

Graduate Theological Foundation

PHILOSOPHY OF EVOLUTION:

**The Twentieth-Century
Neo-Scholastic Approach,
with Special Reference to the
Gregorian University, Rome**

**A Dissertation Submitted
in Candidacy for the Degree
Doctor of Philosophy**

**By the Reverend
John Edward Mulvihill**

**South Bend, Indiana
Convocation 2009**

CONTENTS

INTRODUCTION	1
Proposal for the Study	1
Evolutionism as Interesting	4
Evolutionism as Current	5
Evolutionism as Complex	6
History of Evolutionism	7
Chapter 1: LIMITS OF THE STUDY	16
Evolutionism and Evolution	16
Evolutionism and Its Critique	19
Evolutionism and the Philosophy of Man	21
Evolutionism as Universal Law	22
Neo-Scholasticism and Its Roots	23
Twentieth Century Renewal of Philosophy of Nature	26
Gregorian University in Rome	27
Survey of Literature on Evolutionism	28
An Academic Course on Evolutionism	29
PART ONE: ANALYTIC EXAMINATION OF RECENT NEO-SCHOLASTICS	30
Chapter 2: SURVEY OF LITERATURE	30
Gregorian University in Rome	31
Roman Universities and Academies	57
France	71
Germany	96
Ireland	112
Italy	115
North America	132
Poland	198
South America	200
Spain	207
Vatican	216
PART TWO: HEURISTIC DISCOVERIES FROM SURVEY OF LITERATURE	242
Chapter 3: PROBLEM WITH DEFINITION	242
Chapter 4: PROBLEM WITH PHILOSOPHIC JUDGMENT	250
Chapter 5: PROBLEM WITH SCIENTIFIC JUDGMENT	261

Chapter 6: PROBLEM WITH REASONING	279
The Neo-Scholastic <i>Argumentatio Probabilis</i>	287
Evolution in the Genus of History	291
Chapter 7: PROBLEM WITH BELIEF	296
Science and Ideology	302
Philosophy and Ideology	305
Theology and Ideology	307
Response to Ideology	313
PART THREE: SYNTHETIC THESES ON THE PHILOSOPHY OF EVOLUTION	322
Chapter 8: EVOLUTIONISM IS PHILOSOPHICALLY POSSIBLE.	322
The State of the Question	322
Participants in the Dialogue	324
Definitions and Distinctions	325
Question Needing A Reply	328
The Thomistic Foundations	329
The Scholastic Solutions	340
The Level of Certitude	346
Chapter 9: EVOLUTIONISM NEEDS SOME CONCEPT OF PURPOSE.	355
The State of the Question	355
Participants in the Dialogue	356
Definitions and Distinctions	360
Question Needing A Reply	366
The Thomistic Foundations	366
The Scholastic Solutions	373
The Level of Certitude	384
Chapter 10: EVOLUTIONISM IS INCOMPATIBLE WITH MECHANICISM.	392
The State of the Question	392
Participants in the Dialogue	393
Definitions and Distinctions	399
Question Needing A Reply	400
The Thomistic Foundations	401
The Scholastic Solutions	405
The Level of Certitude	407

Chapter 11: EVOLUTIONISM IS INCOMPATIBLE WITH MATERIALISM.	416
The State of the Question	416
Participants in the Dialogue	416
Definitions and Distinctions	420
Question Needing A Reply	424
The Thomistic Foundations	425
The Scholastic Solutions	429
The Level of Certitude	434
Chapter 12: EVOLUTIONISM IS COMPATIBLE WITH HYLEMORPHISM.	443
The State of the Question	443
Participants in the Dialogue	447
Definitions and Distinctions	451
Questions Needing A Reply	457
The Thomistic Foundations	457
The Scholastic Solutions	459
The Level of Certitude	462
Chapter 13: CERTAINLY, MAN IS ESSENTIALLY DIFFERENT FROM OTHER ANIMALS.	476
The State of the Question	476
Participants in the Dialogue	477
Definitions and Distinctions	480
Question Needing A Reply	483
The Thomistic Foundations	484
The Scholastic Solutions	488
The Level of Certitude	492
Chapter 14: POSSIBLY, THE HUMAN BODY HAS EVOLVED.	503
The State of the Question	503
Participants in the Dialogue	505
Definitions and Distinctions	509
Question Needing A Reply	511
The Thomistic Foundations	511
The Scholastic Solutions	515
The Level of Certitude	519

Chapter 15: CERTAINLY, THE HUMAN SOUL HAS NOT EVOLVED.	529
The State of the Question	529
Participants in the Dialogue	532
Definitions and Distinctions	535
Question Needing A Reply	538
The Thomistic Foundations	539
The Scholastic Solutions	544
The Level of Certitude	546
Chapter 16: FUTURE BIOLOGICAL EVOLUTION OF MAN IS UNLIKELY, AND EQUIVOCAL.	558
The State of the Question	558
The Meaning of Equivocal	559
Participants in the Dialogue	562
Definitions and Distinctions	565
Question Needing A Reply	568
The Thomistic Foundations	568
The Scholastic Solutions	574
The Level of Certitude	582
Chapter 17: EVOLUTIONARY ABIOGENESIS IS PROBABLE, BUT EQUIVOCAL. . . .	591
The State of the Question	591
Participants in the Dialogue	592
Definitions and Distinctions	595
Question Needing A Reply	596
The Thomistic Foundations	596
The Scholastic Solutions	600
The Level of Certitude	609
Chapter 18: COSMIC EVOLUTION IS POSSIBLE, BUT EQUIVOCAL.	619
The State of the Question	619
Participants in the Dialogue	621
Definitions and Distinctions	623
Question Needing A Reply	624
The Thomistic Foundations	625
The Scholastic Solutions	633
The Level of Certitude	644

Chapter 19: SOCIAL EVOLUTION IS UNLIKELY, BUT EQUIVOCAL.	654
The State of the Question	654
Participants in the Dialogue	658
Definitions and Distinctions	664
Question Needing A Reply	666
The Thomistic Foundations	667
The Scholastic Solutions	673
The Level of Certitude	688
Chapter 20: ATHEISTIC EVOLUTION IS IMPOSSIBLE, AND EQUIVOCAL.	699
The State of the Question	699
Participants in the Dialogue	701
Definitions and Distinctions	706
Question Needing A Reply	710
The Thomistic Foundations	710
The Scholastic Solutions	719
The Level of Certitude	734
THE GENERAL CONCLUSION	744
BIBLIOGRAPHY	756
GENERAL INDEX	793
THOMISTIC INDEX	812

INTRODUCTION

Proposal for the Study

The dissertation will have three parts: analytic, heuristic, and synthetic.¹

The first, and analytic, part will be a survey of literature covering 120 Neo-Scholastic philosophers of the twentieth century, with sixteen philosophers from the Gregorian University in Rome, eleven at other Roman universities and academies, thirteen from France, eight of German extraction, two from Ireland, ten from Italy, thirty-eight from North America, one from Poland, four from South America, seven from Spain, and nine from the Vatican. The special emphasis on the Gregorian University is to test and describe the development of philosophy concerning evolution among an inter-acting group of Neo-Scholastics. Analysis of a number of philosophers is warranted because of the multiple implications of evolution, because of the desire to avoid reductionism, and because the problem is not an easy one.²

¹Franciscus Xav. Calcagno, *Philosophia Scholastica* (Naples: M. D'Auria, 1950), 1: 217, notes that for classical science (cognition through causes) both analysis and synthesis are required. Analysis proceeds from the more complex to the simpler, from the particular facts to the more universal, from effects to causes. Synthesis proceeds the opposite way, from the simple to the more complex as a syllogistic proof is built up, from the more universal to the less universal as general axioms are applied to particular cases, and from causes which demonstrate effects. Footnotes and bibliography in this presentation will generally follow: Kate L. Turabian, *A Manual for Writers*, 6th ed. (Chicago: University Press, 1966); and citations from Aristotle, Aquinas, and Latin classical works follow Turabian, *Manual*, 152: #8.127.

²Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 4: "Il problema dell'origine degli organismi viventi, se si vogliono rispettare le sue molteplici implicazioni ed evitare di ridurlo ad uno spazio eccessivamente delimitato, dovrebbe essere considerato dal punto di vista scientifico, filosofico e religioso. L'impresa non è delle più facili." Since this book is the recent course text (*ad uso degli studenti* as noted on the title page) for the philosophy of evolution at the Pontifical Gregorian University, citations may appear frequently.

The second, or heuristic, part will attempt to discover problems in terminology, problems in judgment from the point of view of both philosophy and science, problems with reasoning concerning the proof of evolution, and problems with belief and ideology. These problems will be discovered from the survey of literature as preliminary conclusions.³

The third, or synthetic, part of the dissertation will be the development of a philosophy course with reference to the views on evolution by Neo-Scholastic philosophers.⁴ Thirteen theses or propositions to be proved are listed below in three categories:

Evolution Philosophically:

1. Evolutionism is philosophically possible.
2. Evolutionism needs some concept of purpose.
3. Evolutionism is incompatible with Mechanicism.
4. Evolutionism is incompatible with Materialism.
5. Evolutionism is compatible with Hylemorphism.

Evolution of Man:

6. Certainly, man is essentially different from other animals.

³Calcagno, *Philosophia*, 1: 219, notes that although the analytic method is the best to explore the *genus* of the subject's properties, effects, and parts from the complex to the simple; the heuristic method is precisely the method that seeks truth, and it is part of the analytic method in terms of a conclusion. Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), 195: "It (science) will likewise demand from it (philosophy) those stimulations of the heuristic order thanks to which it may progress *in via inventionis*. Thus, far from being linked with a mechanistic pseudo-ontology, it will be in a sort of dynamic continuity with the specifically different system of ontological notions belonging to the Philosophy of Nature."

⁴Calcagno, *Philosophia*, 1: 219, notes that the diadactic method is the method is the help to communication, and is a part of the synthetic method in terms of a conclusion.

7. Possibly, the human body has evolved.
8. Certainly, the human soul has not evolved.
9. Future biological evolution of man is unlikely, and equivocal.

Evolution as Fruitful Idea:

10. Evolutionary abiogenesis is probable, but equivocal.
11. Cosmic evolution is possible, but equivocal.
12. Social evolution is unlikely, but equivocal.
13. Atheistic evolution is impossible, and equivocal.

Thus, questions will be raised and answered concerning three categories: concerning the philosophy of evolution itself, concerning the evolution of man, and concerning the fruitfulness of the idea of evolution. First, relative to each thesis in this proposed course of philosophy, an attempt will be made to give the state of the question in terms of history. Then the participants in the dialogue, or opponents, will be noted. Thirdly, definitions and divisions of terms will be considered. Fourth, the question needing a reply will be proposed. Fifth, an attempt will be made to give some philosophical foundations for each thesis from St. Thomas Aquinas; although it is clear that a twelfth century philosopher and theologian did not directly treat the issue of evolution which arose in the middle of the nineteenth century. Sixth, some attempt will be made to prove each thesis philosophically in terms familiar to all Neo-Scholastics. Finally, some attempt will be made to assess the level of certitude of each of the thirteen theses, since some statements are proposed in a more serious way than others.

Evolutionism as Interesting

One of the first facts someone wishes to know about a thing is: where did it come from? It is no wonder, then, that biological evolution, with over one hundred years of publicity behind it, has become a household word.⁵ This general and lively public interest has been nurtured by continual scientific discoveries that confirm or critique evolution.⁶

Biological evolution has also become an issue of research for leaders in science, and an object of debate in politics, education, and religion from the time of Darwin's work. There has been sharp debate, necessary and unnecessary public discussion about the consequences of Darwin's idea of common descent, especially as his theory touched upon the origin of man, at which point the term "evolution" began to take on rhetorical overtones.⁷

In reaction to contemporary discoveries in science, there has been a demand for new texts in philosophy. The Neo-Scholastic treatment of the philosophy of nature and its relation to the old Scholastic traditions and principles in view of contemporary natural science have created new discussions and a need for a new presentation.⁸

⁵Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), Preface.

⁶Geoffrey Carr, "The Proper Study of Mankind: Human Evolution," *The Economist* 377 (24 December 2005): 9.

⁷Nogar, *Wisdom*, 28.

⁸Ignatius Smith, foreward to *Cosmology*, by Kenneth Dougherty (Peekskill, N.Y.: Graymoor, 1965), 5: "...new texts...new discussions...new presentation."

Evolutionism as Current

The topic of the evolution of man has been current in debate over the whole last century. The general public been very interested in the topic, and Darwin himself.⁹ Educators have sought direction about what to teach.¹⁰ Accordingly, in the United States the civil courts have been involved.¹¹

Continued scientific discoveries have made evolution a frontier subject for scientists of various types, not only in biology but also in physics, mathematics, geology, anthropology, paleontology and genetics.¹² Evolutionism has become a frontier subject for philosophers and

⁹Kate Kelly, *That's Not in My Science Book* (Lanham, MD.: Taylor Trade, 2006), 75: "Charles Darwin (1809-1882) makes headlines even now. His ideas were as revolutionary as Galileo, Newton, and Einstein. Darwin's explanation of evolution by 'natural selection' transformed our understanding of the living world..."

¹⁰Nogar, *Wisdom*, 327: "But perhaps most of our schools still teach evolution, not as a fact, but only as one alternative..." Claudia Wallis, "The Evolution Wars," *Time Magazine*, 15 August 2005, 30: "It has been only since the late 1980s and early 1990s that most States have created science-curriculum standards as part of a national movement to bring more accountability to education...In 1999, the Kansas State Board of Education changed its science standards to eliminate evolution as an explanation for the development of humanity...The following year they reversed themselves...They have reversed again, having just approved (in 2005) another set of science standards that advocate exposing students to criticisms of evolution, such as intelligent design."

¹¹Kelly, *Science Book*, 83: "In Dayton, Tennessee, in the 1920s, a court case came to test the enforcement of a Tennessee statute that prevented the teaching of evolution in public schools...John T. Scopes, a 24 year old high school biology teacher...The Scopes Monkey Trial as it became known...brought together the two most powerful legal minds: Clarence Darrow for the defense and three-time presidential candidate, and William Jennings Brian as the prosecutor...a media circus...When the case when to the jury, the jurors found Scopes guilty after only an eight minute deliberation." Ibid., 85: "Biological evolution is the only scientific theory to have reached the U. S. Supreme Court. In 1997, the Supreme Court ruled that Creationism is a religious belief that cannot be taught in public schools. Yet discussion continues."

¹²Jesús Villagrasa, "Evoluzione, Interdisciplinarietà e Metadisciplinarietà," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 1.

theologians.¹³

Evolutionism as Complex

The treatment of Evolutionism is made more difficult due to its complexity. Even if we are directly concerned with the philosophy of evolution, the object of our study must be the reality of evolution. However, the kind of evolution must be clarified. Total evolution involves the emergence of life from inorganic matter.¹⁴ Partial evolution would demand involve less transformation. But does this diminished consideration of evolution involve a single ancestor, monophyletic evolution (like the growth to the Biosphere of Teilhard de Chardin), or several ancestors, polyphyletic evolution?¹⁵ Does evolution stay within a given species, between species, or extend up the ladder of taxonomy to classes, to phyla, and to kingdoms of living things?¹⁶ And just what is the scientific mechanism that powers evolution, since not all scientists today agree with Darwin's natural selection and survival of the fittest?¹⁷ Further, theories of evolution are

¹³Józef Życiński, *God and Evolution*, trans. Kenneth W. Kemp and Zuzanna Maslanka (Washington D.C.: Catholic University, 2006), 5: "The overall point of the whole work is to show Evolutionism in light of the dialogue between philosophy and the natural sciences... I turn to a theological line of inquiry in order, if only in a general way, to suggest answers which neither the natural sciences nor philosophy could attain." Józef Życiński is the Catholic Archbishop of Lublin, Poland, and a Neo-Scholastic.

¹⁴La Vecchia, *Evoluzione*, 6: "L'evoluzione totale andrebbe dalla materia inanimata..."

¹⁵F.-X. Maquart, *Elementa Philosophiae* (Paris: Andreas Blot, 1937), 2: 522.

¹⁶La Vecchia, *Evoluzione*, 62: "...non va oltre I gruppi minori e non sembra affatto coinvolgere i gruppi maggiori."

¹⁷La Vecchia, *Evoluzione*, 87: "È pertanto impossibile sostenere che siamo e conoscenza delle cause sufficienti dell'evoluzione."

changing, so where some were weak, now they may be strong.¹⁸ The complexity of Evolutionism is not just an interesting fact, but leads even some Neo-Scholastics to add a chapter on the role of the expert to their more direct arguments.¹⁹

History of Evolutionism

Historically, Evolutionism consists of a complex of philosophic and scientific theories that maintain superior species, animal or vegetable, are derived from lower species.

Among the ancients Pythagoras, Xenophanes, Empedocles, and Herodotus appear to have conceived some type of evolutionistic idea. Modern authors claim to find some evolutionary passages in these ancient thinkers, but such a view is not admitted by all. It is probable that these early philosophers and thinkers knew the rhythmic alteration of earth, sea, and sky. Perhaps they even guessed the true nature of fossils.²⁰

It seems that the first evolutionist was Anaximander, who maintained that every living thing, including man, had its origin from fish. Aristotle supposed that fossils had their origin from mud, due to a rather imprecise “formative force.” Other ancient authors, such as the Roman naturalist and historian Pliny the Elder (23-79 A.D.) held that fossils were a joke of nature (*lusus*

¹⁸Nogar, *Wisdom*, 29.

¹⁹Nogar, *Wisdom*, 32: “The Role of the Expert: At the same time, there is an important adjustment which must be made by the non-specialist in this project. The authority of the specialist’s judgment in the matter of evolution...is great.”

²⁰La Vecchia, *Evoluzione*, 12.

naturae) by which shells and fish were carved into rock.²¹

Some Eastern Church Fathers, such as St. Basil and St. Gregory of Nyssa, appear to have a concept of evolution that approaches the modern view. They held that God had immersed into material such forces or potentiality to produce the various species of plants and animals when the ambient conditions were favorable.²²

Among the Western Church Fathers, St. Augustine held that God created animals in a form that was rudimentary or embryonic. God hid something virtual or potential in nature, to which St. Augustine assigned the term “producing principles” (*rationes seminales*), from which would originate all living things when circumstances were opportune.²³ However, this is not modern evolution, since development does not occur from inferior species but from the embryonic forms that lead individuals to be of the same species.

In the Middle Ages, the Arab doctor and naturalist Avicenna (about 1000 A.D.) returned to the formative power theory of Aristotle. He also thought that fossils were a joke of nature, just as Pliny the Elder. The contribution of Avicenna was a “plastic force” (*vis plastica*) which shaped living organisms, but was incapable of endowing them with life.²⁴

St. Thomas Aquinas was inclined to follow St. Augustine’s position on evolution. In the commentary on the *Sentences* of Peter Lombard, Aquinas said, “The opinion of Augustine is more

²¹La Vecchia, *Evoluzione*, 317: “Dopo aver rapidamente indicato le concezioni che nell’antichità facevano riferimento al concetto di trasformazione evolutiva...”

²²La Vecchia, *Evoluzione*, 13.

²³Augustine *De Civitate Dei* 11. 9.

²⁴La Vecchia, *Evoluzione*, 13-14.

reasonable than that of St. Gregory, and Augustine's opinion defends the sacred scriptures better against the attack of the pagans...and his opinion pleases me more."²⁵

In the seventeenth century, many thinkers considered evolution. Among these was the Jesuit priest, Athanasius Kircher, professor in the Roman College, which would become the Pontifical Gregorian University. Kircher held that God created only a limited number of animal species. From this limited number, by means of the four types of causes noted by Aristotle and operating both intrinsically and extrinsically, came all the other species which actually populate the Earth. The position of Kircher corresponds to polyphyletic evolution, in which organisms arise from a number of evolutionary lines.²⁶

It seems that some Renaissance philosophers such as Giordano Bruno, Lucio Vanini, Francis Bacon, Descartes, Leibniz, Benedict de Maillet and others had some vague idea of evolutionary transformation. Lucio Vanini was censored by the Inquisition for his views in 1619. However, opposition to evolution was not just the view of churchmen. Early scientists also opposed evolution. Cuvier (1769-1831) explained extinction of living things by some cataclysm, and put emphasis on migration of animals. D'Orbigny, a disciple of Cuvier, maintained that there were successive creations for new species. The naturalists of the time did not care much, until Linnaeus (1707-1778) classified living things in his fundamental work, *Systema Naturae*. He maintained that God created each species and there are no new species.²⁷

Until the Renaissance, everyone commonly held the theory of Fixism. This theory of

²⁵Aquinas *Scriptum in Liber Sententiarum* 2. 12. 1. a.

²⁶La Vecchia, *Evoluzione*, 14.

²⁷Maquart, *Elementa*, 2: 518.

Fixism, or theory of Permanence, denies all mutation of species. Abiogenesis, or life from inorganic matter, had been a problem for Fixism, but was eventually solved by its rejection. Fossils had also been a problem for the theory. Exceptional thinkers, such as Leonardo da Vinci, Andrea Cesalpino, who was a philosopher, medical doctor, and botanist, and Girolamo Fracastoro, who was a scientist and author from Verona, all intuited the authentic nature of fossils.²⁸ However, the common opinion about fossils followed Pliny the Elder that fossils were a joke of nature, with the addition that the formation of fossils might have been influenced by the heavenly bodies. In fact, Charles Lyell (1830) determined that geological strata were not necessarily caused by violent cataclysms, but the product of natural laws. Thus the hypothesis of evolution from fossil plants and animals by generation was not accepted by Buffon, Bonnet, Robinet, Diderot, Goethe, or L. Oken.

The real founder of modern evolutionary theory was Le Monnet de Lamarck (1744-1829), who extended this evolutionary theory of descent to all species, with the exception of man.²⁹ Lamarck explained his theory of descent of all species by use and non-use of organs. By non-use organs became weaker. Consequently, the pattern of life of the weaker, or stronger, creature changed. Lamarck also invoked external changes to which living creatures, with stronger or weaker organs, had to adapt. Not all living creatures were transformed in the same way. Plants changed due to nutritional factors, while habits were also a factor for change in animals.

²⁸La Vecchia, *Evoluzione*, 15.

²⁹La Vecchia, *Evoluzione*, 317: "...ci siamo soffermati su vero fundatore dell'evoluzione moderno, J.-B. Lamarck. La sue dottrina non compresa e rapidamente dimenticata è stata ben presto superata nel favore del pubblico da quella darwiniana che si continua attualmente nel darwinismo o teoria sintetica."

Accordingly, functional modifications preceded morphological modifications. It is also notable that Lamarck admitted final causality, which Darwin did not. Lamarck's views were forgotten in public opinion and replaced by the views of Charles Darwin.³⁰

Charles Darwin (1809-1882) explained and defended universal transformism in a materialistic form that excluded final causality. Darwin explained evolution by efficient causality.

The primary efficient causes of evolution, for Darwin, are cosmic and biological causes of variability. Darwin supposed indeterminate variability in organisms so that there is no limit in any part of a living thing by which it could become something else. In this way, transformation of species could continue without a break.³¹

The secondary efficient causes of evolution, for Darwin, are heredity, natural selection, and sexual selection. Darwin drew on ideas that were already current in his time. The struggle for life is also found in Hobbes, Adam Smith, and Malthus. This struggle for life allowed the variability in individuals to be able to produce progress in which the individual remains the same, but the more outstanding qualities obtained from variation are transmitted by heredity; for this reason the struggle for life is called natural selection. Natural selection was proposed by Darwin in 1859, but was already proposed by Spencer, who invented the term in 1852.

Darwin admitted some of the laws of his predecessors, although these were secondary to variability and natural selection.³² Darwin admitted Lamarck's law of use and non-use of organs.

³⁰Maquart, *Elementa*, 2: 518.

³¹Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 312.

³²La Vecchia, *Evoluzione*, 20: "Darwin ritiene che l'evoluzione sia avvenuta mediante il gioco di due fattori: le *variazioni individuali* e la *selezione naturale*."

He also admitted Cuvier's law of mutual correlation, also called the law of intrinsic relation of mutual organs, which postulated that certain organs developed prior to others, for example, teeth came before the stomach. Darwin also admitted the law of compensation, or the law of economy, espoused by Etienne Geoffroy Saint-Hilaire and Goethe, which stated that one part of the organism is proportionally debilitated when the organic humors build up in another part of the organism.³³

Haeckel (1834-1919) was an important follower of Darwin. Haeckel pushed Darwin's theory to the ultimate consequences. Darwin, in 1871, maintained that man also evolved. Haeckel, in 1866, anticipated Darwin in maintaining the evolution of man. Haeckel is also famous for his attempt to prove evolution from the Biogenetic Law of Geoffroy Saint-Hilaire, who stated that the individual embryo follows an observable pattern of growth that parallels the evolutionary development of its species, namely that ontogenesis reproduces phylogenesis. Such a theory is not in great favor today.³⁴

Neo-Darwinism, or the Synthetic Theory, is an important development of the ideas of Darwin. It was founded by Weismann, initially a follower of Darwin.³⁵ He denied the Lamarckian theory of use and non-use. He denied the role of heredity in evolution. He only affirmed natural

³³Marquart, *Elementa*, 2: 521.

³⁴La Vecchia, *Evoluzione*, 54: "Non è quindi applicabile allo sviluppo embrionale la legge 'biogenetica fondamentale' di Haeckel, secondo cui gli stadi embrionali sarebbero una ripetizione degli organismi inferiori."

³⁵La Vecchia, *Evoluzione*, 39: "Al contrario, la teoria sintetica o neodarwinismo, che prosegue la concezione darwiniana, utilizzando il caso e la selezione per dare una spiegazione attendibile del fenomeno evolutivo, è contrastata radicalmente da studiosi competenti. Questi contrappongono ad essa non soltanto le loro critiche fondate, ma la realtà stessa dei fatti."

selection, not only between individuals but between chromosomes of cell generation. The Neo-Darwinians continue to be materialistic and against final causality.³⁶

Neo-Lamarckianism is among the modern theories of evolution. In France, this opinion is represented by Giard, Le Dantec, and Rabaud. Others who hold this theory are Eimer, Cope, Kassovitz, Lotze, and Von Wettstein. The Neo-Lamarckians are against final causality, like the Darwinians. They retain the explanation of mechanistic mutation, heredity, and both natural and artificial selection.³⁷

The Theory of Punctuated Equilibrium (1972) was developed by Niles Eldredge and Stephen Jay Gould. They are Non-Darwinians. This theory of punctuated equilibrium is an idea that evolution, particularly the differentiation among species, occurs relatively quickly with longer periods of little or no change. This theory is still under discussion.³⁸ Pierre Perrier believes that this “jump model” followed by Non-Darwinians is applicable to macro-evolution, in that it jumps to “many” new forms of living things. The Darwinian position is adapted to micro-evolution, in that evolution continues “in a straight line.”³⁹

Other modern evolutionists argue either from the lack of stability in the world, or from the stability of the world. I. Prigogine and I. Stengers argue in 1981 that wherever they look they find evolution, diversification and instability. On the other hand, Jacques Monod, writing in 1970,

³⁶La Vecchia, *Evoluzione*, 317: “...teoria sintetica. Ma numerose e radicali sono le critiche che studiosi competenti muovono a questa concezione evidentemente materialistica e afinalistica.”

³⁷Maquart, *Elementa*, 2: 521.

³⁸Kate Kelly, *That's Not in My Science Book* (Lanham, MD.: Taylor Trade, 2006), 87.

³⁹Pierre Perrier, “Que Nous Apprend l'Analyse Mathématique de la Micro et la Macro Évolution?” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 154.

is a preserver of “periodical stability” so that evolution emerges paradoxically from a stable context, not by an intrinsic change of form but basically by chance.⁴⁰

Adversaries of Darwin included the Fixists and a number of Anti-Fixists.⁴¹ The Theory of Fixism, or the Theory of Permanence, rejects evolution and holds that species are created by God, and this opinion is held by Cuvier and Linneaus. On the other hand, the Anti-Fixists accept evolution but disagree with Darwin due to his monistic explanation of evolution, or because of Darwin’s rejection of final causality, or because of Darwin’s view that evolution is universal.⁴²

Evolutionists who are adversaries of Darwin due to his materialistic monistic explanation of evolution are Cuénot and Davenport, who hold that evolution is directed by God. Cuénot, nevertheless, holds with Darwin an exclusion of final cause.

Evolutionists who are adversaries of Darwin due to his rejection of final cause are the Psychobiologists. Von Hartmann holds an unconscious will. He is a Neo-Larmarckian Psychobiologist. He holds that all life (Law of Continuity) arises from inorganic material, and that inorganic matter is endowed with unconscious psychism. He also holds that evolution develops under the influence of organic intelligence (unconscious will) that is immanent in the living things themselves. Bergson and Le Roy hold a vital impulse. Von Hartmann and Bergson are theistic evolutionists.

⁴⁰Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 224-225; cf. I. Prigogine and I. Stengers, *La Nova Alleanza* (Turin: Einaudi, 1981), especially 274; cf. Jacques Monod, *Il Caso e la Necessità* (Milan: Mondadori, 1970).

⁴¹La Vecchia, *Evoluzione*, 39: “Dopo tanti anni di studi e di ricerche, l’evoluzione remane ancora oggi un problema non risolto, sia per ciò che concerne la spiegazione scientifica, sia per le modalità con cui è avvenuta e il suo sviluppo.”

⁴²Maquart, *Elementa*, 2: 522.

Evolutionists who are adversaries of Darwin due to his rejection of the final cause include some who profess a final goal for “universal” evolution, such as Teilhard de Chardin, the Dominican priest Leroy, and Dorlodot. These “universal” evolutionists profess the need for a final cause and the need for some formal principle of being. They hold the soul is created by God. They hold evolution is directed by God. They maintain that there had to be special divine intervention for the appearance of the vegetative life of plants as diverse from the sensitive life of animals, which are specifically diverse. It is possible, they hold, that evolution might extend to the origin of the body of man.⁴³

Some other evolutionists profess a final goal for “restricted” evolution, such as De Sinety and L. Vialleton. Vialleton (died 1930) is the best of the “restricted” evolutionists. He is not a Fixist, but holds to some partial and non-mechanical evolution. For Vialleton, evolution is restricted to “formal species,” that is, to the lower levels of taxonomy, such as species, genera and families, which differ by reason of external form or by quantity.⁴⁴ Further, he rejects monophyletic evolution, which holds that all living species arose from a single lower ancestor. The conclusions of Vialleton have been confirmed by Guyenot, even if Guyenot does not hold for final causality.

⁴³Maquart, *Elementa*, 2: 527.

⁴⁴Maquart, *Elementa*, 2: 523.

Chapter 1: LIMITS OF THE STUDY

The general intention of this dissertation is to limit the study to the philosophy of evolution to Neo-Scholastic philosophers of the twentieth century, with a special emphasis on the Gregorian University in Rome.

Evolutionism and Evolution

What are the limits of this study concerning philosophy and science? This presentation will confine itself, as much as possible, to the topic of evolution as a philosophical system, which is Evolutionism. Evolution can be a scientific theory too, in addition to being a philosophy.

Philosophy, according to the Neo-Scholastics, is defined as the science of all things from their ultimate causes as known by the light of human reason.¹ It is called a “science” because it is knowledge that is certain and evident, deduced by reasoning from principles that are certain and evident. It is called the science of “all things,” because it treats the Creator, and creatures whether material or spiritual. It is “through ultimate causes” to distinguish it from other sciences which study the same object “through proximate causes.” This separates philosophy from the empirical sciences. For example, medicine might find that someone died from cancer (a proximate cause), while the same analysis done philosophically finds that the cause of death was the separation of the vital principle from the material (the ultimate cause). Among the differences in the point of view is that the philosophical explanation applies to all deaths, so it is an ultimate

¹Franciscus Xav. Calcagno, *Philosophia Scholastica* (Naples: M. D’Auria, 1950), 1: 1, “Definitio philosophiae. Quoad rem philosophia definiri potest: scientia rerum per causas ultimas, naturali rationis lumine comparta.” See also: Aquinas *In Metaph.* 1. 3.

explanation. Further, philosophy knows ultimate causes “by the light of human reason.” This separates philosophy from theology, which also knows the ultimate causes by revelation.

As a scientific theory, evolution is the process which, over the course of time, plant and animal species are successively generated.² A fuller definition states that evolution is the derivation of a very large number of kinds (biological species) of living things by means of a tremendously long series of usually small (although sometimes large) cumulative changes from a very few (perhaps only one) living ancestor. Note that scientific evolution is not a proven fact, at least not to the satisfaction of the Neo-Scholastics.³

Fixism, or the Theory of Permanence, is a philosophic theory that holds species are fixed without any evolutionary change between species. This is a possible theory philosophically, but is not entirely concordant with new paleontological discoveries.⁴

Creationism is a philosophic theory that holds God created species, and is a theistic form of Fixism. This is a possible theory philosophically, but is not entirely concordant with new paleontological discoveries. Certainly, God is the creator of the world, but the issue here is the precise creation of species.⁵

Materialistic Evolutionism is the system that holds the complexity of kinds of things

²Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 7.

³Ionanes Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), 2: 179: “...possibilitas vel etiam probabilitas philosophica evolutionis spiritualisticae indiget adhuc validioribus argumentis biologicis ut evadere possit vera doctrina scientifica.”; *ibid.*, 2: 182: “...hypothesis evolutionismi spiritualistici non est impossibilis; non dicimus quod sit iam doctrina certa seu philosophice vel scientifice probata.”

⁴Di Napoli, *Manuale*, 2: 179, “...de facto plures eam defendunt...fixismus...”

⁵Di Napoli, *Manuale*, 2: 179, “...de facto plures eam defendunt...creationismus.”

(species) is due to accumulated changes brought about by the activity of merely material things, all causality on the part of the Creator being excluded.⁶ Another definition of Materialistic Evolutionism, or Darwinism, is a philosophical theory maintaining the evolution of both man's body and soul. Among Neo-Scholastics this theory is universally rejected. Neo-Scholastics make a clear distinction between bodily or material evolution (which involves change or becoming, whose Latin term is *feri*), and the spiritual soul's creation (which gives man not just essence but existence, whose Latin term is *esse*) Neo-Scholastics affirm the creation of the soul of man by God. Neo-Scholastics affirm the notion that there is an essential difference between man and the other animals, due to the vital principle, or soul, of man. However, evolution of the body alone is not impossible.⁷

Spiritualistic Evolutionism holds that the soul was created by God, but the body had an evolutionary origin. Di Napoli distinguishes this Spiritualistic Evolutionism to be of two kinds.

Spiritualistic Evolutionism without divine intervention: Some hold that the body of man had its de facto origin from a simian body without a special divine intervention. This opinion is held by Mivart, Le Roy, and Teilhard de Chardin. Di Napoli rejects this type of Spiritualistic Evolutionism.⁸

Spiritualistic Evolutionism with divine intervention: Some hold that the body of man had an evolutionary origin with special divine intervention, in so far as God previously transformed a

⁶Geroge P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 414.

⁷Di Napoli, *Manuale*, 2: 179.

⁸Ibid.

simian body into the human body and then infused in this human body a created soul. Catholics who hold this doctrine are D'Hulst, De Sincety, Bouyssonie, Wasmann, Gemelli, and Marcozzi. This second opinion of Spiritualist Evolutionism with special divine intervention is the position defended by Di Napoli. Di Napoli holds that Spiritualistic Evolutionism with special divine intervention is possible and even probable.⁹

This dissertation will limit its study to the philosophy of evolution in three general areas. First, Evolutionism, considered as a system in itself, must be critiqued. Secondly, Evolutionism as a system that involves man must be critiqued. Thirdly, Evolutionism will be critiqued to determine the limits of the idea, in other words, how fruitful is the idea of evolution?

Evolutionism and Its Critique

Materialistic Evolutionism, or Darwinism, as defined above, is a materialistic philosophical system that needs some critique. First, Materialistic Evolutionism is inadequate because it is based exclusively on material causality. An illustration of that inadequacy can be seen in the example of the material kitchen table. If Materialism only considers the material cause, there would be no difference between the lumber, (the material of the table) and the beautiful table itself (the formal cause, formed by the lumber). Further, only considering material cause, there would be no need for a carpenter, thus excluding an efficient cause. Secondly, Evolutionism which admits only the existence of matter seems to deny the facts of experience, in that there would be no difference, on the one hand, between the material activity that is physico-chemical, and on the other hand, life, sensation, and thought. Thirdly, Evolutionism which admits only matter

⁹Ibid.

overlooks a basic principle of knowledge: we know what things are by what they do (*agere sequitur esse*). Since Materialistic Evolutionism maintains that the nature of things is material no matter how they operate, this is an assumption against the facts.¹⁰ On the other hand, there may be some elements of truth to be found even in Darwinism, which is Materialistic Evolutionism.¹¹

Part of difficulty of limiting this presentation involves the large number of different philosophies of Evolutionism. Dr. Maria Teresa La Vecchia of the Gregorian University says there are about thirty different theories of evolution today, and her opinion is confirmed by a number of other Neo-Scholastic philosophers.¹² The biography of Vittorio Marcozzi, the Neo-Scholastic philosopher at the Gregorian University who was occupied with evolution even from the beginning of his career in teaching in 1939, states that he found new theories constantly arising, such as Neo-Darwinism, Neo-Lamarckianism, and Punctuated Equilibrium.¹³

Can Evolutionism, considered as a philosophy in itself, be critiqued under a single

¹⁰Klubertanz, *Philosophy*, 379 : “...material causality...deny evident facts...assumption...”

¹¹Claudia Kalb, “DNA and the Secrets of Who We Are,” *Newsweek Magazine*, 6 February 2006, 52-53: notes medical benefits from future genome testing in such populations as Amish for polydactyly, as Ashkenazi Jews for Gaucher or Tay-Sachs diseases, or as of African ancestry for sickle-cell anemia; although ethical problems with social stereotyping could arise, as feared by Stanford geneticist Marcus Feldman.

¹²La Vecchia, *Evoluzione*, 32: “...sono state almeno una trentina di teoria diverse che tentano di chiarire il fenomeno evolutivo.” Paul Haffner, “Evolution and the Magisterium of the Church” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 326: “...it is more accurate to speak of theories of evolution.” Fernando Pascual, *Evoluzionismo e Bioetica: I Paradigmi di V. R. Potter, H. T. Engelhardt e P. Singer*,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 358: “Dalle theorie (ancora in plurale!)...” Rafael Pascual, “La Teoria dell’Evoluzione: *Status Questionis*,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 34: “...la dottrina dell’*intelligent design*...”

¹³His biography was reported “In Memoriam” in the newsletter *La Gregoriana*. 3 February 2007 <<http://www.unigre.it/pug/rivista/GREG22.pfd>>.

heading? No, it cannot. Since Darwin, there have arisen a number of different philosophies of evolution. In addition to the basic philosophic problem of transformation of species, there is an added question of progress by chance. Further, Positivist philosophers believe that evolution progresses in a mechanical way, raising the questions of Mechanicism and Materialism. A deeper study of the question of evolution raises the question about whether Aristotelian Hylemorphism can give a satisfactory philosophical understanding of evolution, since the “species” of any particular thing arises from both formal and material causality.

Evolutionism and the Philosophy of Man

In an attempt to limit the treatment of Evolutionism, why include the origin of man? Isn't man's origin the same as any other animal, since man is a rational animal? Although Darwin included man, body and spirit, in the evolutionary pattern of all animals, the co-discoverer of evolution, Alfred R. Wallace, denied that evolution by natural selection could account for the origin of man's mental, moral and sociological faculties.¹⁴ Thus arose a precisely evolutionary debate between those who put man totally within the evolutionary pattern and those who placed man totally outside that pattern.¹⁵ Some modern philosophers, such as Maria Teresa La Vecchia at the Pontifical Gregorian University in Rome, base their whole presentation of evolution in

¹⁴Klubertanz, *Philosophy*, 425: “Remember that from this analysis of possibility (of human evolution) it is impossible to say what did occur, for it (evolution) is certainly not the only way in which men could come to be.”

¹⁵Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 128-129: “...Darwin included man...*The Descent of Man* (1871)...In 1889...Alfred R. Wallace...book called *Darwinism*...denied that evolution by natural selection could account for the origin of man's mental ...”

relation to the philosophy of man. Since man is defined as a rational animal, what is man's evolutionary relationship to the other members of the animal family?¹⁶ What is the origin of the body of man?¹⁷ What is the origin of man's soul?¹⁸ Finally, what can be expected of man in the future in terms of evolutionary progress? Since, at first, it may seem that this last question can only be answered with speculation, not even La Vecchia gives much thought to the continued meaning of evolution philosophically.

Evolutionism as Universal Law

Even with the intention of limiting the presentation of Evolutionism, some consideration must be taken of its expansion to the level of universal law, and the consequences of this.¹⁹

A number of philosophers, such as Spencer, have elevated Darwin's biological views of

¹⁶Franciscus-Xav. Calcagno, *Philosophia Scholasticae* (Naples: M. D'Auria, 1952), 56: "Bruta animalia gaudent facultate sentiendi, sed carent facultate intelligendi." See also: Geoffrey Car, "The Proper Study of Mankind: Human Evolution," *The Economist* 377 (24 December 2005): 9, maintains a discontinuity between man and other species.

¹⁷Klubertanz, *Philosophy*, 425, among other Neo-Scholastics answer the question: "Moreover, it seems possible that the human body could take its rise this way."

¹⁸Klubertanz, *Philosophy*, 425, with all Neo-Scholastics: "...God would create...He creates the soul..."

¹⁹Michael Maher, *Psychology: Rational and Empirical*, 9th ed. (London: Longmans, Green, 1940), 578: "The modern doctrine of evolution ramifies into a large number of sciences and its satisfactory discussion involves a multitude of questions pertaining to biology, geology, physical anatomy, rational theology, and scriptural theology." Maher, *Psychology*, 394, adds to the list of concerns about evolution: "Ethics, natural theology, ontology and cosmology must meet...all these sciences are compelled to harmonize their conclusions."

evolution to the status of a universal law.²⁰ This raises some real and challenging questions. Not the least is the question of the possible evolution of life from non-life, the question of abiogenesis.²¹ Does the universe itself evolve?²² What is to be said about the current views on evolutionary society.²³ Finally, does the theory of evolution need to exclude God, the Creator, and what can Scholastic philosophy answer to this atheistic position of Evolutionism.²⁴

Neo-Scholasticism and Its Roots

This study intends to limit itself to Neo-Scholastic philosophers of the twentieth century.

Scholastic philosophy in the Middle Ages was the philosophy taught in the universities, the “schools” from whence Scholasticism gets its name. Later when modern philosophy broke away from traditional philosophy, those who continued to teach the doctrines of the great philosophers of the Middle Ages became known as Scholastics. The term Scholastic philosophy is almost equivalent to Catholic philosophy since it is the philosophy taught, by papal rescript, in Catholic seminaries and universities even today.²⁵

²⁰Nogar, *Wisdom*, 176, “Dynamic Science - How Far Can the Theory of Evolution Be Extended?” Nogar, *Wisdom*, 191-193: “Is Evolution a Cosmic Law?”

²¹Klubertanz, *Philosophy*, 424: “The same explanation (evolution) can be used for the origin of life.” Nogar, *Wisdom*, 179-182: “Biogenesis: The Origin of Life.”

²²Nogar, *Wisdom*, 176-193: “Chapter Eight: Cosmic Evolution.”

²³Nogar, *Wisdom*, 155-175: “Chapter Seven: Psychosocial Novelty.”

²⁴Nogar, *Wisdom*, 294-319: “Chapter Fourteen: Evolution and God.”

²⁵Brother Benignus, *Nature, Knowledge, and God* (Milwaukee: Bruce, 1947), 56: “Thomism is one system...in every age there have been first-rate thinkers who have not adhered to Scholasticism...The greatest masters of Scholasticism besides St. Thomas were St. Bonaventure,

Neo-Scholasticism is the revival of the scholastic tradition in modern times. This revival is due in large part to the encyclical of Pope Leo XIII, *Aeterni Patris* (4 August 1897).

Scholasticism never really died out completely, but had lost much of its vigor and popularity among philosophers.²⁶

Neo-Scholasticism is a system especially based on the philosophy of St. Thomas Aquinas, who was in large part an Aristotelian in philosophy.²⁷ Before Aristotle, Parmenides (flourished 475 B.C.) proposed that becoming (change) was impossible, because being cannot come from being (this already exists) nor can being come from non-being (utter nothingness, and from nothing, nothing comes). Aristotle (384-322 B.C.), in reply to the problem of Parmenides, did a brilliant analysis of change. Change, Aristotle maintained, is possible because between being and utter nothingness there is an intermediate state, which is potential being or being in potency. This is important for our analysis, for fundamentally, evolution is transformation or change. In addition, it may be said that Aristotle was the founder of biology as a science. Some of the

the great champion of Augustinianism, and Duns Scotus, who embodied in his philosophy both Augustinianism and Aristotelian elements. The former was a contemporary of St. Thomas and the latter a half a century his junior; both were Franciscans...A few centuries later a Jesuit, Francisco Suarez, added still another system to these great Scholastic philosophies.”

²⁶Calcagno, *Philosophia*, 1: 9.

²⁷Ioannes Di Napoli, *Manuale Philosophiae* (Turin: Marietti, 1955), 4: 105, “Reviviscentia philosophiae scholasticae est maxima ex parte reviviscentia thomismi, ut hodie indifferenter adhibeantur termini “schoastica” et “thomismus”; particula “neo,” quae praeponitur illis terminis (Neo-Scholastica, Neo-Thomismus), indicat intentionem resumendi philosophiam mediaevalem et eam complendi per doctrinas modernas cum ea compossibiles...explicationes, deductiones, applicationes, evolutiones doctrinae antiquae et perennis in suo valore veritatis.”

principles of Aristotle can still be useful in the analysis of the mutability of species.²⁸ While Plato (born 427 B.C.) thought things perceived by the senses were real because they imitated ideas, for Aristotle things are reality because they embody forms. The doctrine of Aristotle that sensible substances are real embodiments of forms in matter, is called Hylemorphism (from *hyle*, matter, and *morphe*, form). Aristotle also rejected both Materialism and the Mechanicism of Democritus, and Idealism of Plato.²⁹

St. Thomas Aquinas (1225-1274), in the thirteenth century, did not specifically treat the idea of evolution, which arose as an intellectual challenge in the nineteenth century. Nevertheless, his principles and method are still important in philosophy. It is these principles and this method that can be used to try to explain the phenomenon of evolution in its several aspects.³⁰

²⁸H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 19: "...Aristotle makes a critical analysis of earlier doctrines. This analysis, thorough and trenchant, is an achievement by itself. Especially noteworthy are his refutation of the Eleatics and his criticism of Anaxagoras. The Eleatics had done away with the very possibility of change, so, in effect, doing away with the problem of principles. Anaxagoras had gone to the other extreme, saying that the principles were infinite."

²⁹H. D. Gardeil, *Introduction*, 2: 39, gives the conclusion about Hylemorphism and other theories of physical reality.

³⁰Calcagno, *Philosophia*, vii: "Agitur secundo de Philosophia scholastica secundum rationem, doctrinam et principia S. Thomae Aquinatis. Haec est enim Ecclesiae voluntas...et aliunde omnes norunt Doctorem Angelicum inter scholasticos auctores, velut omnium principem et magistrum, longe eximere."

Twentieth Century Renewal of Philosophy of Nature

The Neo-Scholastic philosophers of the twentieth century faced a double task.³¹ First, the science of biology was just becoming modern in the twentieth century, so the material content of the philosophy of nature in biology was changing. Second, the Neo-Scholastics had to answer new problems that had not been treated in prior scholastic philosophy of nature (cosmology and rational psychology), and so some of the formal principles of philosophy (finality, chance, space, and time) had to be enlarged in new application.

Jacques Maritain called for a deep renovation of philosophy of nature. He maintained that there was an essential distinction between philosophy and science. Scientific measurement (*empirométrie*) was only a medium (*scientia media*) between pure mathematics and natural philosophy, while modern descriptive sciences (*emperioschématique*) only lend themselves to verification by experience. Therefore, empirical sciences keep to the more concrete notions, and when they go a step further in analysis, they do not go to ontological but mathematical principles, which fall short of the ontological degree of abstraction, in the opinion of Maritain. Accordingly, if descriptive sciences would be as superficial and hypothetical as Maritain thought, they would not be sciences at all, but only dialectical preparations for science.

The better opinion is that of Aristotle, who held that natural philosophy and empirical science are one, since both treat mobile being and each is a part of the other. The Aristotelian position is also the position of Mondin at the Urbaniana University, Selvaggi at the Gregorian

³¹H. D. Gardeil, *Introduction*, 2: 9: “Clearly then the task is not easy that awaits the author of a modern cosmology in the manner of Aristotle but without much of the Aristotelian matter. The author must perform a double feat in one...separating...scientifically outmoded...build his superstructure, a theory of the universe that is solely philosophical.”

University and the Dominican priests at the Aquinas Institute in River Forest, Illinois, near Chicago. The Aquinas Institute is also the location of the Albertus Magnus Lyceum, dedicated to the working dialogue between Neo-Scholastic Thomism and empirical science.

The philosophy of nature in the twentieth century must be explored to determine if there has been a development favoring essential difference between philosophy and science (Maritain), or whether the dominant opinion will favor the unity of philosophy and science in a unified (Mondin et al.) philosophy of nature.

Part of the philosophy of nature is the philosophy of “human” nature, which is an organized, unified and certain knowledge about the nature of man, derived from experience and through an analysis of his activities, characteristics, and powers.³²

Gregorian University in Rome

The use of the Gregorian University as a special limit is for internal and external comparison. Historically, thirteen scholars have been identified as working at the Gregorian University in Rome. These scholars’ lives have covered the whole of the twentieth century. These scholars have interacted and influenced one another. Some of these scholars have taught the next generation at the Gregorian University.³³ Some are gratefully cited or quoted by their successors in philosophy. A number of these scholars at the Gregorian University have been conservative, due to philosophic principles or due to the consciousness that their centrality in Rome leads to the

³²Klubertanz, *Philosophy*, 10, gives the definition.

³³Filippo Selvaggi, *Filosofia delle Scienze: Principi Fondamentali delle Scienze e Problemi Cosmologici* (Rome: Città Cattolica, 1953), 7, notes with admiration the work of the cosmologist Pietro Hoenen who taught him at the Gregorian University.

conclusion that their views have some official sanction. Some of the other scholars are innovative. Internal comparison should reveal any change of views during the last century. There is a contemporary course on evolution being taught at the Gregorian University and the text of the course is published.³⁴ This most recent publication should reveal where the position of the faculty on evolution is now. Concerning external comparisons, Gregorian University scholars, usually Jesuit priests, have produced texts in philosophy that have been widely used in other Jesuit institutions around the world. Have these texts influenced opinions of scholars in other institutions?³⁵ Accordingly, in a large survey of literature, the Gregorian University may be used as a convenient yardstick.

Survey of Literature on Evolutionism

The analytic section will be limited to a review of literature on Evolutionism. Heuristic, or discovery, will be a separate section, although analytic, to determine problems that arose concerning Evolutionism in the survey of literature. The analytic survey of literature will review 120 twentieth-century Neo-Scholastics to determine their positions on Evolutionism. All of the subjects of this survey would have had training in scholastic thought. Not all of the subjects of the survey became professional philosophers. Not all of the subjects of the survey wrote books

³⁴La Vecchia, *Evoluzione*, title page: “ad uso degli studenti.”

³⁵Robertus Masi, *Cosmologia* (Rome: Desclée, 1961), 16, mentions the origin of his material from Hoenen: “Ut patet plura ex tractatibus cosmologicae iam editis hauriebamus, sed paesertim optimum tractatum clarissimi Petri Hoenen, *Cosmologia* (Rome: Gregorian, 1931; 5th ed., 1956) prae oculis habuimus, quo plura laudavimus.” Masi, *Cosmologia*, 17-18, also recommends M. Liberatore, 1883-1884 at the Roman College, the predecessor of the Gregorian University, and Filippo Selvaggi at the Gregorian University in 1959.

specifically on Evolutionism, or directly on Neo-Scholastic philosophy. Nevertheless, the survey should show how those trained in a Neo-Scholastic manner would approach the modern world, with a problem like Evolutionism, a contemporary reality and an object of great interest.

An Academic Course on Evolutionism

The synthetic section of this project will be limited by the preparation of an academic course on Evolutionism, the philosophy of evolution. Each of the thirteen theses will be stated, given a philosophical background, then philosophically proved to the extent possible, and critiqued as to certitude. Every attempt will be made to prepare an academic course on Evolutionism following the lead of twentieth-century Neo-Scholastics.

PART ONE: ANALYTIC EXAMINATION OF RECENT NEO-SCHOLASTICS

Chapter 2: SURVEY OF LITERATURE

The survey of literature attempts to do an analysis of a very large number of Neo-Scholastic philosophers around the world. The survey includes those who were, at minimum, trained in the Neo-Scholastic tradition during the twentieth century, or those who were the founders of Neo-Scholasticism slightly prior to the opening of the twentieth century. Names of authors are listed as found on the title pages of their books. Footnotes with major bibliographical information are listed in this chapter, but verification of the every position of each author on evolution is found in the appropriate chapter in the synthetic part of this dissertation, to avoid repetition of the same notes and to place notes where the actual debate about proofs is located. Listing of the 120 Neo-Scholastics was done geographically and chronologically, with some adaptations.

Geographically, the following list is a reasonable attempt at classification. Since an alphabetical listing of over one hundred philosophers would be very cumbersome, this listing gathers philosophers by similar geographic area or linguistic area, except for some special cases: those teaching at the Gregorian University in Rome, secondly for those teaching in Rome at the various pontifical universities and academies, and third for popes trained in scholastic philosophy but actually resident in the Vatican. The listing by language groups was an attempt to allow comparison, in the event this might be possible. Of course, some authors wrote in Latin at one time and in a modern language at another time. A reasonable attempt was also made to classify

geographically the more international subjects of this study, such as Teilhard de Chardin, who was trained in France, worked in China, and died in the United States. Another example of internationalism is Ivan Illich, who was scholastically trained in Rome, obtained a doctorate in Vienna, was active as a priest in New York, was an educator on the island of Puerto Rico, and finally opened a school of Spanish culture in Mexico.

Chronologically, this listing of philosophers includes those who have lived in the twentieth century or influenced the beginning of Neo-Scholasticism in the early twentieth century. The dates listed next to the names of the philosophers are usually the dates of publication of their more recent major works. The reason for this method of dating is an attempt to show the interrelation of philosophers who might have influenced each other, and to show the continued influence of the Neo-Scholastics even to the end of the twentieth century.

Gregorian University in Rome

Franciscus Xav. Calcagno (1937).¹ With a doctorate in both philosophy and theology, he

¹Franciscus Xav. Calcagno, *Philosophia Scholastica*, 3rd ed., 3 vols. (Naples: M. D'Auria, 1950-1958; original 1937), esp. 2: 44-54. He rejects evolution in general, vol. 2: page 51: "Diversae species viventium (loquimur de speciebus veri nominis) non aliter originem habuerunt ac per immediatam operationem divinam. Quod quidem confirmatur ex narratione genesiaca, in qua species diversae viventium dicuntur institutae ab initio, *verbo Creatoris*." He rejects human evolution, 2: 51: "A fortiori repugnat transformismus anthropologicus, tum radicalis, tum mitigatus... restringitur ad solum corpus." He rejects spontaneous generation, 2: 45: "Generatio spontanea repugnat experientiae et rationi." Calcagno rejects evolution metaphysically because it contradicts the principle of causality, 2: 50: "Transformismus manifeste contradicit principio causalitatis duplici titulo: a) Cum evolutio fiat a speciebus imperfectioribus ad perfectiores, causa inferioris produceret effectum ordinis superioris; b) Casus fortuitus esset causa *ordinis constantis*. Nemo dubitat quominus omnes organismi diversarum specierum prae se ferant structuram mirabilem, harmonicam conspirationem inter varias partes, et finalitatem evidentissimam in singulis membris."

was a Jesuit Neo-Scholastic professor of philosophy at the Gregorian University in Rome. Eventually, he became Rector of the same university. He wrote a three volume manual covering all of philosophy which was reprinted up to 1958. His philosophy is Neo-Scholastic, following St. Thomas Aquinas. The language of his text is Latin. He attempts to answer modern problems (“*nostris temporibus accommodata*”). His division of the philosophy of nature separates the inorganic (*Cosmologia*) from life (*Psychologia Inferior*), and has a special treatment for man (*Psychologia Superior*). He follows the traditional order (“*ordinem traditionalem secutus sum*”) and sees no need to change the philosophical categories (“*non enim video rationes vere cogentes quae alium ordinem exigat*”). His high quality work was designed as the text for philosophy students in Rome, and the material is presented in thesis form and directly argued. Each thesis is preceded by the state of the question, definitions, opponents. His arguments are mostly metaphysical. Concerning content, Calcagno rejects abiogenesis, rejects evolution and rejects even the possibility of the evolution of the body of man. Calcagno quotes Siwek, who was also teaching at the Gregorian, and Donat who was teaching at Innsbruck.

Carlo Boyer (1939).² Boyer was a Jesuit Neo-Scholastic professor at the Gregorian University and a member of the Roman Academy of St. Thomas Aquinas. His *Cursus*

²Carlo Boyer, *Cursus Philosophiae*, 2 vols. (Bruges: Desclée de Brouwer, 1939), 2: 183-198, especially 2: 192: “Probatur ex notione naturae: Natura omnis ordinatur ad propriam perfectionem et non ad sui destructionem. Sed omnis species proprie dicta est essentia quaedam seu natura in se determinata et ab aliis essentialiter distincta. Ergo non tendit ad induendam aliam speciem, scilicet ad cessationem suae propriae speciei... Probatur ex ratione causalitatis: Non potest esse major perfectio in effectu quam in causa. Atqui in hypothesi evolutionis specierum proprie dictarum, plus esset perfectionis in effectu quam in causa. Ergo haec hypothesis repugnat...Propter hoc argumentum simul ac praecedens, tenendum est quod ‘oportet agens esse simile facto’ et quod ‘simile fit a suo simili’ (Aquinas *Summa Theologiae* 1. 65. 4). See also: Ioannes Di Napoli, *Manuale Philosophiae* (Turin: Marietti, 1955), 4: 57.

Philosophiae manual had an introduction by Eugenio Cardinal Pacelli, later to become Pope Pius XII, which praised the doctrine (from Aquinas), the order of presentation, and the treatment of “modern” questions. The presentation is very well ordered, has great clarity using the thesis form, follows the traditional order of philosophical tracts, and is very useful as a class text. Boyer argues very succinctly and to the point. Boyer is useful in his treatment of evolution, he answers both the Neo-Darwinians (Weissmann) and the Neo-Lamarckians. He holds the possibility (“*possibilis est evolutio intra plures inferiores gradus classificationis*”) of evolution “within” the lower grades of classification, such as species, genus, and family. He denies evolution “between” species (“*non habetur evolutio ab una specie proprie dicta ad aliam*”). He is interested in the origin of the body of man, and denies it originates by evolution (“*corpus hominis non est per evolutionem brutorum formatum*”). Boyer has an extensive treatment of Charles Darwin, whom he generally opposes. Specific opposition of Boyer relates to Darwin’s view that the sensible appetite is just a complex of sensations; Darwin’s opinion that beasts do not differ essentially from man; Darwin’s view that the whole man, body and soul, evolved; Darwin’s systematic presentation of evolution; and Darwin’s position that God is not demonstrated from order in the world.

Carlo Boyer is also a member of the Roman Academy of St. Thomas Aquinas. For example, he wrote for the Academy journal in 1954 in Italian on the proofs for the existence of God given by Aquinas. He noted that atheism and its increase is the scandal of our time. He noted that never before in history has the negation of God been so audacious and so apparently successful. The article on atheism is especially relevant to our presentation of evolutionary atheism. In 1962, he wrote in French for that same Academy journal on “School Liberty.” This was an activist article which noted that whoever cares for the good of humanity is very interested

in the question of education. This article is especially relevant to our presentation on the evolutionary future of man.

Paolo Dezza (1945).³ Born in Parma, Italy in 1901, he was a Jesuit Neo-Scholastic professor of philosophy at the Gregorian University. He became its Rector (1941-1951). He wrote extensively on philosophy, including books in Italian on the origin of Thomism, the Italian Neo-Thomists of the nineteenth century, and Christian philosophy. All of these works showed his extensive Thomistic and Neo-Scholastic background. In metaphysics, he wrote in Latin for his students at the Gregorian in thesis form. He gives citations from Aquinas, which are especially useful for this presentation in the areas of chance and finality in opposition to Darwin, who had alleged that evolution by natural selection was by chance. Dezza also gives useful principles such as finality, vitalism, and substantial mutation, and also gives useful concepts involved with evolution, such as chance, perfecting cause and material causality by eduction.

Dezza treats Evolutionism. He notes that experimental science has shown that spontaneous generation does not exist, but it has not shown the impossibility of abiogenesis. He rejects the position of Darwinism that the origin of man is from inferior animals. He rejects

³Paolo Dezza, *Metaphysica Generalis: Praelectionum Summa ad Usus Auditorum* (Rome: Gregorian University, 1945). Paolo Dezza, *Filosofia: Sintesi Scolastica*, 5th ed. (Rome: Gregorian University, 1960), especially page 130: “La scienza sperimentale ci ha mostrato la inesistenza della generazione spontanea, ma non ce ne mostra l’impossibilità.”; 145, “Da Darwin in poi, cioè da quando si ammise l’origine dell’uomo da animali inferiori, non si è potuto dimostrare nulla di accettabile in questo ordine di idee.”; 146, “L’Evoluzionismo ateo repugna filosoficamente ed è privo di ogni valore scientifico.”; 146: “L’Evoluzionismo teistico parziale, entro confini delle specie naturale, non repugna filosoficamente e trova conferma in alcuni dati della scienza.”; 146: “L’Evoluzionismo teistico integrale non sembra ripugnare filosoficamente nel senso spiegato, ma allo stato attuale delle scienze è un’ipotesi che trova nei risultati scientifici indizi favorevoli ma insieme difficoltà gravi; ulteriori progressi della scienza potranno dare nuove luce su questa questione ancora discussa.”; 138: “...l’anima sarebbe stata infusa da Dio.”

atheistic Evolutionism. He maintains partial theistic Evolutionism (excluding man's body) within the confines of a natural species is not philosophically repugnant. He maintains that total theistic Evolutionism (including man's body) does not seem to be philosophically repugnant, but has grave difficulties scientifically. He maintains the spiritual soul of man is infused by God.

Dezza also illustrates a change in philosophy between his 1945 book on metaphysics and his 1960 book on the scholastic synthesis. While his former audience in 1945 were students for the priesthood, the new audience in 1960 were laity. While his former language was Latin, his 1960 treatment of philosophy was in Italian. While his 1945 style was thesis demonstration by syllogistic proof, the 1960 style was popular. While his reason for philosophy in 1945 was to prepare teachers and thinkers in theology, the motive in 1960 was to educate and increase public awareness of philosophical questions. Nevertheless, this contrast cannot be taken too far. Both Dezza's 1945 and 1960 works followed the classical tract structure of philosophy. The content and themes of both old and new presentations were classical. The aim of Dezza in all his books was effective communication of the material appropriate to the audience. The 1945 book was meant to teach clerical students how to form concepts and reason philosophically, while the 1960 aim was to teach philosophical understanding to the laity.

Paul Siwek (1948).⁴ Siwek, a Neo-Scholastic philosopher, was born in Poland. He studied at the Psychological Institute in Paris, with a doctoral thesis in philosophy on Spinoza. He entered the Jesuit Order and taught at the Gregorian University in Rome from 1921 to 1930. Then he taught at Fordham University in the United States from 1946 to 1949. He loved science, especially

⁴Paul Siwek, *Psychologia Metaphysica*, 7th ed. (Rome: Gregorian University, 1965), 70-143.

as an instrument to reach scholars. He became a citizen of the United States in 1952. Concerning his literary output, he wrote the Latin *Psychologica Metaphysica* in 1948, and it was used as a student text. It was republished several times at the Gregorian University up to the seventh edition in 1965. He is a very serious scholar who in 1952 translated from Greek to Latin *Aristoteles De Anima Libri Tres* with notes and commentary, now in the fifth edition published by the Gregorian University Press. He is a Neo-Scholastic who presents this material in thesis form. He is very complete, and gives the history of each question. Practically no page in his book is without footnotes, including Aquinas, Aristotle and the moderns. He gives citations in the original language, even in English, together with exact references. His presentation treats the vital principles of life (143 pages), sensitive life (133 pages) and intellectual life (269 pages), distinguishing intellect, will and habit. Obviously, from the length of treatment, the human being is central in this treatment, so that most of his book is a philosophy of man, even if it is not given that name. Useful elements of his presentation are his refutation of Mechanicism, his treatment of abiogenesis, and an entire chapter on evolution. He rejects abiogenesis on the basis of human experience and the principle of causality, which now may be debatable. He also refutes evolution in general, and particularly the evolution of man's body, against Teilhard de Chardin. He holds the creation of the immortal soul by God, and has a scholion about the resurrection of the body in the natural order, which may be useful in my treatment of the future of man. My only objection to Father Siwek is his habit of saying that the proof of some thesis will be given "later," since his book is intended for students and has no internal references. Concerning continuity at the Gregorian University, Siwek mentions Boyer as a favorable reference.

Filippo Selvaggi (1953).⁵ He was a student at the Gregorian University under Peter Hoenen, whom he mentions with great admiration. Selvaggi became a Jesuit and a professor at the Gregorian University in Rome. He describes himself as Aristotelian and Thomistic. He also describes himself as a philosopher, and not out to convert unbelievers. All his books carry ecclesiastical approval, and he can be classed as a Neo-Scholastic. Selvaggi breaks new ground in two different fields. In his treatment of the philosophy of science he is unique. He mentions that the treatment is new, and that there is no other general or systematic treatment of the philosophy of science available. In fact, Selvaggi notes that the time may not be ready for a treatment of the philosophy of science, but he wrote in 1953 because he was asked to do so. His treatment of cosmology is both traditional and new. His cosmology is traditional because he uses the traditional references, but does add some hard-to-find texts of Aquinas. His cosmology is new in its treatment of evolutionary cosmology; he also has a thesis on the finite and contingent nature of the cosmos; finally, he has a new thesis on the unity, order, and finality of the cosmos.

Selvaggi's 1953 book on the philosophy of science is written in Italian. Only a few books existed at the time, according to Selvaggi, treating the philosophy of science. In his three page bibliography, he was able to list only five books by Neo-Scholastics. The book takes a Neo-Scholastic position in philosophy, explaining some real problems that scholastic philosophy has precisely in the philosophy of science. Accordingly, Selvaggi disproves Positivism and the Logical Positivists, the Empiricocentricism of Mach, the Conventionism of Poincaré, Scientific Positivism,

⁵Filippo Selvaggi, *Filosofia delle Scienze: Principi Fondamentali delle Scienze e Problemi Cosmologici* (Rome: Cività Cattolica, 1953), 21-22: "Bisogna perciò notare che la scienza ...parte materiale....cioè la filosofia della natura. Così le questione... dell'evoluzionismo..." Filippo Selvaggi, *Cosmologia*, 2nd ed. (Rome: Gregorian University, 1962).

Formalism, Idealism, Existentialism, and Realistic Rationalism. In addition to intrinsic problems in the philosophy of science, there is a problem with the distinction between the philosophy of science (epistemology) and the philosophy of nature. He solves this second problem by showing that epistemology studies the “formal” part of cosmology and rational psychology, and not the “material” of inanimate and animate objects. In other words, the philosophy of science is more metaphysical than material. The philosophy of nature, on the other hand, treats mainly “material” reality, with some help from philosophical “formal” principles.

Selvaggi’s 1962 book on cosmology was published in Latin with ecclesiastical approval by the Gregorian University. Here Selvaggi applies the philosophy of science (epistemology) to determine the value, nature, and method of science in relation to cosmology, the study of mobile inanimate objects. His idea of cosmology is that it is philosophy of nature, treating topics such as opposition to Atomism and Mechanicism, studying space and time, considering causality especially the final cause, and treating Evolutionism. His work is very useful to my presentation, since Selvaggi comments on at least seven of the thirteen theses in the synthetic section of this paper.

Petrus Hoenen (1956).⁶ Petrus Hoenen (1880-1961) was Dutch by birth. He was a Jesuit professor of the philosophy of nature at the Gregorian University and published several books. His well-known *Cosmologia* was first published in 1931 and was re-published up to 1956. He generally wrote in Latin, but his *Philosophy of Inorganic Nature* was published in English in Antwerp in 1938. In French, he wrote *Recherches de Logique Formele*, published in Rome in

⁶Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956; originally published 1931). Petrus Hoenen, *De Origine Formae Materialis* (Rome: Gregorian University, 1951). Petrus Hoenen, *Supplementa ad Cosmologiam: Quaestiones Noeticae de Extensione Corporea* (Rome: Gregorian University, 1955).

1954. He had a good knowledge of modern science. He had a doctorate in physics. He made an effort to process the data and results of laboratory experiments in the light of Thomist metaphysics. With his very open attitude, he carried out a deep renovation of his field, the Neo-Scholastic philosophy of nature. Practically every chapter of his *Cosmologia* was different from the presentation of the scholastics of the nineteenth century. Some of this was due to new developments in science, and some of the change was due to opposing philosophical systems, especially Mechanicism, which had already been rejected by Aristotle but was now appearing with new vigor. His work *Cosmologia* can be considered monumental: original in content but traditionally Thomistic. The usefulness of *Cosmologia* for this presentation is the explanation of hylemorphism and substantial mutation.

Hoenen was part of a number of Neo-Scholastic philosophers working for the renewal of the philosophy of nature. Reliance on the “old” scholasticism was not entirely adequate to answer the more modern problems of the theory of relativity and quantum physics. Others who worked for the renovation of the philosophy of nature were J. Maritain, F. Selvaggi, P. Rossi, and F. Renvite. Robertus Masi of the Lateran University in Rome, in his *Cosmologia* (Rome: Desclée, 1961) mentions that he took a lot of his material from Hoenen. Cosmology, or the philosophy of nature, should not neglect the experimental sciences, and this neglect of empirical science is what caused the problems for the scholastic philosophers of the eighteenth century and nineteenth century. Hoenen taught that philosophy of nature involves both an experimental foundation and metaphysical principles. No wonder Filippo Selvaggi, his student, respected Hoenen so much.

Philippus Soccorsi (1956).⁷ He was a Jesuit Neo-Scholastic philosopher writing in Latin at the Gregorian University in Rome. His books were student texts for academic courses in the philosophy of nature. All his books have notices of written ecclesiastical approval. His works are of very high quality. No words are wasted in these original and orderly composed philosophical themes. Soccorsi is very helpful in the construction of a philosophy of nature. First, he defines a number of schools of thought, especially those of Positivism. Secondly, he gives a good example of philosophy of nature in the combination of empirical science with philosophical metaphysics. Third, he treats Darwin and Spencer. Fourth, he opposes Materialism. Fifth, his views are generally Thomistic.

Soccorsi wrote about questions of physical quantity in 1956. In the twentieth century, the new hypothesis of Max Planck on the structure of energy deeply transformed the empirical science of physics. This caused a serious crisis in philosophy. Some of the classical scientific principles used to explain the world now had to be revised. However, even if classical scientific principles were inadequate to explain the microsystem, there was still a lot of truth in them. The philosophical problem is the supposed incompatibility of two different scientific systems.

Soccorsi wrote about questions of human cognition in physics in 1958. Most of the book (about 274 pages) concerns scientific fact, with two added scholastic theses and proof (34 pages). Something was happening with the need to treat science more extensively in modern philosophical

⁷Philippus Soccorsi, *Questiones Scientifical cum Philosophia Coniunctae: De Geometriis et Spatiis Non Euclideanis* (Rome: Gregorian University, 1960), 285: "Iudicia de veritate cuiusdam geometriae diversa et etiam opposita esse possunt pro variis considerationibus quae de ipso mundo physico possunt." Also: Philippus Soccorsi, *Questiones Scientifical cum Philosophia Coniunctae: De Physica Quantica* (Rome: Gregorian University, 1956). Philippus Soccorsi, *Questiones Scientifical cum Philosophia Coniunctae: De Vi Cognitions Humanae in Scientia Physica* (Rome: Gregorian University, 1958).

presentations, as illustrated by the comparative page numbers. Soccorsi begins by asking whether empirical science is more akin to Positivism or to metaphysics. An immediate problem arises because both Positivism and metaphysics have many different meanings. Nevertheless, Soccorsi argues that, although distinct, empirical science can be explained and integrated into metaphysics. However, real empirical science is opposed to any Positivism, which maintains that all knowledge is ultimately only sense knowledge; and the proof of this is from the principle of sufficient reason. Therefore, natural philosophy investigates the material world and applies metaphysical principles. Soccorsi's opponents, therefore, are the Positivist, the Neo-Positivists, Mechanicism, and even the Idealism of Kant, which Soccorsi believes encourages Positivism. It was Comte who first encouraged Positivism by teaching that the object of science was only empirical sensible facts, and Classical Positivism followed Comte. Neo-Positivism, arising about 1928, came from empiricism and excessive logical formalism leading to the new epistemology of the School of Vienna. Soccorsi maintains that the results of this movement to Positivism are: first, a subjectivism of cognition arising only from sensation; second, only experience has value; third, an anti-rational movement that seeks just the facts, without reasoning; and fourth, an anti-metaphysical bias.

Soccorsi wrote about truth in geometry in 1960. Soccorsi says there are a number of diverse judgments with some simply affirming the truth of geometry, while others deny the truth of geometry even if reason affirms it to be true. First, there are different meanings for the words "geometry" and "truth. Secondly, there are diverse circumstances, such as the limits of experimental possibility or astronomical phenomena. Therefore, some arguments remain open.

Bernard Lonergan (1957).⁸ Bernard Lonergan (1904-1984) was a Canadian Jesuit priest who was trained as a Neo-Scholastic and became a professor of theology at the Gregorian University in Rome. Lonergan entered the Jesuit Order in 1922, but was not ordained until 1936. Young Lonergan specialized in both theology and economics when he studied at Heythrop College in 1929 for a B.A. in philosophy and later at the University of London from 1929 to 1930. He received his training in theology at the Gregorian University in Rome from 1933 to 1937 and received the S.T.L. While he was in Rome as an undergraduate, Lonergan was broadening his intellectual horizons. From his writings at the time, we can see an interest in culture, the philosophy of history, and the human sciences of sociology, politics, and economics. Lonergan was also reading Hegel and Marx, and began to note that the modern idea of history and the modern idea of philosophy are based on the idea of ongoing creativity. This led him to dissatisfaction with the state of Catholic education, so that he began to plan for a renewal of Catholic studies. Father Charles Boyer, S.J., was the director of Lonergan's doctoral dissertation in 1940; this dissertation was later published as *Grace and Freedom*. After 1940, he taught theology to Jesuit seminarians. His teaching career spanned Montreal, Toronto, the Gregorian University in Rome (1953-1965), Regis College in Toronto, Harvard University (1971-1972), and Boston College (1975-1978). While teaching at Boston College, Lonergan once more turned his attention to the economic interests of his younger days.

Lonergan was a Neo-Scholastic. After his return from Rome, Lonergan pondered the

⁸Bernard Lonergan, *Collected Works of Bernard Lonergan*, eds. Frederick E. Crow and Robert M. Doran, vol. 3, *Insight: A Study of Human Understanding* (Toronto: University Press, 1992; original 1957). Bernard Lonergan, *Method in Theology* (New York: Herder and Herder, 1972).

method of St. Thomas Aquinas, and eventually wrote a series of four articles for the magazine *Theological Studies* on the inner word in the psychology of St. Thomas. These articles became highly influential in the study of St. Thomas.

Lonergan wrote *Insight: A Study of Human Understanding* while he was teaching theology at Regis College. This study inaugurated the generalized empirical method. This method belongs to a movement of “transcendental Thomism” inaugurated by Joseph Maréchal, and followed by Lonergan and De Finance at the Gregorian, and by Rahner in Germany. Lonergan called the generalized empirical method by another name, critical realism. By “realism,” Lonergan affirmed that people do make judgments of fact and of value. By “critical,” Lonergan based knowing and valuing in a critique of consciousness. So the generalized empirical method traces all meanings and values that make up personality, social orders, and historical developments to their source in consciousness. How does this happen? First, the empirical method is a success in natural science. This confirms that the human mind can reach knowledge. The empirical scientific method ascends from data, through hypotheses, to verification. Secondly, there is a need to account for the human disciplines that deal with meanings and values. To do this, Lonergan generalized the notion of data to include the data of consciousness (Idealism if pushed too far) together with the data of sense (Positivism if pushed too far). Thirdly, by way of conclusion, from this compound data, one may ascend through hypothesis to verification of the operations by which humans deal with the meaningful and the valuable. Since data is “generalized” and the “empirical method” of ascent from data, through hypothesis, to verification, the method is rightly named the generalized empirical method.

Lonergan published *Method in Theology* in 1973. Lonergan’s method divides the

discipline into eight functional specialties. Lonergan's idea of method is the phenomenon which applies to every discipline and is founded in consciousness. One purpose of this new method is to establish a firm basis for agreement and progress in disciplines such as philosophy and theology. Lack of agreement in such areas inhibited substantive agreement for mutual progress. On the contrary, Lonergan noted that in the natural sciences widespread agreement among scholars on the scientific "method" has enabled remarkable progress.

Georgius Cruchon (1958).⁹ He is a professor at the Gregorian University whose Latin textbook is for the aid of students, although the bibliography cites works in French, German, Italian, and English. Notable is the fact that the bibliography does not cite any Latin works, all of which would be the older philosophical psychology. Almost all his book is experimental psychology, as opposed to the metaphysical "rational psychology" still being taught at the Gregorian University with the texts of Calcagno and Boyer. In fact, Cruchon's text represents a break with the past and the signal for the opening of an entirely new department, scientific or experimental psychology, a psychology of more facts and rather less principles. Nevertheless, Cruchon is a Neo-Scholastic and his work includes morals and religion.

Cruchon often uses the word evolution, but equivocally to indicate personal and social psychological growth, rather than evolution in the Darwinian sense. Cruchon is interested in personal and social growth, and does not endorse any internal psychological or external social effects of Darwinian evolution. About personal growth, he deals with education in morality and religion even from the age of three years old. In adolescence, Cruchon treats puberty and social

⁹Georgius Cruchon, *Psychologia Pueri et Adolescentes* (Rome: Gregorian University, 1958)

integration without any sign of “evolutionary force” In fact, in opposition to chance evolution, he advises parental and social discipline. Between the ages of sixteen and twenty, Cruchon acknowledges temptations to sensuality and narcissism, and recommends to teens the voluntary and affective use of the Sacraments, prayer, and fasting as ways of personal growth. Cruchon uses the word “instinct” only once, in relation to teen desire for emancipation, but even here the use of the word instinct appears to be equivocal, just indicating a natural desire for autonomy. He condemns the false image of love in the media. Cruchon’s book does not endorse evolutionary society.

Joseph De Finance (1960).¹⁰ De Finance was a Neo-Scholastic professor at the Gregorian University and a member of the Pontifical Roman Academy of St. Thomas Aquinas. His writings were in French, but his classes at the Gregorian University were in Latin. His writings have a Neo-Scholastic point of view, noting that metaphysics still has much to say that is valuable. His writings are clear, popular for the educated layman, and modern. His theme was being, the act of all acts, beyond action but knowable by analogy with action. During the Second World War, his publication was interrupted. His works contain abundant footnotes which indicate his fond dependence on Boyer at the Gregorian University and Cornelio Fabro at the Urbanianum University. He often cites Aquinas, and also Maréchal whom he follows. Like Maréchal, Lonergan, and Rahner, De Finance is a transcendental Thomist; and he explains that method of

¹⁰Joseph De Finance, *Être et Agir: dans le Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960). Joseph De Finance, *Essai sur l’Agir Humain* (Rome: Gregorian University, 1962), 394: “Dans l’histoire, le devenir naturel, continuant à l’intérieur de l’espèce l’évolution biologique, interfère sans cesse avec l’activité libre à ses divers niveaux et, radicalement, avec la prise de position devant la Valeur.” Ioannes Di Napoli, *Manuale Philosophiae*, 4: 57.

reflection on consciousness itself and to its constituent structure, while at the same time noting that “to act” has an existential and realist character. He puts the problem of “action” at the center of the philosophy of Aristotle and Aquinas, and the basis of his presentation from page one is about act (“*agere sequitur esse*”, and “*omnes res sunt propter suam operationem*”). When he treats evolution, De Finance notes that Hegel forces an opposition between the inventiveness of man and the conservatism of nature, but De Finance notes that nature is inventive as well, although is not intelligent, except for the action of God in nature. Also, De Finance notes that Bergson’s “*élan vital*” is blind and outside of self, so cannot be a principle of self-activity. It is man who is the agent of history. In history, the natural becoming, biological evolution continuing to the interior of the species, interferes continually with free activity in its diverse levels and radically with the taking of a position before Value itself. De Finance also touches on creation, distinguishing with Aquinas, that creation is “participation by similitude,” so that the subject created only imperfectly reproduces the perfection of the Creator. De Finance had made a great impression on Barrajon, who quotes another book by De Finance, *Citoyen de Deux Mondes* (Rome: Gregorian-Tégui, 1980). Battista Mondin, of the Lateran University and the Urbanianum University, was the student and friend of De Finance, and noted that De Finance was one of the great students and experts of St. Thomas.

Vincentius Arcidiacono (1962).¹¹ He was a Jesuit Neo-Scholastic professor at the Gregorian University. He notes that St. Thomas did not have an entire tract on mathematics, but the papal Apostolic Constitution *Deus Scientiarum Dominus* assigned the teaching of mathematics

¹¹Vincentius Arcidiacono, *Questiones Scientifcae ex Mathematica: De Numeris et Mensuris* (Rome: Gregorian University, 1963).

to the faculty of philosophy. Thus Arcidiacono treats mathematics in Neo-Scholastic and Aristotelian way. His text is in Latin, but he does not have the usual ecclesiastical permission printed on reverse of his title page. He does use references from Aquinas' *Summa Theologiae*, and he mentions how Descartes, Leibniz, Kant, and Spinoza were all affected by mathematics. He notes that mathematics are not as certain as may first appear, with Euclidean geometry as an example, even though Arcidiacono maintains that Euclidian geometry still works for our accessible universe. Arcidiacono helps to understand philosophy of nature. Metaphysics has value by giving principles for the foundation of all sciences. Mathematics liberates man from the servitude of material.

Vittorio Marcozzi (1968).¹² Marcozzi was born in 1908. He joined the Jesuits at 20 years of age and was later ordained a priest in 1938, with solemn profession in the Jesuit Order in 1945. He began to teach experimental psychology, biology, and anthropology in 1939 at the Galarate Philosophical Institute. He then taught for three years in Milan at Sacred Heart University, and

¹²Vittorio Marcozzi, "Differenza fra l'Anima Umana e l'Anima delle Bestie," *Doctor Communis* 11, nos. 2-3 (May - December 1958):124-140. Vittorio Marcozzi, *Caso e Finalità* (Milano: Massimo, 1976). Vittorio Marcozzi, *Però l'Uomo È Diverso* (Milan: Rusconi, 1981). Vittorio Marcozzi, *Alla Ricerca dei Nostri Predecessori: Compendio di Paleoantropologia* (Cinisello Balsamo: Paoline, 1992). A more ample bibliography of books and articles for Vittorio Marcozzi will be given in the general bibliography. Marcozzi and his writings are important for a number of reasons. First, Marcozzi, professor at the Gregorian University, is the guide and source for Maria Teresa La Vecchia, in her current course in evolution at the Gregorian University. Second, these books and articles of Marcozzi all appear in the footnotes of Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999). However, not all these books and articles of Marcozzi appear in her bibliography in that book. Third, Marcozzi's writings and their use by La Vecchia illustrate the dynamic of interchange of ideas at the Gregorian University. Fourth, Marcozzi not only provides continuity in the second half of the twentieth century, but is the beginning of change in the area of philosophy of nature with a new emphasis on material causes. His death was reported in the newsletter *La Gregoriana*. 3 February 2007 <<http://www.unigre.it/pug/rivista/GREG22.pfd>>.

then moved to the University of Padua to teach. He began teaching at the Gregorian University in 1943 and continued up to 1978, teaching scientific questions of biology and anthropology. At the same time, he taught at several institutes of the Gregorian University, the Institute of Spirituality and the Institute of Religious Science. He also worked on the physical anthropology of *Sinanthropus Pekingensis*, continuing the studies which made his fellow Jesuit Teilhard de Chardin famous. He had an important part in explaining the relation between Christian thought and evolution, both in the area of general evolution of species, or in the special field of the evolution of man. He participated in International Meetings, such as on the fossils found at Atapuerca in Spain. He visited South Africa to see Professors Leaky and Tobias. He went to see the excavations at the Olduvai Gorge. Cultural anthropology interested him, and he was one of the major experts on the Shroud of Turin. He wrote 55 books and 120 articles. He was living at the Gregorian University when he died at 96 years old in 2004.

Marcozzi wrote a book *Però l'Uomo È Diverso (But Man Is Different)* in 1981. This book explores both the difference and the similarity between man and the higher animals, especially the anthropoids. Marcozzi's exposition is timely, because some followers of Darwin still refer to the animal world as normative and the pattern for human action. Of importance is Marcozzi's integration of a psychological approach with the anthropological. Marcozzi begins his book with an examination of the psychological and morphological differences between man and anthropomorphic monkeys. Then he continues with a treatment of the capacity of monkeys or apes to understand, in addition to their behavioral and psychological characteristics. He concludes that man is different in his moral conscience, his freedom from instinct, his comprehension of the world as illustrated by funerary ceremonies, man's symbolic language, and man's religious

sentiment. This approach is continued in the exposition of his successor at the Gregorian, Maria Teresa La Vecchia. This approach is also very useful to this dissertation.

Marcozzi also wrote a compendium of paleo-anthropology entitled *Alla Ricerca dei Nostri Predecessori (On the Research of Our Ancestors)* in 1992. He maintains that the road of evolution leads from the Australopithecine to *Homo habilis*, then to *Homo erectus*, and finally to *Homo sapiens*. He explains current controversies about evolution, and its principle problems, namely abiogenesis and the problem of the physical mechanism (genetic mutation) of evolution proposed by the Synthetic Theory. He explains, important for La Vecchia and this dissertation, how we can conceive the psychic evolution of mankind. Marcozzi also says that there are at least three phases in which God's intervention is necessary: first, at the appearance of living organisms; second, the evolutionary possibilities with which God imbues those organisms; and third, the appearance of man, whose spiritual qualities demand God's special intervention.

Sante Babolin (1997).¹³ He is a Neo-Scholastic teacher in the department of philosophy of the Gregorian University. He is a priest, but not a Jesuit. All of his books and his classes are in Italian. He has been teaching simiotics since 1989 and esthetics since 1993. His major works are on simiotics (1996-1997), and his text begins with a consideration of Aristotle. All his books are highly philosophical. His classes in Rome usually include an international group of students, so it is correct that the book on simiotics includes a bibliography of fifteen pages with works in Italian and French, with some English and German. However, as helpful as his student texts may be, none of them contain an index. He is writing at the end of the twentieth century. None of his books use

¹³Sante Babolin, *Piccolo Lessico di Semiotica* (Rome: Gregorian University, 1996). Sante Babolin, *Semiosi e Comunicazione: Lezioni di Semiotica* (Rome: Gregorian University, 1997). Sante Babolin, *L'Uomo e il Suo Volto: Lezioni di Estetica* (Rome: Gregorian University, 1997).

the thesis system, and none have a printed notation of ecclesiastical approval, as would have appeared earlier in the century. He treats modern problems and notes the positions of Locke, Kant, and other modern philosophers. He is at the cutting edge of philosophy, using mostly experience and concrete examples, and then uses philosophical principles and explanations by analogy. He, like Lonergan, is concerned with the metaphysics of judgmental certitude. Babolin has a commitment to clear thinking, and to bring his students to the truth. He also emphasizes experience, and art education. He promotes communication in all its aspects, subjective and affective. His use in this dissertation is an illustration of the change in philosophy in the last half of the twentieth century, and also his commitment to the future of man.

Gustave Martelet (1998).¹⁴ He was born in Lyons, France, in 1916. He is a Jesuit Neo-Scholastic professor of theology at the Centre Sèvres in Paris and at the Pontifical Gregorian University in Rome. He has published 16 books between 1962 and 2005, most of which are still in print. Recently, he has published two books on creation (1998 and 2003) and a book on Teilhard de Chardin (2005). At the International Meeting: The Theological Vision of Teilhard, between 21 and 24 October 2004 in the Aula Magna of the Gregorian University in Rome, Martelet gave the talk: “Un Mondo in Evoluzione: Fede, Scienza, e Teologia.”

Martelet is an author who has always been attracted to themes of anthropology and evolution. He recently wrote *Evoluzione e Creazione: Dall'Origine del Cosmo all'Origine dell'Uomo* which is not always an easy book to read. He takes seriously the questions of science and philosophy, and attempts to give synthetic answers. The text is organized into three parts.

¹⁴Gustave Martelet, *Evolution et Création: Sens ou Non-sens de l'Homme dans la Nature?* (Paris: Cerf, 1998). Gustave Martelet, *Evoluzione e Creazione: Dall'Origine del Cosmo all'Origine dell'Uomo* (Milan: Jaca Book, 2003).

The first section, “Fullness of Facts,” treats physics and biology from the origin of the cosmos to the advent of man. The second section, “Identity of the Man in Question,” reflects on the nature of being human, which includes the emergence of man from the rest of creation. In his attempt to understand the uniqueness of man, Martelet considers the opinions of Hegel, Feuerbach, Marx, and Nietzsche. The third section, “Science and the Mystery of God: An Appeal,” Martelet confronts the problem of God with scientific and philosophic questions, such as: cosmic evolution, the drama of suffering and evil, and finally the enigma of death. This third section of Martelet’s book is the most original, since the material in the first two sections can be obtained elsewhere. This book is not a treatment of a rapport between evolution and creation, nor does Martelet give a theology of creation strictly speaking. Rather, this book is a philosophic road about the problem of man and the problem of God, problems founded on scientific cosmology and scientific biology. Martelet moves from the philosophical level to the existential treatment of the enigma of death as man’s biggest question. Man has to take a position on existence and of a possible transcendent foundation. Martelet is useful for this dissertation because he wants men to be responsible, to be the image of God, in the measure that man can be. This involves the future of man. Also, concerning the origin of man by evolution, Martelet laboriously seeks the unique identity of man, beginning with evolution up to the death of man as the ultimate insult, to promote a deeper understanding of how God comes to man.

Maria Teresa La Vecchia (1999).¹⁵ Dr. La Vecchia is a Neo-Scholastic who teaches the course in evolution in the philosophy faculty at the Gregorian University in Rome. She cites Aristotle, St. Augustine, St. Thomas Aquinas, and Jacques Maritain. When she taught the course

¹⁵Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999).

on evolution in the academic year 2004-2005, she recommended the book *Caso e Finalità* (*Chance and Finality*) by Vittorio Marcozzi, her mentor. Her own book *Evoluzione e Finalità* (*Evolution and Finality*) was published in 1999, but was the foundation for the class presentation in 2006. The book did not have the notice of ecclesiastical approval that would have been usual in the first half of the twentieth century. Both her book and her class is taught in Italian, but her bibliography includes works in Italian, French, English, Spanish and German. She has no index in her book, only a general table of contents. Her presentation is very modern, and much more concerned with the empirical sciences of biology, paleontology, and genetics, than with the kind of philosophical proof that concerned the Neo-Scholastics during the first part of the twentieth century. However, as can clearly be seen from the title of her book, *Evolution and Finality*, she believes the greatest weakness of Evolutionism is its omission of the philosophic principle of finality. She also is very strong on the natural philosophy of man: the discontinuity between man and other animals, the origin of the human body determined by psychic development, and the creation of the human soul. She does not extensively treat the limits of evolution: human future, abiogenesis, evolution of the cosmos, and the Creator. Thus her work could be considered to be restricted to two major questions: first, is there evolution at all, and second, did man evolve? Dr. La Vecchia's work is of high quality and as up-to-date as possible. Further, her work shows continuity with Marcozzi, that is, continuity among the philosophers of evolution at the Gregorian University for the last half of the twentieth century.

La Vecchia does not use the thesis system in her book, *Evoluzione e Finalità*. However, it may be valuable to distill some theses from her material, rather than try to repeat the table of contents to get an idea of the direction of the thought of Dr. La Vecchia. I personally believe that

the following propositions reveal the central themes of her book. First, Evolutionism without finality is not sufficient to explain evolution. Second, the physical mechanism of evolution is largely unknown to empirical science. Third, the evolution of man involves morphology, physiology, and the psychic development of the lower species. Fourth, there is an essential difference between the human and the animal psyche. Fifth, animals may excel in sensitive faculties; humans excel in language. Sixth, in language is the undeniable difference between animals and man. Seventh, between the sensitive and the rational there is no continuity. Eighth, the body of man has to be a proportionate cause to accept the Spirit. Ninth, the spiritual soul is properly human with an intellect that can abstract and have reflex consciousness, which is indicated in prehistory by rites of burial, “religion,” and art. All of these positions make the presentation of Dr. La Vecchia very helpful to my dissertation. Her treatment of prejudice leads me to try to explain how this could happen in the area of evolution. Her position affirming finality is the same as mine, except I believe a more extensive proof is in order. Her position on finality and perfection is elaborated in my treatment of the future of man. Her explanation of the fears of the Anti-Finalists that lead to atheism is further treated in my position that Evolutionism need not be atheistic, and that evolutionary atheism would be a denial of the principle of sufficient reason.

Rafael Pascual (2005).¹⁶ Rafael Pascual is a Neo-Scholastic who was born in Barcelona, Spain, in 1959. He obtained his doctorate at the Pontifical Gregorian University with a thesis entitled: *The Division of the Speculative Sciences in St. Thomas Aquinas*. From 1993, he has been the ordinary professor of the philosophy of science and the philosophy of nature at the Pontifical

¹⁶Rafael Pascual, *L’Evoluzione: Crocevia di Scienza, Filosofia e Teologia* (Rome: Studium, 2005).

Atheneum *Regina Apostolorum*., which is an institution of the Legionaries of Christ religious order of priests. In 2002, he was named Director of the program, *Master of Science and Faith*. In 2002, he won the *Science and Religion Course Program Award* given by the University of California, Berkeley, for his course: Science, Philosophy and Theology: Possible Dialogue? He is the author of numerous publications on the dialogue between science and faith.

Rafael Pascual was the coordinator of the International Congress on Evolution: Crossroad of Science, Philosophy and Theology which was held in Rome under the auspices of the Pontifical Atheneum *Regina Apostolorum* on 23 and 24 April 2002. The major question of the congress was the epistemological status of evolution. Fourteen Neo-Scholastics philosophers discussed the problem and submitted papers, while two other Neo-Scholastic philosophers were unable to attend the congress but submitted papers. The congress seemed traditional in its academic papers, but new in its equally important dialogue among the philosophers. Concerning the traditional aspects of the congress papers, one finds Neo-Scholastic definitions, divisions, lists of philosophers both as allies and opponents, histories of philosophical questions, and very literary presentations.

Footnotes were in the original Latin or Italian. Citations were drawn from Church Fathers, Aquinas, and modern popes. However, even in the traditional presentations there was more science, and less metaphysics, which was becoming the hallmark of the last half of the twentieth century. The topics, although convergent to philosophy, were wider than would have been discussed in the early twentieth century. In short, the written presentations were more involved with material science, with the guidance of only a few metaphysical principles. Even the traditional written presentations were creative philosophy. The real novelty of the congress was its periods of dialogue. First, this dialogue was interdisciplinary by design. This was intended to include

different countries, different cultures, and different academic disciplines relating to evolution. Secondly, openness was aggressively promoted. The participants of the dialogue were told to avoid reductionism and over-simplification. Rafael Pascual noted that only with profound openness could the congress give a convincing reply to the problem of evolution. Rafael Pascual was also the editor of the subsequent publication *Evoluzione*, which reproduced the papers presented at the congress in their original languages. Contributions to the Congress were in Italian, French, Spanish, and English.

Rafael Pascual participated in the international congress himself by delivering a paper entitled *La Teoria dell'Evoluzione: Status Questionis (Theory of Evolution: State of the Question)*. He sets out three questions. The first question relates to science, which asks about the verification of the fact of evolution, and asks with what certitude that fact can be known. The second question relates to theology, which asks if evolution from simple to complex forms of life can be compatible with the creation of the world, which creation can be known not only by revelation but also by rational demonstration. Here Rafael Pascual does note that Fixist Creationism and Materialistic Evolutionism deny the compatibility. Thirdly, and most importantly at the international congress, Pascual poses the question about what may be the epistemological state of Evolutionism, the philosophical question. He asks whether evolution is a fact, a phenomenon of nature, a hypothesis, a theory, a law, a system, a model, a paradigm (according to Thomas Kuhn), a program of research (according to Karl Popper), or simply a mental fantasy. Further, Rafael Pascual wants a clear distinction between the facts of evolution as brought up by naturalists like Lamarck, Darwin, and Wallace, from the philosophical theories of Evolutionism supported by Herbert Spencer and Father Teilhard de Chardin. The answer to these proposals

given by Rafael Pascual is that evolution is now more than a simple hypothesis, and evolution should be regarded as a theory, but not a fact. He also adds that joining evolution to philosophical Materialism or to the denial of purpose in Antifinalism is not compatible with good philosophy, much less with theology. Materialism and Antifinalism reject the rational explanation of facts and are a type of epistemological suicide. He also notes that one cannot admit a double truth, which would be against the Principle of Contradiction, as noted in the papal document *Fides et Ratio*, number 85.

CONCLUSION: Conclusions about the teaching of evolution at the Gregorian University in Rome can readily be seen. First, all the faculty are concerned about a clear and reasonable communication with students, since all are teachers. Boyer even wrote an article about freedom and truth in education. Lonergan, dissatisfied with the Catholic education of his youth, wanted a new program for Catholic education. Second, creativity was important. Lonergan saw creativity necessary in philosophy. Hoenen creatively revised every single chapter in the traditional tract on the philosophy of nature. Third, there was a development in the whole approach to philosophy. Calcagno mentions the need to meet modern problems. Hoenen and Soccorsi actually modify the philosophy of nature to meet modern problems. Selvaggi explains the material emphasis in this newer philosophy of nature. Crushon and Babolin follow by doing psychology and linguistics with few philosophical principles. La Vecchia continues this same pattern by using Italian with an emphasis on empirical science in her treatment of evolution. Fourth, there is a great deal of intellectual interaction between faculty members, illustrated by Calcagno using Siwek, Siwek using Boyer, Selvaggi using Hoenen and Marcozzi, and La Vecchia using Marcozzi extensively. Fifth, there is a development of views on evolution. Calcagno and Dezza both deny abiogenesis, deny

evolution in general, and deny the evolution of the body of man. Boyer is willing to admit evolution “within” species. Marcozzi is careful to maintain evolution with some divine influence. La Vecchia follows Marcozzi, and is explicit about the possibility of abiogenesis, some evolution, and the possible evolution of the body of man. Sixth, the principle of finality is crucial in the discussion of evolution at the Gregorian University. Calcagno, Dezza, Selvaggi, and Marcozzi all endorse the principle of finality in the philosophy of nature. La Vecchia, following Marcozzi, gives her book a title including finality: *Evoluzione e Finalità*. Rafael Pascual also endorses the finality of nature. Finally, Rafael Pascual not only follows the pattern set in the second half of the twentieth century, using principles to deal with the extensive material of the philosophy of nature, but he embodies a philosophy of action. Rafael Pascual not only coordinated an international congress on evolution, but promoted an open and interdisciplinary dialogue there.

Roman Universities and Academies

Matteo Liberatore (1892), Pontifical Roman Academy of St. Thomas Aquinas.¹⁷

Liberatore was a philosopher, theologian, writer and promoter of the revival of the scholastic philosophy of St. Thomas Aquinas. He was born in Salerno, Italy, in 1810 died in Rome in 1892. He studied at the Naples college of the Jesuits in 1825. He applied for admission to the Society of Jesus in 1826, and even then was noted for his remarkable intellectual brilliance and his strength of character. He taught philosophy for eleven years between 1837 and 1848. The revolution in Italy drove him to Malta. On his return, he was appointed to teach theology. He gave up that work in

¹⁷J. H. Fisher. *Matteo Liberatore*. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>. Ioannes Di Napoli, *Manuale Philosophiae* (Turin: Marietti, 1955), 4: 53.

order to be the founding editor of *La Civiltà Cattolica* in 1850. This periodical was founded by the Jesuits to defend the Church and the papacy, and also to spread the knowledge of St. Thomas Aquinas. He published 40 books and more than 900 articles. He was regarded as the greatest philosopher of his day.

Liberatore's greatest glory was that he brought about the revival of Neo-Scholasticism and the scholastic philosophy of St. Thomas Aquinas. He inaugurated the Neo-Scholastic movement by publishing his own course in philosophy in 1840, when philosophy was not well taught. His opponents at that time were Rationalism (Descartes, Spinoza, and Leibniz held real knowledge sprang from reason, not experience), Ontologism (knowledge comes from contemplation of the divine Ideas of God), and Rosminianism (Rosmini was an Ontologist). Liberatore continued to promote the revival of scholastic philosophy by classroom teaching, by textbooks on philosophy, by articles in *La Civiltà Cattolica* and in other periodicals, and by his work as a member of the Pontifical Roman Academy of St. Thomas Aquinas. He was appointed to the academy by Pope Leo XIII, himself interested in the restoration of Scholasticism.

Josephus Gredt (1931), University of St. Anselm, Rome.¹⁸ Gredt (1863-1940) is a Neo-Scholastic who taught at the Benedictine University of St. Anselm on the Aventine Hill in Rome. His works are all prefaced by ecclesiastical approval. His books are intended for students in a three year philosophy course, although he indicates the course could be shortened to two years. He writes in Latin and in thesis form. The first edition of his *Elementa Philosophiae* was published in 1909, and could be the model for the Neo-Scholastic manuals for the next fifty years.

¹⁸Josephus Gredt, *Elementa Philosophiae*, 3rd ed., 2 vols. (Freiberg: Herder, 1921), 269, where Gredt has an especially interesting treatment of substantial generation.

He cites Aristotle (in Greek), St. Augustine, Aquinas, and a number of Scholastics. His bibliography is included in each chapter. His treatment of Natural Philosophy (*Philosophia Naturalis*) is at least nominally ahead of its time, with three sections: mobile being in general, special mobile being including local motion and generation, and the soul. His philosophy is very deep, but also very clear.

Gredt held a number of positions precisely on evolution, and these positions reflect his thinking in 1909. Evolution of species is best explained by divine disposition. Substantial generation is treated. Fossils do not prove monophyletic evolution. Polyphyletic evolution is more probable. Haeckel's law is probably false. Gredt argues against the evolution of the human body. The origin of the human soul is by immediate creation. The human soul is immortal. Gredt argues against abiogenesis. Gredt does favor cosmic evolution.

Raymundus Sigmond (1959), University of St. Thomas, Rome.¹⁹ Sigmond is a Dominican priest and Neo-Scholastic who has written on social philosophy. His work is in Latin and written for students. Presentation is traditional for 431 pages. There are no footnotes. The five page table of contents is labeled "index." Sigmond notes that the philosophy of man treats rational psychology (life, sense life, intellectual life), and then philosophical ethics, and finally is completed by sociology. For Sigmond, sociology is the way that man attains perfection insofar as he lives and grows in a community of others. Social philosophy completes the philosophic cognition of man.

Sigmond is the most useful where he treats the schools of sociology. He notes that in the past, Plato, Thomas More, and Campanella speculated about the ideal city, and from this concept drew some fundamental social principles. Others, such as Aristotle, Aquinas, and Montesquieu,

¹⁹Raymondus Sigmond, *Philosophia Socialis* (Rome: Angelicum, 1959)

did an analysis of objective social life by observation and personal experience, or by historical descriptions, so that they could indicate the right direction of social action by virtue of moral principles. However, in modern times sociology took a new turn under the influence of Positivism and the growth of natural sciences. August Comte (1798-1857) taught that sociology had a static part, inquiring about social mechanisms, and a dynamic part, which inquires about the laws of progress or social evolution according to the “laws of the three states.” The sociology of Karl Marx (1818-1883) denies that sociology and politics can be explained by the general evolution of the human spirit, but by the external material forces of production. From the Marxist position arose “sociology of knowledge” in which the social and the historical are linked, according to Max Scheler (1874-1928), Karl Manneheim (1893-1947), and Sorokin. Herbert Spencer (1820-1903) held that society was organism properly so-called, and that the laws of biology were able to be applied to society in a univocal way; thus the role of the sociologist is to discover how the general law of evolution applies to societies. This biological view was rejected by the “Sociological School” of Emil Durkheim (1858-1917). Useful for this dissertation is the modern position of Comte and Spencer maintaining social evolution, and its rejection by other sociologists.

Cornelio Fabro (1959), Urbaniana University, Rome.²⁰ Cornelio Fabro (1911-1995) was an Italian Catholic priest and Neo-Scholastic philosopher. He first studied biological sciences at the University of Padua and the University of Rome. He did his philosophical studies at the Lateran University and the University of St. Thomas (the Angelicum) in Rome. He taught metaphysics as a professor at the Urbaniana University in Rome from 1938 to 1948. In 1948, he

²⁰Cornelio Fabro, “Coscienza e Autocoscienze dell’Anima,” *Doctor Communis* 11 (1958): 97-123. Ioannes Di Napoli, *Manuale Philosophiae*, 4: 59.

taught theoretical philosophy at the University of Rome. He also taught at the University of Perugia. Back at the Urbaniana University, he headed the faculty of education from 1965 to 1967. He is known for his prodigious philosophical production, relating not just to St. Thomas, but also to Kierkegaard, Marx, Rahner, Rosmini, and Feuerbach. He published books on Aquinas in 1939, 1960, 1969, and 1983. Mondin, also teaching at the Urbanianum, notes the Fabro was a good teacher and friend, and among the great students and experts on St. Thomas.

Fabro is useful for this dissertation. He had already founded, in 1959, the very first European Institute for Higher Studies on Unbelief, Religion and Culture. His written works on atheism were published in 1953, 1964, 1967, and 1989. His dialogue with Existentialism raised the importance of the metaphysical concept of “esse” (to be). So his writings on Existentialism in 1943, 1945, and 1953, all raised a new light on the important distinction in creatures between essence and existence for the meaning of creation.

Robertus Masi (1961), Lateran University, Rome.²¹ Masi is a Neo-Scholastic and a professor in both the Lateran University and the Urbaniana University in Rome. His book on cosmology is current up to 1961. Masi notes that he is indebted to Hoenen at the Gregorian University and that Masi’s book updates Hoenen. Masi treats Aristotle and Aquinas both historically and theoretically. His book is a Latin student text. The index of names in the book runs eight pages. Every section of the book has a special bibliography, and the general bibliography lists works in Latin, Italian, French, English and German. Masi is useful for this dissertation for a number of reasons. Masi has a whole section on the value of St. Thomas. Second, Masi refutes Mechanicism. Thirdly, concerning the origin of new forms from material

²¹Robertus Masi, *Cosmologia* (Rome: Desclée, 1961).

substances Masi has the thesis: Substantial form of the material is educed from the potency of the material.

Ambrose J. McNicholl (1961), University of St. Thomas, Rome.²² McNicholl was a Neo-Scholastic Dominican priest resident at the Church of San Clemente in Rome. He received his theological training in Rome at the University of St. Thomas, and then did his doctoral studies at the University of Fribourg. He was the professor of history of modern and contemporary philosophy at the University of St. Thomas in Rome. He also lectured in esthetics at the Graduate School of Fine Arts at Villa Schiffanoia in Florence. He contributed many articles to philosophical journals. His article, for the studies in the philosophy of science in honor of William Humbert Kane, is about the sociological aspects of science. McNicholl makes a plea for the restoration of metaphysical thinking on the part of Thomists. He shows the divisions in modern Catholic philosophy. Marcel and Lavelle are Catholic Existentialists. Blondel's philosophy of the concrete is centered on action. Gilson's philosophy is intrinsically incomplete and indifferent unless perfected as Christian philosophy. Other French and Italian contemporary Catholic philosophers were turning to the Augustinian and Platonic tradition. Others, McNicholl laments, remove books of logic and metaphysics from school libraries.

McNicholl is useful for this dissertation for a number of reasons. First, he sees the task of contemporary Thomists to participate in a revival of metaphysical thinking. Second, he affirms the autonomy of science. Third, he maintains the clear distinction between science, philosophy and religion. Fourth, he defends values, and the Christian world-view. Fifth, he recommends

²²Ambrose J. McNicholl, "Contemporary Challenge to the Traditional Idea of Science," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 447-468.

responsible dialogue with other schools of philosophy. Sixth, he promotes logic, and helpfully notes that morality and art are pre-logical. Sixth, he recommends awareness of trends in science. Seventh, he notes that metaphysics, not mathematics, is the link between philosophy and science. Eighth, McNicholl encourages scientists through a philosophy of nature to an integrated synthesis which interprets the phenomenon of change, such as evolution, in the light of metaphysical principles.

Raymond J. Nogar (1963), University of St. Thomas, Rome.²³ Nogar (1916-1967) was a Neo-Scholastic who studied biology at the University of Michigan, and did his doctorate in philosophy at the Pontifical Faculty of Philosophy, River Forest, Illinois. He was lecturer in natural philosophy at the University of St. Thomas in Rome. He returned to the United States to become assistant professor of philosophy and lecturer in theoretical biology at the pontifical faculty of philosophy, River Forest, Illinois. He was also executive secretary of the Albertus Magnus Lyceum, for the philosophy of science.

Nogar's book *The Wisdom of Evolution* is both a popular presentation for the educated reader and a class text at the Aquinas Institute, River Forest, Illinois. J. Franklin Ewing, of the Department of Anthropology of Fordham University states that the book was the best book on the

²³Raymond J. Nogar, *The Lord of the Absurd* (New York: Herder and Herder, 1966). Raymond J. Nogar, *The Wisdom of Evolution*, with a forward by Theodosius Dobzansky (New York: Mentor Omega, 1963), especially 302, where Nogar gives religious truths. Raymond J. Nogar, "From the Fact of Evolution to the Philosophy of Evolutionism," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 327-365. Nogar attended and was much influenced by the Darwin Centennial Celebration at the University of Chicago in 1959, at which fifty outstanding international experts on various phases of evolution participated; the papers of the participants, including Sir C. Darwin, Sir Julian Huxley, and L. S. B. Leakey are published in *Evolution after Darwin*, 3 vols., ed. Sol Tax (Chicago: University Press, 1960).

topic by an American Catholic scholar. The general purpose of Nogar is to establish, from logical argument, the fact of evolution. Nogar admits that there is no scholastic demonstrative proof for evolution, but there is a high degree of convergent probability. Nogar holds the progressive evolution of the body of man, as illustrated from convergent evidence; but Nogar also holds that man owes his existence to the special intervention of God, and man is the image of his Creator. Nogar holds an essential difference between man and beast, citing Hallowel and Hilgard at the Darwin Centennial Celebration. The presentation does not go into metaphysics. Nogar is negative, or very cautious, about abiogenesis. Nogar is negative about the evolutionary origin of the universe. Nogar endorses that evolution is the method by which creation is accomplished; Nogar treats God as Creator, His providence, and His co-operative action. Finally, Nogar notes that there is no “law” of evolution. All of these issues are relevant to the third part of this dissertation, the academic course on evolution.

Nogar’s book *The Wisdom of Evolution* has a forward by Theodosius Dobzhansky, the “dean” of American geneticists. Dobzhansky notes that Nogar is a priest of the Dominican Order and equally at home in biology, philosophy or theology. Nogar’s book is an examination of the philosophical status of the evolution theory. Further, Dobzhansky notes that Nogar regards his account of the fact of evolution as compatible with the philosophy of Thomism and with the doctrines of the Catholic Church. But Dobzhansky also notes that Nogar is also aware of vigorous disagreements with his position on the part of unreconstructed Fundamentalists on the one hand, and the Agnosticism and Materialism on the other hand.

Giuseppe Mario Galli (1965), University of St. Thomas, Rome.²⁴ Galli is a Neo-Scholastic Dominican priest and a teacher in natural philosophy. His books cover the old scholastic tract of cosmology, with a more modern title, *Space and Time in Modern Science*. His material is frontier philosophy touching non-Euclidean geometry and relativity. His Latin texts are meant for students, with Aristotle in footnotes in the original Greek. He is very modern, with all the new geometries. He adequately treats Galileo, Newton, and Einstein.

Galli comments on the experiment of Michelson, which was regarded as the most famous experiment in physics. Galli notes that it is only natural to try to find an empirical basis for any new theory. Galli was shown a book by a philosopher who denied the validity of Michelson's experiment because the experiment was disputed by a few physicists. Galli notes that the argument from authority alone is very poor (*argumentum auctoritatis est infirmissimum*). He notes that authority alone was distrusted by the medieval philosophers. Even today in tracts on epistemology one can frequently note the prudent advice: check everything! Do not merely trust human testimony! However, Galli notes that with the growth of science, it is not possible for a single man to repeat every experiment or check every fact (*vita brevis, ars longa*). In reply to this, Galli distinguishes the idea of argument from authority: authority alone, or authority with reasons. Galli would follow an argument from authority if reasons were given, an experiment described, and fellow scientists allowed the possibility of debate in reputable journals. This is useful for the present dissertation, since there does not appear to be an experiment as such to prove evolution.

²⁴Giuseppe Mario Galli, *Spazio e Tempo nella Scienza Moderna: Meccanica Classica, Teoria della Relatività, Cosmologia* (Florence: Baccini e Chiappi, 1967), especially 2:110-112 for the Michelson experiment; 2: 221-224 for the origin of the universe; 2: 224-226 for the life in the universe.

Galli treats the origin of the universe. He treats only the observable universe. He finds homogeneous, made of the same atoms that constitute our Earth. There is no doubt that some stars and galaxies are evolving, but what about the universe as a whole? There are two theories, the evolutionary and the stationary. The Evolutionary Theory is based on the fact that the galaxies are receding from each other. From this recession, there is a rarefaction of material as it spreads through the universe. One concludes that in the past, the density of the universe was greater, leading to the image of the Big Bang, in which the elements were formed. One element was uranium, which decays to lead. Accordingly, uranium had to have a beginning. The Stationary Theory, considering the universe as a whole, views the new galaxies as continuous creators of matter lost by the death of other galaxies. Galli notes that the Evolutionary Theory of the universe is more favored by scientists today.

Galli treats the extension of life in the universe as an important problem, perhaps the most important problem in modern cosmology. If an experimental answer is required, Galli admits we are in total ignorance. However, he notes that on Earth life is fragile. Galli thinks that some planet similar to Earth might have life, and there is a serious probability of finding life on such a planet. Nevertheless, Galli says that for the moment it is better to confess our ignorance.

Battista Mondin (1999), Urbaniana University, Rome.²⁵ Mondin is a Neo-Scholastic and Dominican priest who taught for years at the Lateran University, and is now teaching at the Urbaniana University on the Janiculum Hill in Rome. He had written an encyclopedia of ideas

²⁵Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tomasso d'Aquino* (Bologna: Studio Domenicano, 1991). Battista Mondin, *Manuale di Filosofica Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), especially 225, for Maritain arguing for Aquinas *Summa Contra Gentiles* 3. 22.

contained in St. Thomas' works, which made those ideas easier to access. Written in Italian, with references to the works of Aquinas, it is an important reference tool. In 1999, he prepared and published a systematic manual of philosophy written in Italian in the Neo-Scholastic tradition. The series is modern, clear, and well argued. Mondin's recommended bibliography includes professors from the Gregorian University, Hoenen, Marcozzi, and Selvaggi, and a professor from the Lateran University, Robertus Masi. The first three volumes of Mondin's manual, logic, natural philosophy, and metaphysics, follow the traditional division of scholastic philosophy very closely. The last three volumes on the philosophy of religion, of anthropology, and of ethical politics, contain traditional material but in a more modern form. Of interest to this dissertation is the second volume of the series, in which Mondin combines epistemology and cosmology. This had been the inclination of Neo-Scholastics like Marcozzi, Nogar and Weisheipl, but Mondin appears to be the first to join the disciplines in the same volume so that they can be easily coordinated by the student. Mondin mentions that he was pleased to join epistemology to the cosmological treatment of natural science, and wanted to do this for a long time. His book is for the student experiencing philosophy for the first time, so it does not use the thesis form, nor is it rigorously scholastic in form, although it is thoroughly Thomistic.

Mondin does treat evolution. He notes the origin of species can come from evolution by chance, from creation, or from programmed evolution. First, evolution by chance is the preferred theory of the Jacques Monod, who professes the Synthetic Theory of Evolution, based on Darwinism and updated with evolution by DNA. Monod mentions only two other "interesting" theories of evolution: Teilhard de Chardin who explains evolution by the law of consciousness and complexity, and François Jacob, who explains evolution by the law of *bricolage* (*do it yourself*) in

which the *bricoleur* does not know what he is creating but picks up pieces of string, or wood, or old cartons, which eventually can form something useful. Secondly, creation instead of abiogenesis is the preferred theory of the French scientist Jean Servier, who argues mainly (in Modin) against abiogenesis. His argument that only life comes from life (*omne vivum ex vivo*) is *a posteriori*, since no laboratory has produced life yet. Thirdly, Programmed Evolution is the theory that evolution is realized by a program pre-established by God, in which God ordained that at a certain moment life would develop from the forces which God originally endowed in material. As an explanation Mondin cites Jacques Maritain, who in turn cites St. Thomas (Aquinas *Summa Contra Gentiles* 3. 22), in which St. Thomas describes a pre-existing hierarchy in the order of generation of forms from material, which corresponds to the ascending order of perfection of the activity proper to the nature of each. This Programmed Evolution seems to be the preferred theory of evolution of Mondin.

Marcelo Sánchez-Sorondo (2005), Pontifical Academy of Science, Rome.²⁶ Sánchez-Sorondo is the chancellor of the Pontifical Academy of Sciences. He participated in the international congress on evolution in Rome on 23 and 24 April 2002, and delivered a paper on science and faith. He delivered his paper in Italian. He underlines a new scientific realism, “a second scientific revolution.” Human reason, he notes, works on different levels in different areas, such as empirical science, philosophy, and theology. This is a fundamental idea. There is a need of an analytic and wise metaphysics which will open these different levels of rationality to an ever greater integration of thought, and of compliance with faith. In fact, concerning faith, history

²⁶Marcelo Sánchez Sorondo, “La Scienza e la Fede,” in *Evoluzione*, ed. Refael Pascual (Rome: Studium, 2005), 341-346.

shows valid examples of how faith in dialogue with scientific rationality and philosophic rationality produces great cultural consequences. Therefore, his presentation takes issue with atheism. This will be a useful point in this dissertation.

Sánchez-Sorondo emphasized that evolution is only a hypothesis, and even if more than a hypothesis, it is not confirmed by experimentation. Thus evolution is not science in the strict sense. It is hazardous to think that the evolution of life, and the evolution of man, as a real scientific theory unless empirically proved. This was the problem between Galileo and the Roman Curia, which wanted some experiment or empirical proof from Galileo and not just a mathematical hypothesis. However, experimental science in the twentieth century has grown immensely in the search for complete reality. Science also has distanced itself from Descartes, with his division of reality into thinking being (*res cogitans*) and extended being (*res extensa*), and even from Kant, for whom space and time are *a priori* subjective forms. Modern science can be aided by philosophy. Heisenberg said that material is not able to be understood without the Aristotelian idea of potency. Thus, science can be aided by philosophy and even by theology, all in dialogue. Neither philosophy nor religion are substitutes for science but aids in an interdisciplinary dialogue to find real and complete truth.

Jesús Villagrasa (2005), *Regina Apostolorum* Atheneum, Rome.²⁷ Jesús Villagrasa was a participant in the international congress on evolution in Rome on 23 and 24 April 2002, and he was also the editor of the papers of the participants. He stressed the need for a metabiology, to scientifically critique biology. He stressed that dialogue was necessary, and should be both

²⁷Jesús Villagrasa, "Evoluzione, Interdisciplinarità e Metadisciplinarità," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 1-20.

interdisciplinary and metadisciplinary. Not only did he write about dialogue, but he participated in the dialogue of the participants in the congress; he notes that verbal dialogue was animated and constructive. Villagrasa notes that the risk of science today is fragmentation. This is the reason that science needs philosophy and theology. Philosophy, he quotes from the book of Rafael Pascual, can be the mediator between science and faith. The need for such mediation is evident in the dialogue about evolution, since evolution is the crossroad between science, faith, and philosophy.

CONCLUSION: The conclusion for Neo-Scholastic philosophers in Rome at the various pontifical universities and academies is that there was a growing concern about Evolutionism. First, there was a need for a philosophic tool to accurately examine reality, and this accounted for the growth of the Neo-Scholastics, especially of the Thomist variety. Liberatore was appointed to the Roman Academy by Pope Leo XIII, who himself was interested in the restoration of Scholasticism. The Roman Academy promoted the philosophy of St. Thomas even prior to the twentieth century, and its influence was felt for the next hundred years, with members such as Boyer and Lonergan. Masi, McNicholl and Sánchez-Sorondo all promoted the metaphysics of St. Thomas. Second, there was a constant interplay between these Neo-Scholastics living in Rome. Masi stated that his book was an update of Hoenen. Mondin cited Hoenen, Marcozzi, Selvaggio, and Masi, in his select bibliography. Third, evolution in general was regarded as a fact from the convergent logic in Nogar's book. However, Mondin only accepts Programmed Evolution. Gredt will only accept polyphyletic evolution. Sánchez-Sorondo only accepts evolution as a theory not proved by experimentation. Fourth, abiogenesis is rejected both by Nogar and Mondin. Fifth, the evolutionary origin of the body of man is affirmed by Nogar but rejected by Gredt. Sixth, the

evolution of the universe is endorsed by Gredt and also by Galli, who gives an excellent explanation. Seventh, social evolution, explains Sigmond, is not a recent phenomenon but the inclination of both Comte and Spencer, and social evolution has a history of rejection by a number of sociological schools. Eighth, the existence of God as creator was treated in various ways. Nogar holds that man owed his existence to the special intervention of God, and that man is the image of God. Nogar also holds God as Creator (evolution as the method), God's providence, and God's co-operative action. Gredt believes that God is the best explanation of evolution. Sánchez-Sorondo encourages dialogue between science and religion, but notes that evolution and creationism are a fundamental problem. Cornelio Fabro founded an institute on atheism at a Catholic university. Ninth, interdisciplinary dialogue is necessary, says Villagrasa. Science does not have all truth, but can profit by the insights of philosophy and theology. However, Sánchez-Sorondo notes that philosophy and theology are aids to science, and not substitutes for science.

France

Joseph Maréchal (1922).²⁸ Maréchal was born in 1878 in Charleroi, Belgium. He was a Neo-Scholastic philosopher at the Higher Institute of Philosophy at the University of Leuven (Louvain) in Belgium. He began his career in 1922. He attempted to reply systematically to Immanuel Kant. Kant held that God was an empty, unverifiable concept. When Maréchal had a somewhat sympathetic reading of Kant in volume three of Maréchal's *The Starting Point of The*

²⁸Joseph Maréchal, *Le Point de Depart de la Metaphysique*, 5 vols. (Louvain: Editions du Museum Lessianum, 1926-1947). See also: Donald L. Gelpi, "Two Spiritual Paths: Thematic Grace v.s. Transmuting," *Spirituality Today* 35, no.3 (Fall 1983): 241-255. Ioannes Di Napoli, *Manuale Philosophiae*, 4: 58.

Metaphysics, conservatives labeled him as Kantian as a reproach. Conservatives at the time watched for any deviant speculative innovation. In the 1920s Kant's works were still on the index of forbidden books. Loyal Catholic intellectuals were expected to obey and to defend some form of Thomism, according to the encyclical of Pope Leo XIII, *Aeterni Patris*. In the fifth volume of his work, Maréchal argued that it was just this Thomistic theory of knowledge that anticipates the problems raised by Kant and demonstrates the invalidity of the Kantian attempt to reduce the idea of God to an empty, unverifiable philosophic concept. Maréchal founded a school of thought called Transcendental Thomism, which attempted to merge the philosophical and theological thought of St. Thomas Aquinas with the thought of Immanuel Kant. Maréchal died at age 66 in 1944.

In the twentieth century, Thomism was not an entirely univocal concept. One line of Thomism arose from Maréchal and extended through De Finance and Lonergan at the Gregorian University, and also Karl Rahner in Germany. Lonergan and Rahner were perhaps the major Neo-Scholastic philosophers of the twentieth century. Lonergan's generalized empirical method, in which human knowing is divided into experience, understanding, and judgment, stresses the objectivity of knowledge more than Kant had done, and develops a Thomistic vision of Being as the goal of the dynamic openness of the human spirit. This method of Lonergan belongs to the movement inspired by Maréchal. The other branch of Thomism was led by Etienne Gilson and Jacques Maritain. Gilson notes, at the end of *The Unity of Philosophical Experience*, that the failure of metaphysics is bound up with the temptation to make *thought* the false first principle involved in all representations, not being. In *The Degrees of Knowledge* Maritain cites Maréchal three times, but only in relation to spirituality and mystical contemplation, rather than metaphysical

method.

Eduardus Hugon (1927).²⁹ Hugon was a Neo-Scholastic and French Dominican priest who wrote, in Latin, a course of Thomistic philosophy for students. He notes that he not only follows the doctrine of St. Thomas Aquinas, but also the teaching method. Pope St. Pius X wrote a letter to Hugon praising the presentation due to old principles applied to new problems. The books are very clear, well argued, and with footnotes citing Aristotle, Aquinas, and modern French authors.

Hugon has a very good treatment on evolution. Like later authors, for example Marcozzi and La Vecchia, Hugon defends the Principle of Finality (*omne agens agit propter finem*) which was denied by the evolutionist view of the role of chance in natural selection. Concerning the goal of nature, he maintains that the ultimate goal is the extrinsic glory of God, while the proximate goal is the perfection of the creature, and mainly the beatitude of man. Hugon argues that, since the proximate goal of nature is the perfection of the creature, this implies progress. Progress means that the creature evolves more and more. Nevertheless, progress is not infinite, especially in man, because then man would evolve beyond his species, and the human species as such would perish.

Hugon opposes monistic Materialism. Thus, he opposes Haeckel and Spencer as Materialists. Hugon sees three theories about the origin of species. First, Creationism, or rather Productionism, in which God immediately educes species, the more perfect from the less perfect, from preexisting material (held by Linnaeus saying there are as many species as God created in the beginning: *Tot sunt species quot Deus in principio creavit.*). Hugon maintains that this opinion,

²⁹Eduardo Hugon, *Cursus Philosophiae Thomisticae*, 6 vols. (Paris: Lethielleux, 1935). Eduardo Hugon, *Philosophia Naturalis*, 2 vols. (Paris: Lethielleux, 1927), of which the first volume is Cosmology and the second volume is rational biology and rational psychology.

whereby species are immediately produced by God, is philosophically more probable. Second, passive evolution under the influx of God, by using lower species as secondary causes to generate higher species (held by A. Gaudry). Hugon affirms the possibility of passive evolution. In favor of this second theory, one can argue that it is fitting that God would not destroy species, but modify them by raising them to a superior form. Third, active evolution in which God creates all species in the beginning, not in their present form, but virtually and like a seed. In favor of this theory is that God only immediately produces what only God can do; but the production of species can be done by secondary causes, through evolution of primitive species in which the higher species would be contained virtually. Hugon notes that this third opinion is held by not a few modern Catholics, and it attributed to St. Augustine. St. Thomas (Aquinas *Summa Theologiae* 1. 66. 4) did not think that the theory was without merit, and it did not displease Suarez.

Hugon notes that even if evolution were proved as a fact, this would not exclude divine intervention in the world. Accordingly, Hugon would definitely exclude passive evolution without any divine influence. Further, Hugon maintains that divine intervention would be necessary for the first beginning of life, so he excludes doctrine of abiogenesis of the Evolutionists, such as Moleschott, Büchner, and Haeckel. However, Hugon's argument is that abiogenesis, in whatever form it is proposed, is contrary to scientific fact. Hugon notes that the inception of life by divine intervention is explained in different ways, either God immediately produced living species from inorganic matter, or God immediately created one or a few species and infused in them some active power (*activam virtutem*) by which they would be able themselves to evolve toward higher forms. Hugon thinks the first opinion, immediate production of species by God from inorganic matter, is more probable.

Jacques Maritain (1932).³⁰ Maritain was a French Catholic layman and Neo-Scholastic philosopher, who wrote more than fifty books and countless articles. He was born in Paris and raised in Liberal Protestantism. He attended the Sorbonne, where he fell under the spell of empiricism and claimed that science alone could provide all the answers to the problems of man. At the Sorbonne, he met Raissa Oumansoff, a young Russian Jewish student whom he later married. They collaborated on several books. They both discovered Henri Bergson who liberated them from the disillusionment of Scientism and led them to search for the Absolute. Through the influence of Leon Bloy, Maritain and his wife discovered God and were converted to the Roman Catholic faith in 1906. Maritain obtained his doctorate in philosophy, and then studied embryology and Neo-Vitalism with Hans Driesch (cited five times in *The Degrees of Knowledge*) in Heidelberg. In 1914 Maritain was appointed to the chair of modern philosophy at the Catholic Institute in Paris. He taught at the Pontifical Institute of Medieval Studies in Toronto, the University of Chicago, Columbia University, Princeton University, and the University of Notre Dame. In 1945 Maritain was appointed French ambassador to the Vatican. He became a close friend of Monsignor Martini, later to become Pope Paul VI. The pope frequently admitted his indebtedness to the thought of Maritain. An international center for the study of Maritain has been

³⁰Jacques Maritain, *The Degrees of Knowledge*; alternate title: *Distinguish to Unite or The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), especially 195, concerning "The Anti-Mechanist Reaction in Biology," and also Maritain's critique of Hoenen concerning the philosophy of nature, in the longest footnote in the book. Jacques Maritain, *Philosophy of Nature* (New York: Philosophical Library, 1951), especially 126, where Maritain says, "Although the philosophy of nature is *essentially* distinct from metaphysics because of the basic characteristics of its generic type, yet it has a fundamental importance for metaphysics." See also: Piero Viotto, "Antropologia ed Evoluzione in Jacques Maritain," in *Evoluzione*, ed Rafael Pascual (Rome: Studium, 2005), 361-378. Ioannes Di Napoli, *Manuale Philosophiae*, 4: 57.

founded in Rome; at the University of Notre Dame, in Indiana, a Maritain Center was founded in 1958 for the purpose of encouraging research along the lines of his philosophy. Because of Maritain's nationwide influence, the American Maritain Association was formed in May 1977; *Le Cercle d'Etudes Jacques et Raissa Maritain* in Kolbsheim, France, is planning a definitive edition of Maritain's works. Maritain died on 28 April 1973. He left a long list of contributions to philosophical and theological thought, most of which are available in English translation in *The Collected Works of Jacques Maritain*, published by the Jacques Maritain Center through the University of Notre Dame Press.

Maritain's life and work centered around the task of interpreting the thought of St. Thomas Aquinas in our times. Maritain confronted the philosophical, artistic, social, and theological questions of the contemporary world, including the philosophy of nature, by summoning the wisdom of Aristotle and Aquinas. He helped deepen the concept of *esse* (to be) and treated the repercussions that forgetting that concept caused in the history of Thomistic school. Further, his dialogue with Existentialism raised the importance of the metaphysical concept of *esse* (to be) as well as the most important distinction, in creatures, between essence and existence. Not only is this distinction important for philosophy of nature, but Maritain has a section entitled "The Anti-Mechanist Reaction in Biology" in *The Degrees of Knowledge*. His success with the application of Thomistic principles to contemporary problems has led to his evaluation as one of the most influential intellectuals of the twentieth century. Maritain was admired even by those of different philosophical conviction. He had a zeal for truth, a commitment to human freedom, which combined with a humble personality endeared him to many.

Maritain called for a deep renovation of philosophy of nature. He maintained that there

was an essential distinction between philosophy and science. Scientific measurement (*empirométrie*) was only a medium (*scientia media*) between pure mathematics and natural philosophy, while modern descriptive science (*emperioschématique*) only rose to the level of mobile being. Accordingly, if descriptive sciences would be as superficial and hypothetical as Maritain thought, they would not be sciences at all, but only dialectical preparations for science. The better opinion is that of Aristotle, who held that natural philosophy and empirical science are one, since both treat mobile being and each is a part of the other. The Aristotelian position is also the position of Mondin at the Urbaniana University, Selvaggi at the Gregorian University and the Dominican priests at the Aquinas Institute in River Forest, Illinois, near Chicago. The Aquinas Institute is also the location of the Albertus Magnus Lyceum, dedicated to the working dialogue between Neo-Scholastic Thomism and empirical science.

Maritain confronted the problems of cosmic and biological evolution his whole life, first in relation to Darwin, then considering Teilhard de Chardin. He started with the analysis of Evolutionism by Bergson, and set out to recapture the critical realism of St. Thomas' structures for the evaluation of scientific doctrine. His first article "German Neo-Vitalism and Darwin" was published in 1910, and the last on this problematic area was "On Animal Instinct" for the Little Brothers of Jesus in Tolosa on 12 January 1973. Maritain learned from Bergson that Evolutionism did not have to exclude finalism. Maritain overcame the implicit immanentism of final causality by finding in St. Thomas an ontology of transcendence. Maritain concluded that man was born "in" evolution, but not "of" evolution, because each intelligible soul is created by God.

Yves Congar (1937).³¹ Yves Marie Joseph Cardinal Congar (1904-1995) was a French Neo-Scholastic Dominican priest and theologian. He was born in Sedan in north-east France in 1904 and his home was occupied by the German army during World War II. He kept diaries of the occupation, as he was to keep diaries later during the Second Vatican Council. In his early 20s, Congar spent three years in a Carmelite monastery, where he encountered Thomistic philosophy through the works of Jacques Maritain. He spent some time with the Benedictine Order, but eventually joined the Dominicans for a novitiate in 1925. He studied theology at the seminary of Le Saulchoir in Etiolles near Paris, with a strong emphasis on historical theology. He was ordained a priest in 1930. His thesis for the lectorate in theology was: *The Unity of the Church*. After ordination, he taught at Le Saulchoir for eight years. He was drafted into the French army in World War II and taken prisoner. In the mid-1950s there were a number of Dominican scholars who were breaking new ground in theology but were dismissed or under sanctions from Rome, including the Dominican theologian Marie Dominique Chenu. Other scholars who had continued influence on Congar were Etienne Gilson, Jacques Maritain, and the Russian mystic Nicholas Berdyaev. Congar rethought the relation between scripture, tradition, and the Church. He was not only very active in the Ecumenical Movement, but the first Catholic thinker to seriously contribute to the ecumenical discussion. He was removed from teaching for a time under Pope Pius XII. In 1955, Congar was sent to Blackfriars, Oxford, England, but he was not allowed to teach or to write. He continued to have a deep loyalty to the Church and the Dominican Order.

³¹Robert Nugent. *Yves Congar: Apostle of Patience*. 10 January 2007
 <http://dlibrary.acu.edu.au/research/theology/ejournal/aejt_4/nugent.htm>. M. D. Chenu, *Toward Understanding St. Thomas*, trans. Albert M. Landry and Dominic Hughes (Chicago: Henry Regnery, 1964).

He was exonerated and was one of the most influential theologians at the Second Vatican Council. At the Second Vatican Council, documents that bear his influence are: Divine Revelation, the Church, Ecumenism, Missionary Activity, Life and Ministry of Priests, and Religious Freedom. After much private pain and public humiliation, Congar was made a cardinal, shortly before his death, in 1994 by Pope John Paul II.

Etienne Gilson (1937).³² Gilson is a French Catholic layman and Neo-Scholastic born in Paris in 1884. He became professor of medieval philosophy at the Sorbonne in 1921, and from 1932 until his retirement in 1951 he held a similar chair at the College de France. He was invited to Harvard University in the United States in 1926, and returned again in 1927 and 1928 to teach in the fall semesters. From 1929 until his death he was associated with the Pontifical Institute of Medieval Studies at the University of Toronto. Gilson was the director of studies at the Institute, and he designed the curriculum to cover the range of disciplines relating to the Middle Ages, including history, paleography, liturgy, theology, literature, canon law, and philosophy. He died in 1978.

Gilson published *The Unity of the Philosophical Experience* in 1937. It contained the usual ecclesiastical approval for publication. The book was intended as a compilation of the William James Lectures, which Gilson gave at the 300th anniversary of the founding of Harvard University. The lectures were given in 1936, and the book published the next year. The book is

³²Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), especially 174, where chapter three begins to treat the efficacy of secondary causes. Etienne Gilson, *The Unity of the Philosophical Experience* (San Francisco: Ignatius Press, 1999), especially 255, where he apparently diverges from the Transcendental Thomists, asks, “Are we to encompass being with thought, or thought with being?” Ioannes Di Napoli, *Manuale Philosophiae*, 4: 57.

accessible to the educated layman, but generations of students have also encountered philosophy through this work. Gilson does not write a history of philosophy in this book, but uses the resources of history to study different intellectual experiments philosophers have undertaken. Gilson infers that there has been a continual temptation across the centuries for outstanding thinkers to make a similar mistake: to reform philosophy according to the method and structure of some other science. In the controversies over epistemology in the 1930s among Neo-Scholastics, Gilson argued that we begin our intellectual life by the sense and intellectual experience of things, rather than reflection on knowledge. It is here that Gilson, and Maritain, diverge from Maréchal. Gilson is useful for this dissertation in his opposition to Antifinalism, Mechanicism, and Materialism, as seen below.

Gilson did treat evolution, but was most interested in the social implications of Darwinism, which is also useful to this dissertation. He notes that Karl Marx understood the material order of nature to have a history, following a Darwinian evolution, whose law was essentially the same as Hegel's dialectics. In fact, Gilson notes that Hegel's dialectic is the ideological reflection of the Darwinian class struggle. The problem with this Marxist inheritance of class struggle is that there has to be two classes to struggle, and in order to bring the antagonism to a halt, one class has to be sublated (*aufgehoben*). Although common absorption into a new totality for social peace, eventually the struggle ends in dictatorship of one of the classes. This is the reason Neo-Hegelianism had become the philosophy of Fascism. Marx also drew on the philosophy of Materialism espoused by Feuerbach, but then the conclusion for society is social Darwinism, whose only law is natural selection and where survival of the fittest will settle all theoretical discussions. The problem for society is to determine the group that is the most fit; and when all

historic materialism is stripped of purposiveness and providential plans, society cannot support either socialism or any other practical orientation of human life, as Benedetto Croce noted.

Gilson does treat empirical science. The liberal philosophers, espousing Pragmatism, Neo-Realism, and Behaviorism, are all shades of agnosticism, philosophical descendants of Hume. Since the followers of both Hume and Kant lost faith in the validity of metaphysical knowledge, they had nothing whatever to oppose the progressive encroachments of science on the field of human facts. Gilson maintains that the source of modern agnosticism is the fear of scientific determinism, and so, for example, Bergson attacked the determinism of Spencer and Mechanicism of Darwin. One result was that William James elaborated Pragmatism, where ideas were not true, but became true in proportion to their practical verification. An ultimate result, espoused by P. Duhem, a Catholic and a physicist of good repute, thought it necessary to revive the nominalistic interpretation of science and to pit William of Ockham once more against St. Thomas Aquinas.

F.-X. Maquart (1937).³³ Maquart was a French priest Neo-Scholastic professor in the seminary at Rheims. After fifteen years of teaching, he wrote three volumes of elements of philosophy in Latin for clerical students in thesis form. His presentation includes an introduction to philosophy and a treatment of logic in the first volume, philosophy of nature in the second volume, and metaphysics in the third volume. He follows the principles and doctrine of St. Thomas Aquinas. Very helpful to students is the feature that each chapter ends in a summary by way of a descriptive synoptic table. His treatment is traditional, but he applies scholastic principles to modern problems, such as Darwin's evolution and Durkheim's social philosophy. His concern for students is not to give information alone, but to form the students in scholastic method. The

³³F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937).

orientation of his philosophy can be understood by the philosophers that he thankfully cites as helpful: Boyer, Hoenen, Siwek, at the Gregorian University; also Gredt, Hugon, Maréchal, Maritain, and Gardeil.

Maquart treats evolution. He holds that universal evolution is not scientifically proved, even if it does not exceed the demands of reason, and so only restricted evolution can be proved, which is called Fixism. Fixism holds that variations that occur and are passed on by generation are within “formal” types, that is only within species and genera. However, universal evolution does not contradict the demands of reason, provided there is exclusion of the origin of the human body, evolution is not a purely mechanistic process, and not excluding divine intervention not only concurrent with the action of nature, but also divine intervention educing the substantial forms of the new species from the potency of the material. Maquart is opposed to Darwinism, Lemarckism, and to Haeckel. Maquart explains hylomorphism, and that the form is educed from the potency of the material. He accordingly holds that individuation, and species, have their radical principle in the potency of signate material (substance already formed of act and potency and in further potency to determining factors). He notes that the sensitive soul of animals is educed from the potency of matter. The human soul is immediately created by God, and is immortal.

Henri de Lubac (1938).³⁴ Henri Cardinal de Lubac (1896-1991) was a French Jesuit Neo-Scholastic born in Cambrai of a noble ancient family. He was a born aristocrat. He joined the

³⁴Henri De Lubac, *Le Mystère du Surnaturel* (Paris: Aubier, 1965). Henri De Lubac, *Teilhard de Chardin: The Man and His Meaning*, trans. René Hague (New York: Mentor Omega, 1967). Henri De Lubac, *Catholicisme*, 7th ed. (Paris: Cerf, 1983), especially 283-284. See also: Pedro Barrajón, “Evoluzione, Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 258: “The conciliation of the value of the individual person and the call to communitarian love in Christ is in fact one of the paradoxes of Catholicism forcefully underlined by Henri de Lubac.”

Society of Jesus in Lyon in 1913. Since there was no Jesuit scholasticate for religious training in France due to persecution of the religious order, he trained in England. He fought in the trenches in World War I, and was severely wounded on his head. He was ordained a Roman Catholic priest in 1927, and was a professor at the Institut Catholique de Lyon from 1929 to 1961, except during World War II when he went underground with the French Resistance. In 1941, he created a series of bilingual editions of early Christian texts and the writings of the Fathers of the Church. This revolutionized the study of those early Christian texts (Sacred Tradition) and the study of the Church Fathers (Patristics). He also did a pioneering study of the interpretation of Medieval texts (*Exégèse Médiévale*) which revived the spiritual exegesis of the Bible, and helped Roman Catholic ecumenical theology. His innovative approach to the relationship between nature and grace was stopped by the Holy See. He was rehabilitated by Pope John XXIII, who named him to the preparatory commissions of the Second Vatican Council. Pope Paul VI made him a peritus (theological expert and consultant) at the council where his influence was enormous, especially in the fields of ecclesiology and patristics. The new theology of Henri de Lubac, Yves Congar, and Karl Rahner soon became dominant among the Council Fathers. The council texts owe much to De Lubac due to his peaceful demeanor, his encyclopedic knowledge, his clear thinking, and his elegant latinity. After the council, he was disappointed by the ensuing disorder, and he continued to write explaining the teaching of the council. In 1969, Pope Paul VI proposed that he be made a Cardinal, but he demurred because since the time of Pope John XXIII, from 1962, all Cardinals were required to be ordained bishops. In 1963, Pope Paul II offered the cardinalate to De Lubac again, with a dispensation from the requirement of episcopal ordination. At 87 years of age, De Lubac accepted and was created a Cardinal at the Vatican.

H. D. Gardeil (1953).³⁵ Gardeil is a French Dominican Neo-Scholastic who wrote a class text on cosmology as an introduction to the philosophy of St. Thomas Aquinas. He has a series of other books in philosophy, including logic, psychology, and metaphysics. The original language of Gardeil's books is French. He is an Aristotelian as well as a Thomist, and his work is rich in forty-four pages of texts from both these thinkers. The whole book is keyed to the works of Aristotle (Aristotle *Physics* with some additions to Aristotle *Metaphysics*). Gardeil notes the need to modernize the traditional philosophy of nature, but this was not Gardeil's purpose, and he remarks that such a task is yet to be done in the mid-twentieth century. Gardeil is useful for this dissertation because he endorses finality, and the proof for the existence of God from the "first way" of St. Thomas (Aquinas *Summa Contra Gentiles* 1.13 and Aquinas *Summa Theologiae* 1. 2. 3).

Gardeil clarifies the structure of courses in philosophy. Some Neo-Scholastics, like Gardeil and Calcagno, treat the object of cosmology as exclusively mobile inorganic being. Some other Neo-Scholastics, like Donat, treat the object of cosmology as all mobile being, inorganic and organic, except for the soul of man, which is treated in rational psychology. It was Christian Wolff (1679-1754) whose influence made it fashionable to speak of "cosmology" instead of "philosophy of nature." Wolff also popularized the term "psychology" for the treatment of organic life. This is not just a question of the use of words, but a sharp cleavage developed between cosmology and psychology. In Aristotle, there is an orderly continuation between the treatment of inorganic things and the treatment of organic life. Gardeil chooses to treat only inorganic mobile being in

³⁵H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958).

his cosmology (or philosophy of nature). Gardeil believes that treating the preliminary notions of life in cosmology (or philosophy of nature) would have the effect, in the study of man, to isolate the intellectual part of man (soul) from the physiological part of man (living body).

Gardeil is very important for the explanation of how the philosophy of nature differs from the empirical sciences. This is one of the dividing points among Neo-Scholastics during the last century. Maritain teaches that there is a basic and irreducible difference between natural philosophy and the empirical sciences. This means that they constitute specifically distinct sciences. The opposite view is that natural philosophy and the empirical sciences are not essentially distinct, but rather the modern empirical sciences are a dialectical extension of natural philosophy. This is the view of William H. Kane, O.P., Charles De Koninck, Raymond Nogar, James A. Weisheipl, and the Albertus Magnus Lyceum in River Forest, Illinois. This is also the recent view, in 1999, of Battista Mondin at the Urbaniana University in Rome. The author of this dissertation was trained at River Forest, and takes their more unitive view of the philosophy of nature and the empirical sciences.

Edward Schillebeeckx (1959).³⁶ Schillebeeckx was a Belgian Neo-Scholastic philosopher and theologian, who has written extensively, and contributed to the Second Vatican Council. He is a Dominican priest. He was born in Antwerp in 1914. He was educated by the Jesuits at Turnhout, and entered the Dominican Order in 1934. He studied philosophy and theology at Louvain, and was ordained in 1941. From 1943 to 1945, he taught Thomism at the University of Louvain. From 1945 to 1947, he studied at the Dominican center of Le Saulchoir, near Paris. His

³⁶Wikipedia, the Free Encyclopedia. *Edward Schillebeeckx*. 11 January 2007 <http://en.wikipedia.org/wiki/Edward_Schillebeeckx>.

teachers there were Marie-Dominique Chenu and Yves Congar, who introduced him to modern theology. He also attended the Sorbonne, and in 1952 he defended and published his doctoral thesis: *The Redeeming Economy of the Sacraments*. From 1958, he was a professor at the Catholic University of Nijmegen in the Netherlands. In his inaugural lecture, he introduced the Dutch theologians to *Nouvelle Théologie* founded by Marie-Dominique Chenu, Yves Congar, Hans Urs von Balthasar and others. He was not granted the status of *peritus* (theological expert and consultant) at the Second Vatican Council by the Dutch bishops, but his articles and his influence were far greater. In 1965, together with Chenu, Congar, Karl Rahner, and Hans Küng, he founded a new theological journal *Concilium*, which promoted reformist thought. In the late 1960s and early 1970s Schillebeeckx turned to exegesis of Scripture. He debated the position of priests and the obligation of celibacy. He was an influential participant in the Dutch *National Pastoral Council* held between 1968 and 1970. By then Schillebeeckx was known as the leading Dutch speaking Modernist theologian. He had written some books on Jesus, with wide readership, which seemed to the Congregation for the Doctrine of Faith to deny the resurrection of Jesus as an objective fact of the faith. He had to go to Rome to explain his views. After his retirement, Schillebeeckx continued to publish.

Pierre Teilhard de Chardin (1964).³⁷ Teilhard de Chardin (1881-1955) was a Neo-

³⁷Pierre Teilhard de Chardin, *The Making of a Mind: Letters from a Soldier-Priest (1914-1919)*, trans. René Hague (New York: Harper & Row, 1965). Pierre Teilhard de Chardin, *Le Milieu Divin: An Essay on the Interior Life*, trans. Alick Dru et al., ed. Bernard Wall (London: Collins Fontana Books, 1960). Pierre Teilhard de Chardin, *The Phenomenon of Man*, trans. Bernard Wall, with an introduction by Julian Huxley (New York: Harper Touchbooks, 1961). Thomas M. King and Mary Wood Gilbert, eds., *The Letters of Teilhard de Chardin & Lucile Swan* (Scranton: University Press, 1993) containing more than 2,000 letters. See also: Pedro Barrajón, “Evoluzione, Prolemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 261, notes negatively that Teilhard de Chardin does not

Scholastic and French Jesuit priest trained as a philosopher and paleontologist, and was present at the discovery of the Peking Man. He was born in Orcines, close to Clermont-Ferrand, France, the fourth child of a large family. The appellation *de Chardin* was the vestige of a French aristocratic title. He was formally known as Pierre Teilhard, which is the name on his headstone in the Jesuit cemetery in Hyde Park, New York. His father was an amateur naturalist, who had a geological and plant collection and who promoted the observation of nature. The mother of Teilhard de Chardin awakened his spirituality. At eleven years of age, he went to the Jesuit College at Mongré, in Villefrance-sur-Saône where he completed baccalaureates in philosophy and mathematics. In 1899, Teilhard de Chardin entered the Jesuit novitiate at Aix-en-Provence where he began his career in philosophy, theology, and spirituality. In the Summer of 1901, the Waldeck-Rousseau laws took control of Jesuit property, and forced the Jesuits into exile on the island of Jersey, United Kingdom. Later, Teilhard earned a licentiate in literature from the University of Caen in 1902.

sufficiently distinguish between spirit and matter, so that some of his expressions need more clarification if they are not to be misunderstood; 269, notes affirmatively that Teilhard is correct to use the term *phenomenon* of man, something marvelous and new, an exceptional singularity. See also: Josepho Hellin, "Theodicea," in *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 93, notes that Teilhard de Chardin affirms evolution of species up to the body of man inclusive by virtue of divine intervention (*causa specialis superiors*). Raymond J. Nogar, "From the Fact of Evolution to the Philosophy of Evolution," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 364, holds *The Phenomenon of Man* is "unverifiable" and "ideological." Jesús Villagrasa, "Evoluzione, Interdisciplinarietà e Metadisciplinarietà," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), notes that the *Monitum* (warning) to Teilhard de Chardin by the Holy Office in 1962 was intended to avoid the influx of evolutionistic ideology into Catholic theology. See also: La Gregoriana. *Colloquio Internazionale su Teilhard de Chardin*. 3 February 2007 <<http://www.unigre.it/pug/risista/GREG22/pfd>>, with notice of the international meeting at the Gregorian University, Rome, to commemorate the fiftieth anniversary of the death of Teilhard de Chardin; Gustave Martelet gave the talk: "Un Mondo in Evoluzione: Fede, Scienza e Teologia." Ioannes Di Napoli, *Manuale Philosophiae*, 4: 62.

Teilhard de Chardin was destined to be involved with science. From 1905 to 1908, he taught physics and chemistry in Cairo, Egypt, at the Jesuit College of the Holy Family. From 1908 to 1912, he studied theology at Hastings, Sussex, England. He was influenced by Henri Bergson's *L'Évolution Créatrice* and synthesized his scientific, philosophical, and theological knowledge in the light of evolution. He was also inspired by the evolutionary biologist, Theodosius Dobzhansky, who wrote, "Nothing in biology makes sense except in the light of evolution." Teilhard de Chardin was ordained a Catholic priest in 1911 at thirty years of age. From 1912 to 1914, he worked on mammals of the middle Tertiary in the paleontology laboratory of the *Musée National d'Histoire Naturelle*. Professor Marcellin Boule, a specialist in Neanderthal studies, gradually guided him to human paleontology. In 1913 Henri Breuil took him to study the painted caves of Castillo, Spain. His career was interrupted by war service in World War I in which he was stretcher bearer, and received the *Médaille Militaire* for valor and the Legion of Honor. He kept diaries and also wrote letters to his cousin, Marguerite Teilhard-Chambon about the war. He took solemn vows as a Jesuit in 1918. He did write a number of essays between 1916 and 1919. He obtained three unit degrees in natural science (geology, botany, and zoology) at the Sorbonne, in Paris. In 1920, he lectured in geology at the Catholic Institute of Paris. In 1922, he won his doctorate, and became assistant professor.

Teilhard de Chardin began his mature career in 1923. He traveled to China with Father Emile Licent. He returned to the Catholic Institute, and then in 1926 he went back to China. Between 1926 and 1927, he wrote *Le Milieu Divin* and began to write *The Phenomenon of Man*. In December 1929, he had a part in the discovery of the Peking Man. Henri Breuil and Teilhard discovered that Peking Man was a *faber*, a worker of stones and a controller of fire. Teilhard de

Chardin traveled to Central Asia, the Pamir Mountains, and then to the south of China in 1934. He traveled the world, including the United States, India, and Java. He died on 10 April 1955 in New York City at St. Ignatius Loyola Church, Park Avenue. Teilhard de Chardin had a great influence on popular culture, influencing the motion picture *The Exorcist*, and the novel *The Celestine Prophecy*.

Teilhard de Chardin had a serious controversy with officials of the Catholic Church. In 1925, he was told to leave teaching. In 1962, there was a *Monitum* (warning) against some of his mimeographed writing circulating privately. The Roman Curia worried that Teilhard de Chardin undermined the doctrine of original sin as developed by St. Augustine. The literary work of Teilhard de Chardin was denied publication during his lifetime by the Roman Holy Office.

Teilhard de Chardin wrote *The Phenomenon of Man* to show the evolutionary unfolding of the material cosmos from creation to the noosphere (collective thought and communication) in the present, to his vision of the Omega Point (culmination of human history into Christ) in the future. Note that a number of scholars have appreciated his Omega Point for Finalism and for Theism. The leading proposal of Teilhard de Chardin was orthogenesis: that evolution occurs toward a directional goal in a driven way. This is not Intelligent Design, but a teleological theory with evolutionary processes themselves accounting for the complexity of life. The theological problem concerned the perfection of man by himself, to which Teilhard de Chardin answered in the affirmative, because the culmination of human history in the Omega Point would represent an actual Chirstogenesis (birth in Christ).

Anne Dambricourt (2005).³⁸ Anne Dambricourt Malassé is a French Non-Darwinian evolutionist, paleoanthropologist philosopher at the Institute of Human Paleontology in Paris. She writes in French. She holds that chance and natural selection are not the only factors directing evolution. She belongs to the French evolutionary School of Finality (rather than the School of Auto-organization) and is most interested in the internal logic of the process of evolution. Is Anne Dambricourt a Neo-Scholastic? There are three reasons for an affirmative reply. She did participate in the Neo-Scholastic international congress on evolution, in Rome between 23 and 24 April 2002, at the *Regina Apostolorum* Atheneum. Further, her contributions to the conference are congruent to the Neo-Scholastic position about God, ethics and finality. Finally, she is the General Secretary of the Teilhard de Chardin Foundation.

Anne Dambricourt is a working paleontologist as the Research Director of the National Museum of Natural History and the National Advisory Board of French Universities. She has revealed a process unfolding over millions of years which cannot be strictly explained by chance or by natural selection. Her research in human paleontology, done between 1988 and 1993, noted the

³⁸ Anne Dambricourt, “Les Origines Embryonnaires du Processus d’Hominisation, la Conscience Éthique et les Fondements de la Conscience Ontologique: La Révélation Adamique,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 107-126. See especially, pages 122 and for his affirmative position on God as more than Creator; page 123 for his affirmative position on ethics; and page 124 on Adamic Revelation: “La révélation adamique est une présence intérieure, une paix, qui recueille les âmes meurtries en son sein, dans l’infinie tendresse de Son Regard.” See also: Jean Staune, “La Biologie Non-Darwinienne: Essai de Typologie et Analyse des Implications Philosophiques,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 74: “Ces découvertes d’Anne Dambricourt sur la contraction cranio-facial montrent que la bipédie est due chez l’homme à une rotation du tube neural. Et cette rotation constitue un processus interne d’origine embryonnaire qui se développe, en s’accéléralant d’une espèce à l’autre pendant 60 millions d’années. Ce processus paraît pourvu d’une logique propre que ne vient troubler aucune modification de l’environnement. Une telle théorie prend à contre-pied trois constituants fondamentaux du darwinism: l’idée que l’évolution imprédictible, qu’elle est dirigée principalement par les changements de l’environnement et qu’elle est graduelle.”

evolutionary process internal to the species and the embryonic memory of the dynamic of the process. A transformation was observed in embryogenesis in the tissue that became bone at the base of the cranium. In primates, during the first seven to eight weeks of existence, this base, initially flat in form, bends progressively until it assumes an angle proper to the species. In each species there is a reproducible memory of this bend; in this bend and this angle the jump from one species to another can be verified. She has contributed to develop a new interpretation of general evolution. Her work was reviewed on French television, and has been a source of vast debate. She has been accused of being a paleontologist, not a geneticist.

Anne Dambricourt is not a Darwinian. Her research data show a directional and discontinuous phenotype variation that may be a key element for the human vertical position to walk upright. Her research does not seem compatible with the Darwinian random (non-directional), gradual (discontinuous) genetic variations selected by the environment (natural selection). Therefore, the research data show a Non-Darwinian process. Anne Dambricourt maintains that life, where reproduction and evolution are inside a *continnum* of logical phenomena, which follow the first and universal law which Teilhard de Chardin noted as complexity and consciousness crossing. So the Adamic revelation, described by Dambricourt, then involves an existential response to an intimate presence of God.

Anne Dambricourt also reversed the common opinion of the French Paleoanthropological School. This school is represented by Jean Piveteau, a student of Teilhard de Chardin. The origin of the human species is a process that was slow, a process, an hominization. The ancestor of *Homo sapiens* acquired locomotion slowly and contingent on ecological variations. The mechanism for evolution was locomotor adaptation, as the ancestor of man moved from the forest

(climbing) to the savannah (walking upright), which theory has its roots in Lamarck. Now recent discoveries reversed that theory. First, fossils appear to have complete locomotion. Second, Anne Dambricourt notes that skeleton architecture is directly linked to the process of embryogenesis. There are units of levels of embryonic organization arranged along the dorsal cord, but since the split with the Great Apes, the memory is unstable, either evolve or abort.

Anne Dambricourt has opponents. Can the model of evolution proposed by Darwinism explain the directional and discontinuous phenotypic variations? Jean Staune and Richard Dawkins would reply that “apparently directional” can be explained by cumulative changes. The “apparently discontinuous” phenotypic variations can be explained by cooperative model.

Pierre Perrier (2005).³⁹ Perrier is a French professor. He is a member of the *Académie des Sciences*, Paris and also *Académie des Technologies*, Paris. He participated in the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* between 23 and 24 April 2002 in Rome. He delivered a paper on numerical simulation of micro and macro evolution.

Pierre Perrier has studied evolution mathematically. He transformed the genetic message of a species into computer *bits* (basic units of information). He discovered, against the Darwinians, that there is no continuity in evolution between species. Evolution is possible only within the species itself. Numerical simulation indicates that there is no macro-evolution of species because there is no law of emergence or general tendency toward complexity of species. Pierre Perrier notes that the jumps between species would be scientifically inexplicable: numerical simulation only confirms the micro-evolution of species, that is evolution only within the species.

³⁹Pierre Perrier, “Que Nous Apprend l’Analyse Mathématique de la Micro et la Macro Évolution?” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005).

Pierre Perrier has some other data useful for this dissertation. He gives definitions in his presentation, for example, the definition of life as autonomous, self-regulating, capable of reproduction, and capacity for individuation. He endorses finality, noting that behind all life there is an objective plan. He endorses metaphysics. He notes that metaphysics can uncover a creator of life. He notes the special place that man occupies in the universe, man's specific individuality, his irreducible human value. It is this human value that permits exchange both socially and with God. God is discovered by observation of the world. God made the world favorable to man, under God's fatherly care.

Jean Staune (2005).⁴⁰ Jean Staune a French professor at the Interdisciplinary University in Paris attended the international conference on evolution at the Pontifical Atheneum *Regina Apostolorum* from 23 to 24 April 2002 in Rome. If not in fact, he is Neo-Scholastic in sympathy. His presentation touched evolutionary finality. He is a Non-Darwinian. He also hopes that a new understanding of Non-Darwinian biology will be able to conquer ideology and enable dialogue. He notes that Non-Darwinian biology will be the evolutionary theme of the twenty-first century. He writes in French, but his footnotes were in French, English and Italian, appropriate to her text.

Jean Staune asks if a scientist can be a Darwinian and a Christian. Staune notes that there are a diversity of theories of evolution. He cites papal teaching about openness to new knowledge in the search for truth. He is most helpful in giving the divisions of two great contemporary Non-Darwinian schools. The two main Non-Darwinian schools are the Auto-Organizers and the Finalists (divided into three subdivisions).

⁴⁰Jean Staune, "La Biologie Non-Darwinienne: Essai de Typologie et Analyse des Implications Philosophiques," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 71-88.

Jean Staune notes that the Auto-Organizers are Brian Goodwin, Mae-Wan Ho, Stuart Kauffman, and Francisco Varela. They are currently, and mainly, Pantheist or Animist. Some of these authors seek a Christian conception of “emergence” following a Process Theology inspired by Whitehead.

Jean Staune explains that the second Non-Darwinian school is the Finalists. The School of Finality with regard to evolution can be divided into three currents: Internal Logic, Repeatability, and Unknown Factors. The first current of the Finalist School is the philosophers who are interested in the internal logic of the process of evolution, such as Anne Dambricourt. The second current of the Finalist School is the philosophers who believe in the reproducibility of evolution, such as Christian de Duve and Michael Denton; so evolution can attain the same result twice, which is also held by Richard Dawkins and Stephen Jay Gould. The third current is the philosophers who explain macroevolution by appealing to unknown factors, such as Remy Chauvin, Roberto Fondi, and Giuseppe Sermoni.

Jean Staune wants to explain the systems, arguments, and interpretations. Staune wants to show that the theory of evolution does not necessarily have to be Darwinism. Nevertheless, Staune maintains that Darwin’s theory continues to be the dominant paradigm even today.

CONCLUSION: The conclusion for the French Neo-Scholastic philosophers brings to light a number of similarities and differences from philosophers in Rome. First, all the French philosopher were more or less involved in education. This included Maréchal, Hugon, Congar, Maritain, De Lubac, Gilson, Gardeil, Maquart, Teilhard de Chardin, Perrier and Schillebeeckx. Some ever acted as advisors to the Second Ecumenical Council, such as Congar, De Lubac, and (without title of *peritus*) Schillebeeckx. Second, the unusual factor in the French group is the

number of activists, such as Congar, De Lubac, and Schillebeeckx. These same three were disciplined by some offices of the Church, but eventually Congar and De Lubac were invited to the cardinalate. Teilhard de Chardin was disciplined by the Church, but was not truly an activist.

Third, there is still a strong emphasis on the importance of metaphysics, which was promoted by Maritain, Hugon, Gilson, Gardeil, Schillebeeckx, and Perrier. Fourth, concerning general evolution, Perrier affirms evolution only within species; Maritain affirms man “in” evolution but not “of” evolution, so that he seems to reject general evolution of species; Hugon affirms only Productionism, or a possible evolution by God by means of education; Maquart only states Fixism with a need of God for evolution does not go against reason; and Teilhard approves evolution up to the body of man inclusive, and a continued spiritual evolution to the Omega Point with Christ.

Fifth, finality is endorsed by Hugon, Gilson, Gardeil, Teilhard de Chardin, Dambricourt, and Perrier. Sixth, explicit treatment of the evolution of the body of man is given by Teilhard. Seventh, the immortality of the soul is affirmed by Maquart, Hugon, and Perrier. Eighth, abiogenesis is rejected by Hugon and Maquart. Ninth, theism is affirmed by Hugon, Maquart, Maritain, Gilson, Gardeil (as Prime Mover), Teilhard de Chardin, Dambricourt, and Perrier both from metaphysics and from observation. Tenth, liberty is affirmed by Gilson against determinism, and Maquart affirms liberty of exercise but not liberty of specification. Eleventh, a serious concern about science is found in Gilson, Teilhard de Chardin, and Maritain. Twelfth, Gradeil noted the break between two views of philosophy of nature: one incorporating science (William H. Kane, O.P.) and the other with an essential difference between the philosophy of nature and the empirical sciences (Maritain). Thirteenth, there was a break among the Neo-Scholastics in favor of Transcendental Thomism (Maréchal) and historical Thomism (Maritain and Gilson). Fourteenth, Dambricourt

maintains an Adamic revelation where, following the ideas of Teilhard de Chardin, consciousness and complexity cross, which is expression of the immanent action of God. Fourteenth, Perrier maintains that a fatherly God cares for man and made the world for man, which is an expression of the Anthropic Principle without using the technical phrase.

Germany

Joseph Wilhelm Karl Kleutgen (1883).⁴¹ Kleutgen was a Neo-Scholastic philosopher and theologian who composed the first draft of the encyclical of Pope Leo XIII *Aeterni Patris* (1879) concerning the revival of scholasticism. He played a leading part in the revival of scholastic philosophy and theology. He had mastered the teaching of St. Thomas Aquinas so well the he was called *Thomas redivivus* (Thomas returned to life). In response to theological controversies raised by Gunter, Hermes, and Hirscher, he produced some epoch-making works.

Kleutgen was born in Dortmund, Germany, in 1811. He studied philosophy at the University of Munich in 1830 and 1831. He was very interested in Plato and the Greek tragic poets. Among the moderns of his time, he read Lessing and Herder, which he could not reconcile with his Catholic faith. From this intellectual crisis, he turned to prayer, through which he was transformed. He attended the theological academy at Munster for two terms in 1832. Then he went to the Catholic seminary at Paderborn. In 1834, he entered the Jesuit Order at Brig in Switzerland. He became a Swiss citizen and changed his name to Peters. He was ordained a priest

⁴¹John J. Toohey. *Josef Wilhelm Karl Kleutgen*. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>. Joseph Kleutgen, *Die Philosophie der Vorzeit (Philosophy of Antiquity)*, 2 vols. (Munster: 1860-1863; Innsbruck: 1878) was translated into French and Italian. Ioannes Di Napoli, *Manuale Philosophiae*, 4: 54.

in 1837, and became the professor of Ethics at Fribourg, Switzerland, for two years. From 1840 to 1843, he taught rhetoric at Brig. Then in 1843, he became the professor of sacred eloquence at the German College in Rome.

Kleutgen spent from 1842 to 1874 in Rome. He did his main writing during this period. He did pastoral work, and was loved by the poor of Rome whom he served. He also served as a secretary at the headquarters of the Jesuit Order from 1843 to 1862. He was persecuted by the Holy Office in Rome, so he left Rome for the secluded shrine of Our Lady of Galoro, where he wrote some of his major works. He was restored by Pope Pius IX, who made him a consultor to the bishops at the First Vatican Council, where he helped to prepare the council document *De Fide Catholica*. He died at St. Anton in the Tyrol in 1883. When he died, Pope Leo XIII said of him, “*Erat princeps philosophorum*” (He was the prince of philosophers).

Joseph Donat (1914).⁴² Joseph Donat was a Jesuit Neo-Scholastic teaching at the University of Innsbruck at the beginning of the twentieth century. Each of the departments of philosophy (*Critica, Ontologia, Cosmologia, Psychologia, Theologia Naturalis, Ethica Generalis et Specialis*) are treated in a handy small volume. His books were popular in Jesuit institutions for the preparation of the clergy up to the 1930s.

Donat treated natural philosophy, which he also calls cosmology. He defined cosmology as

⁴²Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915). Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 318: “Neque hac admissione id obtinetur ut modernis evolutionismi defensoribus satisfiat, nisi totius hominis descendencia teneatur et omnis divinae creationis necessitas recusetur.” See also: Joseph Donat, *Critica*, 3rd ed. (Innsbruck: Rauch, 1915). Joseph Donat, *Ethica Generalis*, 2nd ed. (Innsbruck: Rauch, 1920). Joseph Donat, *Ethica Specialis*, 2nd ed. (Innsbruck: Rauch, 1921). Joseph Donat, *Ontologia*, 5th ed. (Innsbruck: Rauch, 1921). Joseph Donat, *Theodicea*, 2nd ed. (Innsbruck: Rauch, 1914). Ioannes Di Napoli, *Manuale Philosophiae*, 4: 60.

that part of philosophy which treats corporeal things according to their ultimate causes. In this tract, Donat also treats “life” in general and the activity of plants and animals. Donat treats man only later, in psychology, which Donat defines as the philosophical science of the sensitive and rational life of man. Later authors, like Boyer (around 1937 for his several volumes) and Calcagno (around 1952) treat all of life, whether plant, animal or human, together in psychology.

Donat begins his treatment of cosmology by stressing order in the world. He maintains that the universe is not infinite, since it does not have all perfections nor have them perfectly. Further, the universe is not even infinite partially (*secundum quid*) in extension, since there are no arguments to favor infinity, while actual extension (which is observable) does not include infinity in its concept. Donat also maintains that the universe is good, but not the best, as the Stoics, Pantheists, and Leibniz all claim. Donat also argues against Materialism.

Donat treats evolution in cosmology and in psychology. In cosmology, Donat maintains that abiogenesis is impossible. Donat also rejects Darwinism. Donat does admit evolution of plants and animals that is polyphyletic and restricted to species and genera. Donat rejects monophyletic evolution. In his treatment of psychology, Donat rejects the evolution of the whole man, including man’s body and soul. Donat also denies, against Mivart, that even the body of man has descended from brutes. Donat adds a rare personal comment in his denial of the evolution even of the body of man, that if he conceded the evolution of the body of man, this would not satisfy the Evolutionists, until the descent of the whole man is admitted and the necessity of any divine creation is refused.

Donat treats man in psychology, which Donat notes can be divided into empirical psychology (science) and rational psychology (philosophy). Donat says these two can be treated

together, and can be a philosophical science. He notes, however, that the scientists reject a philosophical treatment. Donat begins his treatment of man by considering the nervous system and the senses. Then, he considers the intellect and the will. Donat seems to be ahead of his time with his ten page treatment of language. Donat also stresses the freedom of the will of man.

Donat treats man in ethics. The proximate goal of man is the perfection, order and conservation of his own life. In addition, the proximate goal of man is the good of others, which is attained by a social life appropriate to man's nature. Modern opinion which makes culture or humanity the sole goal of mankind, contains some truth, but also have grave errors, according to Donat.

Edith Stein (1952).⁴³ Edith Stein (1891-1942) was a disciple of Husserl and a Thomist philosopher in her own right. She authored a study which tried to combine the phenomenology of Husserl and the philosophy of St. Thomas Aquinas (Halle: 1929). She also translated St. Thomas' work on truth (Aquinas *De Veritate*) in 1932.

Stein lived an unconventional life. She was born into a devout Jewish family, drifted into atheism in her mid-teens, took up the study of philosophy, and studied at the University of Göttingen with Edmund Husserl who was the founder of phenomenology. She followed Husserl to the University of Freiburg as his assistant. She became a pioneer in the women's movement in Germany, and served as a military nurse in World War I. She received her doctorate in philosophy in 1916 with a dissertation under Husserl, *On the Problem of Empathy*. She then became a member of the faculty in Freiburg.

⁴³Wikipedia, the Free Encyclopedia. *Edith Stein*. 31 January 2007
<http://en.wikipedia.org/wiki/Edith_Stein>.

Stein found no conflict between knowledge and faith. She had some earlier contacts with Catholicism, but it was her reading of the autobiography of St. Teresa of Ávila on a holiday in 1921 that resulted in her conversion. Baptized on 1 January 1922, she gave up her assistantship with Husserl to teach at the Dominican girls' school in Speyer from 1922 to 1932. It was while she was in Speyer that she translated St. Thomas' work on truth into German and she familiarized herself with Catholic philosophy in general. In 1932, she became a lecturer at the Institute for Pedagogy at Münster, but anti-Semitic legislation passed by the Nazi government forced her to resign the post in 1933. She entered the Carmelite monastery at Cologne in 1934 and took the name Teresa Benedicta of the Cross. There she wrote her metaphysical book *Endliches Und Ewiges Sein* which again tries to combine the philosophies of Husserl and Aquinas. To avoid the Nazi threat which was growing in Germany, her Order transferred her to the monastery of Echt in the Netherlands. There she wrote *The Science of the Cross: Studies on John of the Cross*. She was murdered at Auschwitz-Birkenau in 1942, and was canonized as a Saint by Pope John Paul II.

Stein was a personalist and a person of action, as proved by her thesis on empathy, by her nursing in World War I, and by her pioneering in the women's movement in Germany. (Aquinas was a man of action too.) Her orientation toward St. John of the Cross is very much like Maritain in *The Degrees of Knowledge* where St. John of the Cross is explicitly treated. Her position that there is no conflict between knowledge and faith did not arise directly due to science, but is relevant to the consideration of evolution. Her treatment of psychology was not the rational psychology of the Neo-Scholastics of the 1940s, but closer to the experimental psychology of practice.

Karl Rahner (1958).⁴⁴ Karl Rahner (1904-1984) is a German Jesuit priest and Neo-Scholastic philosopher and theologian. The philosophical sources of Rahner's theology include St. Thomas Aquinas, read from the aspect of contemporary continental philosophy. Rahner also is a clear exponent of a dialogue with Existentialism, which raises the importance of metaphysics and the vital distinction in creatures between essence and existence.

Rahner was born in Freiburg, Germany on 5 March 1904. He attended lectures by Martin Heidegger at the University of Freiburg. Between 1937 and 1984, he taught dogmatics in Catholic universities in Innsbruck and Munich. It was in 1964, he followed Romano Guardino at Munich. He gave attention to pastoral issues, to Church reform, and to the responsibility of man as the receiver of revealed messages. He was at the Vatican Council between 1962 and 1965. He profoundly influenced the Second Vatican Council, since Rahner was one of the ground-breakers for a modern understanding of the Catholic faith. He wrote more than half a dozen books. Written near the end of his life, one of his most important theological works is the *Foundations of the Christian Faith (Grundkurs des Glaubens)*, which is the most developed and systematic of his works, most of which were published in the form of theological essays. He died in Innsbruck,

⁴⁴Karl Rahner and Herbert Vorgrimler, *Dizionario di Teologia* (Milan: TEA, 1994). Wikipedia, the Free Encyclopedia. *Karl Rahner*. 30 December 2006 <http://en.wikipedia.org/wiki/Karl_Rahner>. Pedro Barrajón, "Evoluzione, Problemi Epistemologici e Antropologici," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 267, notes that Rahner brings up the fundamental problem with evolution: "La domanda che si pone, da un punto di vista ontologico, è: come dal 'meno' viene fuori 'il più'?" See also: Karl Rahner, *Hominization: The Evolutionary Origin of Man as a Theological Problem* (London: Burns & Oates, 1965), 64. On the Internet are other evolutionary questions: Christopher L. Fisher and David Fergusson. *Karl Rahner and the Extra-Terrestrial Question*. 10 January 2007 <<http://www.blackwell-synergy.com/doi/abs/10.1111/j.1468-2265.2006.00288.x>>. Herbert F. Lowe. *Homanization by Karl Rahner*. 10 January 2007 <<http://www.religion-online.org/showbook.asp?title=3367>>.

Austria, on 30 March 1984.

Rahner has as the basis of his theology that all human beings have a latent (“unauthentic”) awareness of God in any experience of limitation in knowledge or freedom as finite subjects. In this, he is similar to Dambricourt’s Adamic revelation. Also, because such an experience is necessary, since it constitutes what Rahner calls “a condition of possibility” for any knowledge or freedom, Rahner borrows the language of Kant to describe this experience as “transcendental experience.” This transcendental experiential factor reveals his closeness to Maréchal’s Transcendental Thomism.

Rahner does touch on evolution in his work, *Homanisation*, which originally appeared in 1958. Rahner revised it and it was republished by Herder in 1965. This 1965 edition is the one described here. Note that the term “hominization” means the theory of man’s evolutionary origins. The Preface describes the limits of Catholic theology relative to evolution. The toleration of moderate evolution by the Catholic Church leaves many questions unanswered. The first section (of three) is dogmatic and gives a summary of official church teaching on evolution. The second section is “fundamental theology” to elucidate the background or foundation of church teaching. The long third section raises some philosophical and theological questions, which are useful to this dissertation: the concept of becoming, the concept of cause, the distinction between spirit and matter, the unity of spirit and matter, the concept of operation, and the creation of the spiritual soul.

Rahner does not simply treat the origin of man, but his existence and his future, items that can be of some concern to the issue of evolution. Central for Rahner is the theological doctrine of grace, which for Rahner is a constituent element of man’s existence, so that grace is a permanent

modification of human nature in a supernatural “existential,” to borrow a phrase from Heidegger. For this reason, Rahner doubts the real possibility of a state of pure nature (*natura pura*), which is human existence without being involved with grace. The fulfillment of human existence occurs in receiving God’s gift of Himself, not only in the beatific vision at the end of time, but present now as seed in grace. In treating the present existence of man and his future as human, Rahner is of special usefulness to this dissertation.

Rahner has been open to the prospect of extra-terrestrial intelligence, the prospect that cosmic evolution has yielded sentient life forms in other galaxies. This raises questions of philosophical, ethical and theological significance. Rahner argued against any theological prohibition of the notion of extra-terrestrial life, while distinguishing the existential significance of such life forms from that of angels. Further, Rahner raises, but does not affirm, the possibility of multiple Incarnations. Given the strong Christological orientation of the theology of Rahner, it does not appear likely Rahner would incline toward the repetition of the Incarnation of Christ.

Victor Cathrein (1959).⁴⁵ Victor Cathrein is a Neo-Scholastic moral theologian who was born in Brig in Switzerland in 1845. He was an editor of the journal *Stimmen aus Maria-Laach*. He taught moral theology for twenty-eight years. He wrote several books, including one on *Socialism*. He died in Aachen in 1931.

Cathrein wrote a book on moral theology, *Philosophia Moralis*, that had become a classic and went through twenty-one editions up to 1959. The original book was written in 1895 in Valkenburg, Holland, at the College of St. Ignatius. The book contains more than 500 pages, and

⁴⁵Victore Cathrein, *Philosophis Moralis*, 21st ed., ed. Iannes B. Schuster (Barcelona: Herder, 1959).

the material is presented in thesis form. There are 106 theses. His citations are from Aristotle and St. Thomas Aquinas. He does not recommend reading many authors, which will cause “only confusion.” His book *Philosophia Moralis: In Usus Scholarum*. 21st ed. (Freiburg: Herder, 1959) is written in Latin but Cathrein also has another work in German which expands on the Latin compendium. The book has two parts, of which the first is general moral philosophy, containing the ultimate goal of man, human acts, natural law, conscience, sin, and law. The second part of the book is special moral philosophy, containing individual ethics, (duties to God, self and others as well as property rights and contracts) and special social ethics (domestic, civil, political and international society).

Cathrein treated Evolutionism. He wrote a pamphlet *Darwinism* in 1885. However, Herbert Spencer’s book *Data of Ethics* makes Spencer a better adversary than Darwin. Cathrein does put Spencer and the “followers of Darwin” together under the same philosophy, Evolutionism. Cathrein (thesis #3) opposes Spencer who holds Mechanicism for ethics since man is a machine with no free will and will continue to evolve. Cathrein (thesis #26) accuses Spencer of being a Utilitarian, because altruistic common joy will evolve to perfect harmony. Cathrein (thesis #41) opposes Ahrens (1808-1874) who maintains that the ultimate good and the goal of evolution will be the progress of human faculties. Cathrein (thesis #127) opposes Spencer’s evolutionary system is not positive but falls between social eudaemonism and hedonism. Cathrein (thesis #139) opposes Spencer who maintains: that man is not created by God, that God is not the final goal of man, that man has no spiritual and immortal soul, and that man is not a species diverse from brutes.

Hans Urs von Balthasar (1961).⁴⁶ Father Hans Urs von Balthasar (1905-1988) was a Swiss Neo-Scholastic Roman Catholic theologian, born in Zurich, Switzerland, and who studied in Vienna, Berlin, and Zurich. He obtained his doctorate in German literature. Although von Balthasar is known as a theologian, he never obtained a doctorate in theology. He joined the Jesuit Order in 1928, and was ordained a priest in 1936. In 1950, he left the Jesuits, and joined the diocese of Chur where he founded a religious order for the laity. He was prohibited from teaching. However, the journal he founded, *Communio*, is published in twelve languages, including Arabic. He was asked by Pope John Paul II to become a cardinal. He died on 26 June 1988 at his home in Basel, just two days before the ceremony making him a cardinal. He is buried in Lucern, in the Hofkirke cemetery. Pope John Paul II called von Balthasar his favorite theologian and the most cultured man in Europe.

Von Balthasar was concerned that his theology address practical issues and the spiritual life. For example, he was influenced by the mystical experiences of Dr. Adrienne von Speyr. He wrote about the lives of the Saints and the Church Fathers in order to give examples of the perfect Christian life.

Von Balthasar was a very serious theologian. His work *Glory of the Lord* was seven volumes, and explored the philosophical transcendentals, the good, the true, and the beautiful. His work *Theo-Drama: Theological Dramatic Theory* was five volumes, and concerned God's action and man's response. His work *Theo-Logic* was three volumes, and concerns Christology and

⁴⁶Edward T. Oakes. *The Witness of Balthasar*. 11 January 2007
<<http://www.americamagazine.org/gettest.cfm?textID=4292&articleTypeID=1&issue 10=538>>.
Wikipedia, the Free Encyclopedia. *Hans Urs von Balthasar*. 11 January 2007
<http://en.wikipedia.org/wiki/Hans_Urs_von_Balthasar>.

ontology. Von Balthasar even wrote a “forward” to the book on Tarot by Valentin Tomberg.

Von Balthasar is difficult to categorize because he is so eclectic in approach, sources and interests. For example, von Balthasar had a long conversation with the Protestant theologian, Karl Barth. Von Balthasar wrote the first Roman Catholic analysis of Barth and a response to Barth’s theology that was full of sensitivity and insight. Barth himself agreed with the analysis.

Von Balthasar was one of the most important Catholic theologians of the twentieth century, along with Karl Rahner and Bernard Lonergan. All three offered an intellectual and faithful response to the Modernism of the West. Von Balthasar was the traditionalist who resisted all reductionism and wanted Christianity to challenge all philosophical and modern assumptions. The moderate position was taken by Lonergan, who worked out a philosophy of history that sought to critically appropriate modernity. The progressive position was taken by Karl Rahner who sought an accommodation with modernity.

Ioannes B. Lotz (1963).⁴⁷ Lotz is a German Jesuit Neo-Scholastic teaching in Pullach, seven miles from Munich, Germany. He follows the Perennial Philosophy, which is the philosophy whose basis is Aristotle and Aquinas. Although he professes Scholastic Philosophy dependent on Aquinas, Lotz notes that there are several schools of scholastic philosophers, so some of his opinions are a synthesis between Thomists and the followers of Suarez. He does note the influence that the Transcendental Thomism of Maréchal and Rousselot had on him, and he was also

⁴⁷Ioannes B. Lotz, *Ontologia* (Barcelona: Herder, 1963): for Hans Driesch see pages 24, 76, 274, and 278; for evolution under the form *mutatio* see pages 274-285; for causality as a real cause see page 279; for finality and the principle of contradiction see page 280; and for finality in man and the rest of the cosmos see page 281. See also: Antonio del Toro. *Neo-Thomist Philosophy-Theology in the XX Century* (Spanish or English). 27 June 2007 <http://www.mercaba.org/Rialp/N/neotomismo_filosofia_teologia_en.htm>.

influenced by Kant, Hegel, Heidegger whom he believes also contributed to Perennial Philosophy. He was also influenced by E. Coreth's *Metaphysik* written in Innsbruck in 1961. Lotz, writing in 1963, thinks that the transcendental method, which is the ascent to subsistent Esse (God), is indispensable to accommodate Scholastic Philosophy to modern problems, such as historicity, existential ontology, freedom, and the importance of the person.

Lotz wrote his book *Ontologia* in Latin in 1961. He had been working on the book for five years, from 1956 to 1961, and it went through several forms as student notes. The book is part of a series, *Institutiones Philosophicae Scholasticae*, whose independent books were written by Jesuit philosophy professors at the Jesuit College at Pullach, near Munich. He gives a five page general bibliography, but more important is the bibliography with each thesis, always beginning with Aristotle and Aquinas. Lotz uses the scholastic method of thesis, definitions, opinions, proofs by syllogism, and objections. He adds educational helps for his students by putting important matter in larger print. He uses modern terms as much as possible, for example, in types of analogy.

Lotz treats evolutionary issues in his treatment of Driesch. Hans Driesch at Heidelberg University was an evolutionist, who rejected merely material evolution. Driesch was a teacher of Jacques Maritain. Lotz praises Driesch for his use of the inductive method, the method of science. Driesch was a scientist and biologist, who later changed to the field of philosophy. Lotz mentions Driesch favorably twice for the support Driesch gives to final causality. Note that Marcozzi and La Vecchia at the Gregorian University view the failure to admit final causality as the fatal flaw of Evolutionism in general.

Lotz treats evolutionary issues under the topic of mutation (*mutatio*). Lotz maintains that change of earthly beings supposes final causality. The goal, or final cause, is not just a term, but

the reason for and the reason why change happens. It can be a goal in intention (humans decide) or in execution (infra-human). Finality is an order to a goal (*ordo ad finem*) which is called “subjective” if the order to the goal is in a conscious subject, or called “objective” if the order to the goal is not in a conscious subject. Man knows and wills the goal. What about infra-human creatures and goals? An intelligent cause (such as the Creator) can imprint such a final structure on infra-human entities, just as man makes machines.

Lotz treats finality extensively, which is most important since Anti-Finalism (chance in natural selection) is the usual characteristic of most Evolutionism. Lotz maintains that the goal is a real cause (*finis est causa proprio sensu*), since it fulfills the definition of cause properly speaking: a principle which by its influx determines to existence something insufficient by itself. Therefore, the goal by its goodness is determinative. Lotz also maintains that finality does not violate the Principle of Contradiction (as if the goal caused itself), since the goal does not yet exist as attained. But the final cause does conform to the Principle of Sufficient Reason because it moves something to the yet non-existent goal.

Christoph Schönborn (2005), who has his own web site.⁴⁸ Christoph Cardinal Schönborn is a German Neo-Scholastic trained Dominican, and since 1995 the Archbishop of Vienna, Austria. He was born on 22 June 1945 in Skalhen Castle, west of Leitmeritz, Bohemia, now the Czech

⁴⁸Christoph Schönborn. *Cardinal Schönborn*. 27 June 2007 <<http://www.cardinalschonborn.com>>. Christoph Schönborn. *Finding Design in Nature*. 3 June 2006 <<http://catholiceducation.org/articles/science/sc0060.html>>. Sandro Magister. *Creation or Evolution? Here is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressonline.it/printDettaglio.jsp?77264&eng=y>>. Wikipedia, the Free Encyclopedia. *Christoph Cardinal Schönborn*. 31 January 2007 <http://wikipedia.org/wiki/Christoph_Sch%C3%B6nborn>. See also: David Van Biema, “God vs.Science,” *Time Magazine*, 13 November 2006, 48-55.

Republic. He has two brothers and one sister. His parents died in 1959. His family is an old and noble central European family. Several members of that family held high posts in the Catholic Church in the past. In 1945, the family was forced to flee Bohemia. He was created Cardinal-Priest by Pope John Paul II on 20 February 1998. He was considered a possible papal candidate when he took part in the conclave that elected Pope Benedict XVI. He is a chaplain to the Austrian Order of the Golden Fleece.

Schönborn was trained as a teacher and is a Neo-Scholastic from the last half of the twentieth century. He took his Matura exam in 1963. He studied philosophy, theology and psychology in Barnheim-Walberberg, Vienna, and Paris. He was ordained a Dominican priest by Franz Cardinal König in 1970 in Vienna. He later studied at Regensburg under Joseph Ratzinger, later Pope Benedict XVI. In 1975, he became professor at Freiburg im Üechtland. In 1980, he became a member of the International Theological Commission of the Holy See. In 1987, he was made the editorial secretary for the World Catechism. He speaks six languages.

Christoph Cardinal Schönborn wrote an editorial published in the *New York Times* (7 July 2005) in which he criticized the Neo-Darwinian theories of evolution as incompatible with Catholic teaching. The defenders of the Neo-Darwinian position on evolution somehow believed their position was actually compatible with the Catholic faith, due to the statement of Pope John Paul II in 1996, that evolution (a term he did not define) was “more than a hypothesis.” Although Christoph Schönborn admitted that evolution in the sense of common ancestry may be true, he opposed chance evolution in biology and cosmology. He opposed evolution by the proper mechanism of matter, which is Materialism. He relied on papal documents to illustrate and prove his theological view. He does not define “immanent design evident in nature” and he defends this

from a theological point view.

Schönborn received a great deal of public criticism for his views, even from Rev. George Coyne, S.J., director of the Vatican Observatory. In an exchange of articles with the Catholic physicist, Stephen Barr, Christoph Schönborn replied and clarified some of his statements. He recognizes the great progress made by science. He states that science and faith need not conflict, because they answer different questions. Science and faith should each respect the worldview of the other. He notes that the work of Darwin remains great in the history of ideas. He notes that unguided, unplanned evolution is not Christian faith compatible. He has no problem with theistic (God guided) evolution. While there is no difficulty between belief in a Creator and the theory of evolution, it is important that the borders of scientific theory be maintained; but he notes that Julian Huxley, Will Provine and Peter Athins do not stay in their own scientific territory. Those who hoped to replace religion as a worldview, Schönborn categorized as followers of Scientism, a dogmatic view of science.

CONCLUSION: The conclusion for the German Neo-Scholastic trained philosophers brings to light a surprise on the variety of their activities. Kleutgen was a founder of Neo-Scholasticism and wrote the first draft of its charter in the encyclical *Aeterni Patris*; Cathrein was also an early Neo-Scholastic and unique in his field of moral philosophy. On the other hand, a professional philosopher like Edith Stein moved toward experimental psychology. Rahner and Lotz emphasized the importance of metaphysics. Rahner, Fabro and Maritain were all influenced in part by Existentialism. Von Balthasar founded a religious order for laity. Both von Balthasar and Cathrein were magazine editors. Both Stein and Schönborn held that there was no conflict between religion and science. However there are some common traits such as educators and

activists, and many of these Neo-Scholastics held some common opinions on evolution.

German Neo-Scholastics were all teachers at one time or another: Kleutgen, Donat, Stein, Rahner, Cathrein, von Balthasar, Lotz, and Schönborn. Several were activists, such as Kleutgen with the poor of Rome, Stein with the liberation movement for German women, and von Balthasar founding a new religious order and a successful magazine. Two of these activists were persecuted by Rome, but Kleutgen and von Balthasar were both recognized as worthy by subsequent popes. Schönborn was not an activist, but certainly a controversialist.

German Neo-Scholastics held a number of helpful opinions on evolution. Darwinism was specifically rejected by Donat. Cathrein accused Spencer of Utilitarianism. Concerning evolution in general, Donat admitted polyphyletic evolution in plants and animals in species and genera, while Schönborn had no problem with evolution as common ancestry with a Creator God. The Principle of Finality was well defended by Lotz and Schönborn. Donat and Schönborn argued against Materialism. Cathrein argued against Mechanicism. Cathrein argued an essential distinction between man and brute. Donat opposed the evolution of the body of man. Donat and Cathrein both endorsed the creation of the individual soul of man by God. Abiogenesis was rejected by Donat. However, Donat did argue that the cosmos is well ordered. Donat, Rahner and Cathrein all endorsed free will for men in society as opposed to evolutionary determination, and Cathrein noted free will is necessary as a foundation for morality. Donat, Rahner and Schönborn all endorsed the necessity of God in evolution. Rahner took up disputed questions in the philosophy of evolution. Rahner also treated extra-terrestrial life as possible. Concerning the future development of human understanding, both Maritan and Stein were creative philosophers, both entered monasteries, and both wrote about the mystical thought of St. John of the Cross.

Ireland

Michael Maher (1940).⁴⁹ Michael Maher was an Irish Jesuit Neo-Scholastic who is the author of a work in psychology that is both empirical and rational. His is an Aristotelian and he offers readings in his book from St. Thomas Aquinas. He was an examiner in education for the National University of Ireland. He is an educator, and his intention is to come into closer contact with modern questions. He wants to acquaint students with the merits of modern psychological analysis and explanation. He was also a consultant for the *Catholic Encyclopedia*, and wrote several articles.

Maher wrote his book in psychology as part of the Stonyhurst Philosophical Series for students. The ninth edition of his book was published in 1918, and the first edition was published forty years earlier, in 1878. The book was still in print and republished in 1940, a testimony to its worth. Even Maher notes that the book had a surprising endurance and reflected an expression of demand. Maher was well ahead of his time in treating both empirical and rational psychology at the same time. Still, this made the treatment of “life,” both plant and animal, to be treated in another course, cosmology. This is not merely a technical issue, for it allowed Maher to say that he did not have to treat the issue of evolution directly, since it did not apply to the subject of psychology, the soul. Nevertheless, Maher is most insistent that he wishes to expand the old system of scholastic psychology, test its principles, develop them, and apply those scholastic principles to “modern problems” in the light of the most recent research. His footnotes are in

⁴⁹Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, 1940).

English, French, German, and in Greek for Aristotle.

Maher does treat various evolutionist theories. He is opposed to Darwin's theory of emotion. He is opposed to both Darwin's theory of natural selection and to Spencer's theory of hereditary habits being passed on to another generation. Maher's critique of both Darwin and Spencer is that both men assume that changes will be passed on to the next generation by heredity. Maher notes that natural selection of itself or learned habits in one generation do not necessarily modify the cells of the parent and so inheritance would be impossible. Maher explains the essential union of body and soul by hylemorphic principles and by the Aristotelian system of causes. He treats the discontinuity between men and animals by showing that animals have a material soul. He affirms the spiritual soul of man, created by God. He has a section on the origin of human language. He notes that man has free will, and gives a metaphysical proof among other proofs. He affirms that God exists as an efficient cause, as Creator of the soul.

Henry V. Gill (1944).⁵⁰ Gill is an Irish Jesuit Neo-Scholastic writer who also has a M.A. from Cambridge. He worked in the Cavendish Laboratory in physics research with J. J. Thomson. For many years, Gill was directly engaged in lecturing and teaching. In addition to his scientific background, his philosophical and theological training make him well equipped to write with authority. His book about fact and fiction in modern science is a compilation of a number of articles he had already published in such journals as the *Irish Ecclesiastical Record*, *The Month*,

⁵⁰Henry V. Gill, *Fact and Fiction in Modern Science* (New York: Fordham, 1944), 56 : "It is scientifically certain that life can never come from non-life; but if such a phenomenon were to be discovered, it would in no way weaken the belief in the existence of God. What it would do is to show that one of the most fundamental laws of physics must be looked on as false. Granting the truth of the second law of thermodynamics, or entropy, it can be looked on as scientifically certain that life cannot come from non-life. In other words, spontaneous generation is impossible."

Studies and Thought. His book is intended for the educated reader, and is in popular style.

Nevertheless, the content is serious and up-to-date in science at the 1944 time of publication. The book proved very popular, with three printings in Ireland and an American edition.

Gill treats modern science. He cites Michael Maher, a fellow Jesuit, about the metaphysics of consciousness. It is also noteworthy that while Maher was interested in the future as modern and up-to-date, Gill sees modernity as the rapid growth of science and has a chapter on “Science and Survival.” Gill notes that the attitude of the popes was to promote science. He also endorses the principle of finality in treating evolution and entropy.

Gill treats evolution. He notes that Materialism has no answer adequate to explain the difference between life and non-life. Gill opposes abiogenesis. He does note that scholastics did affirm spontaneous generation in the past, and that this would not exclude the existence of God. However, Gill maintains that if abiogenesis is excluded, then the necessity of the Creator can be demonstrated. He excludes the theory that life came from across space, for then the same problem of the origin of life is pushed back, still unsolved. Gill notes that evolution is contrary to the law of entropy, and that entropy is a dogma accepted by all physicists.

CONCLUSION: The conclusion for the Irish Neo-Scholastic philosophers brings to light two teachers also in public life: Maher as university examiner, and Gill as a lecturer and popular author. Maher, an older Neo-Scholastic at the beginning of the twentieth century was preoccupied with being modern, while Gill near mid-century was concerned with survival and the future of man. Both believed in the separation of science and religion, without prejudice to either. Concerning evolution in general, the psychological presentation maintained that evolution does not even belong in rational psychology, which treats only the soul, according to Maher. Gill is more concerned

about the origin of life itself, or spontaneous generation, which he rejects. When Gill treats evolution directly, he rejects evolution because of the physical law of entropy. While Gill rejects Materialism, Maher explains the essential union of body and soul using the concepts of matter and form. Maher shows (in a supplement on animal psychology) the material nature of the soul of animals, while the human soul is spiritual and created. Maher's treatment of the immortality of the soul looks to the future of man. Both Gill and Maher endorse free will, and Maher gives a metaphysical proof for that freedom. Maher and Gill are both theists. Maher invokes God as the efficient cause of the creation of the soul, and Gill invokes God as the cause of order in the universe.

Italy

Tommaso Maria Zigliara (1873).⁵¹ Zigliara (1833-1893) was a Italian Neo-Scholastic philosopher and theologian, who became a cardinal of the Roman Catholic Church. He was one of the founders of the Neo-Scholastic movement, superintendent of the critical edition of St. Thomas Aquinas works entitled The Leonine Edition, author of a text *Summa Philosophica* that had world circulation, and co-president of the Pontifical Academy of St. Aquinas. By his teaching and through his writings, he was one of the chief promoters, under Pope Leo XIII, of reviving and

⁵¹Charles J. Callan. *Tommaso Maria Zigliara*. 20 August 2006
 <http://www.history-of-philosophy.com/neo_scholasticism_m.htm>. Franciscus Xav. Calcagno, *Philosophia Scholastica* (Naples: M. D'Auria, 1950), 1: 9, shows the connection between the Neo-Scholastics responsible for the restoration: "Sed silentio praeteriri non debent alii quidam illustres Philosophi, de restauratione Philosophica optime meriti, nempe Can. Vincentius Bozzetti, Can. Caietanus Sanseverino, eiusque discipuli Nuntius Signoriello et Iosephus Prisco et ex ordine Praedicatorum Card. Thomas Zigliara, Card. Zephirinus Gonzales, et P. Albertus Lepidi, qui postea fuit Sacri Palatii Magister." Ioannes Di Napoli, *Manuale Philosophiae*, 4: 53.

promoting Thomistic philosophy and theology throughout the entire Church. In his own Dominican Order and in some seminaries and universities, the teaching of St. Thomas had never been interrupted, but it was Zigliara who gave a special impetus to the movement that made Thomistic philosophy and theology dominant in the Catholic world.

Zigliara was born in Bonifacio, Corsica, in 1833 and died in Rome in 1893. He did his classical studies in Bonifacio under Rev. Aloysius Piras, S.J. At eighteen years of age, he joined the Dominican Order in Rome, and was professed in 1852. He was always a brilliant student. He studied philosophy in Rome and theology in Perugia. In 1856, Zigliara was ordained to the priesthood by Joachim Cardinal Pecci, Archbishop of Perugia. Appointments to teach philosophy at Rome, at Corbara in Corsica, and at Viterbo quickly followed. Back in Rome, he became the regent (head professor) of the Minerva College. When Pope Leo XIII was elected, Zigliara was made a cardinal, and appointed prefect of the Congregation of Studies, which regulated the courses in all the seminaries in the world. Zigliara's *Summa Philosophica* was the textbook of seminaries in Europe, Canada, and the United States for many years. Around 1920, this book was so influential that it was the textbook for the philosophical examination in the National University of Ireland.

Caesare Carbone (1935).⁵² Carbone was an Italian Neo-Scholastic philosopher and priest who taught in the regional Catholic seminary in Apulia, Italy. He wrote his books in Latin, and his concern was for his seminary students. His purpose, which was to provide extensive material in

⁵²Caesare Carbone, *Circulus Philosophicus*, 2 vols. (Turin: Marietti, 1935), especially 2: 285 concerning visibility of essence, 2: 346-347 concerning accidental change, 2: 519 concerning final causality, and 2: 549 touching hylemorphism. Calcagno, *Philosophia*, 104-108, not only treats the usefulness of such a scholastic debate for the students, but gives the process, the duties of the participants, and an example of how the Neo-Scholastic disputation proceeds.

two volumes for scholastic disputation, was unique among the Neo-Scholastic philosophers of the twentieth century. In the tradition of the public *Questiones Disputatae* of the Middle Ages, every seminary in the early nineteenth century had a solemn disputation at least once a year in Latin concerning some philosophic topic to help students actually see a living scholastic debate; and such a process was even more useful since it was a preparation for the eventual Latin oral defense of doctoral dissertations.

Carbone treated some important preliminary issues for this dissertation. First, he opposes ideology, by noting that neither divine revelation, nor human assertion can be the only first criterion of truth. Against this, we have already seen that Nogar argues to the fact of evolution by the consensus of scientists. Second, Carbone also notes that sciences are distinguished by the way in which the same object is known, so this forms a basis of understanding that both philosophy and empirical science can treat evolution, but each in its own way. Third, Carbone notes that science is defined as the effect of demonstration, and yields knowledge of a thing that is certain and evident due to the necessity of its causes. Of course, this definition of science is based on the deductive power of the Aristotelian syllogism, rather than the inductive process of modern empirical science. Such a definition favoring deduction then opened the debate in the twentieth century as to whether philosophy and science are essentially different (Maritain) or not (Mondin).

Carbone treats issues in evolution, although he does not treat evolution directly. First, he treats the problem of knowing the substance's essence, which cannot be known simply by the accumulation of visible and material qualities alone, but by the intellect. This raises the question even for the philosopher, no less for the empirical scientist, of how to determine if evolution has occurred to change one species to another species. Second, Carbone treats the distinction between

substance and accidents, which lead to the question of how small changes can result in a substantial change that can be termed evolution of a species. Third, Carbone argues to the existence of a final cause, which Darwinism denies in espousing natural selection. Fourth, Carbone argues to the mutual causality of matter and form, following the hylemorphic theory of Aristotle, which will help to philosophically understand the mechanism of evolution.

Ioannes Di Napoli (1958).⁵³ Di Napoli was an Italian Neo-Scholastic philosopher and a priest who is a seminary professor. His four volume *Manuale Philosophiae* is intended as a Latin class text. His books have ecclesiastical approval. Di Napoli has a well-argued approach to evolution. He is very clear, and up-to-date for his time.

Di Napoli treats evolutionary topics. He rejects abiogenesis. He is against Darwinism, which maintains evolution of both the body and the soul. He rejects evolutionary Mechanicism. He affirms the need for formal causality, against mere natural selection by chance. He affirms the essential difference between man and the other animals. He treats human speech extensively. He affirms the need for creation of the soul by God. For man, Di Napoli affirms free will. He also treats the future of man by affirming the immortality of the soul. He is a theist.

Di Napoli holds that Spiritualistic Evolutionism is possible and even probable. He is careful to note that evolution is not a scientifically proven fact. Di Napoli rejects Darwinism (evolution of both body and soul), which is Materialistic Evolutionism. Di Napoli notes that the evolution of the

⁵³Ioannes Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), especially 2: 180-181, for the precise thesis on the creation of the soul and that the hypothesis of the evolution of the body is not impossible; 2: 127, for human free will; 2: 189, for the future goal of the human race (*fine hominis*) related to the immortality of the soul, and see especially 2: 179, for Spiritualistic Evolutionism, with special divine intervention, as “possible or even probable” (*...possibilitas vel etiam probabilitas...*)

body is not impossible. He makes a clear distinction between bodily evolution (which involves change or becoming, whose Latin term is *feri*), and the spiritual soul's creation (which gives it not just essence but existence, whose Latin term is *esse*). He rejects crass notions that the body of the monkey and man are the same, arguing psychological and physiological differences. He notes that many still defend Creationism and Fixism, and these positions are still able to be sustained; but the latest fossil evidence creates serious difficulties for these theories. Therefore, as possible, Di Napoli defends Spiritualistic Evolutionism, which holds that the soul was created by God, but the body had an evolutionary origin. Di Napoli distinguishes this Spiritualistic Evolutionism to be of two kinds. Some hold that the body of man had its de facto origin from a simian body without a special divine intervention. This opinion is held by Mivart, Le Roy, and Teilhard de Chardin. Di Napoli rejects this type of Spiritualistic Evolutionism. Some hold that the body of man had an evolutionary origin with special divine intervention, in so far as God previously transformed a simian body into the human body and then infused in this human body a created soul. Catholics who hold this doctrine are D'Hulst, De Sincety, Bouyssonie, Wasmann, Gemelli, and Marcozzi. This second opinion of Spiritualist Evolutionism with special divine intervention is the position defended by Di Napoli.

Di Napoli sums up his position by affirming that Spiritualist Evolutionism as philosophically not impossible. This theory would be impossible, if the following would be admitted: eternity of material, abiogenesis, identity between monkey (animal) and man, merely mechanical transformation without any finality, and without divine intervention. But Spiritualistic Evolutionism with special divine intervention does not admit any of these things. Therefore, the philosophical hypothesis of Spiritualistic Evolutionism with divine intervention is not impossible.

However, if Creationism and Fixism are shown to be less likely, then this kind of Spiritualistic Evolutionism with divine intervention would be possible and even probable. Nevertheless, for Spiritualistic Evolutionism even with divine intervention to be a true scientific doctrine, there would still be required more valid biological arguments.

Joseph Gevaert (1992).⁵⁴ Gevaert is an Italian Neo-Scholastic who has written a serious study in philosophical anthropology.

Gevaert's book on *The Problem of Man (Il Problema dell'Uomo)* is a good example of the new Neo-Scholasticism. There is no ecclesiastical approval, although the book is in a series of theology books. There is no thesis form, but rather expansions of general topics of philosophic interest in the philosophy of man. The book is directed to the college student or the educated general reader. Unfortunately, for students there is no index, but rather a seven page table of contents. The footnotes are all fairly current, and in Italian, English, Spanish, German, and French, with generous citations of original texts. The popularity of the book is clear, since it has gone through eight editions.

Gevaert has a Neo-Scholastic point of view concerning liberty, immortality, and God. He treats the non-scholastic modern philosophers extensively: Kant, Jaspers, Heidegger, Marcel, Sartre, Camus, Marcuse, Simone de Beauvoir, and Feuerbach. He does cite the scholastic tradition, for example, Rahner, Maritain, Boros, Tresmontant, Delooz, and Teilhard de Chardin. He does not deal directly with St. Thomas Aquinas, who is mentioned in a footnote, but not directly in the bibliography. Gevaert is also an expert on the philosophy of Emmanuel Levinas.

⁵⁴Joseph Gevaert, *Il Problema dell'Uomo: Introduzione all'Antropologia Filosofica*, 8th ed. (Turin: Elledici, 1992), 250: "In più l'amore del Dio creatore che 'pone' la persona è essenzialmente in grado di garantire l'eternità del dono personale dell'esistenza."

Gevaert is important in facing the question of human existence in the world. He does this from a Christian point of view. He opens his treatment of man from a social point of view. He decries the loss of this social aspect of man from the time of Cartesian Rationalism, through post-Kantian Idealism, to Collectivism. He promotes the ethical and metaphysical primacy of “the other.” He wants being with other to also include being for others.

Gevaert treats the body of man in a philosophic and creative way. He does not do this in an evolutionary way. His adversary is the Dualism of Descartes, Malebranche and Leibniz. He finds the significance of the human body as the place of human actuation, as language, as principle of instrumentality, as a limit, and as the point of orientation toward others. He is concerned with “human” sexuality.

Gevaert treats the soul of man. When Darwin published *The Origin of Species*, it was quickly interpreted by some philosophers (Haeckel, Nietzsche, Marx, Engels) in a way that moved from anthropology to just material science. But there is more to the world of man than just material, as proved by society, culture, and history. Man is a spirit as much as a body.

Gevaert then seems to continue his treatment of man (part two of his book) in the more traditional order of scholastic psychology. First, he treats the intellect. Secondly, he treats the will, with an emphasis on freedom. However, he then creatively adds a chapter on the historicity of man, and another on the final goal of man. The treatment of this final goal involves the immortality of the soul and the promise of being with God.

Gevaert is useful for this dissertation in his opposition to Materialism, his view of the dignity of the body, his free will in society, his future of man’s immortal soul, and God as the final promise. Gevaert notes that the love of the Creator God is the eternal guarantee of the gift of

personal existence. Accordingly, Gavaert uses creation in a creative way and is more interested about the present and future of man, than about man's origins.

Fiorenzo Facchini (1993).⁵⁵ Facchini is an Italian Neo-Scholastic who is the ordinary professor of anthropology at the University of Bologna. He also teaches paleontology in the School of Archeology at the University of Bologna. Facchini is an evolutionist and a theist. Facchini treats evolution both as a scientist and as a philosopher. His presentations touch issues of the human evolutionary past and future.

Facchini notes that evolution is a problem. The debate over what set off evolution and shaped it is still open. It is not easy to determine when man appeared in the history of life, and so hypotheses are founded on when, where and how man arose. It is important to know the criteria behind the hypothesis. He notes that Darwinist scientists have a tendency to ideology.

Facchini notes that solutions to the problem of the evolution of man must be faced biologically, culturally, and philosophically. Certain physical conditions were necessary for the emergence of man: a fit environment, brain development for cerebral areas connected to language, ability to stand erect and bipedalism. Certain cultural or comportmental criteria had to be fulfilled

⁵⁵Fiorenzo Facchini, *Il Cammino dell'Evoluzione Umana* (Milan: Jaca Book, 1995), treats the separation of man from the time of the hominids, and shows a complex process involved with culture. Fiorenzo Facchini, "Evolution and Creation," *L'Osservatore Romano*, English ed., 16 January 2006. Fiorenzo Facchini, *Evoluzione Umana e Cultura* (Berscia: La Scuola, 1993), describes culture as the sociological niche of humanity; culture is based on man's ability to plan for the future and his symbolic capacity; hominization can be detected through culture. Fiorenzo Facchini, "Emergenza dell'Uomo nell'Evoluzione: Aspetti Biologici e Culturali," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 89-106. Fiorenzo Facchini, *Origini dell'Uomo ed Evoluzione Culturale: Profili Scientifici, Filosofici, Religiosi* (Milan: Jaca Book, 2002), maintains that man is not an animal like the others, since man has cultural behavior; the current view of evolution is based on cultural behavior. Jesús Villagrasa, "Evoluzione, Interdisciplinità e Metadisciplinità," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 6.

to show the capacity for culture: tools actually fashioned, territorial and social organization, religion, planning, and symbolization to indicate capacity for language.

Facchini believes in the evolution of the body of man. Six million years ago there was a divergence in the lineage of the anthropomorphic apes and the cluster of Hominid species. Two million years ago, the human lineage emerged. *Homo habilis* evolved to *Homo erectus*, to which *Homo sapiens* is related. 150,000 years ago, modern man developed.

Facchini notes the discontinuity between biological evolution and culture. There is an ontological difference between man and the other animals. Man expresses himself in culture. Facchini underlines that culture constitutes an “anomaly” in the evolutionary process because it permits man to adapt himself to different environments and so to occupy the whole earth. By culture, man always appears more in contrast to natural selection, and it is man who now largely directs the process of biological evolution. The emergence of man implies and essentially recognizable discontinuity in culture, which reveals itself on the empirical level in the specific behavior of man.

Facchini notes a spiritual principle in man, observable from culture. The behavior of man, creator of culture is self-conscious and free, capable of self determination. This reveals the metabiological nature of the human species. The genetic base, which does influence human behavior, does not normally appear so determining as to suppress free will. Just when man first received a spiritual soul is impossible to say, since the soul itself is outside empirical observation. However, it does not seem reasonable that the soul emerged gradually. Human psychology enters the spiritual sphere at once or not at all. There is no gradual development of the human psyche, but the presence or absence of abstractive intelligence or self-consciousness. While the soul of

man is not the object of direct empirical science, the soul leaves traces in its cultural productions that are signs of the specific activity of man, and these signs are observable by science.

Facchini is not in favor of the Intelligent Design Theory. First, despite the shortcomings of the Darwin's model (science), it is a methodological fallacy to look for another model (theological) outside the realm of science, while pretending to do science. Secondly, Intelligent Design Theory introduces an external and corrective greater cause (God) to explain what still may be discovered by science working on genetic mutations and the environment. Thirdly, Intelligent Design Theory cannot explain why catastrophic events and mutations were not avoided.

Pasquale Giustiniani (2000).⁵⁶ Giustiniani is an Italian Neo-Scholastic philosopher. He was born in 1951. He is philosophy professor in the "St. Thomas Aquinas Section" of the Pontifical Faculty of Theology of South Italy, in Naples. He writes in the Italian language, not Latin. He has published two books and various magazine articles. He has submitted an article to an International Congress.

Giustinini wrote a book on philosophic anthropology. He treats new questions in anthropology, but notes the difference between empirical anthropology and true philosophical anthropology. He treats the problem of man in the twentieth century, and the consequences of a philosophical anthropology. He is very conscious of the modern philosophical trends and their founders: the personalistic anthropology of Max Scheler (1874-1928), the Neo-Kantian anthropology and ontology of Nicolai Hartmann (1882-1950), the Dualism of Descartes (1596-1650), the Existentialism of Karl Jaspers (1883-1969), the Neo-Hebraism of Martin Buber (1878-1965), the Personalism of Gabriel Marcel (1889-1973), and the founders of today's philosophical

⁵⁶Pasquale Giustiniani, *Antropologia Filosofica*, 4th ed. (Monferrato: Piemme, 2000).

anthropology, Arnold Gehlen and Helmut Plessner. On the side of traditional scholasticism, Giustiniani affirms Hylemorphism, the immortality of the soul of man, and the unity of body and soul which makes up the total person. Giustiniani cites Aquinas on the spiritual soul created directly by God, the substantiality of the soul, and the profound unity of body and soul. Very helpful is his fifteen pages of "Reasoned Bibliography," and his frequent footnotes which cite sources in Italian. For a 168 page book, he has a very full six page table of contents, but no index. Giustiniani cites Joseph De Finance and Giovanni Mondin as some of his Neo-Scholastic sources.

Giustiniani treats evolution. He explains the hypothesis of Charles Darwin (1809-1882) and the development of this into a general doctrine by Ernst Haeckel (1834-1919) and the promoters of Positivism in Europe. Giustiniani perceives this Materialism will cause difficulties for traditional Neo-Scholastic theoretical positions such as: from less cannot come more; the effect cannot be greater than the cause; the soul cannot come from material. Darwinism continues to be a dogma in scientific circles even now. The Synthetic Theory of evolution was elaborated by Huxley. Theodosius Dobzhansky explained how higher species can be an effect of differentiation and isolation of higher animals. George Gaylord Simpson elaborated the theory of Quantative Evolution in the 1940s. The theory of Punctuated Equilibrium was proposed by Stephen Jay Gould of Harvard and Niles Eldrege. There are other critics of Darwin, including the Biblical Fundamentalists and the Creationists. There are also casuistic or tentative theses such as the work of Teilhard de Chardin, or the work of Xavier Zubiri, who places Evolutionism (nurturing nature) into the context of traditional metaphysics. Giustiniani stresses the need to safeguard four important points. First, the soul is not reducible to pure materiality. Second, Giustiniani affirms that the passage from pre-man to hominids to modern man is not an evolution of the species within

a single human genus, but man is a unique species. Third, even if an apparent evolutionary chain of psychic development is discovered, this is not a step in physico-mechanical evolution, but the indication of an essential change caused by a principle (the soul) ontologically diverse from matter. Fourth, should evidence demand some acceptance of evolution, this demand would involve divine intervention.

Pedro Barrajon (2005).⁵⁷ Pedro Barrajon is an Italian resident and a Neo-Scholastic. He has a Catholic perspective, for he quotes Pope John Paul II favorably. He is a philosopher, for his interest is in epistemology, by concern for philosophic values and concern for philosophic distinction. By concern for values, Barrajon wants to know the philosophic value of any theory of scientific importance. By concern for philosophic distinction, Barrajon wants to distinguish the grades of knowledge implicit in considering evolution. He writes in Italian. He favors Evolutionism against Fixism. He also cites as one of his sources, Selvaggi at the Gregorian University.

Barrajon participated in the International Congress on Evolution between 23 and 24 April 2002 at the Pontifical Atheneum *Regina Apostolorum*, in Rome. His paper on evolution developed two topics. First is the value of Evolutionism as related to science, philosophy and theology. A scientific theory of evolution must be open and integrated in a global vision of reality. Philosophy gives such a vision on the rational level. If Revelation is accepted, theology can add insights. Secondly, the essential difference between man and other animals is due to the spiritual soul of man created directly by God. Such a soul cannot evolve from infrahuman animals. If

⁵⁷Pedro Barrajon, "Evoluzione, Problemi Epistemologici e Antropologici," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 245-272.

evolution happens, the soul is directly created and infused by God when the evolutionary mechanism has prepared a body adapted to receive it. Science alone is not able to detect the divine intervention, nor can science alone detect the spiritual soul.

Barrajón treats evolution explicitly. As to method, Barrajón advocated dialogue in exploring the theory of evolution. Nevertheless, Barrajón is clearly Catholic in quoting Pope John Paul II, who maintains that man is both body and spirit, and who maintains the essential difference between man and beast. In epistemology, Barrajón wants to both link and separate science, philosophy and theology; and Barrajón rejects Scientism, the ideology that science always knows best. In ontology, Barrajón affirms the unity of man but the duality of body and soul; he affirms the immediate creation of the soul by God; he affirms that God creates the human person; and he notes that the paradox of man (noted in the Second Vatican Council document on the Church in the modern world: *Gaudium et Spes*, 22) deepens the understanding of Christian anthropology.

Barrajón has four conclusions with regard to evolution. First, evolution has great value to help to know the physical world, but it is not the only theory. Second, evolution does not have absolute value, for Popper says it is subject to falsification. Third, the ideology of Scientism presents evolution as a philosophy to give the theory greater validity. Fourth, some scientists today use evolution to promote atheism.

Fernando Pascual (2005).⁵⁸ Fernando Pascual is an Italian Neo-Scholastic who participated in the international conference on evolution between 23 and 24 April 2002 in Rome at the

⁵⁸Fernando Pascual, "Evoluzionismo e Bioetica: I Paradigmi di V. R. Potter, H. T. Engelhardt, e P. Singer," in *Evoluzione*, ed Rafael Pascual (Rome: Studium, 2005z), 347-360. See also: Fernando Pascual, "Stranieri Morali e Consenso Sociale: Una Discussione sulla Proposte di H. T. Engelhardt," in *Il Cannocchiale* 3 (2000): 119-140. Jesús Villagrasa, "Evoluzione," 2.

Pontifical Atheneum *Regina Apostolorum* where he gave a paper in Italian and participated in the dialogue. Fernando Pascual notes that bioethics is the science that regulates man in regard to human and non-human life. So bioethics must consider the meaning of human beings, the meaning of life in its various forms, how life is formed and transmitted, and the place that man has among the living creatures. In bioethics, evolution can either be a foundational thought, or evolution can be a point of reference.

Fernando Pascual critiques the bioethics of Hugo Tristram Englehardt Jr., who is professor of philosophy at Rice University in Houston, Texas. Englehardt maintains that an ethics cannot be formed as long as there are two roads, rational and religious. Fernando Pascual disputes Englehardt's rejection of religion, and objects to the following four theses of Englehardt. First, Englehardt maintains that human nature is a product of chance. Second, Englehardt maintains that there is no ultimate reality to follow. Third, Englehardt maintains evolution does not look to the fulfillment of the individual nor society. Fourth, Englehardt maintains that we can only look to ourselves for a point of moral reference. Fernando Pascual disputes all these positions.

Vittorio Possenti (2005).⁵⁹ Possenti is an Italian Neo-Scholastic who participated in the international conference on evolution between 23 and 24 April 2002 in Rome at the Pontifical Atheneum *Regina Apostolorum* where he gave a paper in Italian and participated in the dialogue.

Possenti presented a paper on life, nature and teleology. He is persuaded of the necessity to develop an adequate philosophy of life to the level of contemporary biological discovery. This will allow dialogue between science, philosophy, and theology. Possenti wants philosophy to

⁵⁹Vittorio Possenti, "Vita, Natura e Teleologia," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 199-228. Jesús Villagrasa, "Evoluzione," 2, and 8-9.

deepen two concepts: nature, which is the internal principle of movement, and life, which is the principle of self-movement. In the light of this, Possenti wants to meditate on two problems: finality, and the search for a Thomistic principle which can be the foundation for a philosophy of the evolution of life.

Possenti treats finality, following Aristotle and Aquinas, as an ample and analogous notion applicable to ontogenesis and to phylogenesis, since it is not restricted to conscious subjects. Nature is self-activity finalized. Also, a non-deliberate goal or a non-intentional goal is a real goal, says Possenti.

Possenti endorses Hylemorphism. He seeks for a philosophical foundation and explanation of evolution in Aquinas, with his concepts of nature, organism, mutation, substantial transformation, and cause. In particular, the concept of Hylemorphism is viewed as useful by Possenti. In particular, Possenti notes a difficult but helpful passage in St. Thomas on phylogenesis (Aquinas *Summa Contra Gentiles* 3. 22). Phylogenesis, the transformation from species to species, seems possible in the ontological Hylemorphism of Aquinas, where the potentiality of prime matter is successively and progressively actuated, and where in the prime matter there is a metaphysical tendency toward diverse forms. This evolutionary tendency, if the fact of evolution can be demonstrated with sufficient empirical proof, is able to offer an ontological picture capable of giving a philosophical account of the evolution of life. The hylemorphic explanation would obviate the opposition of creation and evolution, according to Possenti.

Piero Viotto (2005).⁶⁰ Viotto is an Italian Neo-Scholastic who participated in the

⁶⁰Piero Viotto, “Antropologia ed Evoluzione in Jacques Maritain,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 361-378, especially 361 where Viotto cites St. Thomas, “Gli elementi sono dunque per i corpi misti, e questi per i viventi, tra i quale le piante son per gli

International Conference on Evolution between 23 and 24 April 2002 in Rome at the Pontifical Atheneum *Regina Apostolorum* where he gave a paper in Italian and participated in the dialogue. Viotto writes in Italian. Viotto notes that Maritain explored all of philosophy in his works, but Viotto only considers Maritain's views on the biological growth of the human person. Viotto adds a historical dimension to metaphysical principles.

Viotto notes that Maritain confronted the problem of evolution, both cosmological and biological, during his whole life. After his graduation from the Sorbonne, Maritain studied embryology with Hans Driesch in Heidelberg. Driesch was conducting experiments that revealed the inadequacy of Darwinism and Materialism in evolution. He started with an analysis of Bergson's evolutionary views, and attempted to restore the critical realism of St. Thomas for the evaluation of scientific doctrine. Maritain learned from Bergson that Evolutionism did not have to exclude finalism. Then, Maritain was able to overcome the implicit immanentism of evolution by finding in St. Thomas an ontology of transcendence. Maritain was then able to conclude, since each spiritual and rational soul is created by God, that man is born in evolution, but not of evolution. Later in life, Maritain was to deal with evolution again, considering the theory of Teilhard de Chardin.

CONCLUSION: The conclusion for the Italian Neo-Scholastic philosophers brings to light a number of similar views concerning Evolutionism. First, there is a concern about communicating views about evolution, since almost everyone is in education: Carbone, Gevaert, Di Napoli,

animali, e gli animali per l'uomo, l'uomo in effetti è il fine di tutto il movimento di generazione (Aquinas *Summa Contra Gentiles* 3. 22) . Piero Viotto, *Introduzione a Maritain* (Bari: Laterza, 2000). Piero Viotto, "Maritain, Jacques," in *Dizionario Inter-disciplinare di Scienza e Fede* (Rome: Urbaniana University Press-Città Nuova, 2002), 1939-1951. See also: Jacques Maritain, "Vers une Idée Thomiste de l'Évolution," in *Nova et Vetera* 2 (1967), 87-136.

Facchini, Barraón, and Giustiniani. Barraón is especially clear about the need to dialogue and the triple relation of evolution to science, philosophy, and theology. Possenti endorses the need for dialogue. Secondly, some clearly have moved to modern questions and presentations in the vernacular: Gevaert, Facchini, Giustiani and Fernando Pascual. Such presentations are easier to read than the old scholastic texts, but may not be as clear. Thirdly, the authors of the traditional texts are not without problems, such as the limitation of science to syllogistic demonstration by Carbone. Nevertheless, Neo-Scholastics like Possenti still look to Aquinas for metaphysical principles to form a foundation for the philosophy of the evolution of life. Fourth, several Italian Neo-Scholastics affirm Evolutionism, such as Di Napoli who argues Spiritualistic Evolutionism is not impossible, or Facchini who notes a posteriori proofs for evolution involve both the right external conditions and evidence of culture. In fact, Di Napoli states that should the fossil record diminish the credibility of Creationism of species, or diminish Fixism, then Evolutionism would be probable. Barraón favors Evolutionism. Fifth, some systems of evolution are rejected, such as Darwinism by Di Napoli, Mechanicism by Di Napoli, Fixism by Barraón, and Materialism by Gevaert, Giustiniani, and Viotto, and Antifinalism by Carbone, Di Napoli, Possenti and Fernando Pascual. Sixth, Hylemorphism was a recommended theory by Carbone, Giustiniani, Viotto, and Possenti. Seventh, the essential difference between man and other animals was affirmed by Di Napoli (due to psychology, physiology and language), by Facchini, Giustiniani, and Barraón. Eighth, the possibility of the evolution of the body of man was affirmed by Facchini (under favorable conditions) and Giustiniani. Facchini noted that Pope Pius XII noted that evolution of the body of man was possible. Ninth, the spiritual soul of man was created by God according to Di Napoli, Barraón, Giustiniani, and Viotto. Tenth, the future of man is not just in the material

world, but involves man's immortal soul, says Di Napoli, Gevaert, and Giustiniani. Facchini also looks to the future of man as a development of culture. Eleventh, abiogenesis is denied by Di Napoli. Twelfth, man in society has free will, according to Di Napoli, Gevaert, and Giustiniani. Thirteenth, the need for God is affirmed by Di Napoli, Gevaert, Facchini, and Giustiniani. Barrajon asserts that some scientists use evolution to promote atheism. Fourteenth, Facchini argues against the Intelligent Design Theory, as ideological theology, as external and corrective, and unable to answer extinction. Carbone also argues against ideology. Giustiani argues against the Biblical Fundamentalism and ideological Creationism. Barrajon argues against Scientism. Fifteenth, the eternity of the world was denied by Di Napoli. Sixteenth, Carbone rises metaphysical problems relevant to evolution, such as the inability to actually see essences, and the relation of accident to substantial change.

North America

John J. Rolbiecki (1939).⁶¹ Rolbiecki is an American Neo-Scholastic layman who taught in the school of philosophy of the Catholic University of America, in Washington, D.C. He is a serious philosopher, and has also written on the political philosophy of Dante Alighieri. He writes in English, even though his book on the prospects of philosophy was published in 1939. There were clerical students at the Catholic University, but Rolbiecki wanted a wider audience of lay

⁶¹John J. Rolbiecki, *The Prospects of Philosophy* (New York: Benzinger, 1939), especially 52: "Evolution is now universally admitted in scientific circles"; 76: "It must be admitted that both Aristotle's and Aquinas, view of the physical cosmos was defective, yet a slight modification of the argument (for the existence of God), many will hold, makes it as valid as any other"; 77: "After all, Thomas Aquinas held a sort of axiom the tenet that when events or occurrences in nature can be explained by the activity of secondary causes, one may not ascribe them to the direct intervention or the primary cause, God."

students who are thinking of spending more time in an intensive study of philosophy. His book on philosophical prospects is written from a historical point of view, and has notice of ecclesiastical approval. He makes a survey of a number of philosophical topics, however it is not an introductory textbook. Each chapter is a section of scholastic philosophy, but written in a modern colloquial style, with some brief indications of future tasks of philosophy. Themes that run through the presentation are the need for cooperation between science and philosophy, and a concern for students. Pedagogically, Rolbiecki wants to awaken interest in philosophy, arouse an impulse for deeper investigation, and by lifting the philosophic veil only partially raise a real curiosity in the reader.

Rolbiecki treats evolution as the problem of life. He rejects abiogenesis, and accepts the biological axiom, all life from life (*omne vivum ex vivo*), but he is open to the possibility that life could be produced in the laboratory in the future. He rejects the theory of Svante Arrhenius that life comes from some extra-terrestrial source. Rolbiecki endorses the view that philosophy has something to say about the concept of life. He rejects Materialism, after noting that Fechner and Wundt made psychology independent, so that philosophical psychology became empirical psychology, which became biology, which is being transformed into bio-chemistry, and bio-chemistry is being reduced to chemistry pure and simple. Thus, Rolbiecki notes, the enigma of life is disappearing like a mirage. Rolbiecki affirms the Vitalism of Hans Driesch. Rolbiecki believes that evolution is now universally admitted in the scientific and philosophic circles. He generally affirms the essential distinction between man and other animals, personally wants to see more empirical study. He notes that many affirm the evolution of man's body. He notes that St. Augustine did not account for the origin of all living things by special creation, but supposed that

the powers innate in nature could bring forth life.

Rolbiecki treats evolution as a fruitful concept. He tends to reject Hylemorphism of Aristotle and the Scholastics. Against Kant, Rolbiecki holds a limited universe in space and time. Rolbiecki also maintains that Mechanicism is not a good explanation for the cosmos. He approves of finality in the cosmos. He maintains that a Supreme Being created the universe and gave it purpose. Against evolutionary society, Rolbiecki notes that the development of society has taken place quite in accord with the nature of man. Against the agnosticism of Herbert Spencer, Roliecki holds that the argument of Aristotle and Aquinas for a Prime Mover does lead to an affirmation of the Creator.

Celestine N. Bittle (1945).⁶² Bittle is an North American Neo-Scholastic Capuchin priest and educator. He has written several textbooks in English in the philosophical areas of logic, epistemology, ontology and cosmology. In cosmology he treated Hylemorphism extensively. His book on philosophical psychology is for the undergraduate student who already has a fairly good acquaintance with this department of philosophy. The book treats empirical psychology only as a background for the course. Bittle puts special emphasis on the unity of man, and not just on mental functions. Bittle bases his philosophy on Aristotle, Aquinas and the Neo-Scholastics. His work is an excellent summary of Neo-Scholastic philosophical psychology in the first half of the twentieth century. He does not write in thesis form, but his philosophical positions are well argued

⁶²Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), especially page 579 evolution probable, 482 for necessary finality, 581 against Mechanicism, 480 against Materialism, 469 against meristic Vitalism, 475 favoring Hylemorphism, 493 for material soul in animals, 585 for the hypothesis of man's bodily evolution, 612 favoring survival after death, 595-599 for social life with no indication of evolutionary determinism, 574 for no necessary evolutionary atheism, and 582 that the fact of evolution is still debatable. See also: Celestine N. Bittle, *Reality and the Mind* (Milwaukee: Bruce, 1936).

and very clear. His treatment of philosophical psychology is very extensive and more complete than many English manuals. His bibliography is suited to books available to students in English, although some French and Latin texts are noted. The major contribution of Bittle to this dissertation is his vision of the future of man in this world and the endorsement of survival after death as morally certain in philosophy.

Bittle treats evolution extensively. He maintains that evolution is philosophically possible, but the fact of evolution is still debatable. He is against evolutionary Mechanicism and Materialism. Finality exists in nature where inherent natural purposefulness can be found. Vitalism that is meristic is rejected, although there is a vital principle in plants, animals and man. Bittle endorses Hylemorphism by maintaining two incomplete principles, primordial matter and the vital principle, form living organisms, except for the substantial soul of man. There is a discontinuity between man and the other animals, who only have a material vital principle. The evolution of the body of man is a fair working hypothesis. The human soul cannot evolve. The future of man involves his free growth of self, an active and free role in the world, and the development of culture, including abstract language. Survival after death for man is morally certain. Bittle opposes evolutionary abiogenesis. Bittle describes social life with no indication of evolutionary determinism. Bittle notes that evolution of itself is not atheistic, although some promoters of evolution are atheists.

Henri Renard (1946).⁶³ Renard was a North American Neo-Scholastic Jesuit educator at

⁶³Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), especially pages 13-14 on metaphysics, 62-70 on finality, 66 on eduction from the potency of matter, 67-69 on the history of Hylemorphism, 119-102 for demonstration of the existence of God, and 222 for the relations between philosophy and theology. Ibid., 72, "For him (Aquinas) every accidental change is somehow, at least mediately, an actuation of the substance. The individual, therefore,

the University of St. Louis. His book on the philosophy of being had ecclesiastical approval. His book is in question form, rather than in thesis form. He does respond to these questions with development of the problem, the Neo-Scholastic solution, and philosophical proofs. In his replies to problems, Renard is valuable in citing the different schools of scholastic philosophy founded by Duns Scotus, Suarez and Aquinas. Clearly, Renard is a follower of Aristotle, whom he cites thirty-two times, and Aquinas, whom he extensively quotes in Latin. Renard recommends that the teacher who uses his book should read St. Thomas to pupils. Renard is aware of current trends in Thomism, and cites both Maréchal and Boyer, and is aware of modern problems involving Empiricism, the Idealism of Kant, and Neo-Hegelianism. Renard notes that philosophy can help theology.

Renard is concerned about metaphysics. He notes the decline of metaphysics due to the emphasis on the physical sciences, attributed largely to Bacon, together with the contempt that the Renaissance had for the culture of the Middle Ages and for the philosophy of St. Thomas. In the modern era, two views of reality arose. The emphasis on sense knowledge was found in the English school of Empiricism, held by Hume, Locke, Mill, Spencer; by French Positivism espoused by Taine and Comte, and by German Materialism espoused by Buchner and Feuerbach. The second trend is the subjective and psychological tendencies of Descartes which led to Kant's Idealism and the modern idealist school of Hegel. Neither Empiricism nor Subjectivism will help

should never be considered an immutable substance, but as one constantly changing, constantly becoming. Even though this becoming may not affect the essence of the individual sufficiently to produce a substantial change, still in view of the fact that it is drawn out of the potencies of the substance and actuating these potencies, it must profoundly affect at least some of the individual's future activities...(added note 54)...At times accidental becoming prepares and disposes the substance, at least *a longe* for such a change (*genratio substantialis*)."

with the analysis of reality necessary to deal with evolution. The restoration of metaphysics of Aquinas is necessary to adequately deal with Evolutionism.

Renard treats the principles needed to make a philosophical study of Evolutionism. The principle of finality is necessary. The doctrine of Hylemorphism is useful to understand evolution. The new material form of the species would be educed from the potency of the matter by the action of an extrinsic agent. The fact of accidental change can prepare and dispose the substance at least *a longe* for a substantial change, which would philosophically explain the process of evolution. He also notes that philosophy is separate from theology, but can help theology. The existence of God can be demonstrated.

Brother Benignus (1947).⁶⁴ Brother Benignus of Jesus, a Brother of the Christian Schools, was a North American Neo-Scholastic professor of philosophy at Manhattan College in New York City. His book on nature, knowledge and God is an introduction to Thomistic philosophy. The footnotes in the book are almost exclusively references to St. Thomas. The purpose of Brother Benignus is to present a single coherent integral picture of philosophy, rather than just its various departments. St. Thomas had such an integral view. The secondary purpose is to communicate this integral view of philosophy to students. In method, Benignus tries to follow St. Thomas to: first, be concerned with some concrete being; second, follow pedagogical order so that the new builds on what is already known; third, quickly explain the basic principles of philosophy; and

⁶⁴Brother Benignus, F.S.C., *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), see especially: pages 146-147 for St. Thomas on the nature and grades of life, 147 for human life, 152 on finalism, 153 on the uniqueness of life, 154 on the unexplained origin of life on earth, 157 on the failure of Positivism to explain the origin of life, 163 on science and philosophy with regard to life, 160 for Hylemorphism as opposed to Mechanicism, 499 for St. Thomas having no objection to evolution in general or to abiogenesis, and 550 for God as the perfection of life.

fourth, show repeated application of the principles of St. Thomas.

Benignus treats life. St. Thomas defines life as immanent activity (Aquinas *Summa Theologiae* 1. 18. 2 ad 2, and also Aquinas *Summa Theologiae* 1. 18. 3 ad 1). Life is unique. Organic beings have unity and purposefulness.

Benignus treats Evolutionism. He notes that St. Thomas has no theoretical objection to the Evolutionism, neither to the hypothesis of abiogenesis nor to the hypothesis that all life evolved. Benignus notes the text of St. Thomas (Aquinas *Summa Contra Gentiles* 3. 22) which indicates that matter has an appetite for the most perfect activity attainable. This means that the first cause of the processes through which matter passes in evolution is the goal of those processes. Accordingly, Benignus defends finality by noting the principle that “every agent acts for an end” (*omne agens agit propter finem*) as St. Thomas says (Aquinas *Summa Theologiae* 1-2. 1. 2; Aquinas *Summa Contra Gentiles* 3. 2). The proof of the Principle of Finality is from the fact that there has to be a reason to act (Principle of Sufficient Reason) and another proof is that every act tends to some specific goal (from act and potency in change). Benignus argues against Mechanicism, since the parts of an organism do not account for the whole; he argues against Materialism, since chemistry alone does not explain life; and he argues against mere Vitalism, since there is no need to add some special life force to the adequate hylemorphic theory.

Benignus treats the evolution of man. St. Thomas notes grades of biological life: vegetable, sensitive, and intellectual; so that the perfection of life depends on the degree to which the movements of the living agent are determined by the agent itself from within. Human life is superior to other animals since humans have intellect and free will. Man is a hylemorphic composit. Man has a true vital principle distinct from his material body.

Benignus treats the fruitfulness of the concept of evolution. He notes that abiogenesis has no theoretical objection against it. But science has not been able to account for the origin of life. While abiogenesis is not impossible, there is no evidence in its favor. Evidence against abiogenesis is the fact that it does not happen now, where the conditions are favorable for life. Concerning the evolutionary cosmos, Benignus maintains with St. Thomas (Aquinas *Summa Theologiae* 1.11; Aquinas *De Potentia Dei* 1. 5; Aquinas *Summa Contra Gentiles* 2, 15-38) that God created the cosmos out of nothing by a free act of His will. Concerning evolutionary atheism, Benignus gives philosophical proofs for God as creator, but also notes the reality of secondary causes through which evolution could operate. Benignus' proofs for secondary causes come from St. Thomas (Aquinas *Summa Contra Gentiles* 3. 69).

Benignus also treats belief and ideology. Some scientists dislike divine creation and then make a dogma out of Materialism, while some non-scientists simply find the doctrine of creation incredible and too astonishing for acceptance. Benignus notes that human reason is limited because it is dependent on the senses. St. Thomas (Aquinas *De Trinitate* 3. 1) gives justification for revelation of truths that can be obtained through reason, by citing Maimonides. St. Thomas (Aquinas *Summa Contra Gentiles* 1. 5. 7) also defends the rationality of faith, since man's reason is limited and man should avail himself of the easy way to attain his destiny. In any case faith perfects reason. St. Thomas (Aquinas *Summa Theologiae* 2-2. 5. 3. c) notes that there can be no conflict between faith and reason, since truth is above both, and "only the false can contradict the true."

Benignus treats the foundation of the Intelligent Design Theory. Even if there is design, this does not simply prove there is a designer. Finality is one of the four Aristotelian causes.

Every end or goal is subsequent to its cause. If solely in time, the end would not exist until the future; during the process there would be no existence. But a cause (like the final cause) must be prior to its effect. So the intrinsic finality of things needs a cause outside time; timeless. This would be a transcendent final cause or causes. But the transcendent cause is one, for even if there is a plurality of orders in the universe, all of them demand a First Order or Ordainer as their ground or cause.

Paul J. Glenn (1948).⁶⁵ Glenn was a North American Catholic Monsignor and Neo-Scholastic who taught at St. Charles Borromeo College in Columbus, Ohio. He has a doctorate in both theology and in philosophy. He wrote a class manual in fundamental metaphysics, in English, as one of a series of eight books for college students. He notes that the book does not take the place of the teacher, so there are no references, no study questions, and no foreign readings.

Glenn treats ontology, the “science of being,” which is sometimes called general metaphysics. He warns that ontology cannot be turned into a simple study. Significantly, in 1949, Glenn notes that there are few manuals in ontology available in the English language. However, Glenn is a traditionalist in scholastic philosophy, and states that his purpose is traditional. He differs from those for whom the “older writings” have small appeal. He notes that between 1937 and 1949, many Catholic colleges have omitted ontology altogether, but may teach logic, ethics,

⁶⁵Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), especially pages 326 for the principle of causality, 327 for the principle of finality, 299 for God as First Efficient Cause, 93 for equivocity, and especially 130-132 for the principle of specification, which allows some key to the possibility of evolution: “Now the form of any individual body might have been conjoined with some other quantity of matter, and in that case the emerging individual would not be in all respects this precise individual reality as we now find it.” Ibid., preface vi, Glen indicates some possible problems with Neo-Scholasticism in North America.

and psychology. Further, he notes that psychology is done in the laboratory, and “dragged momentarily from the academic scene.” There appears to be a movement to the empirical and the practical, that is somehow detrimental to Neo-Scholasticism.

Glenn treats metaphysical concepts that are useful in the evaluation of Evolutionism. He affirms the principle of causality and the principle of finality. He treats the use of equivocal concepts. He notes how “species” is constituted metaphysically. He affirms God as the Supreme Intelligence and Infinite Wisdom.

Mortimer Adler (1952).⁶⁶ Mortimer Adler was a North American Jewish Neo-Scholastic educator at the University of Chicago. He also produced the Great Books series for the Encyclopedia Britannica in Chicago. The Great Books program had publications even for children to enter into dialogue, and Adler had the same kind of dialogue, presumably on a higher level, with corporate leaders at the Aspen Institute in Colorado. Adler was a researcher into St. Thomas Aquinas. Although born a Jew, he was baptized an Episcopalian, and converted to the Roman Catholic Church just prior to his death.

Adler’s book on the great ideas, originally called the *Syntopicon to the Encyclopedia Britannica’s Great Books of the Western World*, was first published in 1953, but has been popular and in print until the latest edition in 1999. The book consists of 102 essays featuring ideas that collectively defined Western thought; the book is over one thousand pages and contains more than half a million words. Adler presents the philosophical material, including points of view on almost three thousand questions, in a way that is clear and fair to all sides. Adler gives the historical

⁶⁶Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999). Author Clifton Fadiman, on the book jacket, notes that this is Adler’s finest work.

references, material for lively debate and relevance for today. Adler was especially noted for his position that the written material is only the beginning, and that dialogue and debate are the real work of philosophy. Adler's work is a true modern descriptive (not Neo-Scholastic) synthesis. Adler, in his own essay, notes that the twentieth century has seen dramatic discoveries and great technological advances but these cannot be understood without seeing them in the larger context of the past. Relevant to this dissertation are Adler's treatment on evolution, chance, mechanics, matter, animal, man, soul, happiness, immortality, life and death, astronomy and cosmology, liberty and God. In short, Adler's work for discussion touches every thesis proposed for the academic part of this dissertation.

Adler's publications verify the man: philosopher, educator, and writer on topics associated with the evolution of man's political, economic, and future society. Also his general publications are no less useful as background to this dissertation. Adler was a true philosopher and wrote: *The Conditions of Philosophy, Philosopher at Large, Aristotle for Everybody, Six Great Ideas*, and *Ten Philosophical Mistakes*. Adler was concerned with education and wrote: *How to Read a Book, The Paideia Proposal, The Paideia Program, Reforming Education: The Opening of the American Mind*. Adler was concerned about the humanity of man, man's politics and economics, and the future of man, and his writings reflect this concern: *The Difference of Man and the Difference It Makes, What Has Man Made of Man, The Idea of Freedom, The Common Sense of Politics, The New Capitalists*, and *A Vision of the Future*.

George P. Klubertanz (1953).⁶⁷ Klubertanz was a North American Neo-Scholastic Jesuit

⁶⁷George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), especially pages: 422 for monophyletic evolution ("perhaps even a single one"), 423 for his theory of equivocal causality and chance, with the influence of Providence, 424

priest teaching at the University of St. Louis. He acknowledges, in 1953, that new problems for philosophy have arisen in the twentieth century. He does not use the thesis system, but does follow the scholastic topics. He writes in English, but gives both footnotes and bibliographical sources in Latin, French, and English. Klubertanz notes that his book is too much for a single year of treatment of the philosophy of human nature, and the teacher will need to reduce its use appropriately. His book is excellent with good arguments, not just facts. His book is very useful for this dissertation due to an original arguments favoring Evolutionism.

Klubertanz treats Evolutionism directly in his book on the philosophy of human nature. There is a need to be careful with terminology in this book, since Klubertanz only treats atheistic Evolutionism as an adversary. Klubertanz is a Neo-Scholastic and notes that the writings of St. Thomas are closely integrated, so the texts must be re-read and re-thought in the light of modern problems. Klubertanz has positive and original arguments favoring evolution. He endorses monophyletic evolution. He uses equivocal causality, chance, and Providence to explain the dynamic possibility of evolution. Klubertanz answers the two serious objections against evolution from the principle of causality, namely, no effect can be greater than its cause, and effects need to be similar to their causes. He holds the possibility of the evolution of the body of man, but not the soul of man. He holds the possibility of abiogenesis. Klubertanz notes that the factual establishment of evolution is extremely difficult, and maybe impossible.

for the possibility of abiogenesis, and 425 for the possible evolution of the human body, but the soul is created by God. Ibid., on page 423, Klubertanz answers the two very serious objections to evolution: the effect cannot be greater than the cause (the principle of causality), and secondly, the effect has to be of the same kind as its non-concognitive cause (*omne agens agit sibi simile*).

Timothy Gannon (1954).⁶⁸ Gannon was a North American Neo-Scholastic layman and educator. He was professor of psychology at Loras College in Dubuque, Iowa.

Gannon wrote on psychology as the study of human behavior. He wrote for college students. There is a bibliography at the end of each chapter, with many articles, but all in English. He wrote in English, and was very concerned with scientific psychology, although his book follows the scholastic order and endorses scholastic doctrine. He cites Aristotle, and recommends St. Thomas in the suggested readings. His book was printed with ecclesiastical approval.

Gannon notes evolutionary themes. There is an essential discontinuity between man and animals. Man has conscious control of himself, so that Gannon would not be in favor of evolutionary society. Gannon rejects Mechanicism, Materialism, and endorses the Hylemorphism of Aristotle. Gannon rejects social evolution by remarking about the danger of pressing parallels too far, for example in applying the herd instinct to humans when the real causes of apartment life for humans may be environmental and economic. Gannon also rejects the Determinism of Freud.

Gannon raises a serious problem for Neo-Scholastic philosophy of nature, since the sciences of biology and experimental psychology upon which the philosophy of nature is partly

⁶⁸Timothy Gannon, *Psychology: The Unity of Human Behavior*, with a foreward by Thomas Verner Moore (Boston: Ginn, 1954), especially pages: 15 for rejecting Mechanicism, 19 for rejecting Materialism, 19 for existence of the human soul as life principle, 20 for endorsement of Hylemorphism, 362-363 for essential discontinuity between man and the other animals, 221, 369 and 376 for the rejection of social evolution. Ibid., 454, Gannon notes personality as more than just genetic constitution, but also involves character which adds the contribution of development and learning to personality. Ibid., 3: "Differences of opinion on minor details have a stimulating effect upon a science; but when these differences go down to its foundations, they lead to confusion and lost motion (in the new science of modern psychology)." Ibid., iii-iv, Thomas Verner Moore confirms the lack of unity in the science of psychology from his personal experience, and laments that the lack of a philosophy (such as Aristotle, used by Gannon), an adequate psychology is still "in the process of development."

built were in flux themselves. In other words, the philosophical explanation of evolution would be difficult in the context of a shifting and reversing empirical biological science (for the body of man) and a shifting psychological science (for the soul of man). Differences in empirical biology were fundamental. Modern psychology slowly started about 1839 with Ernst Weber's investigation of sensory reactions. Theodor Fechner (1801-1887) and Wilhelm Wundt (1832-1920), two of the most influential pioneers in experimental psychology, regarded the new science as the study of the conscious process. Sharing this view of psychology as the science studying the conscious process were von Helmholtz, G. E. Müller, Lotz, Brentano, Stumpf, and Kulpe in Germany, and William James (1842-1910) in America. Younger men who spread this view in the United States were Scripture and Ladd at Yale, Baldwin at Princeton and John Hopkins, Cattell of Columbia, Frank Angell of Stanford, and Pace at the Catholic University of America. But less than twenty-five years later, Sigmund Freud (1856-1939) was declaring that the unconscious is the only true domain of the psychologist. Before another decade had passed, John B. Watson in the United States had openly rebelled against the validity of Wundt's method of introspection. Watson declared that only by abandoning all reference to consciousness and by devoting itself to the objective observation of behavior could psychology become a real science. Watson promoted Behaviorism (the study of any overt response) with Frank Angell in America, Vladimir Bekhterev and Ivan Pavlov in Russia, Lloyd Morgan and George Romanes in England, and Jacques Loeb and von Uexküll in Germany. About the same time, 1912, Franz Brentano (1838-1917) in Vienna was establishing the psychology of Gestalt (German for "form," "structure," or "configuration"). Gestalt became influential only late in the 1920s in the United States and more from the influence of the Gestalt psychologist Max Wertheimer from Berlin. The purpose of this short history of

modern psychology is at least a question of definition; how to define psychology, the soul, human unity, and human personality. The facts about man are plentiful, but the synthesis is wanting. The various schools of psychology are as far apart today as they have ever been. Added to the difficulty of dealing with evolutionary biology and psychology is the mind-body dilemma proposed by the founder of modern philosophy, René Descartes(1596-1650). Descartes' Mechanicism was transmitted into psychology in the form of psychophysical parallelism, which holds the mind and body can have events without affecting each other. After a century of struggle with this problem, no solution has been reached by the Cartesians.

Gannon's book has an introduction by Thomas Verner Moore, the former head of the department of psychology and psychiatry at the Catholic University of America, who notes the difficulty of presenting a unified view of empirical psychology up to 1954. Scholars in America were influenced by the "New Psychology" at the close of the nineteenth century. This resulted in Sensationalism, the false philosophy that knowledge can be completely accounted for by sensations from objects perceived. At the same time, about 1800, educators in psychology broke with philosophy entirely. But due to Sensationalism, teachers lost interest in the "New Psychology." Subsequently, Freud and Behaviorism became popular. As a result, especially due to the loss of philosophy, there was still a problem in finding some true and adequate psychology. This left Neo-Scholasticism with not much of a material object from which to construct a modern philosophy of man.

Kenneth Dougherty (1956).⁶⁹ Dougherty was a North American Neo-Scholastic Catholic

⁶⁹Kenneth Dougherty, *Cosmology: An Introduction to the Thomistic Philosophy of Nature* (Peekskill, N.Y.: Greymoor, 1965), especially pages 104-119 on the affirmation of Hylemorphism, 180 for man as intermediate goal of the universe, 180 for the possibility of rational

priest of Atonement Order of New York. He has a doctorate and has published books in metaphysics, general ethics, and logic, in addition to cosmology. He is an active teacher, and his books for college level students contain review questions and suggested readings at the end of each chapter.

Dougherty's treatment on cosmology covers the main doctrines of the Thomistic school concerning the universe. He considers modern opposing views. Positively, he orders his presentation according to the four causes of Aristotle. At the beginning of the course, he describes the object and method of cosmology. Illustrations from modern scientific data are employed throughout the work, while the traditional scholastic treatment is more in favor of training students in abstract thought. No doubt the method of Dougherty is more suitable to the college student of today. He sees no philosophical problem in holding the creation of the cosmos, and then holding the mediate formation of the heavenly bodies and the earth through natural evolution. He endorses Hylemorphism. He rejects Pantheism, Materialism, and Agnosticism. He endorses the principle of finality and notes that man is the intermediate goal of the universe, while God is the ultimate goal

extra-terrestrial beings, 182 for the existence of a Supreme Efficient Cause and an Ultimate End of the universe. Ibid., evolution is treated by Dougherty on pages 76, 113-117, and 152-155, especially 152: "There is no repugnance in holding the creation of the cosmos and the mediate formation of the heavens and the earth through natural evolution. God could endow material forms with such powers and activities that they could evolve from some primeval state to other states according to the laws of their natures. Astronomy and geology speculate on how inorganic matter by its powers and activities could have formed the non-living world by a process of evolution. However, it is still disputed...Kant and Laplace...spiral-nebula theory...Chamberlain-Moulton theory...Abbé Lemaître of Louvain...Frederick Hoyle...Whether the cosmos evolved from some other state than that in which it now exists or not in no way destroys the nature of the cosmos as a mutable, finite, contingent, and multiple entity which is not self-sufficient." Ibid., 5, is the introduction by Fr. Ignatius Smith, O.P., dean of philosophy at the Catholic University of America, who on the one hand pleads the need for "new presentations" and on the other hand notes "the demand for texts in Scholastic Philosophy continues...It is and indication of vitality..."

of the universe. Dougherty's view of man as the first creature of importance in the universe is based on St. Thomas (Aquinas *Summa Contra Gentiles* 3. 112). Should rational animals be found on other planets, this would still prove that the intermediate goal of the universe is rational animals, according to St. Thomas (Aquinas *Summa Theologiae* 3. 3. 5 and *ibid.* 3. 3. 7).

Dougherty is important for the issue of the survival of scholasticism. On the one hand, the material base of philosophy is beginning to expand and seems to edge out metaphysics. On the other hand, Ignatius Smith, in the preface of Dougherty's book seems to indicate otherwise. We should look at both the negative and the positive evidence. Negatively, Dougherty's work appears to be a turning point of sorts. Although he uses the strict scholastic method, including the thesis system, he incorporates more scientific facts in support of his theses, thus expanding the material base of his philosophical treatment. Dates are important as a possible indication of a turning point. Dougherty's first edition of cosmology was in 1952, with a Japanese edition in 1959, and another edition in 1965. Father Ignatius Smith, the Dominican dean of the school of philosophy at the Catholic University of America, agrees with this newness by noting a demand for new texts, new discussions, and a new presentation. So it appears that the old Neo-Scholasticism is disappearing. Affirmatively, Father Smith notes that "the demand for texts in scholastic philosophy continues," which is an indication of the vitality of the field. Smith notes that "this demand is most evident in those areas of philosophy that have the closest contact with the physical sciences."

Vincent Edward Smith (1958).⁷⁰ Smith was a North American Neo-Scholastic layman who

⁷⁰Vincent Edward Smith, *The General Science of Nature* (Milwaukee: Bruce, 1958), especially pages: 40 for evolution, 204 for the evaluation of chance in evolution, 221 for evolution and finality, 214 for the rejection of Mechanicism, 216 for proof of the principle of finality, 243 for God as the final goal of all creation, 246 for man as a mediate goal of creation, 246 for proof for the existence of God from created effects, and 378 for God as Prime Mover. Vincent

is widely known for his many books. He is the professor and director for the Philosophy of Science Institute at St. John's University in Jamaica, New York. He received his doctorate from the Catholic University of America. He did additional studies at Fribourg, Harvard, the Massachusetts Institute of Technology, and the Institutum Divi Thomae. He was the editor of the magazine *New Scholasticism*. He was the former president of the American Catholic Philosophical Association.

Smith is interested in philosophical pedagogy. He notes that in modern colleges, philosophy is an equivocal term, because it may be logic, or the philosophy of nature including philosophical psychology, or either general or special ethics, or metaphysics, which includes epistemology and natural theology. Smith notes that the treatment of the philosophy of nature is fundamental in the order of learning of St. Thomas (Aquinas *In Phys.* 1. 1. 7; Aquinas *De Trinitate* 3. 1), even if metaphysics and natural theology are more important.

Smith argues against evolution and Darwinism. Smith evaluates arguments for radical indeterminism from biology. In Darwin's theory of evolution, changes of one species to a higher species are brought about by slow accidental variations. The tendency to variations, Smith admits, is a basic character of life. Smith says variation is a first principle of living things. In ascribing the evolution of living things to slow accidental variations, Darwin chose natural selection by chance one of the fundamental causes of the living world. Smith argues, however, that while chance is real, it cannot be the primary causality in the biological world. Chance can exist only where there is a previous purpose or order, according to St. Thomas (Aquinas *In Phys.* 2. 10; Aquinas *Summa Contra Gentiles* 2. 39). The man went to the market for food, and by chance met his creditor.

Edward Smith, "Evolution and Entropy," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 305-326, especially 309, where he notes that we face problems and paradoxes even without opposing evolution.

The cow searched for food, and by chance was hit by lightning. In short, events that result from chance, no matter how numerous they may appear to be, must always be a secondary kind of reality, because they are a deviation from an order which is more primary. Chance is relative and secondary. Chance cannot be the absolute and primary cause of biological change, which is evolution.

John Courtney Murray (1960).⁷¹ Murray (1904-1967) was a North American Jesuit Neo-Scholastic. He was considered a prominent American intellectual, whose picture appeared on the cover of *Time Magazine* (12 December 1960). He was trained in scholastic philosophy and theology, but was mainly known for his theological efforts to reconcile Catholicism and religious pluralism. He was born in New York City in 1904, and entered the New York Province of the Society of Jesus in 1920. He studied the classics and philosophy at Boston College, graduating in 1927, and quickly obtaining his Master's degree only a year later. He taught Latin and English literature in the Philippines at the Ateneo de Manila. He returned to the United States and was ordained a Roman Catholic priest in 1933. He studied at the Gregorian University in Rome for a doctorate in theology, which he completed in 1937. He taught Catholic Trinitarian theology at the Jesuit theologate in Woodstock, Maryland. In 1941, he became the editor of the Jesuit journal, *Theological Studies*. He was the leading public figure dealing with tensions between religion and public life, as dealt with in his best known book, *We Hold These Truths*. He died in Queens, New York, in 1967.

Murray slowly became an activist for freedom. He was consultant to the United States

⁷¹Wikipedia, the Free Encyclopedia. *John Courtney Murray*. 11 January 2007 <http://en.wikipedia.org/wiki/John_Courtney_Murray>. See also: John Courtney Murray, *We Hold These Truths: Catholic Reflections on the American Proposition* (Sheed and Ward, 1960).

Catholic bishops and the religious affairs section of the Allied High Commission, for whom he helped draft and promote the 1943 *Declaration on World Peace*. This was an interfaith statement of principles for post-war reconstruction including the dispersal of state-collected taxes to German churches. He collaborated with Robert Morrison MacIver of Columbia University to assess academic freedom and religious education. Several American bishops consulted Murray on censorship and birth control and he argued for substantive public debate. In 1966, he was appointed to serve on John F. Kennedy's presidential commission that renewed Selective Service classifications for inductees to the military. He supported a classification for those opposed to war on moral grounds, but this suggestion was not accepted.

Murray was opposed for his activism on behalf of religious freedom. In 1944, Murray was an ecumenical traditionalist, and argued "no salvation outside the Church." By 1944, Murray was cooperating with other theists for a right that was actually demanded and protected in the First Amendment to the Constitution of the United States. Historically, however, the civil rights of Catholics were attenuated. Murray promoted human dignity for all in practice. In 1954, Alfredo Cardinal Ottaviani, prefect of the Congregation for the Doctrine of Faith, in Rome, demanded that Murray cease writing on religious freedom, and stop the publication of his two most recent articles. The same effort for religious freedom was being made in Europe by Yves Congar, and it met with the same opposition.

Murray, at the Second Vatican Council, played a fundamental role in persuading the Council Fathers to positively endorse religious freedom, which they did in the ground-breaking declaration *Dignitatis Humanae* (1965). He had not been invited to the first session (of four) of the Second Vatican Council. He was invited to the 1963 second session. He drafted version three

and version four of the endorsement of religious freedom. Murray continued to write on religious freedom, even claiming that the arguments offered by the declaration on religious liberty by the Second Vatican Council did not go far enough. Murray used philosophy to define the term “human dignity,” and he argued that this human dignity is the philosophical foundation for the right to religious freedom.

Benedict M. Ashley (1961).⁷² Ashley was a North American Neo-Scholastic Dominican priest who was professor of philosophy at the Dominican House of Studies and at the Aquinas Institute, River Forest, Illinois. He was also dean of the department of philosophy at St. Xavier University, Chicago. He had received his doctorate in sociology at the University of Notre Dame, Indiana, and received a second doctorate from the pontifical faculty in River Forest. Ashley cooperated in contributing to the book on philosophy of science in honor of William Kane.

Ashley promoted dialogue. He wrote about the sociological aspects of science. Social science is founded on natural science. There must be a dialogue between sociology and theology. Revelation shows the nature of the Church and its history in outline, but profound analysis is needed to fill in that outline. Metaphysical methods are not adequate for the study of the concrete. Theology does not concern itself with the same problems as the social sciences down to the historical particular. Therefore, the social sciences need to evaluate the present time, the social forces, social trends, and social institutions. Social science founded on natural science can open a Christian vision today by a dialogue between sociology (science) and theology (faith).

⁷²Benedict M. Ashley, *Aristotle's Sluggish Earth: The Problematics of "De Caelo"* (River Forest, IL: Albertus Magnus Lyceum, 1958). Benedict M. Ashley, “A Social Science Founded on a Unified Natural Science” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 469-485.

Olivia M. Barrett (1961).⁷³ Barrett was a North American Neo-Scholastic Sister of Mercy (R.S.M.). She received her doctorate (Ph.D.) in chemistry from Notre Dame University. She was the assistant professor of chemistry at St. Xavier University, Chicago. She was on the committee for planning science studies at St. Xavier University.

Barrett was concerned about teaching evolution. Evolution, the nature and origin of life, is taught as part of a four semester college course at St. Xavier University. The biological problems in empirical science provide an excellent opportunity for the students to examine the validity of Aristotelian principles. The mind-body problem in psychology provides a good example of the importance and perennial value of Aristotelian principles in the development of psychology. The basic question of the curriculum is the relationship between science and philosophy. Pope Pius XII stressed, and Barrett personally believes, that there must be a unity of science and philosophy. Principles of philosophy reveal the nature of scientific problems. Philosophy helps to give precision to the choice of relevant material. Philosophy helps to see limitations in explanation. Philosophy uses principles that may be useful in correlative areas. Philosophy may help to identify views that are similar, and which are opposed. Therefore, philosophy, and especially the philosophy of nature, is useful to science.

Barrett has a unitary view of science and philosophy. Since all knowledge comes through the senses, knowledge begins with observation, so Aquinas places natural sciences at the root of

⁷³Olivia M. Barrett, "The Role of Science in Liberal Education," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 486-502. The actual details of curriculum reform involving science and philosophy were published in the *Transactions of the Illinois State Academy of Science* (February 1957). Curriculum reform and review actually began as early as 1932. This reform involved 60 elementary schools with 800 teachers. Philosophical help was provided by the Albertus Magnus Lyceum.

knowledge. Therefore, natural science becomes the very foundation of a liberal education. Philosophers need science. Science needs sound philosophy. Mutual understanding and cooperation are needed. The habit of science is the epitome of intellectual growth. The philosophy of nature includes both the philosophical and the positive aspects. Barrett accordingly sides more with this unity of philosophy with science (William Kane's position) than the view that science and philosophy are essentially distinct (Jacques Maritain's position).

Daniel A. Callus (1961).⁷⁴ Callus was an English Neo-Scholastic Dominican priest. He cooperated in submitting a study in the philosophy of science in honor of William Kane at the Dominican House of Studies in River Forest, Illinois. Callus wrote about the history of science. Callus himself had a doctorate in Medieval history from the University of Oxford. He was a Fellow of the Royal Historical Society, professor emeritus of the University of Malta, regent of studies at Blackfriars in Oxford, lecturer in medieval thought at the University of Oxford, and widely known as an authority on thirteenth century Oxford and Paris.

Callus treated the problem of unity of form. The problem is important in the study of evolution, since evolution is substantial change in species. The problem of unity of form is whether the same individual has just one form, or many substantial forms. If the substantial form is the determining principle of composite being, how can philosophy account for various perfections? Does one substantial form give one perfection only, so there would be a substantial form for each perfection (many forms)? Or does a single form determine the nature of the entire thing (one

⁷⁴Daniel A. Callus, "The Origins of the Problem of Unity of Form," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 121-149, gives a survey of literature of the Middle Ages. Ibid., especially pages: 122 for the question applied to man, and 149 for the solution by Aquinas, which is not actually specified. Klubertanz, *Philosophy*, 298-321 gives the full solution, and 321 cites Aquinas' texts.

form)? Boethius maintained the single form for the whole (*omne esse ex forma est*). The issue is not irrelevant to man, who is composed of vegetative (nutrition), animal (senses), and human (intellectual) life. Is man one unit or three? The question was elaborated by degrees. The problem was eventually solved by St. Thomas (Aquinas *Summa Theologiae* 1. 76. 1-7).

Charles DeKoninck (1961).⁷⁵ DeKoninck was a Canadian Neo-Scholastic layman, dean of the faculty of philosophy from 1939 to 1956 at the University of Laval, and editor of *Laval Théologique et Philosophique*. He was professor of natural philosophy and lecturer in theology at Laval University, Québec, Canada. In 1966 Laval University named a building in his honor. He was widely known for his publications in the philosophy of science. He was also visiting professor of philosophy at the University of Notre Dame, Indiana. DeKoninck contributed to the studies in the philosophy of science in honor of Willam Kane of the Aquinas Institute. DeKoninck wrote about the philosophy of science.

DeKoninck wrote about Darwin's dilemma. Darwin rested his theory of evolution on observation. Darwin saw the geometrical increase in organisms, and at the same time Darwin saw that the numbers of creatures appear to remain constant. From these two observations Darwin deduced the struggle for existence. However, Darwin argues that all organisms struggle for existence, animals and plants. Darwin was aware that it is more difficult to see this struggle for existence in plants, so Darwin himself noted that he used the struggle for existence in "a large and metaphorical sense." However, to be exact, the Neo-Scholastic philosopher would say that the

⁷⁵Charles De Koninck, "Darwin's Dilemma," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 231-246, especially pages: 234 about the necessity of understanding the application of equivocal, analogous, and univocal terms, and 243 for the necessity of precise definition.

term “struggle for existence” predicated about plants, animals and man as an equivocal term, which means that struggle for existence is a very different concept when applied to men, animals and plants. DeKoninck, commenting on this equivocal concept, states that there stands the dilemma. However, the problem is not just about the application of terms, but rather understanding. Sir Julian Huxley takes the equivocal struggle for existence very literally. In accord with this literal interpretation of the struggle for existence, Sir Julian Huxley deduces that there is no purpose in nature, just struggle for a chance outcome. Then, Huxley maintains that Darwin’s contribution is precisely that there is no purposeful activity in nature, and all natural activities must be explained without any recourse to purpose. DeKoninck then goes on to show that the conclusion of Sir Julian Huxley has four different flaws.

Jocelyn Garey (1961).⁷⁶ Garey was a North American Neo-Scholastic Dominican nun with a pontifical license in philosophy (Ph.L.) from the University of Fribourg, and a doctorate in philosophy (Ph.D.) from Laval University. She was a professor of philosophy at Dominican University, River Forest, Illinois. She cooperated in the project of studies in the philosophy of science in honor of William Kane of the Aquinas Institute. She wrote about the philosophy of science.

Garey treats “time,” the number of movement. At first, her presentation appears far from our theme of evolution, except for two reasons. First, her model is scholastic method for

⁷⁶Jocelyn Garey, “Time, the Measure of Movement,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 295-304, especially page 302 where the new and better view of time as an a kind of being or imperfect being (*utcumque ens*) is noted by St. Thomas (Aquinas *In Phys.* 23. 5). Nevertheless, in that same commentary on Aristotle, Aquinas defends the Aristotelian definition by saying, “...the totality itself of time is obtained through the ordination of the soul numbering the prior and posterior of motion...:

confronting a real problem, using text analysis, and finding a Thomistic answer. Secondly, time is a being of nature, much like “species,” that evolves. Garey’s problem arises from the fact that motion exists in nature, while time is in the mind of man, so that if there are no men, there would be no time. The young St. Thomas (Aquinas *Scriptum in Liber Sententiarum* 2. 12. 5. 2) thought that time was dependent on the mind. Distinctions and definitions must be considered. Time is not just a “numbering number” which the mind of man counts, but a “numbered number” which is a quality of time, so that “when” is an accident caused by time. In the opinion of Aristotle, time is the number of movement according to before and after. In the opinion of Albertus Magnus maintains that the mind numbers efficiently, but time is numbered formally, because it has multiplicity, distinctions, and otherness. In the opinion of mature St. Thomas (Aquinas *Summa Theologiae* 1. 30. 3) time is not a number with which we count, but a number of things counted, because before and after are different, that is, the “now” of each is different. Thus time is not just a being of reason (*ens rationis*), but rather a being of nature, a kind of being (*utcumque ens*).

Melvin Glutz (1961).⁷⁷ Glutz was a North American Neo-Scholastic priest of the Passionist Order (C.P.). He received his doctorate in philosophy from the pontifical faculty of

⁷⁷Melvin Glutz, “Order in the Philosophy of Nature,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 266-282, especially pages: 276 for the distinction between natural philosophy and other sciences, and 279 for pedagogy. Renard, *Philosophy*, 11, agrees with Glutz’s view of Wolff, noting, “The science of Metaphysics was unfortunately mutilated by Christian von Wolff (1754) into distinct particular sciences which are designated by the curious titles of Ontology, Cosmology, Theodicy, etc.” Concerning the promotion of the Socratic method by Glutz, it is notable that books by Neo-Scholastics do not seem to be popular, there are good sales for Christopher Phillips, *Six Questions of Socrates* (New York: Norton, 2004), jacket: “Six questions of Socrates opens minds and reinvigorates the idea that philosophy not as an academic or historical exercise, but as a way of thinking about how we live now.” Christopher Phillips, not a Neo-Scholastic, is the founder and director of the nonprofit Society for Philosophical Inquiry (www.philosopher.org) and is also the author of *Socrates Cafe*.

philosophy at the Aquinas Institute, River Forest, Illinois. He was the professor of philosophy and the student master at the Passionist monastery in Chicago. He was the author of various studies in psychology. He cooperated in contributing to studies in the philosophy of science in honor of William Kane at the Aquinas Institute. Glutz wrote about the philosophy of science in his treatment of order in nature.

Glutz investigates order in nature. Glutz notes that Wolff and Leibniz wrongly viewed natural philosophy as only the application of metaphysics. There are distinctions involved in the understanding of order of natural philosophy. Order extrinsically distinguishes natural philosophy from science and theology. Order intrinsically distinguishes natural philosophy from cosmology. The reasons for the distinction between metaphysical cosmology and natural philosophy is that natural philosophy uses its own proper principles, and secondly, while the middle term in a metaphysical syllogism is always abstract, the middle term in a syllogism of natural philosophy contains sensory matter in the definition. Further, since the order of learning is from the sensible (more accessible) to the ontologically more perfect (more intelligible), natural philosophy is preparatory to metaphysics.

Glutz investigates the order to investigate nature. The order of learning can involve on the one hand, a process of questioning, and on the other hand, teaching doctrine. Glutz notes that the thesis method is the best for remembering, reviewing, and disputation. However, as a teacher, he prefers the method of Socrates that makes the student hunt for definitions. In this way, the teacher gives the student formation, rather than just information. In the philosophy of nature, the teacher must allow the student to observe. Next the student must learn to define. Let the student fashion a hypothesis. Then the student should be allowed to prove the hypothesis by induction

(demonstration *quia*). All of this analytical material is eventually ordered to real science from deduction (demonstration *propter quid*).

Michael A. Hoskin (1961).⁷⁸ Hoskin is a Neo-Scholastic who cooperated in the studies in the philosophy of science presented to William Kane of the Aquinas Institute. Hoskin obtained his doctorate in mathematics at Cambridge, England. He was a former Fellow of Peterhouse. He was the lecturer in the history of science at the University of Cambridge and at the University of Leicester. He was the general editor of the Newman Association's History of Philosophy of Science series.

Hoskin treats the historical development of the philosophy of nature. Samuel Clarke helped to bring the philosophical ideas of Newton to Cambridge. Clarke went to Cambridge in 1691. His tutor, John Ellis, was a zealot for Descartes. *The Traité de Physique* by Rohault, published both in Latin and French, helped to make Cartesian philosophy a success. Newton developed a rival cosmology to Descartes, but neither Newton's books nor his philosophy made much impact at Cambridge due to the use of Rohault's textbook. Clarke helped the cause of Newton. Clarke annotated Rohault's book, answering objections and adding new material. Clarke was the champion of Newton at Cambridge, where eventually the cosmological system of Newton prevailed.

Roman A. Kocourek (1961).⁷⁹ Kocourek was a North American Neo-Scholastic associate

⁷⁸Michael A. Hoskin, "Mining All Within: Clarke's Notes to Rohault's *Traité de Physique*," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 217-230. See also his contribution to the series, *History of the Philosophy of Science*, entitled *William Herschel*, published by Sheed & Ward.

⁷⁹Roman A. Kocourek, "Motionless Motion," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 283-294. See also: Roman A. Kocourek,

professor of philosophy at the College of St. Thomas, and lecturer at St. Paul Seminary, St. Paul, Minnesota. He majored in history at the University of Minnesota, where he was granted a Master's degree. His doctorate in philosophy (Ph.D.) is from Laval University. He contributed to the studies in the philosophy of science in honor of William Kane of the Aquinas Institute. Kocourek wrote about the philosophy of science.

Kocourek treats the implications for man in the study of philosophy. Heraclitus said that nature loves to hide. Aristotle affirmed this, and added the reason, because induction may not give the specific nature of the thing. The first obstacle is that matter is the basis of intelligibility. The second difficulty for the science of nature is that the intelligibility of the object studied may exceed man's ability to understand it. The goal of Greek philosophy was to carry man beyond the changing existence of sensible nature. The ideal of Aristotle was to find man's goal in the life of the intellect. Modern philosophy either rejects this ideal, or does not even consider this ideal, or considers the ideal as desirable but not practical. Kocourek concludes that philosophy can make a difference in the life of man, and especially philosophy of nature. Aristotle held to the objective reality of nature. Aristotle often used the analogy and the principle that "art imitates nature." The life of man is an art, and the study of nature can make a difference in the conception of man and of role of man in the universe.

Margaret Ann McDowell (1961).⁸⁰ McDowell was a North American Neo-Scholastic and

Introduction to the Philosophy of Nature (St. Paul: 1948).

⁸⁰Margaret Ann McDowell, "The Rhythmic Universe," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 366-382, especially pages: 369 for observation as the scientific basis of fact, 378-308 for the commentaries on Aristotle by Aquinas, and 381 for the argument from order in the universe to a Supreme Intelligence.

Dominican nun. She cooperated in the studies in the philosophy of science in honor of William Kane of the Aquinas Institute. She was trained in science from her master's degree (M.A.) in plant physiology from the University of Ohio, to her master's degree (M.S.) in bacteriology from the Institutum Divi Thomas, and her doctorate (Ph.D.) in medical research. She was the professor and chairman of the department of biology at the College of St. Mary of the Springs, Columbus. She has written many scientific papers. In 1961, she moved from education to cancer research.

McDowell treated the philosophy of nature. The Aristotelian-Thomistic synthesis engages the modern scientific world. Science, in the opinion of McDowell who is a practitioner, confirms the profound insights of the perennial philosophy of nature. This philosophy is an aid to fruitful scientific exploration. It also may awaken the curiosity of the researcher, and point to the First Cause. In addition, scientists need an outlook foster by the humanities and moral philosophy.

McDowell wrote on the rhythmic universe, with special reference to evolution. She notes that all observed marine animals move in rhythm with the cosmos. This built-in rhythm in animals seems to provide an advantage for individual survival and that of the species. Scientists have determined that the regulatory apparatus, the internal factor, in these animals is inherited. However, the external factor is not. Among the external factors were light, tides, cosmic radiation, magnetic fields, temperature, barometric pressure, and sun spots. Order is implicit in this rhythm, a combination of variation and constancy. The hypothesis of ultimate regular motions in the universe causing a regular periodicity is that of Aristotle and St. Thomas (Aquinas *In Metaph.* 12. 6). In fact, since Ptolemy lived after the time of Aristotle, St. Thomas attempted to bring Aristotle up-to-date with the progress of natural science (Aquinas *De Caelo* 2. 17. 7). Nevertheless, St. Thomas was aware of the limitations of his natural science and notes that "Whatever remains

unstated, however, shall have to be investigated by ourselves or taken on the authority of those who investigate such things or developed later from the facts now stated by those who treat these matters” (Aquinas *In Metaph.* 12. 9).

McDowell treats the source of the order in the universe. She defines order as the sequence of one thing upon another according to some principle. She notes that order is not random but the presence of an intelligent and intelligible pattern in the universe. Scientists have always agreed on this, for example, Einstein said, “Der Herr Gott ist raffiniert, aber boshaft ist er nicht.” St. Thomas agrees, in his commentary on the second book of the *Physics* where Aristotle writes “Art imitates nature,” when St. Thomas says, “The reason why art imitates nature is that the principle of activity of art is knowledge...but the reason why natural things are imitable by art is that the whole of nature is ordered by some intellective principle to its goal, in such a way that the work of nature is perceived to be the work of an intelligence, as it proceeds through determinate means to certain goals, which process art indeed imitates in its operation” (Aquinas *In Phys.* 2. 4. 6). McDowell comments that experimental determinations of rhythmicity indicate a more cosmic and universal basis, rather than a particular base. Order occurs from intelligence and human intelligence is the analogue for the Supreme Intelligence of the universe. Chance is the exception to order, so order does not result from chance.

Richard P. McKeon (1961).⁸¹ McKeon was a North American Neo-Scholastic philosopher.

⁸¹Richard P. McKeon, “Medicine and Philosophy in the Eleventh and Twelfth Centuries: The Problem of the Elements,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 75-120, especially page 77 where of the elements, air, earth, water and fire, Thales chose water as a principle, and Hippocrates’ view that all natural objects are characterized by four qualities (hot, cold, dry, and moist), in contrast Aristotle taught that the Ionian and Italian philosophers used the “elements” as principles in their philosophies in “lispering anticipations” of his own use of “causes” as principles.

His doctorate (Ph.D.) is from Columbia University. He was formerly dean of the division of humanities at the University of Chicago, member of the United States delegation to UNESCO, United States counselor of UNESCO affairs at the American Embassy in Paris, and Distinguished Service Professor of Greek and Philosophy at the University of Chicago. In 1961, he was on leave from the University of Chicago, and working at the Center for Advanced Study in the Behavioral Sciences in Stanford, California. He cooperated in the studies in the philosophy of science in honor of William Kane of the Aquinas Institute. McKeon wrote about the history of science.

McKeon treats philosophy dealing with new problems, perhaps a model for modern times. Between 1150 and 1250 A.D., there was a cultural and scientific renaissance. There were new problems. New data were accumulated. The text of Aristotle was translated at that time, and made available in the West. The problem of universals and the problem of the elements both developed from being taught as part of the medieval curriculum, the Trivium, to demonstration, and to systematization. McKeon shows that the problem of the elements is a counterpart to the problem of universals. Regarding universals, McKeon notes three steps. First, science is of the universal. Second, universals are derived from particulars, and applied to particulars. Third, the examination of universal predicates is involved in existence (for being) and experience (by reason). The result is a new scientific method. Regarding elements, McKeon also note three steps. First, wholes come from parts, while parts are composed of simple parts. Second, the nature of the parts depends on how the whole is conceived. Third, determination of samples is involved in a complex of related questions. The result is a new interpretation of data. McKeon notes that the history of the problem of the elements has been repeated and is now being repeated by modern assessment of the theory of the whole, then a reassessment of the parts, and the result is a new theory.

Albert S. Moraczewski (1961).⁸² Moraczewski was a North American Neo-Scholastic Dominican priest. He received his doctorate (Ph.D.) from the University of Chicago in pharmacology. His specialty is the pharmacological differences of mitochondria from selected areas of the brain. He has carried out his research in the department of psychiatry of Baylor University College of Medicine at the Texas Medical Center in Houston. He then became a research specialist on the staff of the Houston State Psychiatric Institute. He cooperated in the studies in the philosophy of science in honor of William Kane at the Aquinas Institute. He wrote about special problems of science involving the brain and mind.

Moraczewski, from the point of view of modern pharmacology, reviewed the philosophical mind-body problem. If mind and body are distinct, how can chemical treatments act on the mind? Can psychotherapy (non-chemical) treat brain chemistry? To answer these questions, history may offer some help. Plato maintained mind and body are linked, metaphorically, with the soul like a charioteer to the body's chariot. Descartes' dichotomy of body and spirit leads to two compete entities. Dialectical Materialism states the mind is just matter in motion. Leibniz maintained that the mind and body were in preestablished harmony established by God; this theory influenced Fechner and Wundt in the "new science" of psychology. J. C. Eccles maintained that the brain-mind liaison takes place mainly in the cerebral cortex, but since Eccles' solution is mechanical, it is not widely accepted. Aristotle, and Galen, hold the hylemorphic theory which allows the immaterial mind interdependence with the body. To date, Moraczewski notes that the solution of

⁸²Albert S. Moraczewski, "Mind, Brain, and Biochemistry," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 383-407, especially pages: 387 for the Hylemorphism of Aristotle to be the "only adequate solution to the mind-body problem," 406 that there is not basis for the opinion that all mental illness is biochemical, and 407 biochemistry, for example arising with fear, could compromise freedom and moral responsibility.

Aristotle is the only adequate solution to the mind-body problem.

Moraczewski endorses Hylemorphism for three reasons. First, only Hylemorphism can satisfactorily explain the essential unity of man. Second, only Hylemorphism can explain man's dependence on biological composition. Third, only Hylemorphism can explain the transcendence of man over biological composition. Therefore, only Hylemorphism can adequately explain man's peculiar nature.

Moraczewski's work touches social evolution. Moraczewski notes that fear arouses biochemical factors that could compromise freedom and moral responsibility. The mind does depend on the body externally. The will is influenced by emotions and feelings. However, the mind and will function with a certain independence from material limitations. The mind and will are spiritual. There is no basis for the theory that all mental illness is biochemical. Behavior can be influenced, but the ultimate determination of behavior depends on the intellect and will, unless completely inhibited.

John A. Oesterle (1961).⁸³ Oesterle was a North American Neo-Scholastic philosopher. His doctorate (Ph.D.) is from Laval University. He was a Fulbright Research Scholar at the University of Louvain. He was assistant professor of philosophy at the University of Notre Dame, Indiana. He cooperated in the studies in philosophy of science in honor of William Kane at the

⁸³John A. Oesterle, "The Significance of the Universal *ut nunc*," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27-38., especially pages: 27 for the citation from Aquinas, 36 for the reasons for the use of the provisional universal, and 37 for the provisional nature of the bulk of our knowledge. Ibid., 27, Aquinas *In Post. Anal.* 1. 9. 4, notes, "Hoc autem contingit vel 'ut nunc,' et sic utitur quandoque 'dici de omni' dialecticus; vel simpliciter et secundum omne tempus, et sic solum utitur eo demonstratur." His other publications include: John A. Oesterle, *Logic: Art of Defining and Reasoning* (Prentice Hall, 1952); John A. Oesterle, *Ethics: An Introduction to Moral Science* (Prentice Hall, 1957).

Aquinas Institute. He wrote on scientific methodology.

Oesterle distinguishes between the verified universal and the provisional universal. This latter concept is a tool that may be particularly valuable in the investigation of nature. An example of the verified universal is declaring that a swan is a bird, since all swans are birds according to their nature. An example of a provisional universal is declaring that swans are white, since not all swans have not been seen and white is an accident. The provisional universal is mentioned by St. Thomas (Aquinas *In Post. Anal.* 1. 9. 4). There are two complimentary reasons for using the greater dimension of the provisional universal. First, the nature of the human mind is experimental, which derives knowledge from the things themselves. Second, there is an unexpected complexity in the things we seek to know, even sensible things. For example, the eye is the organ of sight, and we initially recognize the eye with reference to our sensations, but now we must delve into anatomy, physiology, chemistry, and physics.

Oesterle treats uncertainty in natural science. The bulk of our knowledge, Oesterle claims, is provisional and in constant need of implementation. The history of science proves that we may be quite certain of our uncertainties. Most of our universals are provisional. Even a true universal such as “what a man is” does not settle all that a man is, once and for all. On the one hand, the definition of man as a rational animal is essential and good. On the other hand, the definition of man as a rational animal is inadequate and incomplete. Much more remains to be said about man. So with the understanding how provisional our knowledge really is, the provisional universal may be a very useful concept for the philosophy of nature.

Sheilah O’Flynn Brennan (1961).⁸⁴ O’Flynn Brennan was a North American Neo-Scholastic. Her doctorate (Ph.D.) from Laval University was in philosophy. She was a former Woodrow Wilson Scholar at the University of Oxford. She was professor and chairman of the department of philosophy at St. Mary’s College, at Notre Dame University. She cooperated in the studies in the philosophy of science in honor of William Kane at the Aquinas Institute in River Forest. She wrote about the philosophy of science.

O’Flynn Brennan treats philosophy of nature. She first notes the importance of definition, since words can also have secondary meanings. She is an Aristotelian-Thomistic philosopher. The danger is that word “nature” is continually modified by science. For Aristotle, the form is primarily and most properly nature. Aristotle defines nature as the principle or cause of being moved or at rest in that which it is, primarily, in virtue of itself, and not accidentally. St. Thomas establishes the meaning of nature right at the beginning of his commentary on the *Physics* of Aristotle. St. Thomas says, “Because everything that has matter is mobile, consequently the subject of natural philosophy is mobile being. For natural philosophy is about natural things, which are those whose principle is nature. Now nature is the principle of motion and rest in that which is. Natural science, therefore, is about those things which have in themselves a principle of motion” (Aquinas *In Phys.* 1. 1)

O’Flynn Brennan treats evolution and nature. St. Thomas comments, “These things are

⁸⁴Sheilah O’Flynn Brennan, “Physis: The Meaning of Nature in the Aristotelian Philosophy of Nature,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 247-265, especially pages: 250-251 for the definition of nature by Aristotle and by Aquinas, 253 for nature as both an active principle (*principium activum et formale*) and passive principle (*principium passivum et materiale*), 256 for the application of the principle of St. Thomas to evolution.

naturally moved, when they are moved by their proper acts, to which they are in potency according to their nature” (Aquinas *In Phys.* 9. 8. 1). When St. Thomas says “to their proper acts” he implies that these things are not in potency to just any acts or even to many acts, but to certain determinate acts fixed by their nature, which is primarily their form. Their form brings them certain perfections in which they find their fulfillment. St. Thomas implies an order of appetite intrinsic to things. Therefore, the passive potency in the case of nature involves a determinate inclination, an appetite. An application may be seen in the case of evolution, says O’Flynn Brennan. Though the active principle must certainly have been outside of nature, the whole process of evolution would have been natural from the standpoint of the passive inclination of matter, always “desiring” as a goal the more perfect fulfillment of its potency. The act conferred was natural, corresponding to a natural potency, though the power that conferred it was not, says O’Flynn Brennan.

O’Flynn Brennan treats cosmic evolution. In considering evolution in this way, “nature” is taken as the whole system of interrelated individual natures. In the case of inorganic things, non-living things, it is very difficult to determine just what is good for them. Although the natural potency in a thing implies an intrinsic order to an act, giving rise to a relation between an appetite and a good, this good need not be considered as a perfection of the thing in its own particular being. If the whole universe is considered, the evolutionary perfection of a thing might contribute to harmony and the finality of the universe. The observed tendencies of things to certain acts very often appear to benefit the whole universe, as seen within the framework of the general intention of universal nature. St. Thomas sometimes gives the example of the tendency of water to be warmed as a simple example of an intrinsic passive principle of natural movement, which could be seen as

contributing to the good of the whole. O’Flynn Brennan notes that the tendency known as “gravity” can also be seen as contributing to the good of the whole universe and preserving general order. Therefore, the order of appetite and good in the universe as a whole is what determines whether or not the movement of a thing toward a goal is natural.

Herbert Ratner (1961).⁸⁵ Ratner was a North American medical doctor. He has his doctorate (M.D.) from the University of Michigan. He did graduate work in bacteriology, public health, and nutrition. He was assistant professor of public health and preventative medicine at the Loyola School of Medicine, Chicago. He had been associated with the Great Books program in biology. He was the director of the Department of Public Health, Oak Park, Illinois. He is a Neo-Scholastic and a participant in the studies in the philosophy of science in honor of William Kane of the Aquinas Institute. He wrote about scientific methodology.

Ratner was interested in the method of investigation and discovery in problems relative to the philosophy of nature. Did William Harvey have some method when he discovered the circulation of blood? Harvey was competent in intellectual development due to his studies at King’s School in Catebury, Caius College in Cambridge, and the Universitas Juristarum at the University of Padua. Harvey based his scientific method solidly on Aristotle, through observation, experiment, reason, and dialogue. Both Aristotle and Harvey did research by observation. The circulation of blood was confirmed by reason and ocular experiment. The opponents of Harvey were the traditional scholastics who were slaves to the conclusions of Aristotle, instead of the

⁸⁵Herbert Ratner, “William Harvey, M.D.: Modern or Ancient Scientist?” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 39-74, especially pages: 47 for the method of Aristotle, 49 for observation, 52 for experiment explained by reason, and 71 for the priority of method over conclusions in natural philosophy.

method of Aristotle.

Edward D. Simmons (1961).⁸⁶ Simmons was a North American Neo-Scholastic. His doctorate (Ph.D.) was from the University of Notre Dame, Indiana. He was the associate professor of philosophy at Marquette University in Milwaukee. He was a frequent contributor to the Neo-Scholastic magazine, *The Thomist*. He cooperated in the studies in the philosophy of science in honor of William Kane at the Aquinas Institute. He wrote about scientific methodology.

Simmons defends the scientific method of Aristotle. In the very beginning of the *Posterior Analytics* Aristotle confronts the famous dilemma of Meno, which disputes the possibility of learning. Meno says either a person already knows what he learns, and this is not learning, or a person is ignorant of what he seeks to learn, and then cannot recognize it when it appears. Aristotle defends the integrity of discourse by introducing the notion of the self-evident proposition. Self-evident propositions are the basic truths of demonstration, and in these self-evident propositions scientific conclusions exist in potency. Aristotelian demonstration represents a true advance in knowledge from the potentiality of the scientific conclusion to its actuality. In

⁸⁶Edward D. Simmons, "Demonstration and Self-Evidence," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 3-26. Simmons cites St. Thomas as confirming Aristotle. Ibid., 4, concerning the need for pre-existing knowledge, "Omnis autem disciplinae acceptio ex prae-existenti cognitione fit" (Aquinas *In Post. Anal.* 1. 1. 9). Ibid., 14, concerning self-evident propositions, "Nam principia per se nota sunt illa quae statim intellectis terminis cognoscuntur ex eo quod praedicatum ponitur in definitione subjecti" (Aquinas *Summa Theologiae* 1. 17. 3 ad 2). Ibid., 15, concerning the traditional divisions of self-evident propositions into *per se nota in se* and *per se nota quoad nos*, and the subdivision of the latter into *per se nota quoad sapientes* and *per se nota quoad omnes*, which are explained by St. Thomas in several texts, including: Aquinas *De Veritate* 10. 12; Aquinas *In Metaph.* 4. 5. 595; Aquinas *In Post. Anal.* 1. 5. 6-7; and Aquinas *De Hebdomadibus* 1. Ibid., 18, concerning the principles of science, St. Thomas says, "Inest enim unicuique homini quoddam principium scientiae, scilicet lumen intellectus agentis, per quod cognoscuntur statim a principio naturaliter quaedam universalia principia omnium scientiarum" (Aquinas *Summa Theologiae* 1. 117. 1). See also: Edward D. Simmons, *The Scientific Art of Logic* (Milwaukee: Bruce, 1961).

reply to Meno, prior to demonstration, the conclusion is not known *simpliciter*, but at the same time, because it is known potentially in its principles, it is not unknown *simpliciter*. Therefore, when a person grasps self-evident conclusions, there is a potential grasp of the scientific conclusions virtually contained therein. Further, the premises of the demonstration, seen together with the middle term of the syllogism, function after the fashion of efficient causes which actuate the potentiality of the conclusion and make it be. All of this is important for this dissertation, since the level of certitude is affected by the possibility of syllogistic demonstration.

Michael Stock (1961).⁸⁷ Stock was a North American Neo-Scholastic Dominican priest. His doctorate in psychology is from the Pontifical University of St. Thomas in Rome. His articles frequently appeared in the scholastic magazine, *The Thomist*. He was the lecturer in psychology at the Dominican House of Studies in Dover, Massachusetts. He cooperated in the studies in the philosophy of science in honor of William Kane at the Aquinas Institute. He wrote about special problems of science.

Stock touches on interpretation of character. This is important to the present dissertation due to the modern consideration of social evolution. Stock elucidates the major psychological formations known to depth psychology. Character defects can occur in the psychological or moral (see Aquinas *Summa Theologiae* 2-2. 104. 5) process of acquiring self knowledge. Some consequences are timidity, rigidity, erroneous conscience (see Aquinas *Summa Theologiae* 1-2. 94. 4) and scruples. These basic attitudes flow from more or less unconsciously adopted behavior. Important and notable for our dissertation, Stock does not regard any of the roots of these

⁸⁷Michael Stock, "Conscience and Superego," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 408-446, especially page 437 where Stock says, "A child is born with no innate ideas about morality or anything else."

problems to be evolutionary. Stock notes the work of Sigmund Freud, who treated mostly the mentally or emotionally troubled, and investigated their problems by means of the technique he invented. Freud realized that factors which operate almost imperceptibly in normally functioning minds would be exposed by the stresses imposed. This may be the reason Freud passed over the role of intelligence in his analysis of human activity. St. Thomas also considered certain psychological problems only in terms of conditions of mental stress, such as rapture and prophecy, and St. Thomas did not fail to mention analogies with mental disease (Aquinas *Summa Theologiae* 2-2. 171-175; Aquinas *De Veritate* 12-13). Stock appears to reject social evolution by way of inheritance, when Stock notes that a child is born with no innate ideas about morality or anything else.

William A. Wallace (1961).⁸⁸ Wallace was a North American Neo-Scholastic Dominican priest. He obtained a M.Sc. in physics from the Catholic University of America, a doctorate (Ph.D.) in philosophy from the University of Fribourg, and a doctorate in moral theology (S.T.D.) from the University of Fribourg. He has done research in magnetic and acoustic field theory, and in ultrasonics. He was professor of natural science and the philosophy of science at the Dominican House of Studies in Dover, Massachusetts. He cooperated in studies in the philosophy of science in honor of William Kane at the Aquinas Institute. He wrote about the history of science. His historical method of research in literature is to try to find present content, missing content, and

⁸⁸William A. Wallace, "Gravitational Motion According to Theodoric of Freiberg," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 191-216, especially pages: 193 for Medieval error clarifying future causal analysis, 203 for the development of new ideas, 204 for the importance of an empirical foundation for natural philosophy, 215 for problems arising from the lack of philosophical principles, and 216 for the significant contribution of Theodoric of Freiberg in determining that gravity was an effect and not a cause. See also: William A. Wallace, *The Scientific Methodology of Theodoric of Freiberg*.

new content. Wallace studies texts in terms of causes. Wallace hopes for dialogue with future scholars.

Wallace treats the philosophy of nature using Theodoric of Freiberg as an example. The natural philosophy of Theodoric had a sound beginning due to his empirical foundations. He also used distinction well. There was an problem with scientific analysis in the Middle Ages because there was no extensive mathematics, at least relative to gravity, and principles about gravity were obscure, which forced Theodoric to stay on the qualitative and dialectical level. He also pointed out that some confusion existed between the physical (science) and metaphysical (philosophy) approach to the problems of mechanics. He made an attempt to examine gravity as a cause, but his great insight was to see gravity as an effect.

James A. Weisheipl (1961).⁸⁹ James A. Weisheipl (1923-1984) was a North American Neo-Scholastic Dominican priest. He received his doctorate in natural philosophy (Ph.D.) from the Pontifical University of St. Thomas Aquinas, in Rome. He also has a doctorate in medieval history from the University of Oxford. He was professor of medieval philosophy in the Pontifical

⁸⁹James A. Weisheipl, "The Celestial Movers in Medieval Physics," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 150-190, especially pages: 150 for secondary causality in St. Thomas Aquinas, "Responsio ad Lectorem Venetum de Articulis 30," and "Responsio ad Eundem de Articulis 36," in *Opuscula Theologica*, ed. R. A. Verardo, O.P. (Turin: Marietti, 1954), 193-208, and 158 for Albertus Magnus and Aquinas both recognizing mathematical astronomy and physical astronomy, of which physical astronomy was considered an integral part of natural philosophy, 159 for mathematical astronomy as a dialectical preparation for real demonstration in natural philosophy, 185 for Aquinas noting that the eternity of the world cannot be demonstrated, 185 for God normally ruling His creation through intermediaries; and that the divine power is no way limited by the order it has established. James A. Weisheipl, "Introduction: The Dignity of Science," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xvii-xxxiii, where he notes that science needs an ethics, a philosophy of nature, and a concept of the dignity of both science and the dignity of man.

Faculty of Philosophy at the Dominican House of Studies in River Forest, Illinois. He was formerly lecturer in natural philosophy at Hawkesyard Priory, England. He was the bursar and archivist of the Albertus Magnus Lyceum. He contributed to the studies on the philosophy of science in honor of William Kane at the Aquinas Institute. Not only did he do an article for this book, but he was the general editor of the presentation.

Weisheipl treats the values needed by a philosophy of science. In the first third of the twentieth century, science was viewed as the producer of useful gadgets, the discoverer of effective drugs, and the developer of quicker and better means of communication. First, the atomic bomb at Hiroshima on 6 August 1954 brought the awareness of the need for morality in science. Second, the launch and flight of Sputnik I in October 1957, brought the realization of the need for real science education in the United States. However, the Russians were indoctrinated with Dialectical Materialism, and against their excessive specialization arose the consciousness of the need for a deeper background in history, philosophy, and the Great Books. Third, science itself had been growing from the time of Newton to Quantum Mechanics and Relativity. All of these needs and movements have unsettled philosophers, who seek answers to the morality of science, to a broader philosophical view of science, and to a true philosophy of nature. Science is an analogous concept. Its dignity must be recognized in its diversity and complementarity. There is no incompatibility between science, philosophy, and religion. Each seek the same truth according to their own proper method. The danger is Scientism, Fundamentalism and ideology.

Weisheipl treats the philosophy of nature. St. Thomas relies on observation to yield the causes of things, if possible, saying, "These matters into which we inquire are difficult since we are able to perceive little of their causes, and the properties of these bodies are more remote from our

understanding than the bodies themselves are spatially distant from our eyes” (Aquinas *De Caelo* 2. 17. 8). Albertus Magnus and St. Thomas recognized two types of astronomy, mathematical and physical (Aquinas *In Phys.* 2. 3. 8-9). Physical astronomy was considered an integral part of the philosophy of nature (Aquinas *In Mataph.* 6. 1). St. Thomas’ first proof of the existence of God from the example of solar motion and ends disjunctively with Plato’s self mover of the first sphere, or Aristotle’s separated mover of the whole (Aquinas *Summa Contra Gentiles* 1. 13). The second starts with various types of self-movements, showing how all must be reduced to some *primum movens se quid sit sempiternum* , which is God as self movement. This proof of God from motion is the easier way (manifestior via) which is the only one presented by St. Thomas (Aquinas *Compendium Theologiae*) for Brother Reginald of Piperno. Even the argument for the existence of God from contingent bodies includes observation of nature, and reasoning about spiritual substances which are radically necessary beings, their necessity is derived and beyond them there must exist an absolutely necessary being whose necessity is in no way derived (Aquinas *De Potentia Dei* 5. 3). St. Thomas notes that Aristotle erred in affirming the eternity of the world: such eternity cannot be demonstrated from reason (Aquinas *De Substantiis Separatis* 2. 14; Aquinas *De Aeternitate Mundi*). St. Thomas notes that although Plato and Aristotle did posit that immaterial substances and even heavenly bodies always existed, “we must not suppose on that account that they denied to them a cause of their being” (Aquinas *De Substantiis Separatis* 9. 52). Accordingly, the philosophy of nature is important and integral to the philosophy of St. Thomas.

Weisheipl treats evolution as an example of a problem that separates neo-biology, philosophy and theology. Weisheipl notes that the Darwin Centennial held at the University of Chicago in 1959 allowed a number of scientists to proclaim that man is no more than a form

evolved from matter, and religion is just superstition. Some biologists claimed the triumph of science over religion. Dialectical Materialism had been saying this for over a century. An appeal to perennial philosophy, says Weisheipl, can be a foundation of a reply. The natural philosophy of Aristotle together with the empirical sciences form one science, both materially and formally. They are two parts of the same science concerning mobile being (*ens mobile*). Each part, science and philosophy, has the need of each other in the attempt to evaluate Evolutionism.

Weisheipl treats secondary causes. St. Thomas states that God normally rules His creation through intermediaries. The lower and more gross bodies are ruled by the higher and more subtle bodies. The argument against this use of secondary causality is that it would limit divine power. St. Thomas replies that divine power is in no way limited by the order it has established. St. Thomas admits the possibility of intermediaries (Aquinas *Resp. de Art. 30* ad 4; Aquinas *Resp. de Art. 36* 2). St. Thomas notes that rectilinear motions, such as those of heavy and light bodies, arise from within bodies, from nature as an active (formal) principle. Nature in this sense is predetermined to a certain end and to the means of attaining it. The end, therefore, is already within the intentionality of nature as form. Once nature has attained its end, it must rest in its acquisition, since it is its good. Physically there is no need for any “conjoined mover” to account for this motion. This motion can be either downward from God to lower created things, or from created things upward to God by God’s providence. Nature itself spontaneously moves toward the end which is its goal. St. Thomas notes, “There is in heavy and light bodies a formal principle of its motion, because, just as other accidents proceed from the substantial form, so does place and consequently movement toward place; not however that the natural form is a mover (*motor*), but the mover is the generator which begot such a form upon which this motion follows” (Aquinas *In Phys. 2. 1. 4*; Aquinas *De*

Caelo 1. 18; Aquinas *Summa Contra Gentiles* 3. 82; Aquinas *De Potentia Dei* 5. 5).

Patrick H. Yancey (1961).⁹⁰ Yancey was a North American Neo-Scholastic Jesuit priest. He received his M.A. in biology from Gonzaga University, and his doctorate (Ph.D.) in biology from St. Louis University. He was professor and chairman of the department of biology at Spring Hill College, Mobile, Alabama. He was a former member of the National Science Foundation. He was the science editorial editor for the *New Catholic Encyclopedia*. He was a founder of the Albertus Magnus Guild, and its executive secretary-treasurer. He cooperated in the studies in philosophy of science in honor of William Kane. He wrote about the sociological aspects of science.

Yancey treats the history of the conflict between science and religion. Ever since the time of Voltaire and the French Encyclopediads, there has been an effort to discredit religion for antagonism toward science. On the other hand, the popes have sponsored the Pontifical Academy of Sciences whose membership includes the world's outstanding scientists, regardless of religious beliefs. World Catholic leaders in science have been Copernicus, Galileo, and Mateo Ricci in China and Father Marquette in Canada. Unfortunately, there seems to be less Catholic scientific leadership in the United States around the mid-twentieth century. Reasons for this are: few Catholic scientists, immigrant status or the next generation, clergy distrust of science, popularizers

⁹⁰Patrick H. Yancey, "American Catholics and Science," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 503-520, especially pages: 508-509, "...itself became a philosophy, almost a creed."; 517-520 for the promotion of dialogue between science, theology and philosophy in the United States in the Albertus Magnus Guild, the Albertus Magnus Lyceum, *Pax Romana* international, the Philosophy of Science Group in Great Britain, and the Union Française des Scientifiques Catholiques in France. See also: L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: Witherby, 1939), 164, "Evolution, only a scientific theory for Darwin's 'modest mind,' itself became a philosophy, to some almost a creed."

antipathy to religion, poor scientific instruction in Catholic schools, and poor reporting from the media which includes poor Catholic reporting on interest in science.

Yancey explicitly treats evolution. There was significant controversy aroused by the publication of Darwin's *The Origin of Species*. The opposition to the theory of evolution was not limited to Catholics. However, since Darwin was an Englishman and not a Catholic, the theory of evolution somehow came to be looked on as anti-Catholic. Some clergy may have moved easily from this bias to a distrust and even a fear that science itself was dangerous to faith and morals. The truth of the matter is, that long before Darwin, the Catholic Lamarck had proposed evolution to account for our present-day species of plants and animals. It is interesting to note that the chief opponent of Darwin was not a Catholic, but the Protestant scientist, Cuvier. The problem of contention between faith and science expanded when some of the followers of Darwin, notably Huxley and Spencer in England and Hackel in Germany, made unwarranted extensions of the theory into fields of philosophy and ethics. So evolution, only a modest scientific theory, itself became a philosophy, almost a creed.

Yancey is an activist who promotes dialogue. He was the founder of the Albertus Magnus Guild in 1952. It not only has local chapters, but meets annually during Christmas week in conjunction with the American Association for the Advancement of Science. Yancey also notes that one notable exception to the inactivity of Catholic scientists is the dialogue at the Albertus Magnus Lyceum at the Dominican House of Studies in River Forest, Illinois. This has been the life work of Father William Kane, O.P. Father Kane and his associates have worked tirelessly at a synthesis of philosophy and natural science. The steady output of publications is a good sign of the progress of science among Catholics in the United States.

William H. Kane (1962).⁹¹ William Humbert Kane (1901-1970) was a North American Neo-Scholastic Dominican priest. He was born William Dean Kane in LaGrange, a suburb of Chicago, in 1901. He attended Lyons Township High School, Aquinas College in Columbus, Ohio, and entered the Dominican Order in Somerset, Ohio in 1920, with the Religious Order name Humbert. He was ordained a Roman Catholic priest in 1927. He studied theology at the Dominican House of Studies, Washington, D.C., and he studied medicine at the same time. The Dominican Order was preparing him to be a missionary in China, so he continued his medical studies at the Catholic University of America in Washington between 1923 and 1926, and then attended the Georgetown University School of Medicine from 1926 to 1928. Then he was sent to the Pontifical University of St. Thomas in Rome (then known as the Collegio Angelico) for two

⁹¹William H. Kane, *Approach to Philosophy: Elements of Thomism* (Washington, D.C.: Thomist Press, 1962), especially pages: 54 for the outline of the chief parts of the philosophy of nature in which the question of evolution is raised about a being changeable by growth “in general origin and development,” and 55 for the need of experts to provide the material object of the philosophy of nature: “With the help of a competent teacher, philosophy of nature as a special habit of mind can be acquired within a moderate period of time; to master the details and discover new truths about nature is the vocation of specialists” (but evolution is a “new truth”). James A. Weisheipl, ed., *The Dignity of Science* (Washington, D.C.: Thomist Press, 1961), 524-526 has a listing (1929-1960) of all the thirty-six articles written by William Kane. Among Kane’s writings three are of significant importance to this dissertation. First, William Kane, “Hylemorphism,” *Proceedings of the American Catholic Philosophical Association* 11 (1935), 61-74, since Hylemorphism is part of the Neo-Scholastic solution to the problem of evolution. Second, William Kane, “Review of Jacques Maritain’s *Philosophy of Nature*,” *The Thomist* 16 (1953), 127-131, since Maritain says that science and philosophy are essentially different, while Kane and the Albertus Magnus Lyceum maintain that science and philosophy form a unity in philosophy of nature. Third, William Kane, “Comments on Jude R. Nogar’s *Nature, Deterministic or Indeterministic?*” *Proceedings of the American Catholic Philosophical Association* 27 (1953), 104-109, since both Kane and Nogar taught at the Aquinas Institute as Dominican lecturers, with Nogar defending the certainty of evolution, and Kane philosophically less certain. Sister Olivia M. Barrett, “The Role of Science in Liberal Education,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 490: “Members of the Albertus Magnus Lyceum under the able direction of Father William H. Kane, O.P., collaborated with the faculty of the college and its associated schools...”

years and he received his doctorate in philosophy (Ph.D.) *summa cum laude*, in 1930. His thesis was on “Finality in Nature.” He spent the rest of his life, thirty years, teaching: biology, logic, natural philosophy, metaphysics, and theology. During that time Kane gave much thought to the texts of St. Thomas and modern problems. He was sent to Rome to teach natural theology from 1948 to 1951. He was the first director of the Albertus Magnus Lyceum from the time of its founding in 1951. The purpose of that Lyceum was to promote dialogue between science and philosophy. That dialogue between science and philosophy became the life work of Kane.

Kane was an activist. He provided the philosophical background for the St. Xavier Plan (now Xavier University) for the renewal of science teaching and philosophy of nature. This plan affected a system of 60 elementary and secondary schools with some 800 teachers. The plan included curriculum reform and renewal beginning in 1932. Those completing the various requirements of this plan could have advanced college placement at St. Xavier University, beginning in 1934. Barrett notes that Kane and the Albertus Magnus Lyceum gave psychological, philosophical and theological help to form this plan of renewal. The philosophical principles were a guide for the ideal education of a Christian person.

Dietrich Von Hildebrand (1973).⁹² Dietrich Von Hildebrand (1889-1977) was a German

⁹²Wikipedia, the Free Encyclopedia. *Dietrich Von Hildebrand*. 31 January 2007
<http://en.wikipedia.org/wiki/Dietrich_Von_Hildebrand>.

William A. Marra. *Von Hildebrand on Love, Happiness, and Sex*. 31 January 2007
<<http://www.catholiceducation.org/articles/sexuality/se0039.html>>. Like Von Hildebrand, William Marra was professor of philosophy at Fordham University.

Von Hildebrand was the author of dozens of books, both in English and in German. A brief sample is given here to show his philosophical bent and his wide interests: written in 1929, *Marriage: The Mystery of Faithful Love*; in 1930, *Metaphysics of Community*; in 1931, *Actual Questions in the Light of Eternity*; in 1934, *The Essence of Philosophical Research and Knowledge*; in 1943, *Liturgy and Personality*; in 1948, *Transformation in Christ*; in 1950, *Fundamental Moral Attitudes*; in 1952, *Christian Ethics*; and in 1953, *Ethics*.

Catholic philosopher and theologian who eventually settled in the United States from 1940 to 1977. He was born and raised in Florence, in Italy, in a secular Protestant household. He was converted to Catholicism in 1914. In 1923, when Von Hildebrand was thirty-four years old, he lectured at the Catholic Academic Association Congress in Ulm, Germany. In 1925, he gave several lectures at the Federation of Catholic Students' Unions in Innsbruck, Austria. He published a booklet *Marriage* in 1923 and another booklet *Purity and Virginity* in 1925, both of which were enthusiastically approved by the papal nuncio in Munich, Eugenio Cardinal Pacelli, who later became Pope Pius XII. In 1933, he fled from Germany to Austria, because he had been a vocal opponent of Adolph Hitler and Nazism. He founded and edited an anti-Nazi weekly paper, *The Christian Corporative State (Der Christliche Ständestaat)*. For this he was sentenced to death *in absentia* by the Nazis. In 1938, Hitler annexed Austria, and Von Hildebrand fled again. He settled near Fribourg, Switzerland. Then he settled at Fiac, near Toulouse in France, where he taught at the Catholic University of Toulouse. In 1940, Hitler invaded France, so Von Hildebrand fled to Portugal, Brasil, and finally to New York. In 1940, Von Hildebrand taught philosophy at the Jesuit Fordham University on Rose Hill in the Bronx, New York. He continued teaching until 1960. Von Hildebrand spent the rest of his life writing. He lived in the United States from 1940 to 1977, of thirty-seven of his eighty-eight years. He died in New Rochelle, New York, in 1977.

Von Hildebrand was trained as a philosopher. He studied under Edmund Husserl at the University of Goettingen. Husserl distinguished experiences that are intentional, like love, from experiences that are non-intentional, like being. The grasp of the object for Husserl is an encounter. There is an intentionality of "feelings," but these are not bodily feelings as would be expected in traditional rational psychology. For Von Hildebrand, spiritual feelings are a value response. For

Aristotle, human beings always will the good. Von Hildebrand answers Aristotle from a more ethical point of view, rather than from the scholastic rational psychology point of view. Von Hildebrand notes that man should always choose the good of value response, but not merely a good that is subjectively and selfishly satisfying. Von Hildebrand, even if not always in the Aristotelian and old scholastic orbit, was a Catholic philosopher attempting to confront modern problems with the traditions of Catholic Christianity. Pope Pius XII called him (informally) “the twentieth-century doctor of the Church.” He was also known to have been a great favorite of Pope John Paul II.

Von Hildebrand touched the subject of evolution. He noted that if atheistic evolution was true, everything just random chance, then his treatment of the love of spouses was even more special. The metaphysics of love is a value response, and love is not blind evolution but something special. The free choice of spousal love is not just a matter of evolutionary atoms of matter marching into the future. His interest was in Personalism, so that marriage involved faithful love, and fundamental moral attitudes. Society had to be founded on ethics, and especially Christian ethics, and not a matter of evolutionary development of society. Responsibility for the future of man and the world is based on ethics, and this responsibility was not just an evolutionary development of man. Von Hildebrand was interested in personal transformation, to become one with Christ through personal encounter with Christ in the liturgy. Von Hildebrand was interested in the future of man, and tried to treat real questions in the light of eternity.

Thomas M. King (1981).⁹³ Thomas Mulvihill King was a North American Neo-Scholastic

⁹³Wikipedia, the Free Encyclopedia. *Thomas M. King*. 24 January 2007 <http://en.wikipedia.org/wiki/Thomas_M._King>. See also: Thomas M. King and Mary Wood Gilbert, eds., *The Letters of Teilhard de Chardin and Lucile Swan* (Scranton: University Press, 2001). *Chicago Catholic New World*, 21 January and 3 February 2007, 21: Loyola University of Chicago sponsors Thomas King, S.J., on 12 March 2007, to speak on “Teilhard, Intelligent

Jesuit philosopher and theologian. He is professor of theology at Georgetown University, Washington, D.C. He was born on 9 May 1929 in Pittsburgh, Pennsylvania. He entered the Society of Jesus in 1951. He did his undergraduate studies at the University of Pittsburgh. He studied philosophy and theology at Fordham University and Woodstock College. He was ordained a Roman Catholic priest in 1964. He received his doctorate in theology from the University of Strasbourg in 1968. He began to teach at Georgetown University in Washington, D.C. in 1968. He is a member of the American Teilhard Association. He is both priest and personalist, and known by students and alumni alike for his late evening Mass at 11:15 P.M. at the Dahlgren Chapel on the Georgetown main campus nightly Sunday through Friday. He started this service in 1969. In 1999, the Georgetown student newspaper, *The Hoya*, declared King “Georgetown’s Man of the Century,” and said, “No one has a more significant presence on campus and effect on students than Father King.”

King treats evolution. He has written or edited several books on Pierre Teilhard de Chardin. He wrote *Teilhard’s Mysticism of Knowing* in 1981. He wrote *Teilhard and the Unity of Knowledge* in 1983. He wrote *Teilhard de Chardin* in 1988. He was the editor of *The Letters of Teilhard de Chardin and Lucile Swan* in 1993. He also wrote *Teilhard’s Mass* in 2005. In addition, King’s concern about evolution is manifest in that he helped to co-found an annual gathering of scientists interested in religion, which gathering is known as “Cosmos and Creation.”

Design and the Anthropic Principle.” Books written by Thomas King, but not pertaining to evolution, are: *Sartre and the Sacred*, published 1974; *Enchantments: Religion and the Power of the Word*, published in 1989; *Merton: Mystic at the Center of America*, published in 1992; and *Jung’s Four and Some Philosophers: A Paradigm for Philosophy*, published in 1999.

Francis J. Kovach (1988).⁹⁴ He was a North American Neo-Scholastic layman. He is a student and commentator on St. Thomas. He was made professor emeritus after teaching twenty-four years at the University of Oklahoma. He studied at the University of Budapest. He was awarded his doctorate (Ph.D.) in philosophy from the Albertus Magnus University in Cologne, Germany. He taught in three American colleges and Villanova University before settling at the University of Oklahoma. He was a member of seven philosophical associations, including the American Catholic Philosophical Association and the American Maritain Association. He was an editorial consultant to the magazine, *The New Scholasticism*.

Kovach is Neo-Scholastic author confronting traditional philosophy with modern thought. He has written a collection of nineteen essays in English in the field of metaphysics, philosophy of nature, aesthetics, and ethics. His philosophical adversaries are the Skeptics and the Agnostics of our time. In his book on scholastic challenges, Kovach takes a critical approach to Medieval scholastic positions and modern contemporary theories. Kovach is inspired by the ever deepening and unsolvable differences between Neo-Scholastic realism and the Skeptics and Agnostics of our time. He hopes to stimulate discussion and debate. His first goal is a critical approach to scholasticism and modern thought for Kovach fears an ever deepening of unresolvable differences. His second goal is that the essays on aesthetics will intensify interest among Neo-Scholastics and non-Scholastics alike. He comments that the field of metaphysical aesthetics is much neglected. His other essays in the same book, scholastic challenges, treat causality, the existence of God,

⁹⁴Francis J. Kovach, *Scholastic Challenges: To Some Medieval and Modern Ideas* (Stillwater, OK: Western Publications, 1988). See also: Francis J. Kovach, *Die Aesthetik des Thomas von Aquin* (Berlin: W. De Gruyter, 1961); and Francis J. Kovach, *Philosophy of Beauty* (Norman, OK.: University of Oklahoma Press, 1974). Kovach has written more than 36 articles in English, German and Portuguese.

infinity, and the morality of the lie used as a protective statement.

William E. Carroll (1999).⁹⁵ Carroll was the professor of history at Cornell College, in Mt. Vernon, Iowa. Carroll was at the University of Oxford faculty of theology who participated in the Blackfriars lecture series and the Aquinas Seminar. His area of philosophical expertise is creation and science in the Middle Ages, and also science and religion. He involves theology and scripture in his philosophy. Nevertheless, Carroll's thought is grounded in Aristotelianism.

Carroll treats human evolution. Carroll is aware and cites Darwin and Non-Darwinism in theories of evolution. He points out the distinction between Darwin and his modern followers such as Dennett. Carroll defends metaphysics, human nature, creation of the rational soul. He is concerned about the place of God in creation as Creator. Carroll opposed Deism, Occasionalism, Process Theology, and gives reasoned arguments against them. Carroll sees the need to give definitions, such as creation, divine agency. Carroll also sees the need for distinction, such as to distinguish between creation and mere change, to distinguish between biology, philosophy, and theology, and to distinguish between receiving existence and mere generation.

Carroll treats cosmology. He is familiar with modern cosmologists. He is also familiar with the history of philosophy, for example, Occasionalism, and his very insightful treatment of St. Thomas. He is also familiar with theology, such as the notion of creation *ex nihilo* prescribed by

⁹⁵William E. Carroll. *Aquinas and the Big Bang*. 25 January 2007
<<http://www.leaderu.com/ftissues/ft9911/opinion/carroll.html>>.

William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007
<<http://www.catholiceducation.org/articles/science/sc0035.html>>.

William E. Carroll, ed., *Nature and Motion in the Middle Ages* (Washington, D.C.: Catholic University of America Press, 1985). William E. Carroll and Steven E. Baldner, *Aquinas on Creation* (Toronto: Pontifical Institute of Medieval Studies, 1997). William E. Carroll, *La Creación y Las Ciencias Naturales: Actualidad de Santo Tomás de Aquino* (Santiago: Pontifical Catholic University of Chile Press, 2001).

the Fourth Lateran Council (1215). Carroll notes that the key to cosmic origins is the distinction between creation and change. On the one hand, where mere change exists, some “prior thing” must change (*ex nihilo, nihil fit*). On the other hand, creation accounts for the existence of things, where there was no “prior thing.” It was St. Thomas who separated essence from existence. Thus any thing left to itself, separated from the cause of its existence, would be absolutely nothing. Creation is the continuing complete causing of the existence of every thing that is. Creation, thus, is a subject for metaphysics and theology, and not for the natural sciences.

Carroll explains evolution from a Neo-Scholastic point of view. God is at work in every operation of nature. The autonomy of nature is not a limit on God, but a sign of the goodness of God. There are different levels of divine causality and creaturely causality. Divine causality is not partial, not by co-causes, but wholly done by both in a different way; God is the Primary Cause, transcendent enabling origin and also immanently present. Creaturely causality is not partial, but co-causes, wholly done by both but in a different way, totally and immediately done by the creature as a secondary cause. So there are differing levels of metaphysics of primary and secondary causality. The action is wholly done by both according to a different way. The same effect is wholly attributed wholly to the instrument, e.g., the hammer, and wholly to the principle agent. For Aquinas, the differing metaphysical levels of primary and secondary causation require us to say that any created effect comes totally and immediately from God as the transcendent primary cause, and totally and immediately from the creature as secondary cause. Secondary Cause is defined as the intrinsic dependence on the primary cause, while Instrumental Cause is defined as extrinsic dependence on the primary cause, such a hammer used by the Primary Cause. God is the complete cause of the new thing. To paint a picture, working from existing natural materials is (change)

radically different from creation *ex nihilo*. To create is to cause existence, and all things are totally dependent on the Creator for the very fact that they are. An evolving universe, just like Aristotle's universe, is still a created universe, which results in change.

Francisco J. Ayala (2005).⁹⁶ Francisco J. Ayala was a noted North American Neo-Scholastic philosophical researcher. He teaches at the University of California, at Irvine. He attended the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* in Rome, on 23 and 24 April 2002 and submitted a paper. He writes in English.

Ayala treats Darwinism. Ayala demonstrates the scientific value of the discovery of Darwin. He notes that in the sixteenth and seventeenth centuries Copernicus, Kepler, Galileo, and Newton conceived the universe as matter in motion which was governed by natural laws. The postulate that the universe obeyed immanent laws which can explain natural phenomena is a scientific revolution. Darwin extended that revolution to the world of living beings through the causality of genetic

⁹⁶Francisco J. Ayala, "Two Revolutions: Copernicus and Darwin," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 53-70, especially pages: 54 for the Copernican revolution, 55 for the argument from design, 57 for the revolutionary contribution of Darwin, 59 for the philosophical distinction between the three modes of creation, 60 for the explanation of how natural selection can be a creative process, 62 for the non-random aspect of natural selection, 63 for an analysis of the element of chance, 65 for a critique of Intelligent Design, and 68 for the scope and limits of science. The opponents of Ayala in the question of Intelligent Design are William Paley, *Natural Theology* (New York: American Tract Society; originally published 1802), and Michael J. Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: Simon & Schuster Touchstone, 1996). Concerning St. Thomas' fifth way (*Quinta Via*) for the proof of the existence of God, God is not the "watchmaker" of the eighteenth century writers such as Fontenelle and Voltaire, but rather of a God who is "Subsisting Intellect," and therefore Pure Act. St Thomas explains, "In all things...the form must be the end of any generation whatsoever. But an agent does not act on account of the form, except in so far as the likeness of the form is in the agent, as may happen in two ways. For in some agents the form of the thing to be made pre-exists according to its natural being, as in those that act by their nature. Whereas in other agents (the form of the thing to be made pre-exists) according to the intelligible being as those that act by the intellect" (Aquinas *Summa Theologiae* 1. 15. 1).

variation and natural selection. On the one hand, Ayala defends the scientific character of Darwinism, and on the other hand its limited value in the world of nature since moral and aesthetic values are more significant for man's life and are not accessible to natural science.

Ayala treats evolution itself. Ayala maintains that natural selection is much more than a purely negative process, for it is able to generate novelty by increasing the probability of otherwise extremely improbable genetic combinations. Natural selection is thus creative in a way, not by actually creating the entities upon which it operates, but by producing adaptive genetic combinations that would not have existed otherwise. Ayala notes that chance is an integral part of the evolutionary process. Chance enters the evolutionary process because natural selection does not anticipate the environments of the future. Ayala notes that natural selection gives some appearance of purposefulness because it is conditioned by the environment. Here it seems that some purposefulness is excluded by Ayala, but from a single clause, the philosophical position of Ayala on finality is not entirely clear. Ayala notes that more than ninety-nine percent of all species that ever lived have become extinct without issue. Thus chance is counteracted by natural selection, which preserves what is useful and eliminates the harmful. The theory of evolution thus manifests chance and necessity jointly interlocked in a natural process that has produced the most complex, diverse, and beautiful entities in the universe. The process is creative but not conscious. The theory of evolution can account for everything in nature as the result of natural processes governed by natural laws. It accounts for all the organisms that populate the earth, including humans, who think and love, endowed with creative powers, and able to analyze the process of evolution itself that brought their bodies into existence.

Ayala treats Intelligent Design. He notes that the theory of evolution is superior because it

also explains defective design. Ayala notes design in the philosophy of St. Thomas in his proof for the existence of God, the fifth way, the argument from design, but seems to lump St. Thomas with the Intelligent Design defenders. Ayala only mentions St. Thomas in passing, and his argument is not the watchmaker argument of William Paley.

Paul Haffner (2005).⁹⁷ He is a North American Neo-Scholastic who has attended the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* in Rome, on 23 and 24 April 2002. He delivered a paper in English. He participated in the dialogue at the congress. His presentation touches issues of evolution and of atheism.

Haffner treats evolution. He is concerned about evolution and the teaching ministry of the Church. First, he finds that in St. Augustine of Hippo, St Gregory of Nissa, and St. Thomas (Aquinas *Summa Contra Gentiles* 3. 76) there are some traces of creation which is not opposed to evolution. Second, there was an open discussion among theologians of the nineteenth century about the compatibility of the theory of evolution with Christian doctrine. The third stage opened at the end of the nineteenth century, when moments of tension occurred between theologians and doctrinal authority, not by the initiative of these groups, but by the outside influence and activity of a group of Roman professors. As usual, the authority of the Church expressed the essential and basic harmony between science and religion. However, there was also the necessity of rejecting those movements that were incompatible with revelation (the Bible) such as the ideologies of Materialism and Modernism (relativism in theology). The warning (*Monitum*) by the Holy Office in

⁹⁷Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 315-340, especially pages: 319 on evolution and ideology, 324 for evolution and providence, 329 for evolution and the human person, and 333 for monogenism and polygenism.

Rome regarding the works of Teilhard de Chardin was intended to avoid the influence of evolutionist ideology on Catholic theology

Haffner notes a surprising openness on the part of the popes regarding evolution. Years before the warning of Teilhard, Pope Pius XII in his encyclical *Humani Generis* (n. 36) maintained the teaching of the Church does not forbid research or discussion on the doctrine of evolution about the origin of the human body from pre-existing living material. Pope John Paul II taught that creation is able to be seen in the light of evolution as an event which is extended in time, as a continued creation. Pope John Paul II recommends respect for the different methods used in various areas of knowledge to permit a view of reconciliation when different areas of knowledge seem irreconcilable. In particular, the world of the spirit is not able to be studied with the scientific method, but by philosophical analysis.

Haffner comments on monogenesis. The ecclesiastical discussion on monogenesis (which means one pair of proto-parents) and polygenesis (many pairs of proto-parents) merits particular attention because it is strictly connected to Christian teaching about original sin. Since polygenesis proposes many copies of the origin of the human species, it seems to lead to one of three theologically unacceptable hypotheses: that original sin was not transmitted to all members of the human species; or if transmitted, that the process of transmission was different from generation; or if transmitted by generation, that Adam was not an individual but a group of persons. Because the act of infusion of the soul directly by God in the first man excludes the possibility of empirical scientific research, science cannot deny the monogenetic origin of man, nor affirm the polygenetic origin of humanity. The most secure position from the point of view of theology is monogenism.

Haffner draws a conclusion about evolution. First, Haffner concludes that the Magisterium

(teaching office) showed a growing concern about evolution. Second, the popes showed remarkable openness to new scientific ideas. Third, the popes showed a constant appeal to human reason. Fourth, the position of the popes was not just Concordism (agree for the sake of peace), but dialogue between science and religion to explore the limits of evolution. At the same time, Haffner does note the possibility of dangers both for faith and for reason from the ideology of Materialism.

Stanley L. Jaki (2005).⁹⁸ Stanley L. Jaki is a North American Neo-Scholastic who teaches at Seton Hall University in New Jersey. He has a doctorate in physics and another doctorate in theology. He is a member of the Pontifical Academy of Sciences, Rome. He participated in the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* on 23 and 24 April 2002 in Rome. He wrote in English on Non-Darwinian Darwinism which touches on the problems of philosophy of evolution.

Jaki treats Darwinism. Jaki wants to clearly distinguish science from ideology. Darwinism is an ideology. First, Darwinism is ideological in its rejection of metaphysics and its rejection of the idea of substance. Second, Darwinism is ideological in its rejection of finality or purpose. Third, Darwinism is ideological in its promotion of atheism. Fourth, Darwinism is ideological in its reduction of science to genetics. Jaki also rejects Materialism as an ideology. Because Darwinism is a anti-metaphysical dogma, an ideology, this promotes a strong relativism. Darwin himself had a theory of great scientific merit, but Darwinism puts this achievement in disrepute.

⁹⁸Stanley L. Jaki, "Non Darwinian Darwinism," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 41-52. See also: Stanley L. Jaki, *The Purpose of It All* (Washington, D.C.: Regnery Gateway, 1990), which is his treatment of finality. Jaki also maintains the atheism, a negation, can never be the subject of science, against a theme of Oxford biologist Dawkins' book, *Selfish Gene*, which claims that Darwin made atheism intellectually respectable.

Jaki treats theory. Jaki maintains that it is irrelevant whether Darwinism is termed a hypothesis or a theory. Jaki notes that Darwinism is an incomplete science. Biology has to grow.

CONCLUSION: The outstanding contribution of the North Americans in the last half of the twentieth century is the metaphysical analysis of Evolutionism, and philosophical explanation of how evolution could occur. Such major contributors are Klubertanz, O'Flynn Brennan, Renard, Carroll, and Glenn.

A surprise conclusion is philosophers moving into other areas of the philosophy of nature and philosopher-activists. Yancy in sociology, Kovach in aesthetics, Ratner in medicine, Moraczewski in biochemistry, and Stock in empirical psychology, all added to the specialized knowledge that is the material object of the philosophy of nature, and needs the contribution of a specialist. Communication in educational terms was promoted by philosopher-activists Kane, Ashley and Barrett. Kovach was a professor in a public university. Yancy was also an activist in the promotion of philosophical organizations. John Courtney Murray was trained as a Neo-Scholastic and was an activist opposed by Rome, until his monumental work as advisor to the bishops and in the preparation of the document on religious liberty at the Second Vatican Council; and in activism, Roman opposition, and outstanding contribution to the Second Vatican Council his literary and personal activism paralleled Congar and De Lubac. Von Hildebrand published an anti-Nazi newspaper.

Other conclusions for the large number of North American Neo-Scholastic philosophers can be conveniently divided into a treatment of opinions on the philosophy of science, Evolutionism in itself, human evolution, and the fruitfulness of the evolutionary concept.

Conclusions on the philosophy of science involve its method, its history, its content, special

problems, and its social implications.

Concerning method, every author in North America writes in English, and none use the thesis form. Ratner, Weisheipl, and Simmons show the importance of philosophy for scientific methodology. Bittle, Renard, Benignus, Adler, Smith, Barrett, Von Hildebrand, and Glenn have a great concern for students, and these are college students, not only candidates for the priesthood. Glenn and Kane note that the book does not take the place of the teacher, who should give living references and living questions. Adler and Weisheipl encouraged discussion and debate, and the Great Books discussions. Ashley, Kane Hoskin, Ratner, Kovach, Haffner, and Murray promoted the use of dialogue in education, in research, and public life. Ratner, Kovach, and Kane note that method, rather than just the conclusions of the ancients, is of prime importance for the success and survival of natural philosophy. Glutz promotes the method of Socrates in education, although he and Carroll in natural philosophy want observation, definition, hypothesis, proof by induction and later proof by demonstration. Ratner shows the validity of the method of Aristotle. Klubertanz and Kovach note that as new problems arise St. Thomas has to be re-read and re-thought. Further, even in Klubertanz, the reader must pay attention to definitions, since Klubertanz has a restrictive definition of Evolutionism; in short, definition can be a problem. Smith notes that the term philosophy is equivocal, since it applies to four sciences: logic, philosophy of nature, ethics, and metaphysics. DeKoninck shows that an equivocal term, and the lack of an exact definition, can lead from a dilemma for Darwin to a completely univocal concept of “survival of the fittest” from which Sir Julian Huxley denies purpose. Weisheipl notes that science is an analogous concept.

Concerning content, Renard, Barrett, Garey, Glutz, Wallace, Kane, Jaki, and Glenn show the need for metaphysics. Simmons notes the need for logic as well. Rolbiecki, Barrett, McDowell,

Wallace, Haffner, and Begninus want science and philosophy to cooperate. Ayala notes the need for moral values, which are not accessible to natural science alone. Glutz notes that natural philosophy, as more accessible to the senses and observation should precede metaphysics for students. Ashley wants science and faith to cooperate. Renard believes philosophy can help theology. Positivism and Secularism both fail to find an explanation for life, says Benignus. Klubertanz, in an attempt to give a philosophical explanation of evolution, is excellent in his presentation of material causality. Barrett and Smith note the prime importance of metaphysics and natural theology, but with St. Thomas places the philosophy of nature first pedagogically. Ashley notes that metaphysics has limitations dealing with concrete problems, and should use the help of the social sciences. Oesterle notes the provisional nature of much of the philosophy of nature, and suggests the use of the provisional universal. Kovach and Ayala agree that aesthetic values are more important in the life of man and are not accessible to natural science.

Concerning history, Renard and Moraczewski give the history of hylemorphism. Adler treats the philosophical history of evolution, matter, form, chance, man, soul, happiness, immortality, cosmology, liberty and God. Barrett gives the history of the development of a modern curriculum including a unitary study of science and philosophy. Callus gives the history of the problem of unity of form, which is important for evolution because of substantial change from one species to another. Garey, McKeon, and McDowell show the importance of the historical opinions of Aristotle, the scholastics, and St. Thomas. Hoskin showed the value of historical study in the growth of philosophy of nature. Ratner showed the importance of learning method in natural philosophy from history, rather than slavishly following the conclusions of the past.

Concerning special problems, Klubertanz, Garey, and Glutz make the reader alert to

problems in definition. Klubertanz himself uses the most important term, Evolutionism, in a restricted way. Further, something is happening to philosophy at mid-twentieth century that seems to diminish the popularity of the Neo-Scholasticism. Glenn, in 1949, notes that there are few manuals in ontology available in English, and some professors find “older writings” of small appeal. Carroll is firmly grounded in Aristotle and Aquinas. Glenn, Carroll, and Moore note the contrasting development in the field of empirical psychology, up to at least 1954, which deprived the philosophy of man of a material basis in the study of evolution; this was a problem of definitions, but a more fundamental problem about freedom, conscious control, and the very existence of the soul. Dougherty’s introduction is by Fr. Ignatius Smith, O.P., dean of philosophy at the Catholic University of America, who on the one hand pleads the need for “new presentations” and on the other hand notes “the demand for texts in Scholastic Philosophy continues...It is an indication of vitality...” Glutz noted he would rather use the method of Socrates with students, although the thesis method was best for memory, review, and scholastic disputation. McDowell and Weisheipl stress that scientists need the humanities and moral philosophy. McKeon and Weisheipl stress that scientists need a philosophy of nature. Weisheipl and Haffner know no incompatibility between science, philosophy and religion. Weisheipl rejects Scientism, Fundamentalism, and ideology.

Concerning social implications, Rolbiecki wants to stimulate lay students to a deeper and continued interest in philosophy. Even in 1939, Rolbiecki writes in English on modern problems for a wider audience than seminarians preparing for the priesthood. However, Rolbiecki raises questions to stimulate curiosity without demonstrative proof, whereas Bittle and Benignus as educators provide extensive proof for each assertion, without using thesis form. Adler taught university students, heads of corporations at the Aspen Institute, and even children through the

Great Books movement, thus extending the sphere of philosophy exponentially. Murray, trained as a Neo-Scholastic and using scholastic principles, like Von Hildebrand, was not as much concerned about the origin of man as about the goals of humanity; it is the goals of man that round out the treatment of man in this dissertation. McDowell has moved to cancer research, taking philosophy with her.

Conclusions on evolution in itself are varied. Rolbiecki, in 1939, holds that evolution is universally admitted in scientific and philosophical circles. Bittle, in 1945, maintains that the fact of evolution is still open to debate, as does Benignus, Kane, and Adler. Klubertanz, McDowell, and O'Flynn Brennan give an original and positive defense of evolution. Klubertanz also will admit monophyletic evolution. Glenn and Jaki give a defense of the principle of finality, both in organic and inorganic things, and Dougherty defends the finality of inorganic bodies. Adler sees finality as important. Smith and Jaki argue against Darwinism, that chance is not a cause. Rolbiecki, Benignus, Dougherty and Bittle are opposed to Materialism, and the mere Vitalism of Driesch. Rolbiecki, Benignus, Smith, and Bittle also reject Mechanicism. Rolbiecki has reservations about the usefulness of Hylemorphism for modern science, but Adler and Kane treat matter and form as important issues. Bittle, Renard, Dougherty, Kane, and Benignus endorse Hylemorphism. Renard gives a possible philosophical explanation of evolution by accidental forms preparing and disposing the substance for substantial change. Glenn holds "species" is constituted by substantial form, but since the form of any individual body might have been conjoined with some other quantity of matter, it is rather the matter than the form which ultimately constitutes the individual.

Conclusions on human evolution are varied. Rolbiecki and Moraczewski note the essential difference between man and animals, but Rolbiecki, in 1939, wants more experimentation. Bittle

endorses the essential distinction between man and the other animals, and implicitly Benignus agrees. Rolbiecki, Klubertanz, and Bittle admit evolution of the body of man. Bittle and Klubertanz deny the evolution of the human soul. McDowell notes an analogy between the intelligence of man and that of God. Bittle and Von Hildebrand treat man's personal and social growth in the world, and endorse survival after death as morally certain. Adler also treats the soul and immortality. Adler and Von Hildebrand treat a vision of the future. Smith and Dougherty view man as the mediate goal of nature and God as the final goal of all creation.

Conclusions on evolution as a fruitful concept are varied. Rolbiecki argues against abiogenesis, but is open to the production of life from non-life in the future. Bittle is against abiogenesis. Klubertanz explains abiogenesis as possible part in the divine plan. O'Flynn Brennan endorses an evolutionary view of the universe. McDowell argues from scientific observation of order in the universe to the existence of a Supreme Intelligence. Benignus, Dougherty, Carroll and Glenn maintain that God created the world out of nothing. Rolbiecki, Smith, and Dougherty maintain the universe is limited in extension and duration. Adler treats theories of cosmology, while Carroll endorses Aquinas. Rolbiecki and Moraczewski do not affirm evolutionary sociology, and find that the development of society has taken place in accord with human nature. Bittle from the view of rational psychology, and Stock precisely from the view of empirical psychology, see no deterministic social evolution. Von Hildebrand sees the need for Christian ethics. Adler treats freedom. Rolbiecki, Smith, Von Hildebrand, Carroll, and Renard confirm a Supreme Being as a Creator. Adler treats God. Bittle and Jaki note that evolution of itself is not atheistic.

Poland

Józef Życiński (2005).⁹⁹ Józef Życiński is Archbishop of Lublin, Poland, a Neo-Scholastic and a member of the Vatican Congregation for Catholic Education. He is also a member of the Pontifical Council on Culture. He studied at the University of Lublin, Poland. He attended the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* from 23 to 24 April 2002 in Rome. He delivered a paper, in English, on issues of evolutionary cosmology. He was also present for the congress dialogue. Józef Życiński embraces evolution and interprets it in a sophisticated and appealing way.

Józef Życiński treats the Anthropic Principle. There is an opposition between theology and science over the theory of evolution. Życiński wants to demonstrate that this classical opposition can be overcome. He views evolution as subordinate to the general laws of nature, and so evolution has to be an expression of the teleological and finalistic structure of nature. He views finality in nature from the perspective of the “weak” Anthropic Principle, that nature is somehow ordered to man. He takes into consideration some developments of modern physics. First, the “weak” anthropic principle: the world is just as we observe it because we are not able to exist in a

⁹⁹Józef Życiński, *God and Evolution*, trans. Kenneth W. Kemp and Zuzanna Maslanka (Washington, D.C.: Catholic University of America, 2006), especially page 216 concerning sociobiology and its promoter, Edward O. Wilson, where Życiński says, “One can find in the late Wilson an example of unverifiable assertions...” Józef Życiński, “The Weak Anthropic Principle and the Theological Meaning of Evolution,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 229-244. As a personal comment on the work of Józef Życiński, I note what is not said directly in the book or article. Evolution actually has two claims. First, there is an evolutionary move from one species to another, emergence. Second, there is an evolutionary move from one lower species to another higher species, or evolutionary progress. Józef Życiński, it seems to me, uses the weak Anthropic Principle globally to explain evolution between species, emergence without reference to progress. Then he uses the categories of supervenience and physical attractor to explain evolutionary progress.

world which would have different cosmic parameters and diverse physical laws. If we establish a “strong” anthropic principle, which many consider without any foundation and too metaphysical, we would insist that the universe must have these properties that permit the development of life.

Józef Życiński explains “supervenience” and the “physical attractor.” Życiński looks for categories that permit an integration of causality (natural laws keep everything predictable) and teleology (movement to a final goal). He wants to avoid reductionism to a mere material causality. He also wants to avoid a teleological view too strong and anthropomorphic. Two categories are helpful. The category of “supervenience”, or emergence, explains the discontinuity between the ontological structures of the world without the need to reduce them all to the lowest (material) level. The category of “physical attractor” explains how evolution can be interpreted as an ascending process directed toward an “attractor.” In the evolutionary process the discontinuity (lower to higher species) is able to be explained with reference to supervenience, and God is able to be thought of as teleological attractor, as far as directing the evolutionary process according to a design that is not in agreement with the causal laws (since evolutionary progress moves beyond regularity).

CONCLUSION: The conclusion for the Polish Neo-Scholastic philosopher brings to light what seems to be an innovation, the Anthropic Principle. Actually, this has been a common Neo-Scholastic teaching, except for the name (Calcagno, *Cosmologia*, 1: 364-365). However, Józef Życiński deserves special credit for two reasons. First, emphasis on the Anthropic Principle restores some finality to evolutionary thought. Secondly, the Anthropic Principle places man back in the center of the universe, from which the earth had been dethroned by Copernicus (now heliocentric) and man had been dethroned by Darwin (now just another evolved animal). This

restoration is consistent with the teaching of St. Thomas (Aquinas *Summa Contra Gentiles* 3. 22).

South America

Ivan Illich (1956).¹⁰⁰ Ivan Illich is a multinational and multilingual Neo-Scholastic academic, popular philosopher and activist. Illich was born in 1926 in Vienna, Austria. He studied philosophy and theology at the Gregorian University in Rome. He obtained his doctorate (Ph.D.) in history at the University of Salzburg. He came to the United States in 1951, and became the assistant pastor of a New York City parish with a mixed population of Irish and Puerto Ricans. From 1956 to 1960, he was the rector of the Catholic University of Puerto Rico, where he organized an intensive training program for priests in language and Latin American culture. He was the co-founder of the well-known and controversial Center for Intercultural Documentation (CIDOC) in Cuernavaca, Mexico. In 1964, he became the director of research seminars on “Institutional Alternatives in a Technical Society,” with special emphasis on Latin America.

Illich treats the future of man. His interests are in a better world for the future. Six of his eleven books are on social development. He is interested in educating for a better future. Three of his eleven books are on education. On the one hand, Illich is critical of the growth economy, political centralization, and unlimited technology. On the other hand, Illich provides a set of alternative concepts, so that he is a positive activist. He is known as one of the most radical social

¹⁰⁰Ivan Illich, *Energy and Equity* (London: Calder & Boyars, 1974). Illich also wrote to the international public in serious magazines: *Esprit*, *Epreuves*, *Temps Modernes*, *Le Monde*, *Kursbuck*, *Siempre*, *America*, *Commonweal*, *The Manchester Guardian*, *The New York Review*, and the *Saturday Review*. For Illich’s philosophical view of person and the position of the Neo-Scholastics see: Jesu Iturrioz, “*Metaphysica Generalis*” in *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 756.

and political thinkers of the twentieth century. However, his activism has a positive and realistic foundation.

Illich treats person. The Neo-Scholastic academic definition of person is a substantial individual in a rational nature (*Persona est individuum substantiale in natura rationali*). Illich is far outside the academic philosophic treatment of person, and has moved to a pragmatic Existential view of person: person is important “for the constitution of the new order of society.”

Gustavo Gutiérrez (1971)¹⁰¹ Gustavo Gutiérrez was a South American Neo-Scholastic Dominican priest. First, Gustavo Gutiérrez is world- known as the founder of Liberation Theology. Second, Gustavo Gutiérrez promoted as his theme human liberation through small groups (base communities) which can influence the future of man. Third, Gustavo Gutiérrez does not believe in social determinism.

Gustavo Gutiérrez Merino was born in Lima, Peru, on 8 January 1928. He was a priest and theologian of the Dominican Order. He studied medicine and literature in Peru. He studied empirical psychology (not the rational psychology of the scholastics) and philosophy at the University of Louvain, Belgium. Louvain is one of the great centers of Neo-Scholasticism. He finished his doctorate at the Catholic University of Lyons, France, in the Institut Pastoral d’Etudes Religieuses (IPER). Academic work never distanced him from “Base Communities” where he elaborated his theological and spiritual vision. He had the consent of the local bishop for his work with the poor. However, in September 1984, he was called to Rome with the explicit purpose of

¹⁰¹Gustavo Gutiérrez, *Teologia de la Liberacion: Perspectivas* (Lima: CEP, 1971). Gustavo Gutiérrez was a prolific writer. He published articles in the theological magazine, *Concilium*, and he was a member of its International Board. See also: Gustavo Gutiérrez, *Parlare di Dio a Patire della Sofferenza dell’Innocenti* (Brescia: 1986). Gustavo Gutiérrez, *Alla Ricerca dei Poveri di Gesù Cristo: Il Pensiero dei Bartolomé de Las Casas* (Brescia: 1995).

condemning his work of Liberation Theology. He defended his theological orthodoxy and his work with the poor. The real problem with Rome was the fear of Marxism, and this was clear later in the case of Leonardo Boff in 1985, where he was explicitly accused of Marxism. Gustavo Gutiérrez was recognized and praised as the founder of Liberation Theology. He was a professor at the Pontifical University of Peru. He was visiting professor at major universities of North America and Europe. He taught at Notre Dame University, in Indiana, in the United States. He was a member of the Peruvian Academy of Language. In 1993, he received the French Legion of Honor.

Gutiérrez's fundamental work was *Theology of Liberation* (1971). Here he explains two fundamental principles of his vision. First, there must be an act of loving solidarity with the poor. Second, there must be a liberating protest against poverty. This "liberation" develops within three great and fundamental dimensions: politico-social, human, and theological. The political and social liberation is directed towards eliminating the causes of poverty and injustice. The human liberation emancipates the poor, the marginal, and the oppressed from whatever limits their capacity to grow "by themselves" freely and with dignity. The theological liberation emancipates from egoism and sin by establishing a relation with God and with every human being.

Leonardo Boff (1997).¹⁰² Leonardo Boff was a South American Neo-Scholastic philosopher, theologian, writer, Franciscan priest and activist for the poor and excluded. First, Boff

¹⁰²Leonardo Boff, *Ecologia: Grito de la Tierra, Grito de los Pobres* (Madrid: Trotte, 1997), 34-35: "We can't exclude the hypothesis say some authors that man can become extinct. Gaia can eliminate by permitting global equilibrium to persist and other species to continue to live. They can follow the trajectory of cosmic evolution. If Gaia has liberated thousands of species over her long biography, what guarantee does man have that Gaia will not allow his extinction? Our species in fact endangers all others, and is tremendously aggressive in manifesting geocide, ecocide, and is the Satan of the earth." See also the famous author: Harvey Cox, *The Silencing of Leonard Boff: Liberation Theology and the Future of World Christianity* (1988).

is noted for Liberation Theology, and the fear of Rome that his philosophy was Marxism. Second, he rejected external social determinism even in structures of religion, that were adverse to the poor, and taught this had to be overcome. Third, the future of the world depends on small groups, or extinction of man is possible. Philosophically, this last view of the future touches on the Pantheism of the Gaia Hypothesis, that the earth itself is alive. Boff notes in his book *Ecologia* (1997) that Gaia (the living Earth) may allow man to become extinct, and allow the rest of creation to continue on its evolutionary trajectory.

Leonardo Boff was born on 14 December 1938 in Concórdia, Brazil. He entered the Franciscan Order in 1959, and was ordained a Roman Catholic priest in 1964. He received his doctorate in theology and philosophy at the University of Munich in 1970, for a thesis: *The Church as Sacramental Sign in a Secular World and in the Process of Liberation of the Oppressed*. The thesis was published as *Die Kirche als Sakrament im Horizont der Welterfahrung*. He is one of the best known (along with Gustavo Gutiérrez) Liberation theologians. He was one of the first exponents of Liberation Theology to articulate indignation against misery and marginalization.

Boff spent most of his life as a professor in academic fields of philosophy, theology, and ethics throughout Brazil and Universities abroad: Heidelberg, Harvard, Salamanca, Lisbon, Barcelona, Lund, Louvain, Paris, Oslo, and Turin. He was Professor Emeritus of Ethics, Philosophy of Religion, and Ecology at the University of Rio de Janeiro. He has honorary doctorates in politics from the University of Turin, and in theology from the University of Lund.

Boff fought for human rights. He had always been an advocate against human rights abuse. He helped to formulate a new Latin American perspective with “rights to life and the ways to maintain them with dignity.” The work of the liberation theologians led to the creation of more

than one million “ecclesial base communities” (*Comunidades Eclesiais de Base* or CEBs) among the poor Catholics in Brazil and Latin America. The movement and Boff himself also criticized the Roman Catholic Church in the social and economic order that oppressed the communities where the liberation movement was active. Boff found much justification for his work in the document of the Second Vatican Council on the Church (*Lumen Gentium* 1. 8). In 2001, he was awarded the “Right Livelihood Award” by the Swedish Parliament.

Boff was a political critic. Boff considers the leadership of George W. Bush and Ariel Sharon similar to that of “fundamentalist terrorist states.” He has never made a similar criticism of Islamic fundamentalists. Boff gave an interview to the site “Comunista Italiana” (November 2001) about the destruction of the World Trade Center in New York that was very negative about the power of the United States.

Boff was a controversial figure in the Catholic Church. He has actually supported Communist left-wing regimes. He is alleged to support homosexuality. He criticized the Church for supporting governments which use social oppression. The base communities were also involved in politics against the United States and Israel. Boff was accused of “politicizing everything” and of Marxism. In 1985, because of his book, *Church: Charism and Power*, Boff was silenced for one year by the Congregation for the Doctrine of Faith, whose head at that time was Joseph Cardinal Ratzinger, now Pope Benedict XVI. In 1992, he was almost silenced again to prevent him from participating in the Eco-92 Earth Summit in Rio de Janeiro, which finally led him to leave the Franciscan Order and the presbyteral ministry.

Lucio Florio (2005).¹⁰³ Lucio Florio is a South American Neo-Scholastic theologian. He is a professor at the Catholic University of Argentina. Florio attended the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* in Rome on 23 and 24 April 2002. He presented a paper written in Spanish that touches on atheism. He was also present for the dialogue on evolution.

Florio treats evolution. Florio studies the relationship between evolution and God. This is the new Christian doctrine of the Trinitarian God, Florio remarks. Usually evolution is argued in the context of Deism (God creates, but the subsequent cosmos is Mechanistic without the need for God) or Undifferentiated Monotheism. Florio presents an evolutionary dynamic in the universe in the light of trinitarian theology. Florio selects some theological trinitarian texts elaborated over the centuries to show their rapport with the theology of creation. Finally, Florio identifies the most relevant themes for reflection on the Trinity and evolution. Those themes are: first, personal responsibility in the evolutionary process; second, communion between persons; third, the category relation; and fourth, the consequences for ecological equilibrium and conflict in this process.

Florio treats the future of man. Florio quotes Leonardo Boff that the cosmos gravitates to the mystery of communion. Boff concludes that communion present in God is the reality most profound and foundational that exists.

CONCLUSION: The conclusion for the South American Neo-Scholastic philosophers

¹⁰³Lucio Florio, "Trinidad y Evolución: Repercusiones de la Idea Monoteísta y Trinitaria del Dios Cristiano en Relación a la Naturaleza en Evolución," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 273-314, especially 298 where Florio cites Leonardo Boff, *La Santísima Trinidad Es la Major Comunidad* (Madrid: San Pablo, 1990), 18: "The cosmos gravitates to this mystery of communion...Consequently, the communion is present as 'the reality most profound and foundational that exists'."

brings to light a social activism in all. However, all these philosophers are trained academics: Illich trained in philosophy at the Gregorian University in Rome and with a Ph.D. from Salzburg, Gustavo Gutiérrez trained at Louvain University and with a doctorate from Lyons, Leonardo Boff has a doctorate in theology and philosophy from the University of Munich and two honorary doctorates, and Lucio Florio is a university professor.

All the South Americans have written extensively: Illich wrote eleven books, Gustavo Gutiérrez was a prolific writer on the International Board of *Concilium*, Leonardo Boff has written more than one hundred books which have been translated into the main languages of the world, and Lucio Florio presented a paper to the International Congress on Evolution (2002).

All the South Americans are concerned about education: Illich the rector of the University of Puerto Rico and founder of an international school for linguistic and cultural studies, Gustavo Gutiérrez was professor at the Pontifical University of Peru and visiting professor in North America and Europe, Leonardo Boff taught at Universities in Brazil and in at least ten universities abroad, and Lucio Florio teaches at the Pontifical University of Argentina.

All the South Americans were concerned, not about the origin of man, but about the future of man. Further, this concern was a passion for these Neo-Scholastic philosophers. Illich was both opposed by traditionalists and idealized by liberals. Gustavo Gutiérrez was called to Rome to defend Liberation Theology and his base communities for the poor. Leonardo Boff was also accused of Marxism by Rome in 1985. Lucio Florio notes that the evolutionary process does not diminish personal responsibility. Florio notes that ecological equilibrium is an evolutionary theme.

All the South Americans maintained that there is no social determinism. Gustavo Gutiérrez says so explicitly. Any external social pressure from the state or from the Church must be

eliminated according to Leonardo Boff, who has helped the movement to found more than one million of the Ecclesial Base Communities to work for self-determination. Illich tried to train North Americans in the language and culture of Latin America to aid in self-determination. Lucio Florio cites Leonardo Boff concerning community as the most profound and fundamental reality.

Spain

Irenaeo Gonzalez (1957).¹⁰⁴ Irenaeo Gonzalez is a Spanish Neo-Scholastic Jesuit author with a specialty in ethics. He participated in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain. He also is a professor, and prepares students for examinations at a pontifical university. He writes in Latin.

Gonzalez treats Evolutionism. As an ethical system, Evolutionism, which teaches that everything comes from evolution, is a system that must be rejected. Due to Materialism, it destroys spirituality. Further, it is Mechanicism in regard to general laws to which everything must be regulated in a deterministic way. Evolutionism does not teach good morals, but rather predicts from the knowledge of evolutionary laws what will actually happen in the future. Gonzalez rejects

¹⁰⁴Irenaeo Gonzalez, "Ethica," in *Philosophiae Scholasticae Summa*, vol.3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 351: "Evolutionismus: in hac schola omnia evolutione proveniunt; spiritualitas inficiatur; omnia in homine legibus mechanicis, et necessariis subiiciuntur. Ethicae non est statuere quid homines agere debeant, ut recte procedant, sed praedicare quid, congruit legibus evolutionis, acturi sint." Ibid., for the treatment of subjects relevant to this dissertation: 3: 351 for the rejection of Fundamentalism (*Fideismus seu Irrationalismus*); 3: 365 that the goal of man for happiness in the natural order is God; 3: 381 for the metaphysical essence of human happiness in the knowledge and love of God; 3: 390 that perfect beatitude cannot be obtained in this life; 3: 404 that human liberty is necessary for morality; 3: 437 that morality cannot be determined sociologically; 3: 624 that economic Liberalism is rejected; 3: 631 that Marxist Socialism is rejected; 3: 664 for the right of private property.

all these aspects of Evolutionism.

Gonzalez has other adversaries related to Evolutionism. He notes that among ethical errors are Socialism (denying private property), Racism (practical denial of the unity of mankind), Communism (the state is the norm of morality), and Historicism (history as the norm of morality). Gonzalez also rejects Fundamentalism as an ideology.

Josepho Hellin (1957).¹⁰⁵ Josepho Hellin is a Spanish Neo-Scholastic Jesuit author with a specialty in cosmology and theodicy. He participated in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain. He also is a professor in the faculty of philosophy at the University of Madrid. He writes in Latin. He introduces cosmology as “natural philosophy.” He uses the traditional thesis form. His books have ecclesiastical approval, and follow the teaching of St. Thomas as required by the Holy See in the Apostolic Constitution, *Deus Scientiarum Dominus*.

Hellin treats evolution in cosmology. He notes there are other physical laws in nature. He affirms finality in nature. He rejects Mechanicism in nature. He affirms the Hylemorphism of

¹⁰⁵Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol.2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), especially pages: 2: 199 for the physical laws of nature, real but with hypothetical necessity; 2: 228 for the proof of the principle of finality; 2: 261 for the rejection of atomistic Mechanicism; 2: 264 for the rejection of pure dynamism such as the view of Kant; 2: 325 for an affirmation of the Hylemorphism of Aristotle; and 2:352 for the view of the world as not the worse possible nor the best possible. Josepho Hellin, “Theodicea,” in *Philosophiae Scholasticae Summa*, vol.3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), especially pages: 3: 100-108 for the rejection of atheism; 3: 159 for the rejection of Pantheism; 3: 286 for the affirmation of the creation of the world; 3: 290 that only God can create; 3: 296 that God conserves all things directly, positively, and immediately; 3: 332 that God has immediate providence over all things and over man in a special way; and 3: 338 that God governs all created things. Hellin treats scientific questions philosophically in a more traditional Neo-Scholastic thesis form, but the treatment of philosophy of science as science in a general paragraph form is left for another Jesuit book: Jose Maria Riaza Morales, *Ciencia Moderna y Filosofia*, 2nd ed. (Madrid: BAC, 1961).

Aristotle. He defends the thesis that this world is neither the best nor the worst possible world. In short, Hellin's philosophy of nature is both traditional and modern. He does not want to ignore any scientific facts. He hopes that serious controversy can be solved by dialogue.

Hellin treats theodicy, the philosophy of God. Hellin rejects Pantheism. Hellin favors creation of the world as its primary motion. He notes that only God can create. He maintains that God is still concerned with creation by His conservation of the cosmos. He defends divine providence for the future of man and the world.

Jesu Iturrioz (1957).¹⁰⁶ Jesu Iturrioz Gonzalez is a Spanish Neo-Scholastic Jesuit author with a specialty in general metaphysics. He participated in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain. He also is a university professor. He writes in Latin and gives an emphasis to the philosophy of Aristotle and St. Thomas.

Iturrioz treats evolution. He especially rejects evolutionary Materialism because of its claim not to need finality. He endorses the principle of finality. He defends the limitation of acts in created beings. He rejects Mechanicism. He rejects Materialism. He notes the reaction in favor of vitalism by Hans Driesch (1867-1941) in biology, and the reaction by W. Dilthey (1832-1912) in the field of history. Iturrioz also rejects Bergson on final cause. Although Henri Bergson admits vitalism, he does not admit a proper final cause. He endorses the fundamental unity of the human being.

¹⁰⁶Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), especially pages: 1: 59 for the rejection of Materialism; 1: 588 for the rejection of Vitalism; 1: 589 for the rejection of Mechanicism; 1: 646 for creation; 1: 653 for limitation on the acts of created being; 1: 756 for the treatment of person; 1: 828-832 for the defense of the principle of finality;

Leovigildo Salcedo (1957).¹⁰⁷ Leovigildo Salcedo is a Spanish Neo-Scholastic Jesuit author with a specialty in logic and epistemology. He participated in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain. He also is a professor at a pontifical university. He writes in Latin and in thesis form.

Leovigildo Salcedo treats the nature of philosophy. He gives a history of philosophy, especially treating the birth of Neo-Scholasticism. He gives the properties of scholastic philosophy: that it be Christian, with a special relation to theology; that it be Aristotelian philosophy, which so influenced St. Thomas; and that it be traditional, just as all true science should be.

Leovigildo Salcedo describes the history of philosophy. He gives the origin of Neo-Scholasticism. He mentions the popes that were involved and their official writings promoting the philosophy of St. Thomas. Pope Leo XIII wrote the Encyclical *Aeterni Patris* (1879) which was the original springboard for Neo-Scholasticism. Pope Pius X wrote the Encyclical *Pascendi* (1907), which acted against some philosophical errors. Pope Pius XI wrote the Encyclical *Studiorum Ducem* (1923). The 1918 *Code of Canon Law* promoted philosophy in its canon 1366. Pope Pius XII in the Encyclical *Humani Generis* (1950) commended the doctrine and method of St. Thomas.

Ferdinando M. Palmes (1959).¹⁰⁸ Ferdinando M. Palmes is a Spanish Neo-Scholastic Jesuit

¹⁰⁷Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957)., especially pages: 1: 28 for the nature of scholasticism; 1: 63 for the history of Neo-Scholasticism and its promotion by a number of the popes; 1: 353 for the possibility of opinion; and 1: 357 for the criteria for certitude.

¹⁰⁸Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol.2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), especially pages: 2: 446 that animals do not have an intellectual life; 2: 759-768 for the explanation of Hylemorphism and the unity of man; 2: 776 for the rejection of abiogenesis; 2: 791 that evolution is merely a hypothesis and the fact of evolution has not been proved; 2: 802 for the rejection of the evolution of man without the special

author with a specialty in rational psychology. He participated in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain. He also is a professor in the philosophy faculty at the University of Barcelona. He writes in Latin, and uses the thesis form. All of rational psychology among the Neo-Scholastics touches evolution, so Palmes is in many ways the most interesting of the Spanish Neo-Scholastics. He also notes that natural philosophy is composed of two parts, cosmology for inorganic mobile beings, and rational psychology for organic mobile beings.

Palmes treats evolution. He affirms that there is an essential difference between man and the other animals. He rejects abiogenesis. He rejects evolution as a fact. He rejects the evolution of man unless there is a special intervention of God. He affirms the creation of the soul of man by God. He holds Hylemorphism and the unity of man. He holds that the human soul is by its nature immortal.

Jose Maria Riaza Morales (1961).¹⁰⁹ Jose Maria Riaza Morales is a Spanish Neo-Scholastic Jesuit author with a specialty in science. His title to Neo-Scholasticism is his training as a Jesuit, his fidelity to Church requirements for teaching, his ecclesiastical approval for his book, and the scholastic treatment of philosophy in his book. He did not participate in a three volume series of philosophy texts prepared for students in Jesuit colleges in Spain, but his book, on modern science

intervention of God; 2: 818 that the human soul is created by God.; and 2: 839 that the human soul is by its nature immortal.

¹⁰⁹Jose Maria Riaza Morales, *Ciencia Moderna y Filosofia* (Madrid: BAC, 1961), especially pages: 447 concerning entropy and the final death of the universe, and 588 concerning the expansion of the universe. Ibid., xi-xii, where Jose Maria Riaza Morales treats the necessity of science for the philosopher. Also see the book: Jose Maria Riaza Morales, *El Comienzo del Mundo: Exposición a la Luz de los Avances Científicos Actuales*.

and philosophy is referred to by Hellin who wrote in cosmology, almost as part of the series. Jose Maria Riaza Morales did his License in Physical Science. He is a professor of philosophy at two schools. He is a Neo-Scholastic by training, but writes in Spanish in a popular style. His book is also directed to the cultured public.

Jose Maria Riaza Morales treats philosophy of nature. It is necessary for philosophy to have scientific knowledge. Modern man should know science in general, but the philosopher has a special need. The philosopher needs to know perfections in the world. The Church demands that ecclesiastical faculties present scientific questions to students. Professors must show how modern scientific questions are related to philosophy. A course in scholastic philosophy needs the completion of modern science. The Church wants biology, anthropology, mathematics, physics, and chemistry to be taught to the university student. The book of Jose Maria Riaza Morales does the philosophical problems in the last three subjects: mathematics, physics, and chemistry. He treats the new geometries, logic and mathematics, antiparticles, hyper-matter, anti-matter, wave mechanics, quantum mechanics, nuclear fusion, and both determinism and indeterminism in the cosmos.

Jose Maria Riaza Morales is especially helpful to this dissertation relative to the cosmos. He treats the expansion of the universe. He treats entropy and the final death of the universe.

Jose Maria Riaza Morales can be compared to Josepho Hellin. In 1957, Hellin writes in Latin and in thesis form mostly for students for the priesthood. In 1961, Riaza Morales writes in Spanish and in popular form for college students and the general public. Hellin treats philosophy in the traditional metaphysical elaboration. Riaza Morales needs more facts to explain a smaller amount of philosophy. Both are Jesuit teachers and trained in Neo-Scholastic philosophy. Both

seek ultimate explanations. Nevertheless, around the year 1960 there seems to be a change in Neo-Scholasticism and the change is most apparent in the philosophy of nature. Is Riaza Morales better than Hellin? There is a loss of brevity and clarity, and in some cases the student must make his own application of the facts to philosophy. On the other hand, the student is more integrated in the discovery element of philosophy, in the presentation by Riaza Morales.

José Mariá Bermúdez de Castro (2005).¹¹⁰ Bermúdez de Castro is a Spanish paleontologist who attended the international congress on evolution at the Pontifical Atheneum *Regina Apostolorum* in Rome between 23 and 24 April 2002. He submitted a paper. He participated in the discussions. Is he, strictly speaking, a Neo-Scholastic philosopher? He was invited to a Neo-Scholastic congress on evolution; he not only delivered a paper at the congress but actually entered the dialogue; he is an evolutionist; he affirms the principle of finality; he explains the facts using cause and effect (e.g., *Homo antecessor* eventually generated *Homo sapiens neanderthalis*); and he provides solid material for philosophical analysis. His presence shows the need of Neo-Scholasticism not only to read natural science, but to dialogue with archeologists and other scientists in order to accurately and fully discern the facts upon which philosophy can build.

Bermúdez de Castro excavated at Atapuerca, in (Burgos) Spain. His helper and his co-author of the presentation at the international congress was Susana Sarmiento. Both are primarily

¹¹⁰José Mariá Bermúdez de Castro and Susana Sarmiento, “El Proyecto de Investigación de Atapuerca y su Aportación al Conocimiento de la Evolución Humana en Europa,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 127-148, especially pages: 136 for the fact of the presence of the oldest hominids in Europe, approximately 500,000 years ago; 140 for the graphic about the descent from *H. antecessor* to a double line: with a line to the European *H. heidelbergensis* leading to *H. sapiens neanderthalensis*, while the line from *H. antecessor* through the African *H. rhodesiensis* led to *H. sapiens sapiens*. See also: Benignus, *Nature*, 131: “No philosopher of nature can avoid knowing the scientific facts.”

paleontologists. The Siera de Atapuerca has considerable Pleistocene fossils that have been systematically excavated since 1978. The excavations have uncovered the oldest presence of hominids in Europe. The approximate date of the fossils is prior to 500,000 years ago. The excavators apparently have discovered a new species of hominid, *Homo antecessor*. This is a most important discovery because it appears that *Homo antecessor* is the progenitor of two lines of descent. One, in Europe, is *H. antecessor* to *H. heidelbergensis* to *H. sapiens neanderthalensis*, now extinct. The other, African, is *H. antecessor* to *H. rhodesiensis* to *H. sapiens sapiens*, or modern man.

Bermúdez de Castro may also be helpful about the future of man. Bermúdez de Castro notes the extinction of the Neanderthal. He also speculates about the end of the *Homo antecessor*. One possibility is that the entire population moved north; another possibility is the *H. antecessor* were absorbed by various groups technically superior; while a third possibility is that *H. antecessor* mated with African immigrants technically superior who eventually became *H. sapiens sapiens*, or modern man.

CONCLUSION: The conclusion for the Spanish Neo-Scholastic philosophers brings to light a number of valuable conclusions. One most interesting phenomena is the difference between the Neo-Scholastics before and after the mid-twentieth century. Even just past the mid-century, authors like Gonzalez, Hellin, Iturrioz, Palmes and Salcedo all wrote in thesis style, in Latin, for prospective clerics, with technical details, with ecclesiastical approval, and with more or less traditional questions. The new trend began about 1960 or so, with Rianza Morales and Bermúdez de Castro as examples, who wrote in popular style, in Spanish, for both university students and the general public, with details for interest, without ecclesiastical approval, and with questions so new

and complex that Bermúdez de Castro is called on as an expert, although not technically a Neo-Scholastic.

Conclusions of the Spanish can be drawn about the evolution itself. Proof of evolution from scientific facts, *a posteriori*, appears to be given by Bermúdez de Castro. However, Hellin prefers creation to explain the world, and only God can create. The need for finality is endorsed by Hellin, Iturroz, and Bermúdez de Castro. Arguments against Mechanicism were given by Gonzalez, Hellin, Iturroz. Arguments against Materialism were given by Gonzalez, and Iturroz. Hylemorphism was endorsed by Hellin and Palmes. Iturroz endorses the fundamental unity of the human person.

Conclusions of the Spanish can be drawn about man and evolution. The essential difference between man and the other animals is defended by Palmes. The origin of man's body appears to be confirmed by the excavations of Bermúdez de Castro. The origin of man's soul is by the creation of God, maintains Palmes. Hellin rejects Pantheism. The future of man is not predicted by Evolutionism, says Gonzalez, who maintains that perfect happiness cannot be obtained in this world, no matter what evolution says about the future. The extinction of the Neanderthal, which may be a human species, was noted by Bermúdez de Castro, and had been abstractly considered by the South American Neo-Scholastic Leonardo Boff.

Conclusions of the Spanish can be drawn about evolution as a fruitful concept. Abiogenesis is rejected by Palmes. Cosmic evolution may involve such facts as an expanding universe, but the law of entropy will eventually cause the universe to die, according to Riaza Morales. Hellin maintains this world is neither the best nor the worst of all possible worlds. Social evolution is rejected by Gonzalez, especially Marxist Socialism. Gonzalez maintains that morality has to arise from free acts, so sociological morality must be rejected. Atheistic Evolutionism is implicitly

rejected by all. Not only does God exist, but God conserves the cosmos and directs it by divine providence, says Hellin.

Vatican

Pope Leo XIII.¹¹¹ Pope Leo XIII was the papal founder of the Neo-Scholastic movement in philosophy and ruled as the Roman Catholic pope in Rome from 1878 to 1903. The pope wisely promoted liberty among the Catholic schools. Duns Scotus had a following among the Franciscans and others. Suarez had a following among the Jesuits and others. However, Pope Leo XIII recommended St. Thomas' doctrine, especially against modern errors such as Rationalism and Modernism.

¹¹¹Pope Leo XIII, Encyclical Letter *Aeterni Patris* (4 August 1879): *Acta Sanctae Sedis* 12 (1879), 97 et seq., promoted both Neo-Scholasticism and Aquinas. Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 33. Salcedo, *Introductio*, 1: 35 quotes *Aeterni Patris* concerning liberty and the recommendation to follow Aquinas in the light of modern errors: "...edicimus libenti gratoque animo excipiendum esse quidquid sapienter dictum, quidquid utiliter fuerit a quopiam inventum atque excogitatum... Sapientiam Sancti Thomae dicimus...si...minus cohaerens...non probabile...nullo pacto...proponi." Renard, *Philosophy*, 38, notes the different scholastic schools, and differing views on potency that could cause a problem in this dissertation; St. Thomas is helpful for continued evolution when he says that once potency has received act, it is no longer in potency to that act but "may be in potency to many other acts": ("Cum enim potentia dicatur ad actum, oportet quod secundum diversitatem actuum sit diversitas potentiarum," Aquinas *Summa Theologiae* 1. 54. 3. c); such an explanation of evolution would be impossible among philosophers who deny the need for a potential principle, such as Scotus (*Reportata Paris.*, 2. 3. 2) and Suarez (*Disp. Met.*, 31). To see the importance of Scotus and Suarez even in modern metaphysics, in his 1957 book: Renard, *Philosophy*, 262, gives references to Scotus twelve times and to Suarez sixteen times. See Salcedo, *Introductio*, 1: 33 for continued citations from Pope Leo XIII. Pope Leo XIII in *Aeterni Patris* maintains the intrinsic value of Aquinas: "Inter scholasticos doctores, omnium princeps et magister, longe eminet Thomas Aquinas...rationem ut per est, a fide apprimè distinguens..." Pope Leo XIII in *Aeterni Patris* maintains the extrinsic value of the teaching of Aquinas: "...homines superioribus praesertim aetatibus, Theologiae et Philosophiae laude praestantissimi conquisitis incredibili studio Thomae voluminibus immortalibus...Academias et Scholas..."

Pope Leo XIII gave his reasons for endorsing St. Thomas. In *Aeterni Patris*, he notes that the authority of St. Thomas arises from its intrinsic value. Further, in the same encyclical the pope notes that the authority of St. Thomas is acknowledged doctrine by all doctors of philosophy and theology.

Pope Pius X (1912).¹¹² Pope Pius X endorsed the Neo-Scholastic movement in philosophy and theology and ruled as the Roman Catholic pope in Rome from 1903 to 1914. He studied the classics, philosophy, and theology at the University of Padua. His continued studies were of St. Thomas Aquinas in a special way. In education, he promulgated a new plan of seminary study to strengthen the clergy. In politics, this pope was opposed by secular governments, and the (illegal) annexation of the papal territories by Italy was not yet a settled question.

Pope Pius X dealt with an alleged evolution in philosophy. Modernism was a relativistic theory that tried to assimilate modern philosophers, like Kant, into Church philosophy and theology, much in the same way that Aristotelian philosophy was absorbed by the scholastics of the Middle Ages. Evolution entered the discussion since the Modernists justified their relativism with the idea that beliefs in the Church have evolved throughout its history and continue to evolve. The pope and the Anti-Modernists viewed these notions as contrary to the dogmas and traditions of the Catholic Church. The pope countered Modernism with several encyclicals, an order for all clerics to take an oath against Modernism, and the formation of an Anti-Modernism network of informants, the League of Pius V (*Sodalitium Pianum*).

¹¹²Pope Pius X, *Motu Proprio Doctoris Angelici* (29 June 1914): *Acta Apostolicae Sedis* 6 (1914), 449 et seq., promoted both Neo-Scholasticism and Aquinas. Anti-Modernist documents were: Pope Pius X, *Lamentabili Sane Exitu* (3 July 1907), and Pope Pius X, Encyclical Letter *Pascendi Dominici Gregis*, and Pope Pius X, *Sacrorum Antistitum*. Wikipedia, the Free Encyclopedia. *Pope Pius X*. 22 January 2007 <http://en.wikipedia.org/wiki/Pope_Pius_X>.

Pope Pius X took such an aggressive stand against Modernism that there were disruptions in scholarship. Although only about forty clerics refused to take the oath against Modernism, Catholic scholarship with relativistic tendencies was substantially discouraged. Philosophers and theologians who wished to pursue lines of inquiry considered to be in line with Secularism, Modernism, or Relativism had to stop publication and teaching, or face some conflict with the papacy.

Pope Pius X was a liberal for social justice. In the light of the fact that some Neo-Scholastics were social activists, it is important to examine the papal record on social justice. Social teaching in the Catholic Church began early with Pope Pius IX (1864) and the trend was reinforced by Pope Leo XII and Pope Pius X. The papal documents were not alien to scholastic philosophy, because general moral philosophy gave ethical principles and special moral philosophy gave application of those principles to domestic, social, political, and international life. We have seen this trend in Neo-Scholastic philosophy previously with the Calcagno, Gonzalez, and especially with Cathrein who wrote in 1895. The same trend was developing with papal teaching about workers and social equality. Pope Pius IX, in his Encyclical Letter *Quanta Cura* (8 December 1864), wrote about the prevailing social errors of the day and how scholastic ethical teaching could remedy those problems. This began a trend of papal concern about social questions. Pope Leo XII wrote the Encyclical Letter *Quod Apostolici Muneris* (28 December 1878) about Socialism; the Encyclical Letter *Rerum Novarum* (15 May 1891) about the condition of workers; the Encyclical Letter *Graves de Communi* (18 January 1901) about Christian democracy. More directly to civil society and social justice, Pope Leo XIII wrote the Encyclical Letter *Diuturnum* (29 June 1881) on political authority; the Encyclical Letter *Immortale Dei* (1 November 1885) on the nature of civil society; the Encyclical Letter *Libertas* (28 June 1888) on false liberty; and the Encyclical Letter

Sapientiae Christianae (10 January 1870) on the duties of the Christian citizen. Pope Pius X continued this trend of social concern into the twentieth century. Pope Pius X wrote the Encyclical Letter *Singulari Quaedam* (24 September 1912) about associations of Catholic workers, and approved the *Response of the Sacred Congregation of the Council to the Bishop of Jerusalem* (5 May 1929) affirming the right of workers to unionize.

Pope Benedict XV (1918)¹¹³ Pope Benedict XV gave the Neo-Scholastic movement a legal basis in the new 1918 *Code of Canon Law*, and made Neo-Scholastic philosophy and theology obligatory in all Catholic seminaries. He ruled as Roman Catholic pope in Rome from 1914 to 1922.

Pope Pius XI (1922).¹¹⁴ Pope Pius XI was trained in the seminary as a Neo-Scholastic and

¹¹³Pope Benedict XV, *Codex Iuris Canonici* (Westminster, MD: Newman, 1942; original ed. 1918), canon 1366, §2: “Philosophiae rationalis et Theologiae studia et alumnorum in his disciplinis institutionem professores omnino pertractent ad Angelicae Doctoris rationem, doctrinam et principia, eaque sancte teneant.” A problem that Pope Benedict XV had was altercations between Catholic authors, which might be solved by an appeal to the doctrine and method of St. Thomas, as noted by Pope Benedict XV, Encyclical Letter *Ad Beatissimi* (1914): *Acta Apostolicae Sedis* 6 (1914), 576-577. See also: Salcedo, *Introductio*, 1: 34.

¹¹⁴Pope Pius XI, Encyclical Letter *Officiorum Omnium* (1 August 1922): *Acta Apostolicae Sedis* 14 (1922), 449 et seq. Pope Pius XI, Encyclical Letter *Studiorum Ducem* (29 June 1923): *Acta Apostolicae Sedis* 15 (1923), 328 et seq., promoted Neo-Scholasticism and Aquinas. Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 34, cites Pope Pius XI in *Studiorum Ducem*: “...sed etiam Communem seu universalem Ecclesiae Doctorem appellandum putemus Thomam, cuius doctrinam, et quam plurimis in omni genere litterarum monumenti testata est, suam Ecclesia fecerit.” Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: Preface xxi, notes that Pope Pius XI also published *Deus Scientiarum Dominus* (14 May 1931) on scholasticism to teach the doctrine, method, and principles of St. Thomas Aquinas; and also to examine and judge other philosophers by the criterion of the philosophy of St. Thomas Aquinas. Henry V. Gill, *Fact and Fiction in Modern Science* (New York: Fordham, 1944), 117. Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 318. Marcelo Sánchez Sorondo, “La Scienza e la Fede,” in *Evoluzione*, ed. Rafael Pascual (Rome:

ruled as the Roman Catholic pope in Rome from 1922 to 1939.

Pope Pius XI promoted Neo-Scholasticism. Pope Pius XI in his Encyclical Letter *Studiorum Ducem* (1923) confirmed Neo-Scholasticism and the study of St. Thomas Aquinas. The Apostolic Constitution *Deus Scienciarum Dominus* (14 May 1931) legislated that philosophy faculties should teach scholastic philosophy, in a synthesis of the doctrine, principles, and method of St. Thomas Aquinas. It is from this Neo-Scholastic and Thomistic view that Modern Philosophy should be systematically examined and judged.

Pope Pius XI also encouraged science. The study of natural science for those training for the priesthood had been in place for several hundred years. Such a course was an integral part of studies for those preparing for the priesthood. Further, the popes encouraged science by fostering the Academia dei Lincei, founded by laity in 1603. It was the first academy of science in the modern sense. It was founded by Prince Cesi, who invited Galileo to membership in 1610. Pope Pius IX gave the academy a new constitution in 1847. Pope Leo XIII enlarged the membership in 1847. Pope Pius XI in the Motu Proprio *In Multis Solatiis* gave the academy a new constitution and enlarged its membership to 70 members from every nation and religion.

Pope Pius XI touched evolution. He wanted the Academy of the Lincei, which later became the Pontifical Academy of Sciences, to explore the existence of God, and God's creative power.

Studium, 2005), 344. Henricus Denzinger, *Enchiridion Symbolorum, Definitionum et Declarationum de Rebus Fidei et Morum*, 38th ed. (Friburg: Herder, 1952): Concilium Vaticanum, Constitutio Dogmatica *De Fide Catholica* (24 April 1870), caput 4: "De Mutua Fidei et Rationis Opitulatione, et Scientiae Justa Libertate: Neque solum fides et ratio inter se dissidere numquam possunt, sed opem quoque sibi mutuam ferunt, cum recta ratio fidei fundamenta demonstret eiusque lumine illustrata rerum divinarum scientiam excolat, fides vero rationem ab erroribus liberet ac tueatur eamque multiplici cognitione instruat." (Denz. 1799). Ibid., note that all references to Henricus Denzinger, *Enchiridion*, from now on will be abbreviated: "Denz."

Pope Pius XI taught that there was no contradiction between faith and reason. They should mutually assist each other. The First Vatican Council, as early as under Pius IX (1846-1878), proclaimed this in Session Three (24 April 1870) in the Dogmatic Constitution *De Fide Catholica*: “About the Mutual Relation of Faith and Reason, and the Just Liberty of Science: Not only can faith and reason never disagree between themselves, but they can also be a mutual help for each other, since right reason demonstrates the foundations of faith and by the light of reason the science of divine things is carefully uncovered, and faith liberates reason from errors, and guards and instructs human reason with much knowledge.” Pope Pius XI confirmed this in his Motu Proprio *In Multis Solatiis* (1936): *Acta Apostolicae Sedis* 28 (1936), 421: “Science as a true understanding of reality can never contradict the truths of the Catholic faith.”

Pope Pius XI promoted social justice. Under this pope we see a continuing trend of concern for social justice, just as some of the Neo-Scholastic philosophers turned to activism. Pope Pius XI wrote the Encyclical Letter *Quardigesimo Anno* (15 May 1931) about the restoration of the social order by social justice. Pope Pius XI wrote the Encyclical Letter *Divini Redemptoris* (19 March 1937) against atheistic communism. Two more general documents by Pope Pius XI that treat man and society, social evils, and Christian social doctrine as a remedy for social evil are: the Encyclical Letter *Ubi Arcano* (23 December 1922) on the peace of Christ in the reign of Christ; and the Encyclical Letter *Caritate Christi Compulsi* (3 May 1932) about the current evils in society.

Pope Pius XII (1943).¹¹⁵ Pope Pius XII was trained in the seminary as a Neo-Scholastic and

¹¹⁵Pope Pius XII, *Allocutio Ineunte Anno Pontificiae Academiae Scientiarum* (30 November 1941): “In summo gradu scalae viventium collocatus est a Deo homo, anima spirituale praeditus, princeps et supremus regni animalium...originem hominis spectantes hucusque nihil positive clari et certi protulerunt. Non restat nisi futuro relinquere responsum...” (Denz.2285). Pope Pius XII, Encyclical Letter *Humani Generis* (1950): *Acta Apostolicae Sedis* 42 (1950), 561

ruled as the Roman Catholic pope in Rome from 1939 to 1958.

et seq., that scholasticism has good doctrine and method. Ibid., against Ideology, “Homo enim sive praeiudicatis ductus opinionibus”(Denz. 3005). Ibid., rejects atheistic Evolutionism: “...omni notione theistica ex aminis avulsa” (Denz. 3005). Ibid., “Etenim sunt qui evolutionis, ut aiunt, systema, nondum invicte probatum in ipso disciplinarum naturalium ambitu absque prudentia ac discretione admissum ad omnium rerum originem pertinere contendunt, atque audacter indulgeant opinioni monisticae ac pantheisticae mundi universi continuae evolutioni obnoxii... communismi... materilismum dialecticum...Idealismo, Immanentismo, ac Pragmatismo contendens, existentialismi...Historicismus...rationalismo...”(Denz. 3006). Ibid., favoring Scholasticism: “Utique, pro dolor, rerum novarum studiosi a scholasticae theologiae contemptu ad negligendum...”(Denz 3013). Ibid., Pope Pius XIII affirms the value of metaphysics and the main principles of reason, namely, the principles of sufficient reason, and of causality, and of finality: “...cognitionis humanae valorem tuetur, et metaphysica inconcussa principia , rationis nempe sufficientis, causalitatis, et finalitatis... (Denz. 3020). Ibid., favoring Aquinas: “Quae si bene perspecta fuerint, facile patebit cur Ecclesia exigit ut futuri sacerdotes philosophicis disciplinis instruantur ‘ad Angelici Doctoris rationem, doctrinam, et principia’.”(Denz 3022) Ibid., “Quamobrem Ecclesiae Magisterium non prohibet quominus ‘Evolutionismi’ doctrina, quatenus nempe de humani corporis origine inquit ex iam existente ac vivente materia oriundi; animas enim a Deo immediate creari catholica fides nos retinere iubet...”(Denz 3027). Ibid., for the rejection of Polygenism, the doctrine that there were many protoparents: “Cum vero de alia coniecturali opinione agitur, videlicet di polygenismo, quem vocat....vel post Adam...qui non ab eodem prouti omnium protoparente, naturali generatione originem duxerint, vel Adam significare multitudinem quamdam protoparentum... (Denz.3028). Ibid., the goal of man is eternal life says the Bible: “...tum praecipuas veritates referre, quibus aeterna nostra procuranda salus innitur...” (3029). Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 318, 321-322. Jesús Villagrasa, “Evoluzione, Interdisciplinarità e Metadisciplinarità,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 11. Pedro Barrajon, “Evoluzione, Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 260. Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 355. Olivia M. Barrett, “The Role of Science in Liberal Education,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 502, where she notes Pope Pius XII wanted questions for Neo-Scholasticism to be basic and current; that there be a positive relationship between scientific experimentation and philosophy; that the pope often noted the unity of science and philosophy. Ibid., 502, notes philosophy of science is useful for liberal education. Ibid., 487, that philosophy needs science; science needs philosophy; and there has to be mutual understanding between philosophy and science. Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol.1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 34, on the approval of St. Thomas: “Ea est Aquinatis sapientia ...Quappter animum afferte plenum amoris et studii erga S. Thomam...libenter amplectimini” (Pope Pius XII, Sermon *Sollemnis Conventus* (1939): *Acta Apostolicae Sedis* 39 (1939), 246.

Pope Pius XII treated the fact of evolution as scientifically unresolved. In 1941, the pope addressed the Pontifical Academy of Sciences noting that research in many areas, be it in paleontology, biology, or morphology on the problems concerning the origin of man have not, as yet, ascertained anything with certainty; so it must be left to the future to answer the question, if indeed science will one day be able, enlightened and guided by revelation, to give certain and definitive results concerning a topic of such importance.

Pope Pius XII treated Evolutionism in his Encyclical Letter *Humani Generis* (12 August 1950). The presentation of the pope is helpful for this dissertation in its clear opposition to Evolutionism that involves Mechanicism, Dialectical Materialism, Monism, and Communism. The pope also opposes Evolutionism that involves Idealism, Immanentism, Pragmatism, Historicism, Relativism, or Existentialism as a life philosophies, and Pantheism. Pope Pius XII notes that the fact of evolution as not been definitively proved. Further, Pope Pius XII opposes the supposition that evolution is a universal, causal, cosmic law; the pope notes that this is not a valid inference from any known series of natural facts or laws established by science. The pope opposed abiogenesis. The pope opposed the continued evolution of the world. The pope opposed godless evolution. The pope opposed social evolution implicit in Historicism and Dialectical Communism.

Pope Pius XII treated evolution and man. The body of man could have evolved. The soul of man could never have evolved. The Church does not forbid discussion or research on the doctrine of evolution about the origin of the human body from pre-existing material.

Pope Pius XII approved the wisdom and teaching of St. Thomas Aquinas (Pope Pius XII, Sermon *Sollemnis Conventus*, 1939). Pope Pius XII also praised both Aquinas and scholasticism and Aquinas in *Humani Generis* (1950).

Pope Pius XII often noted the unity between science and philosophy; that science is advantageous and necessary for science; and there has to be mutual understanding and cooperation between science and philosophy (*Forth International Thomistic Congress*, Opening Session, 14 September 1955). Pope Pius XII also noted that science needs a sound philosophy (Pope Pius XII, *Address to the Pontifical Academy of Sciences*, 1955). In *Humani Generis*, Pope Pius XII that the evolution of the human body be “treated in research and discussion by experts on both sides” according to the present state of human disciplines and sacred theology.

Pope Pius XII endorsed democracy in a world-wide radio message (Pope Pius XII, *Christmas Vigil Radio Message*, 24 December 1944).

Pope Pius XII, in several other documents in a more general way, treated man and society, with the Christian social doctrine and the Catholic religion as a remedy for social evils. Pope Pius XII, in the Encyclical Letter *Summi Pontificatus* (20 October 1939), treated prevailing social errors of this age. Pope Pius XII, in his *Christmas Vigil Radio Message* (24 December 1955), treated true serenity and social peace.

Pope Pius XII wrote about social questions and the distribution of material goods. The *Radio Message on the Fiftieth Anniversary of “Rerum Novarum”* (1 June 1941) treated the just distribution of material goods. Pope Pius XII, *Christmas Vigil Radio Message* (24 December 1942) about the international social order of nations. Pope Pius XII, *Allocution to Italian Workers* (13 June 1943) about peace and collaboration of the social classes. Pope Pius XII, *Radio Message on the Opening of the Fifth Year of War* (1 September 1949) about Christian civilization. Pope Pius XII, *Allocution to the Members of ACLI* (11 March 1945) about ethics in Christian unionism. Pope Pius XII, *Allocution to Catholic Business Owners* (7 May 1949) about ethics in business.

Pope Pius XII, *Allocution to the Participants in the International Convention of Social Studies* (3 June 1950) about ethics in business. Pope Pius XII, *Christmas Vigil Radio Message* (24 December 1953) on technological progress. Pope Pius XII, *Allocution to the Poor and Homeless* (3 May 1957) about poverty.

Pope John XXIII (1961).¹¹⁶ Pope John XXIII was trained in the seminary as a Neo-Scholastic and ruled as the Roman Catholic pope in Rome from 1958 to 1963. He called the Second Vatican Council but did not live to see its completion. Pope John XXIII promulgated two significant encyclicals: Pope John XXIII, *Mater et Magistra* (20 May 1961) on the evolution of society in the light of Christian teaching, and Pope John XXIII *Pacem in Terris* (11 April 1963) on peace among all nations, which looks to the next phase in the evolution of world politics in which there is an obvious need for public authority.

¹¹⁶María Alejandra Stahl de Laviero, *Encíclicas Sociales* (Buenos Aires: Lumen, 1992), *Mater et Magistra* page numbers: 111 for nobility of work, 124 for the necessity of Catholic social action, 125 for the responsibility of secular persons for social action, 119 for cooperation on a world basis, 113 for emergency aid as a world obligation, 117 for parity between demographic increase and economic growth, 114 for world cooperation in science, technology, and finance, 98 for adaptation necessary between economic growth and social progress, 118 for educating for a sense of social responsibility, 123 for Catholic social education, 99 for the need of economic structures to adjust to human dignity, 105 for the social function of property, and 109 for social security for agricultural workers. Ibid., *Pacem in Terris*, page numbers: 165 for norms for the social action of Christians, 165 for culture and technology norms, 165 for moral virtues and spiritual values, 163 for public authority needed for world peace, 164 for the need of any world authority to protect human rights, 54 for the obligation of governments to promote the common good, 53 for the obligation of citizens to promote the common good, 144 for human duties, 144 for the necessary connection between rights and duties, 149 for authority to be authentically democratic, 154 for a charter of human rights, 141 for the right to practice religion, 141 for the right to a decent life, 141 for the right to reputation and culture, 142 for economic rights, 142 for the right to property, 143 for the right to residence and immigration, and 157 for the rights of minorities. Wikipedia, the Free Encyclopedia. Pope John XXIII. 19 January 2007 <http://en.wikipedia.org/wiki/Pope_John_XXIII> See also: Nancy Celaschi. Blessed Pope John XXIII: An “Ordinary” Holiness. 19 January 2007 <<http://www.americancatholic.org/messenger/sep2000/feature1.asp>>

Pope John XXIII treats social evolution. *Mater et Magistra* views social evolution as determined by man's own free will. There is no hint of some deterministic force in society or in individual men. The pope endorses education for social responsibility. Catholics should sponsor social education. Secular persons are responsible for social action. Catholic social action is necessary. Intelligent adaptation is necessary between economic growth and social progress. Economic structures must adjust to human dignity. Cooperation must be on a world basis.

Pope John XXIII treats the evolution of world politics. *Pacem in Terris* views political evolution as determined by the free will of mankind acting for the common good. Some public authority is necessary for world peace. World authority needs to protect human rights. Governments need to be ordered to bring about the common good. However, the common good is not just the obligation of governments but also of citizens. Hence, there is little evolutionary determinism in the pope's encyclical. All men have the duty to act responsibly. There is a necessary connection between rights and duties. Authority must be authentically democratic. Human rights include: economic rights, right to a decent life, right to free religious practice, right of residence and immigration, rights of ethnic minorities, right to reputation, and the right to culture.

Pope Paul VI (1966).¹¹⁷ Pope Paul VI was trained in the seminary as a Neo-Scholastic and

¹¹⁷Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 328, "It is by virtue of the eternal soul that the whole person, including the body, possesses such great dignity," Pope Paul VI, *Discourse at the Symposium on Original Sin* (11 June 1966): *Acta Apostolicae Sedis* 58 (1966), 654. Haffner, *Evolution*, 319, "It is of the greatest importance to recognize that over and above what is visible, the reality of which we discern through the sciences, God has given to us an intellect which can attain to that which is, not merely the subjective content of the 'structures' and developments of human consciousness," Pope Paul VI, *Credo of the People of God* (30 June 1968), 5. María Alejandra Stahl de Laviero, *Encíclicas Sociales* (Buenos Aires: Lumen, 1992), 267-348, especially 304: Second Vatican Council, Pastoral Constitution on the Church in the Modern World *Gaudium et Spes* (7 December 1965), number 36: "One should therefore deplore certain attitudes of mind which are sometimes

ruled as the Roman Catholic pope in Rome from 1963 to 1978.

Pope Paul VI treated evolution. He was concerned about the human soul and human dignity. Concerning the soul, the pope pointed out that any application of the theory of evolution becomes unacceptable when it fails to affirm very clearly the immediate and direct creation by God of each and every human soul. By virtue of the soul the whole person possesses great dignity.

Pope Paul VI stressed essential harmony between science and religion. In the prelude to his monumental profession of faith, Pope Paul VI maintained that the sciences study what is visible, God has given man an intellect to attain reality. This is the teaching of the Second Vatican Council, in the document *Gaudium et Spes* (7 December 1965) approved by Pope Paul VI. The council affirmed the legitimate authority of science, and maintained that faith and science were not opposed.

Pope Paul VI also taught about the social order. The pope viewed human beings as free to build their own better future. Pope Paul VI, *Populorum Progressio* (26 March 1967) treats the necessity of promoting the growth of nations. Pope Paul VI, Apostolic Letter *Octogesima Adveniens* (14 May 1971), on the eightieth anniversary of the social encyclical *Rerum Novarum* about the condition of workers, taught that the pope desired to continue and expand the social teaching of the Church so that the Church could walk united with humanity and in solidarity with human dreams to realize the fulness of man's aspirations.

found even among Christians because of a failure to recognize the legitimate authority of science. These mental attitudes have given rise to conflict and controversy and led many to assume faith and science are mutually opposed...For creation without the Creator fades into nothingness.” María Alejandra Stahl de Laviero, *Encíclicas Sociales* (Buenos Aires: Lumen, 1992), *Populorum Progressio* (26 March 1967), 209-226; and *Octogesima Adveniens* (14 May 1971), 352-372.

Pope John Paul II (1985).¹¹⁸ Pope John Paul II was trained in the seminary as a Neo-Scholastic and ruled as the Roman Catholic pope in Rome from 1978 to 2005.

Pope John Paul II treated evolution in *Discourse to the Symposium: Christian Faith and Evolution* (26 April 1985). The pope recognizes evolution as a paradigm of a scientific theory which touches many different disciplines, among which are: physics, biology, paleontology, and sociology. The pope notes that in the nineteenth century the evolutionists promoted Materialism, but today there is more openness and better hope for dialogue. Science and faith are not antagonistic but each has its own method. The pope accepts (1985) evolution that presupposed creation, a continuous creation (*creatio continua*) by which God is visible to the eyes of faith. There are some limits mentioned by the pope. Science and faith are separate, since it is faith that

¹¹⁸Pope John Paul II, Udiienza Generale *L'Uomo Immagine di Dio , È un Essere Spirituale e Corporeo* (16 April 1986): "...del punto di vista della dottrina dell fede, non si vedono difficoltà nello spiegare l'origine dell'uomo, in quanto corpo, mediante l'ipotesi dell'evoluzione...L'anima umana, però, da cui dipende in definitiva l'umanità dell'uomo, essendo spirituale, non può essere emersa dalla materia." Jesús Villagrasa, "Evoluzione, Interdisciplinarietà e Metadisciplinarietà," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 11-14, especially page 11, where it is clear the pope recommends respect for different methods used in various areas of knowledge to permit a view of reconciliation when different areas of knowledge seem irreconcilable.. Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 319, 324. Pedro Barrajon, "Evoluzione, Problemi Epistemologici e Antropologici," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 247-250, for Pope John Paul II, *Discourse to the Symposium: Christian Faith and Evolution* (26 April 1985); Pope John Paul II, *Message to the Pontifical Academy of Sciences* (22 October 1996). Haffner, *Evolution*, 332, describes the *Discourse at the General Audience* of Pope John Paul II (16 April 1986) in which he proposes "programmed evolution," as theoretically probable, so that the genetic structure of the new being was partly inherited from the inferior being and partly due to direct divine intervention. Haffner, *Evolution*, 325, describes the Christian idea of providence, which differs radically from chance in the cosmos or human affairs, according to Pope John Paul II in *Discourse at the General Audience* (14 May 1986). Józef Życiński, *God and Evolution*, trans. Kenneth W. Kemp and Zuzanna Maslanka (Washington, D.C.: Catholic University of America, 2006), 1-2, notes that it is characteristic of the pontificate of Pope John Paul II to promote interdisciplinary dialogue among the natural sciences, philosophy and theology.

teaches morals. Science and philosophy are separate. Pope Paul II endorses the principle of finality and the principle of sufficient reason. Unfortunately, in the popular media evolution is presented as philosophy, as if philosophy were a conclusion of science. The mixing of science and philosophy creates confusion.

Pope John Paul II treated evolution in the *Message to the Pontifical Academy of Sciences* (22 October 1996), originally given in French. The pope affirmed the correctness of Pope Pius XII in *Humani Generis* to call evolution a scientific theory. Pope John Paul II adds that new knowledge allows us to consider that evolution is “more” than a hypothesis. This is the way that the French was translated into Italian (“more than an hypothesis”) for publication in *L’Osservatore Romano*, 24 October 1996, page six. However, (“more than one hypothesis”) was the translation of the French into the English edition of the same *L’Osservatore Romano*. This caused some controversy. In the end, the pope wanted the scientific community to know that evolution was more than just a hypothesis, but had more weight to its evidence today. Hypothesis represents the preliminary stage of the scientific method, with a corresponding lower degree of certitude. Nevertheless, a scientific theory, by its very nature is still open to verification, correction and refinement. Of course, regarding the empirical fact of evolution, there is no absolute demonstration because the process can only be checked indirectly. The second major thesis of this document (22 October 1996) was that there is an ontological difference between man and the animals.

Pope John Paul II treated the extrinsic difficulty of treating evolution. The pope pointed out (22 October 1996) that rather than speaking about the theory of evolution, it is more accurate to speak of the theories of evolution, since there are many. The use of the plural is required here partly because of the diversity of explanations regarding the mechanism of evolution, and partly

because of the diversity of philosophies, such as Materialist, Reductionist, and Spiritualist, involved in interpreting evolution.

Pope John Paul II explained (*General Audience*, April 1986) that what is more consonant with Christian tradition is “programmed creation” which may be called evolution of a species which was then used by God to create man. This idea of the evolution of man’s body would present no difficulty from the viewpoint of faith, the pope said. The human body could have been prepared for in preceding living beings. When the proto-human arrived at a point where it was prepared to receive a soul, God would infuse the soul, either into an embryo or into an adult member of the species. At the same time God modified the genetic structure of the proto-human under consideration, so that it could accept the soul and become a human being. In this way the genetic structure of the new being was partly inherited from the inferior being and partly due to direct divine intervention. The possibility of this kind of origin of the body of man can be termed probable, according to the pope, but is not a scientific certainty. Science cannot verify this theory.

Pope John Paul II urged a complete understanding of evolution by including providence. While a complete understanding of evolution must take into account the effects of the environment and genetic modifications, that complete understanding must include the power of providence guiding created beings through the laws inscribed on them. Blind chance cannot be responsible for co-ordinated developments which give rise to complex biological structures like the eye or ear; in fact, the cell itself, the very basis of life, is exceedingly complex. Evolution can be thought of as a kind of “programmed creation,” in which God has written into creatures the laws for evolution; in this way a clear link can be seen between the action of God at the beginning and His constant providence. The Christian idea of providence is radically different from chance, said Pope John

Paul II in his *Discourse at the General Audience* (14 May 1986). It is precisely Divine Providence as the transcendent wisdom of the Creator that makes the world a cosmos rather than a chaos.

Pope John Paul II treated the paradox of man (22 October 1996). Man is a real paradox and needs to be seen on three levels, science, metaphysics and theology. Science observes and measures and writes the time line of man, but the moment of evolutionary passing to human is not available to science. Metaphysics deals with the very precious signs of the specific being of humanity: moral conscience, liberty, esthetics, and religion. This is an area of philosophical analysis. Theology seeks the ultimate design of man by the Creator. Every theme about evolution leaves perplexity, shadow and doubt. Science, theology and philosophy are limited. There is a mysterious paradoxical reality, which Pope John Paul II calls “the ontological difference.”

Pope John Paul II promoted social justice. Pope John Paul II, *Message for the 2003 World Day of Peace* (8 December 2002) praised the Encyclical Letter of Pope John XXIII *Pacem in Terris* as prophetic because it looked at the new phase of evolution in world politics, and evolution directed by the free will of man toward the common good. This pope was just as concerned about social justice as his predecessors. Pope John Paul II wrote *Laborem Exercens* (14 September 1981) on the value of human work, commemorating the 90th anniversary of the Encyclical Letter *Rerum Novarum*. Pope John Paul II wrote *Sollicitudo Rei Socialis* (30 December 1987) confirming the social teaching and the values in *Populorum Progressio* on the 20th anniversary of that encyclical. Pope John Paul II wrote *Centesimus Annus* (1 May 1991) again confirming the social teaching and ethical values on the centenary of the encyclical *Rerum Novarum*.

Pope John Paul II rejected ideological manipulation. Pope John Paul II rejected, in his *Discourse to the Pontifical Academy of Sciences*, 31 October 1992) rushing to a conclusion, and

exclusively in the framework of science (Scientism). Pope John Paul II also rejected, in *Message to the Pontifical Academy of Sciences: On Evolution*, 22 October 1996) any evolutionist ideologies which regard the spirit either emerging from the forces of living matter (Materialism), or as a simple epiphenomenon of that matter (Modified Materialism, so that consciousness arises from matter).

Joseph Ratzinger (1986).¹¹⁹ Joseph Ratzinger was trained in the seminary as a Neo-Scholastic philosophy and theology. He also taught theology. At the Congregation for the Doctrine of the Faith, he was obligated to watch for deviations in theology. That traditional theology was, in large part, the theology handed down through the scholastics and especially St. Thomas.

Ratzinger, before his papal election, preached a Lenten series of talks in 1981. He spoke on the first chapters of the Book of Genesis. He connected catechesis with creation. He noted the Bible is not a book of science. He distinguished between the inspired message and the biblical literary form. He notes that the pagan philosopher Aristotle refuted the position of the Atomists that everything came into existence automatically, that is by chance. His talks were put into book form. In that book, *Creazione e Peccato*, Ratzinger notes that evolution and creation are answers to two different questions which are mutually complimentary.

Ratzinger, as Cardinal, asked advice on evolution. He consulted with the renowned Jesuit,

¹¹⁹Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 330, for Marcozzi; and the interview with Vittorio Marcozzi is also printed in *Inside the Vatican* 5, no. 1 (January 1997), 27. Joseph Ratzinger, *Creazione e Peccato* (Cinisello Balsamo: Paoline, 1986), 40-41, and the English edition of this book is: Joseph Ratzinger, *"In the Beginning": A Catholic Understanding of the Creation and Fall* (Grand Rapids, Michigan: Eerdmans, 1995), 100: for evolution as presupposing creation. Libreria Editrice Vaticana, *Catechism of the Catholic Church*, trans. United States Catholic Conference (San Francisco: Ignatius Press, 1994), numbers 28, 34, 260, and 283.

Father Vittorio Marcozzi. Marcozzi maintained that there were at least three phases in which God's intervention is necessary and evident. First, God must intervene at the appearance of life, that is, when the first living organisms appear. Second, God must intervene when God imbues these organisms with evolutionary possibilities. Third, God must intervene at the coming of man, whose spiritual qualities implicate God's special intervention. Thus, the Church does not exclude the chemical origin of life, but some special divine intervention, even using evolutionary causes, cannot be excluded in the passage from inanimate matter to living being. Marcozzi also noted that man is the apex of creation. Man is essentially distinct from all other animals.

Ratzinger, as Cardinal, gave the ecclesiastical permission to print the *Catechism of the Catholic Church* (1994) when he was Cardinal Prefect of the Congregation of the Doctrine of Faith. He notes that throughout history man has been a "religious being," since in belief and prayer, in meditation, sacrifice and ritual (n. 28). The world, and man, attest that they contain within themselves neither their first principle nor their final goal, but rather that they participate in Being itself, which alone is without origin or end (n. 34). The studies about the origin of the world and man have enriched our knowledge, invite us to admire the greatness of our Creator, and lead us to reject Dualism, Gnosticism, Deism, and Materialism (n. 283 et seq.). The ultimate end of the whole divine economy is the entry of God's creatures into the perfect unity of the Most Blessed Trinity (n. 260).

Ratzinger, as Cardinal, treated the evolution of the human body. Ratzinger gave the ecclesiastical permission to print the *Catechism of the Catholic Church*, specifically number 364: "The human body shares in the dignity of the image of God: it is a human body precisely because it is animated by a spiritual soul, and it is the whole human person that is intended to become, in the

body of Christ, a temple of the Spirit.” The hypothesis of the evolution of man’s body and the direct creation of man’s soul cannot be checked by observation or scientific investigation. Perhaps, some Catholic thinkers might prefer the even the first human body, in its totality, was the result of direct divine intervention without any influence of evolution. But it is not so easy to declare the creation of the first man’s body is simply a creation out of nothing, since the Scriptures refer to man’s formation from the dust of the earth (Genesis 2: 7). Even if the precise link between what is the contribution of evolutionary process in the creation of man’s body and what is due to divine intervention remains a mystery, God is nevertheless ultimately responsible for the creation of the whole Adam and the whole Eve. It is crucial to recall that the image of God is found in the body as well as the soul (*Catechism of the Catholic Church*, n. 364).

Ratzinger, as Cardinal, holds monogenism. Twice in the *Catechism of the Catholic Church* (n. 28 and n. 360), Ratzinger quotes the *Acts of the Apostles* 17: 26-28: “From one ancestor, God made all nations to inhabit the whole earth.” This quotation strongly suggests a reference to one person, not a plurality. That the Catholic Catechism refers to a single person is confirmed in the footnote of number 360 of the Catechism of the Catholic Church, which cites Tobit 8: 6, “You it was who created Adam, you who created Eve his wife to be his help and support, and from these two the human race was born.” Thus, the “one ancestor” could only be Adam. Accordingly, monogenism (one Adam) is certainly a safer position than polygenism (many Adams). The Catechism of the Catholic Church effectively teaches the polygenism is not compatible with the Catholic Tradition. Further, from the natural sciences it is impossible to affirm that humanity had a polygenetic beginning.

Pope Benedict XVI (2006).¹²⁰ Joseph Ratzinger was elected pope and took the name Pope Benedict XVI in 2005.

Pope Benedict XVI addressed the issue of evolution in talks. He mentioned evolution during the homily of his pontificate's inaugural Mass on 24 April 2005: "We are not some casual and meaningless product of evolution. Each of us is the result of a thought of God. Each of us is willed, each of us is loved, each of us is necessary." A second reference to evolution occurred on 6 April 2006 in a talk to young people who came to St. Peter's Square in anticipation of World Youth Day: "Science presupposes the trustworthy, intelligent structure of matter, the 'design' of creation."

Pope Benedict XVI gave a private seminar on evolution to his former theology students at Castel Gandolfo on the 2nd and 3rd of September 2006. One of the documents presented is the article by Fiorenzo Facchini, priest and scientist, published in *L'Osservatore Romano* on 16 January 2006. One of the two speakers was Christoph Cardinal Schönborn, a theologian close to Pope Benedict XVI. Cardinal Schönborn seems to have embraced the theory of "intelligent design" in an article published by the *New York Times* on 7 July 2005.

Pope Benedict XVI was against ideology. The pope is also against Concordism (denying principles for the sake of unity). In the present world, the pope maintains, in *Creazione e Peccato*,

¹²⁰Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 324, 333, 338-339, especially 338-339 where Haffner notes that the Magisterium of the Church has been very open and positive to scientific developments concerning the theory of evolution. Rafael Pascual, "La Teoria dell'Evoluzione: Status Questionis," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 38-39, on the 1981 Lenten sermons that eventually were turned into the book *In the Beginning*. Jesús Villagrasa, "Evoluzione, Interdisciplinarietà e Metadisciplinarietà," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 13-14, about the Encyclical Letter *Fides et Ratio*. Sandro Magister. *Creation or Evolution? Here Is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>>, especially for the details of recent papal talks and for the Castel Gandolfo seminar in September 2006.

a certain convergence between science and revelation. For example, theologians hold the temporality of the universe, and now it appears that this is supported by the Big Bang Theory and also by the Thermodynamic Theory of Entropy. Another example is theologians holding some harmony and design in the universe, and now this appears to be supported by Albert Einstein and Fred Hoyle. Ideology still exists in the area of evolution, since Jacques Monod believes that the scientific method forces him to view order in nature as the fruit of blind chance in response to the word “God.”

CONCLUSION: The importance of the conclusions from the popes is enhanced by their position as the leader of the Roman Catholic Church. These popes are Neo-Scholastic by their seminary training. In general, the Magisterium of the Catholic Church has been very open and positive to scientific developments concerning the theory of evolution. Pope Pius XII endorsed (12 August 1950) metaphysics and its principles of causality, finality, and sufficient reason. Pope John Paul II noted (22 October 1996) the paradox of man, which can only be understood by the convergence of science, philosophy and theology.

Conclusions from the popes touched evolution. On 30 November 1941, Pope Pius XII told the Pontifical Academy Sciences that despite much research, the problem of the origin of man was not resolved, but it was an important problem. Since, in his 1941 address to the Pontifical Academy of Sciences, Pope Pius XII locates man at the summit of the scale of the living, endowed with a spiritual soul, and placed by God as prince and sovereign over the animal kingdom, he would maintain an essential difference between man and the other animals. Pope John Paul II also noted an ontological difference between man and the other animals (22 October 1996). Cardinal Ratzinger, before becoming pope, was told of the essential difference between man and the animals.

Conclusions from the popes touches some opposition, not directly to evolution as such, but to various philosophies attached to evolution. Pope Pius XII wrote the Encyclical Letter *Humani Generis* (1950). In it, Pope Pius XII was against Historicism, Mechanism, Materialism; he noted that the body of man could evolve; the soul of man could not have evolved but was directly created. Pope Pius XII notes the Bible teaches man's goal is to attain his eternal salvation. Pope Pius XII is against Evolutionism as a universal law, against atheistic evolution, and against a perpetually evolving world. The pope is against social evolution implicit in Historicism. Pope John Paul II was also against nineteenth-century evolutionary Materialism (26 April 1985).

Conclusions from the popes show an openness about the possibility of the evolution of the body of man, as long as man evolved from already existing and living material. This was affirmed by Pope Paul II, who noted that from the point of view of religion, there is no difficulty in explaining the origin of the body of man by means of the hypothesis of evolution.

Conclusions of the popes concerning the soul of man touch its spirituality. Pope Pius XII states the soul could not have evolved but is directly created by God. Pope John Paul II states that the human soul, upon which the humanity of man depends, is spiritual, and is not able to be immersed in matter. This non-immersion in matter essentially separates man from all the other animals.

Conclusions from the popes touch the mode of evolution. Pope John Paul II explained (*General Audience*, April 1986) that what is more consonant with Christian tradition is "programmed creation" which may be called evolution of a species which was then used by God to create man. When the proto-human arrived at a point where it was prepared to receive a soul, God would infuse the soul. At the same time God modified the genetic structure of the proto-human

under consideration, so that it could accept the soul and become a human being. In this way the genetic structure of the new being was partly inherited from the inferior being and partly due to direct divine intervention. Science cannot verify this.

Conclusions from the popes support the view that there is no contradiction between science and religion. The First Vatican Council solemnly taught that faith and reason can never contradict each other, and they should mutually assist one another. Pius XI in his Motu Proprio *In Multis Solaciis* (1937) notes that same theme. The Second Vatican Council, under Pope Paul VI, in the Pastoral Constitution on the Church in the Modern World *Gaudium et Spes* (7 December 1965) confirms that faith and science are not mutually opposed. Pope Paul VI taught the essential harmony between science and religion: Pope Paul VI, *Credo of the People of God* (30 June 1968). Pope John Paul II maintained that science and faith are not antagonistic, but each have their own method (26 April 1985).

Conclusions from the popes support the free exploration of scientific questions by competent scientists. The origin of the Papal Academy of Sciences was the initiative of laymen, but it was given a new constitution by Pius IX, enlarged by Pope Leo XIII, enlarged to 70 members from every nation by Pope Pius XI. Pope Pius XII wanted philosophical questions to be basic and current (Pope Pius XII, *Fourth International Thomistic Congress*, 14 September 1955).

Conclusions from the popes support dialogue between science and philosophy. Pope Pius XII not only noted the relationship between scientific experimentation and philosophy, but often noted the unity of science and philosophy (Pope Pius XII, *Fourth International Thomistic Congress*, 14 September 1955). Science needs a sound philosophy (Pope Pius XII, *Address to the Pontifical Academy of Sciences*, 1955). Pope Pius XII, in *Humani Generis*, noted that the origin of

the body of man by evolution could be treated in research and discussion by experts in the natural sciences and in theology. Pope John Paul II affirmed science and philosophy are separate, and to mix them causes confusion (26 April 1985). Pope John Paul II promoted interdisciplinary dialogue between the natural sciences, philosophy and theology. Pope John Paul II, advised by Cardinal Ratzinger, in the Encyclical Letter *Fides et Ratio* (Faith and Reason) notes a fragmentation of knowledge that not only makes research difficult, but man himself begins to have a fragmented view of himself, and even ends by not recognizing himself as fragmented.

Conclusions that the popes supported Neo-Scholastic philosophy involve the foundation of Neo-Scholasticism by Pope Leo XIII. The usefulness of Neo-Scholasticism was endorsed by Pope Pius X against Modernism. Pope Benedict XVI mandated the teaching of Neo-Scholastic philosophy and theology by the legislation in the new *Code of Canon Law*. Pius XI continued the trend of support for Neo-Scholasticism. Pope Pius XII commended St. Thomas.

Conclusions from the popes support avoidance of ideology. Pope Pius XII, in *Humani Generis*, does not want man to be led by ideology. Pope John Paul II rejected ideological manipulation. Pope John Paul II rejected (31 October 1992) rushing to a conclusion, and exclusively in the framework of science (Scientism). Pope John Paul II also rejected (22 October 1996) any evolutionist ideologies which regard the spirit either emerging from the forces of living matter (Materialism), or as a simple epiphenomenon of that matter (Modified Materialism, so that consciousness arises from matter).

Conclusions from the popes support human dignity, especially Pope Pius XII condemning war, addressing the ethics of both workers and business owners, promoting unions, stating concerns about technology, and addressing the poor and the homeless. Pope Pius XII, on 30 November

1941, noted in his presentation to the Pontifical Academy of Sciences that man was placed by God in the top grade in the scale of living beings. Pope John XXIII affirms human dignity in the entire Encyclical Letter *Mater et Magistra*, and especially in number 82 of that document. Pope John XXIII also affirms human dignity in the Encyclical Letter *Pacem in Terris* (11 April 1963) by teaching the duties of government for the common good (number 60) and endorsing a charter of human rights (number 75). Pope John Paul II explained (1996) two reasons why the teaching authority of the Church is interested in theories of evolution: first, because evolution impacts man who is the image and likeness of God, and secondly because man's loving relationship with God will find its full expression at the end of time, in eternity (Aquinas *Summa Theologiae* 1-2. 3. 5 ad 1). Cardinal Ratzinger, before becoming pope, was told that man is the apex of creation.

Conclusions for social action and social justice are positive in a trend from Pope Pius IX to Pope Leo XIII, for many writings on social justice. This trend continued in Pope Pius X in approval for unions for workers. This trend continued under Pope Pius XI for a new order with social justice, and the condemnation of atheistic communism. Pope Pius XII delivered four addresses and four world radio messages about the distribution of material goods and social questions. Pope John XXIII issued Encyclical Letter *Mater et Magistra* (5 May 1961) and Encyclical Letter *Populorum Progressio* (11 April 1963) to promote social justice in the world. Pope John Paul II affirmed (8 December 2002) that another encyclical of Pope John XXIII, *Pacem in Terris*, was prophetic in that it looked to the next phase of evolution in world politics, and that one of the consequences of this evolution was the obvious need for a public authority.

Conclusions from the popes affirm God in creation. Pope John Paul II on 26 April 1985 says that evolution presupposes creation by God, and by a continuous creation (*creatio continua*).

Cardinal Ratzinger, even before becoming Pope Benedict XVI, sought advice on God's place in evolution, and was told God must be present in abiogenesis, in evolutionary orientation of creation, and in the evolution of man.

PART TWO: HEURISTIC DISCOVERIES FROM SURVEY OF LITERATURE

Chapter 3: PROBLEM WITH DEFINITION

Here is a presentation of the difficulties with definition in treating evolution. These difficulties were discovered (a heuristic) in the analytic survey of literature. Later, in the synthetic presentation of theses to develop an academic class on Evolutionism, there will be definitions appropriate to each proposition.

Four general difficulties were discovered with definitions in the treatment of Evolutionism. First, popular definitions can be extended or restricted when applied to science or philosophy, so that terms are used analogously. Second, technical definitions can be diverse in reality and their proponents endorse the effort to keep their theories of evolution distinguished from other theories alleged less accurate. Third, words can be applied equivocally, so that the same word means different things. Fourth, definitions can be lacking.

First, there can be a problem with the extension of the popular concept of evolution.¹ There is a popular meaning, a scientific meaning and a philosophic meaning.² The popular meaning,

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 6: “Per ‘evoluzione’ si intende l’origine delle specie viventi, animali e vegetali, mediante un processo di trasformazione.” However, La Vecchia adds that the common concept of progressive evolution may be deceptive: “L’evoluzione, inoltre, non sarebbe stata sempre progressiva nel senso di un maggiore perfezionamento e di una più alta complessità degli organismi, ma anche non di rado regressiva, vale a dire in direzione di una semplificazione e di una destrutturazione degli organismi...per esempio, di molti parassiti...”

²Geroge P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 414, notes that, “Many writers argue: if you admit changes occur, you admit the scientific theory of evolution,” which Klubertanz characterizes as “loose thinking.”

“change,” is an invitation to a number of writers wrongly to allege that those who believe in change, believe in evolution. Also, there is a scientific meaning which states that a very large number of kinds of living things has been derived by means of a tremendously long series of usually very small (perhaps occasionally large) cumulative changes, from very few (perhaps only one) living ancestors. The philosophic meaning, which properly concerns us here, is Evolutionism, the philosophy that holds the complexity of kinds of things is due to the accumulated changes passed on by generation.³

This same analogical problem can arise in connection with such a simple term as “man.” There can be a problem with the philosophical definition of man. Even a true universal such as “what a man is” does not settle all that man is, once and for all. The definition of man as a rational animal has been criticized as inadequate and incomplete. This definition of an is essential, good, but never intended to be a complete definition. From the standpoint of completion, much more needs

³Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), quotes Olson at the Chicago Darwin Centennial: “If organic evolution can be defined simply and loosely as the changes of organisms through successive generations of time, then it can hardly be questioned, that within our understanding of the earth and its life, evolution has occurred. In this sense it must be considered a reality.” La Vecchia, *Evoluzione*, 317, distinguishes between the science of evolution and the philosophy of Evolutionism: “...distinguendo anzitutto tra evoluzione ed evoluzionismo.” Ferdinando M. Palmes, “Psychologia” in *Philosophia Scholastica Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 791, gives a scholastic philosophical definition of evolution, “Transformation seu evolutio specierum organismorum viventium...Transformatio, vi nominis, idem est ac mutatio formae, qua unum ens, forma aliqua qua praeditum erat relictæ, aliam indueret. In hac, autem questione pro eodem sumitur transformatio ac evolutio ab una forma in aliam; licet evolutio potius connotat principium aliquod internum transformationis et gradationem aliquam qua ipsa efficeretur.” Jesús Villagrasa, “Evoluzione, Interdisciplinarietà e Metadisciplinarietà,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 5: “Si tratta di una distinzione analoga a quella fatta tra il testo della Sacra Scrittura e la sua interpretazione. Il caso Galileo è illustrativo: l’errore dei teologi di allora fu quello di considerare di natura scientifica – teoria eliocentrica – come appartenente all’ambito della fede; l’errore di Galileo fu presentare come verità scientifica ciò che, in mancanza di prove sufficienti, non era altro che un’ipotesi tra altre fatta sui fenomeni osservati.”

to be said.⁴ There can also be a problem with the scientific definition of man. Man is defined as *Homo sapiens sapiens*. With the advent of better knowledge of the Neanderthal, some authors are now labeling Neanderthals as *Homo sapiens neanderthalensis*.⁵ Does the predication of man include all the subspecies under the genus *Homo*? The obvious use of popular and common terms is not so obvious at all.

Second, technical definitions can be diverse in reality, and the promoters of such technical definitions of evolution seek to have their views of evolution clearly distinguished from other views. There are at least thirty different schools of evolution.⁶ Their definitions of evolution vary considerably and consequently have a different influence on the concept of Evolutionism.⁷ An

⁴John A. Oesterle, "The Significance of the Universal *ut nunc*," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 36-37.

⁵La Vecchia, *Evoluzione*, 276. Confer La Vecchia, *Evoluzione*, 314: "Con l'*Homo sapiens neanderthalis* l'evoluzione psychica, compresa nel processo di Ominazione, che aveva avuto inizio fin delle Australopithecinae del Sud Africa, si può ritenere conclusa." Nogar, *Wisdom*, 336-337: "The metaphysical definition of man, *animal rationale*, is not, however, identical with the taxonomic category *Homo sapiens*. To avoid confusion in this matter, all of the taxonomic classifications of the genus *Homo* (e.g., *Homo erectus pekinesis*, *Homo sapiens neanderthalis*, etc.) which have undisputed human artifacts associated with them would correspond to the general metaphysical definition of man."

⁶La Vecchia, *Evoluzione*, 32: "...sono state almeno una trentina di teoria diverse che tentano di chiarire il fenomeno evolutivo." Paul Haffner, "Evolution and the Magisterium of the Church" in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 326: "...it is more accurate to speak of theories of evolution." Fernando Pascual, *Evoluzionismo e Bioetica: I Paradigmi di V. R. Potter, H. T. Engelhardt e P. Singer*, in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 358: "Dalle theorie (ancora in plurale!)"

⁷Nogar, *Wisdom*, 328: "If however the definition of evolution goes further and asserts that contemporary synthetic theory (neo-Darwinism mutation-selection) is the theory of evolution as was done many times during the (Chicago Darwin Centennial) Convention, then, Dr. Olsen points out, that the 'fact of evolution' must be rejected as unproved and invalid." Nogar, *Wisdom*, 342: "The term 'Evolutionism' has been variously used in technical and popular literature in the past one hundred years. Even today 'Evolutionism' is used occasionally as interchangeable with

example of such a difference is the distinction between Darwinism⁸ and the Punctuated Equilibrium Theory⁹ of Evolution; and another example is the distinction between atheistic¹⁰ and theistic¹¹

biological or anthropological teaching...In this book...ideological...”

⁸Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 311: “Vox ‘darwinismus’ varias significationes habere solet.”

⁹Kate Kelly, *That’s Not in My Science Book* (Lanham, Maryland: Taylor Trade, 2006), 87: “Punctuated Equilibrium – a 1972 theory put forward by Niles Eldredge and Stephen Jay Gould – the idea that evolution, particularly the differentiation among species occurs relatively quickly, with longer periods of little or no change.” Klubertanz, *Philosophy*, 414, gives the gradual Darwinian view of evolution as a scientific theory: “Evolution as a scientific theory: the very large number of kinds of living things has been derived by means of a tremendously long series of usually very small (perhaps occasionally large) cumulative changes, from a very few (perhaps only one) living ancestors.”

¹⁰Klubertanz, *Philosophy*, 414, defines Evolutionism “as a philosophical system, holds that the complexity of kinds is due to accumulated changes brought about by the activity of merely material things, all causality on the part of the Creator being excluded.” Palmes, *Psychologia*, 2: 795, only agrees with this definition after treating Darwin, Haeckel and Huxley, after which he notes: “Quapropter essentialis assertio transformismi authentici stat in affirmatione, saltem implicita, transformationis via generationis, viventium inferiorum et inferioris naturae, in organismos viventes perfectiores et superioris naturae, solis viribus naturae tribuendae, omni speciali interventione causae primae seclusa.” Irenaeo Gonzalez, “Ethica,” in *Philosophicae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 351, clarifies the real difference of atheistic evolutionism from theistic Evolutionism, when he considers the consequences of atheistic Evolutionism: “Evolutionismus: in hac schola omnia evolutione proveniunt; spiritualitas inficiatur; omnia in homine legibus mechanicis, et necessariis subiciuntur. Ethicae non est statuere quid homines agere debeant ut recte procedant, sed praedicere quid, cognitis legibus evolutionis, acturi sunt.”

¹¹Ioannes DiNapoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), 2: 179, rejects materialist Evolutionism and describes spiritualistic Evolutionism: “Evolutionismus spiritualisticus tenet animam fuisse a Deo creatam, sed corpus habuisse originem a simio; duplex tamen est modus defendendi talem evolutionem: a) quidam tenent corpus humanum habuisse de facto originem a simio sine speciali influxu Dei: ita Mivart, Le Roy, Teilhard de Chardin et alii; b) alii tenent corpus humanum habuisse originem a simio per specialem Dei actionem, in quantum Deus transformaverit prius corpus simii in corpus humanum et postea in illud animam creatam infunderit. Haec doctrina ceterum eadem est ac doctrina illorum catholicorum, qui admittunt possibilitatem evolutionis corporis humani a simio sub speciali Dei influxu: ita D’Hulst, De Sinety, Bouyssonie, Wasmann, Gemelli, Marcozzi et plures alii catholici.” Józef Zycinski, “The Weak

evolution.

Third, words can be applied equivocally, so that the same word means totally different things.¹²

Fourth, at times, definitions are totally lacking. Reasons for this lack of definitions are the refusal of some scientists who take definitions for granted,¹³ or there may be a disagreement among scientists that prevents definition,¹⁴ or the impediment to definition may be the scientific method

Anthropic Principle and the Theological Meaning of Evolution,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 242, is where the author endorses theistic Evolutionism and distinguishes theistic Intelligent Design: “Design (old) is rigid design in which all the details are pre-established by the Creator; Design (new) is design which depends on the cooperation between the Creator and creation which groans in an unended process of longing for evolutionary consummation (Romans 8: 22 et seq.)...there is also an element of artistic touch which cannot be expressed in the language of algorithmic rationality but is actualized in non-linear evolution and unpredictable bifurcations.”

¹²Nogar, *Wisdom*, 337: “...equivocal...In naming things, one might use a name in common only in the sense that the word only is the same, not the signification: as in ‘dog days,’ ‘dog star,’ ‘dog food,’ the name ‘dog’ is pure equivocation...Finally, there is another kind of analogy which is not based on something essential to the things named but on a kind of accidental similitude. This is the analogy called metaphor. The term ‘evolution’ when used to signify biological and cultural history seems to be equivocal in this sense. To call the extension of the term ‘evolution’ to cultural prehistory ‘equivocal’ is not to outlaw the validity of the term altogether. In a very wide sense, there are similarities between biological development and cultural development, but the differences are great enough to demand a different name when speaking strictly.” Charles De Koninck, “Darwinian Dilemma,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 245: “This passage from the Origin of Species reminds us of Aristotle’s caution in using the simple term ‘life.’ If we compare plants to animals, he says, they are not alive; but compared to other forms of matter they are indeed alive. So ‘alive’ or ‘life’ are equivocal terms, they have many meanings.”

¹³Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 4-5: “The scientific psychologist touches many vital problems which he refuses to discuss...The scientist takes...for granted.”

¹⁴Palmes, *Psychologia*, 2: 794: “Criteria, enim, quibus de facto determinata sunt agmina classificationis taxonomicae, nec eadem sunt apud omnes qui eiusmodi classificationibus operam dant; nec eadem quoad diversa agmina ab uno eodemque classificatore determinata; cum nec una

itself,¹⁵ or the difficulty may be the philosophy of the scientist.¹⁶ Many of the scientific presentations simply assume the reader knows some popular definition.¹⁷ Darwin himself does not provide ample definitions.¹⁸ Among the Scholastics, it is well known that St. Thomas borrows his language from a diverse number of sources, with the consequence that there is often a need to scrutinize the text of St. Thomas to find not only the personal meaning he applies to the text, but also the personal contribution he makes to the problem he is attempting to solve.¹⁹ Some Neo-

et constans detur definitio perspicua species taxonomicae, ab omnibus classificatoribus admissa.”

¹⁵Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolution,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 351, where Nogar quotes M. Bechner, *The Biological Way of Thought* (New York: 1959), 160: “My own view is that evolution theory consists of a family of related models; that most evolutionary explanations are based on assumptions that, in the individual case, are not highly confirmed; but that the various models in the theory provide evidential support for their neighbors.”

¹⁶Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Logmans, Green, 1940), 255, gives a historical sketch of current theories of general knowledge together with his own critique of the various defective systems: innate a priori mental forms of Kant (page 265), Empiricism (page 270), later German Idealism (page 270), and recent Nominalism (page 262).

¹⁷Charles De Koninck, “Darwinian Dilemma,” 243, where the author notes Sir Julian Huxley does not define the term “reason.” De Koninck comments, “Notice the different meanings here imposed on the word ‘reason.’ It means one thing in ‘man is endowed with reason’; it means another in ‘man has no reason to do this or that’; and something else again when we say ‘the man fell for the reason that he slipped on the banana peel.’ Sir Julian does not mean...” De Koninck has to explain what Sir Julian Huxley means because Huxley does not give any definition.

¹⁸Palmes, *Psychologia*, 2: 794: “Darwin scripsit in suo celebri libro *De Origine Specierum*, citato a De La Vaissière, *Philosophia Naturalis*, 1: 267: “Nous aurons à traiter les espèces comme des simples combinaisons artificielles inventées pour une plus grande commodité. Cette perspective n’est peut-être pas consolante; mais nous serons au moins débarrassés de vaines recherches auxquelles donne lieu la définition absolue, non encore trouvée et introuvable de l’espèce.” See De Koninck, “Darwinian Dilemma,” 234: “But what does it mean... Darwin...was keenly aware that he was not using the expression in its readily verifiable meaning.”

¹⁹Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 77: “Whatever his reason, he (Aquinas) borrowed the language of others.

Scholastics give definitions, but in a very restricted or even ideosyncratic way.²⁰

Difficulties with definitions of evolution and its elements are common.²¹ Not surprisingly, there are a large variety of meanings attached to the concept “fact of evolution.”²² The importance

Thus, the need to scrutinize his texts in order to extract his personal thought from words and expressions that are not his own. We can speak about his terminology and formulae this way when we become aware of the extreme diversity of their sources... We shall see that he did modify them, and his personal contribution to the problem (at hand) was precisely the modification he imposed upon them.”

²⁰Klubertanz, *Philosophy*, 414, has a very restrictive (atheistic) definition of Evolutionism, by which he means “Evolution (Evolutionism) as a philosophical system, holds that the complexity of kinds of things is due to accumulated changes brought about by the activity of merely material things, all causality on the part of the Creator being excluded.” Confer Palmes, *Psychologia*, 2: 795: “Quapropter essentialis assertio transfromismi authentici stat in affirmatione, saltem implicita, transformationis via generationis, viventium inferiorum et inferioris naturae, in organismos viventes perfectiores et superioris naturae, solis viribus naturae tribuendae, omni speciali interventione causae primae seclusa.” While these definitions of Klubertanz and Palmes are appropriate for Darwinism, they appear too restrictive for the more general term “Evolutionism.” Raymond Nogar also seems to use the term “Evolutionism” in an ideosyncratic way to indicate ideology. See Nogar, *Wisdom*, 342: “In this book, the two terms ‘evolution’ and ‘Evolutionism’ attempt to distinguish the valid scientific use and invalid ideological inferences.” Nogar makes this distinction because he wishes to exclude a cosmic law of evolution from “philosophies of Evolutionism.” See Nogar, “Fact of Evolution,” 355: “The supposition of a universal, causal, cosmic law of evolution is not a valid inference from any known series of natural facts or laws established by science.” This restricted position of Nogar is given in the context of the Darwin Centennial Celebration at the University of Chicago in November of 1959. See Nogar, “Fact of Evolution,” 330, where he notes the excessive extent of the definition of Huxley, Dobzhansky, Stebbins, et al., when they agreed on the definition: “Evolution is definable in general terms as a one-way, irreversible process in time, which during its course generates novelty, diversity, and higher levels of organization. It operates in all sectors of the phenomenal universe but has been most fully described and analyzed in the biological sector.”

²¹Donat, *Cosmologia*, 276: “Ceterum nomina allata plerunque promiscue adhiberi solent.”

²²Nogar, *Wisdom*, 351: “Careful delineation of the wide variety of meaning attached to the concept ‘fact of evolution’...”

of exact definition is critical in serious dialogue about Evolutionism.²³

²³Nogar, *Wisdom*, 330: “There cannot be true disagreement in a dialogue, however, until there is a fundamental agreement of the terms used in discussion.” Roman A. Kocourek, “Motionless Motion,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 283: “...I discovered that most of the terms I was using meant something quite different for him. This was particularly true of the term ‘motion.’ I, of course, was referring to *actus entis in potentia inquantum huiusmodi*. When I tried to show him how this motion required an analysis of matter, form, and privation he expressed the typical Cartesian astonishment. In the discussion which followed he referred to an idea of motion by a neo-Kantian which he said fairly well expressed his own concept of motion...*omnis locatio mentis est opus*.”

Chapter 4: PROBLEM WITH PHILOSOPHIC JUDGMENT

Can the concepts of “evolution” and “fact” be joined together in a philosophic judgment?¹

For most of the twentieth century there were philosophic problems with the term “evolution” that prevented evolution as it is in itself to be immediately recognized as the same evolution apprehended as factual.² First, there is the problem of the essential union of philosophy and science, which essential union was denied by Maritain. Second, there is a problem of the admission of extensive material facts into judgments based on just a few philosophic principles. Third, the philosophical determination of substantial quality, like species, is a problem. Fourth, the philosophical determination of substantial change, becoming species, is a problem. Fifth, the philosophical determination of the extent of evolution is a problem. Sixth, there is a common mistake of trying to “imagine” formal and material causality of species in terms of the efficient cause. Seventh, a philosophic problem arises when imagination tends to equate “creation” as a kind of evolutionary change. Eighth, a philosophic problem may arise when the essence of sensible

¹H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 9: “Clearly then the task is not easy that awaits the author of a modern cosmology in the manner of Aristotle but without much of the Aristotelian matter. The author must perform a double feat in one...separating...scientifically outmoded...build his superstructure, a theory of the universe that is solely philosophical.”

²Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 46: “Subjectum in iudicio tenet locum rei prout est in se ipsa; praedicatum tenet locum eiusdem rei prout hic et nunc est apprehensa.” Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 115, “Realis vero definitio iudicii ita dari potest: Actus mentis, quo duas ideas obiectivas vel affirmando componimus, vel negando separamus; vel assensus mentis in cognitam identitatem vel diversitatem obiectivam duarum idearum.” Aquinas *De Veritate* 14.1: “Actio intellectus secundum quam componit aut dividit affirmando et negando.”

things is either merely imagined, or merely reduced to mathematics without reference to the real things. Ninth, problems in philosophical judgment can arise particularly in the area of the philosophy of man. Tenth, the effect of these changes in judgment were reflected in a change in judgment that evolution was a fact, as illustrated by changes at the Gregorian University in Rome.

First, is there an essential union between philosophy and science? The Neo-Scholastics had to answer new problems, like Evolutionism, that had not been treated in the prior scholastic philosophy of nature (cosmology and rational psychology), and so some of the formal principles of philosophy (finality, chance, space, and time) had to be enlarged in new application. In the light of these new problems of science, Jacques Maritain called for a deep renovation of philosophy of nature. He maintained that there was an essential distinction between philosophy and science.³ Aristotle, however, held that natural philosophy and empirical science are one, since both treat mobile being and each is a part of the other.⁴ The Aristotelian position eventually prevailed in the position of Mondin at the Urbaniana University⁵, Selvaggi at the Gregorian University⁶ and the

³Jacques Maritain, *Philosophy of Nature* (New York: Philosophical Library, 1951), especially 126, where Maritain says, “Although the philosophy of nature is *essentially* distinct from metaphysics because of the basic characteristics of its generic type, yet it has a fundamental importance for metaphysics.” See also: Piero Viotto, “Antropologia ed Evoluzione in Jacques Maritain,” in *Evoluzione*, ed Rafael Pascual (Rome: Studium, 2005), 361-378. Ioannes Di Napoli, *Manuale Philosophiae*, 4: 57.

⁴Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 90: “La cosmologia é filosofia della natura; essa studia il mondo oltre che dal di dentro anche dal di fuori; per capire completamente questo mondo si spinge oltre il mondo stesso; non vede il mondo come l’intero ma come parte dell’intero. Così la cosmologia veste i panni della metafisica. Essa considera la natura in quanto ente mutabile (*ens mobile*), e ne ricerca i principi primi, le cause supreme che non sono di ordine sperimentale.”

⁵Mondin, *Manuale*, 91: “Aristotele, che è il padre sia della fisica sia della metafisica sistemica, e che ha elaborato una grande fisica che ha prevalso per quasi due millenni, ha elaborato anche una grandiosa metafisica; ...ma al contrario ha costruito la metafisica come un

Dominican priests at the Aquinas Institute in River Forest, Illinois, near Chicago.⁷ The Aquinas Institute is also the location of the Albertus Magnus Lyceum, dedicated to the working dialogue between Neo-Scholastic Thomism and empirical science.⁸ Therefore, the essential unity of philosophy and science is proved by opinion (Mondin and Selvaggi) and institutions (Aquinas Institute and Albertus Magnus Lyceum). It is also proved by the 2002 Congress in Rome on Evolutionism. Fourthly, proof of the unity of philosophy and science arises from change in the way the Neo-Scholastics raised the treatment of Evolutionism from an appendix to the level of serious

prolungamento della fisica; il Motore immobile è il necessario elemento conclusivo delle catena dei motori mobili. Il legame tra fisica e metafisica non è così stretto come lo ha concepito Aristotele: ma un legame esiste certamente, perché soltanto i concetti della metafisica sono in grado di fornire una spiegazione conclusiva di questo mondo.”

⁶Filippo Selvaggi, *Filosofia delle Scienze* (Rome: La Civiltà Cattolica, 1953), 317: “Ora, l’analisi compiuta nei capitoli precedenti ci porta, in primo luogo, ad affermare l’unità generica di scienze e filosofia sotto il concetto tradizionale di scienza in senso largo, come conoscenza tradizionale delle cose per mezzo delle loro cause, *cognitio rerum per causas*. Affermiamo ciò... bensì *a posteriori*, cioè come frutto dell’analisi positiva delle scienze moderne, specialmente sperimentali.”

⁷James A. Weisheipl, “Introduction,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xviii, notes the unity of philosophy and science by writing, “Despite the fact that Soviet students of science are thoroughly indoctrinated with the philosophy of Dialectical Materialism, some American educators were diminishing, and eliminating if possible, courses in the humanities in a frantic effort to produce more trained scientists.”

⁸Michael Brown, Order of Preachers Master General, preface to *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xiv: “We have watched with paternal concern the growth of the Albertus Magnus Lyceum...We have been particularly pleased to observe the devotion of its members to the solid principles of St. Thomas and St. Albert, and at the same time the concern of its members with vital problems of modern science. Problems such as the relationship of Thomistic philosophy to modern science...”

treatment as an important part of the philosophy of nature, or even a whole course.⁹

Second, what is the function and extent of the material content of the philosophy of nature? Although there is essential unity between philosophy and science, there is no essential “identity” between philosophy and science, but rather a specific distinction with an intimate connection. This means that the philosophy of nature is not purely physics on the first level of abstraction, nor is it purely metaphysics on the third level of abstraction, but a “mixed science” which applies metaphysical principles to physical (biological in the case of evolution, for example) and mathematical objects.¹⁰ Aquinas notes the possibility of such a science, a philosophy of nature, which is the application of the formal principles to the material subject, an applied metaphysics.¹¹ This position was first introduced to the Neo-Scholastics by Liberatore and has been accepted by many: Zigliara, Palmieri, De Backer, De San, Descoqs, Haen, Donat – and more recently by Hoenen, De Raeymaeker, Dezza, Morán, Esser, Massi, Van Melsen, and Koren, although no

⁹Early Neo-Scholastics treated Evolutionism more as an appendix. Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D’Auria, 1952; original ed. 1937), 2: 48, still places evolution as an addition to vegetative life. Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 180-190, still places evolution as an appendix to the philosophy of man. On the other hand, more modern authors treat the issue of evolution in a more integrated fashion, with philosophy and science essentially unified. Fernando M. Palmes, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2:791-811, treats evolution as part of the philosophy of nature. Paolo Dezza, *Filosofia: Sintesi Scolastica*, 5th ed. (Rome: Gregorian University, 1960), 136-147, treats evolution as an integral part of the philosophy of man. Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999) is an entire integrated course on evolution, both philosophy and science.

¹⁰Philippus Selvaggi, *Cosmologia*, 2nd ed. (Rome: Gregorian University, 1962), 12-14.

¹¹Aquinas notes the possibility: “Quando aliqua scientia est simpliciora et abstractiora considerans, tanto eius principiis sunt magis applicabilia aliis scientiis” (Aquinas *De Trinitate* 5. 3. ad 6; Aquinas *In Post. Anal.* 1. 25).

explicit mention is made about the Thomistic doctrine of mixed sciences, which seems to be implicit in their words and definitions. Selvaggi at the Gregorian University applies this position in his 1962 book., *Cosmologia*.¹² However, the full application can be seen in the 1999 student text-book of La Vecchia at the Gregorian University, *Evoluzione e Finalità*, in which there is expanded material of science, no need for ecclesiastical approval for new science, report in the vernacular language of science, material from scientific journals and from dialogue with scientists, and an entire course on the material facts of evolution, with a special reference to human evolution¹³

Third, problems in philosophical judgment can arise from philosophical difficulties in the determination of substantial qualities, like species. There is diversity between plants and animals. However, there is some order. Systematic order involves individuals, races, species, genera, families, orders, classes, and phyla. Natural species are diverse by nature, and are essential qualities from the soul. Natural varieties arise from merely accidental differences in qualities. However, it is often difficult to tell which qualities are essential and which are accidental.¹⁴ Therefore, it is not

¹²Selvaggi, *Cosmologia*, 10: “Ita scientia physica valorem ontologicum habet, immo est sola via qua homo veras naturas specificas et causas proximas et proportionatas rerum materialium cognoscere potest; et perfecte verificat notionem aristotelicam scientiae physicae, tanquam scientiae primi gradus abstractionis, cuius obiectum formale est ens sensibile in quantum tale, sensibile sive immediate sive mediate per experimentum scientificum et definitionem operativam, prout in sequentibus magis declarabitur; causae autem, proprietates et essentiae, quae tali modo per reductionem ad sensum definiri nequeunt, obiectum formale scientiae physicae transcendunt ac proinde methodo philosophica et metaphysica diiudicandae erunt.”

¹³Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 4: “Ciò fatto, tenteremo di dilineare il meccanismo dell’evoluzione. Osserveremo quali difficoltà possano essere mosse ad una concezione evoluzionistica così configurata dalle analisi della biologia e dai reperti della paleontologia e quali argomenti siano invece a favore dell’evoluzione nell’ambito biologico e paleontologico.”

¹⁴Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck, Rauch, 1915), 274: “Attamen saepe difficile est determinare, quaedam qualitates sint essentiales, quae vero accidentales, quanam

always easy to determine which systematic species are natural and which are not.

Fourth, problems in philosophical judgment can arise from philosophical difficulties in determining substantial change, like becoming species. For Aristotle, substantial change was obvious, such as the birth and death of a living thing or chemical changes, especially when they show a marked difference in operation after the change.¹⁵ But “as for knowing whether this or that variation in the physical appearance of a thing denotes a substantial change, this is usually most difficult if not impossible.”¹⁶

Fifth, problems in philosophical judgment can arise from philosophical difficulties in determining the extent of evolution. Evolutionism, generally considered, teaches that more perfect organisms have their origin by progress from lesser organisms and ultimately from (one or) many most simple organisms. Biological Evolutionism mainly treats plants and animals. Neo-Scholastics frequently restrict their approval of evolution to minor (accidental, and not substantial)

igitur species (genera, familiae) systematicae simul species naturales sint, quae vero non. Attamen dubium vix est, quin saltem permultae species systematicae tantum varietates naturales sint sine discrimine interno naturae sive animae; ita omnes formicae immo forsitan omnia insecta ad eandem speciem naturalem pertinere possint.”

¹⁵Vittorio Marcozzi, “Differenza fra l’Anima Umana e l’Anima delle Bestie,” *Doctor Communis* 11: 2-3 (May to December, 1958): 124: “Si conosce la natura delle cose dalle loro attività e manifestazioni. Poichè ci sfugge la conoscenza diretta della natura di qualsiasi cosa, è necessario accontentarci di consoscerla soltanto indirettamente dalla consocenza delle sue attività o manifestazioni, evitando così sia l’errore di coloro che si accontentano soltanto di constatare fatti, rifiutandosi di trarne qualsiasi conclusione e sia l’errore di quelli che, senza prima interrogare la natura, costruiscono *a priori* i loro sistemi.”

¹⁶Gardeil, *Cosmology*, 27, appears to admit only substantial change for change of species. See Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Pascual, 2005), 220: “Evolution is mutation, transformation, becoming, the process of either substantial or accidental transformation as a process of ordering and differentiation.” It seems that as a process, Possenti would admit accidental changes to lead to an eventual substantial change.

transformations and also polyphyletic (more than one primitive life form, and not monophyletic) evolution within zoological and botanical genera and families.¹⁷

Sixth, there is a common mistake of trying to “imagine” formal and material causality of the species in terms of the efficient cause. The reason for this mistake is that persons do at times experience the manifestation of an action by the agent, whereas no sensible experience can bring a realization of the material and formal causality.¹⁸ This is important since that transcendental interaction of prime matter and substantial form enters in to the explanation of evolution.

Seventh, a philosophic problem arises when imagination tends to equate “creation” as a kind of evolutionary change or some distinct event. Creation cannot be imagined since there is no term (*terminus a quo*) from which something arises, and change demands: a term from which (*terminus a quo*), privation, and a term to which (*terminus ad quem*). Creation is not some distinct event, but it is the continuing complete causing of the existence of everything that is.¹⁹ Creation is a subject for metaphysics and theology, and not for the natural sciences.

Eighth, a philosophic problem may arise when the essence of sensible things is either merely

¹⁷Donat, *Cosmologia*, 300-301: “Evolutio monophyletica admittenda esse non videtur. Primo, ex constantia generum superiorum. Genera superiora animalium et plantarum, phyla, classes (et ordines), per aetates geologicas constanter eadem permanent, ut intra ea quidem transformatio fiat, nunquam autem transformation unius phylli vel classis et rarissime ordinis in alium observari possit.”

¹⁸Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 164: “A mistake commonly made is to ‘imagine’ ...no sensible experience...”

¹⁹William E. Carroll. *Aquinas and the Big Bang*. 25 January 2007 <<http://www.leaderu.com/ftissues/ft9911/opinion/carroll.html>>, 2-3.

imagined, or merely reduced to mathematics without reference to the real things.²⁰ The danger arises in a possible inaccurate return to the real world.

Ninth, problems in philosophical judgment can arise particularly in the area of the philosophy of man.²¹ The philosophy of human nature is an organized, unified and certain knowledge about the nature of man, derived from experience and through an analysis of his activities, characteristics, and powers.²² However, although all psychologists are working towards a complete science of man, ever since the time of the Humanists there has been an artificial, unreal concept of man.²³ Some Neo-Scholastic philosophers, who admit the concept of universal

²⁰Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), 176: "It is important to remember, as St. Thomas often said, that in general, the essence of sensible things remains hidden from us because of the matter in which it is, as it were buried" (Aquinas *Scriptum in Liber Sententiarum* 2. 35. 1. 2. ad 3; Aquinas *De Veritate* 4. 1. ad 8; Aquinas *Summa Contra Gentiles* 1. 3; Aquinas *In Metaph.* 7. 12). Ibid., 179-180: "Perdurable in its essential determinations, the philosophy of nature must, therefore, accept the law of ageing and rejuvenation, of molding and renewal imposed on the fleshly garments it receives from the experimental sciences, and thanks to which its factual material is marvelously increased and by which it is, at the same time, freed from all imagery (not philosophical, but common or 'vulgar') which it takes from the prescientific interpretations running through the familiar world of the senses." Ibid., 194: "From this it should be clear what we meant by saying that the essence of biology does not consist in a mathematization of the sensible...the mathematical instrument remains for it a simple instrument."

²¹Klubertanz, *Philosophy*, v, "No realistic philosophy can be complete unless it includes a philosophy of nature. And a philosophy of human nature is where most of the problems in philosophy of nature occur, some in crucial form."

²²Klubertanz, *Philosophy*, 10, gives the definition.

²³Timothy Gannon, *Psychology: The Unity of Human Behavior* (Boston: Ginn, 1954), 13: also notes the book by Alexis Carrell, *Man the Unknown* (New York, Harper, 1935), which acknowledges that facts are plentiful, but a synthesis is needed.

evolution, are reluctant to extend evolution to the body of man.²⁴ On the other hand, other Neo-Scholastics point out the need for studying the nature of knowledge, even if there are some considerations of knowledge that go beyond what is needed for the discovery of the nature of man.²⁵ During the Darwin Centennial in Chicago there was a radical change in the concept of evolution as applied to man, especially as regards man's cultural evolution in the future.²⁶

Tenth, as a result of changes in the nature of philosophy, there were changes in Neo-Scholastic views on evolution. It seems that more conservative views on Evolutionism are affirmed earlier in the twentieth century. More liberal and more evolutionary views are held by Neo-Scholastic philosophers at the end of the twentieth century. The truth of this change can be verified by a short survey of the positions of the philosophers at the Gregorian University in Rome. Calcagno in 1937 rejected the evolution of species.²⁷ Calcagno also rejects the evolution of man in any way. Boyer in 1939 denied evolution from one species to another, and denied the evolution of

²⁴F.-X. Maquart, *Elementa Philosophiae*, 3 vols. (Paris: Andreas Blot, 1937), 2: 545, "Argumenta quae afferuntur ad affirmandum originem corporis primi hominis per evolutionem sunt insufficientia."

²⁵Klubertanz, *Philosophy*, 400, "But for all practical purposes we may say this. To arrive at the nature of man, something of the nature of knowledge must be studied. But there are considerations of nature that go beyond...may well be called epistemology."

²⁶Nogar, "Fact of Evolution," 350: "These papers on cultural anthropology, archaeology, psychology and language not only show this radical change in the concept of evolution as it is applied to man, but they even show a tendency to ignore the concept of man's prehistory and concentrate upon man as he is now known to be the fashioner of his own future."

²⁷Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: D'Auria, 1952; original ed. 1939), 2: 49: "Theoria descententiae seu evolutionis specierum est reiicienda." Ibid., 2: 51: "A fortiori repugnat transformismus anthropologicus, tum radicalis, tum mitigatus."

the body of man.²⁸ Boyer did acknowledge the Neanderthal Man as human, due to the use of tools and fire.²⁹ Dezza in 1960 affirmed that the philosophic position of theistic evolution was not impossible with natural species, but affirmed grave scientific problems.³⁰ It is notable that Dezza is waiting for more scientific results, the material part of the philosophy of nature for scientific induction as promoted by the work of Selvaggi at the Gregorian University.³¹ Marcozzi in 1958 maintained that all the prehistoric men who have spiritual manifestations have a soul entirely similar to our own. Marcozzi also maintains that Neanderthal Man falls into the category of true man.³²

²⁸Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 192, “Non habetur evolutio ab una specie proprie dicta ad aliam.” Ibid., 194: “Corpus hominis non est per evolutionem brutorum formatum.”

²⁹Boyer, *Cursus*, 196: “Homo enim Cromagnonensis et Homo Neanderthalensis sunt simpliciter homines, quoad morphologiam attinet;...activitas eorum, ut ex vestigiis apparet, vere humana est: instrumenta intellectu confecta, signa affectus et religionis in sepulturis nonnisi homines manifestant.”

³⁰Paolo Dezza, *Filosofia: Sintesi Scolastica*, 5th ed. (Rome: Gregorian University, 1960), 146: “...l’evoluzionismo teistico integrale non sembra ripugnare filosoficamente nel senso spiegato, ma allo stato attuale delle scienze è una ipotesi che trova nei risultati scientifici indizi favorevoli ma insieme difficoltà gravi; ulteriori progressi della scienza potranno dare nuova luce su questa questione ancora discussa.”

³¹Filippo Selvaggi, *Filosofia delle Scienze* (Rome: Civiltà Cattolica, 1953), 21-22: “Bisogna perciò notare che la scienza forma l’oggetto dell’epistemologia nella sua parte formale in quanto processo conoscitivo e non nella sua parte materiale, nel suo contenuto di affermazione intorno alla realtà materiale. Anche questo può fornire oggetto di considerazioni filosofiche; ma la filosofia che si occupa di esse non è l’epistemologia, bensì la cosmologia o la psicologia, cioè la filosofia della natura. Così le questioni dell’atomismo, del meccanicismo, della causalità e dell’indeterminismo, dello spazio e del tempo, del continuo e del discontinuo, del vitalismo, dell’evoluzionismo...”

³²Marcozzi, “L’ Anima Humana,” 132: “Anche gli Uomini della Preistoria, per quanto si risalga nel tempo, presentano manifestazioni spirituali e un’anima del tutto simile alla nostra.” Ibid., 133: “I Neandertaliani dunque, non soltanto lavorarono le pietre, ma ebbero riti funerari e idee religiose.”

The manifestations that Marcozzi is looking for are some indication of abstract principles of thought and also language.³³ At first, La Vecchia admits the possibility of the evolutionary process, at least within the lower groups of taxonomy. The scope of her presentation is to distinguish the finalistic from the non-finalistic types of Evolutionism. Then La Vecchia argues to an evident biological evolution in all living things, which culminates in man.³⁴

In conclusion, there is a negative philosophical judgement dividing “evolution” from “fact.” If we consider the judgement, “The snow is white,” whiteness in the snow as apprehended can be immediately verified in the snow as it is outside the mind. There are a number of philosophical reasons preventing the immediate philosophical judgement, “Evolution is fact,” since evolution as apprehended cannot be immediately verified in evolution as it is outside the mind.

³³Marcozzi, “L’Anima Humana,” 138-139: “Dunque, gli animale anche superiori non giungono alla formulazione di ‘principi astratti,’ non sono intelligenti...Gli animali non parlano...”

³⁴La Vecchia, *Evoluzione*, 317: “Dopo aver analizzato gli argomenti portati dai finalisti e le difficoltà connesse, abbiamo osservato l’evidente ascesa biologica che si manifesta nella comparsa degli organismi viventi e che culmina nell’essere umano.”

Chapter 5: PROBLEM WITH SCIENTIFIC JUDGMENT

Can the concepts of “evolution” and “fact” be joined together in a scientific judgment?

Philosophic judgment has already been considered in the last section, and now scientific judgment must be considered. Syllogistic reasoning, which is composed of two premises leading to a conclusion, will be considered in the next chapter.

Scientific judgment involves a number of problems. For most of the twentieth century there were scientific problems with the term “evolution” that prevented evolution as it is in itself to be immediately recognized as the same evolution apprehended as factual.¹ First, there was a problem about the nature of science, since science itself was changing. Second, there were problems with the new material of science. Third, there were problems with new scientific methods. Fourth, there were problems with the world views of many scientists, which were not a Scholastic view. Fifth, there was a problem with certitude. Sixth, there was a problem about the exclusive right of science to find truth. Seventh, new theories of evolution brought new problems.

By way of introduction, it should be noted that modern science and philosophy were historically intertwined. From the eighteenth century, the ideas of Newton were accepted without any problem. However, in the nineteenth century scientific thought moved from a preference for

¹Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 46: “Subjectum in iudicio tenet locum rei prout est in se ipsa; praedicatum tenet locum eiusdem rei prout hic et nunc est apprehensa.” Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 115, “Realis vero definitio iudicii ita dari potest: Actus mentis, quo duas ideas obiectivas vel affirmando componimus, vel negando separamus; vel assensus mentis in cognitam identitatem vel diversitatem obiectivam duarum idearum.” Aquinas *De Veritate* 14.1: “Actio intellectus secundum quam componit aut dividit affirmando et negando.”

Rationalism to a preference for Positivism and Empiricism. In fact, it was in the middle of the nineteenth century that Positivism triumphed even in philosophy. One of the greatest representatives of this Positivistic school, and probably the most systematic, was Herbert Spencer (1820-1904). In epistemology the fundamental problem is the motive for determining certitude in judgments. Spencer replies that the fundamental motive for certitude is the inconceivability of the contrary. By this Spencer hoped to assume a intermediate position between Empiricism and Aprioricism. Against Empiricism, he sustained the principles of logic and the intuitive forms of space and time which man knows from birth and which are the presupposition of every certain cognition. But he also maintains that these dispositions, independent of individual experience and the foundation of this experience, are previously constituted in man during the slow and progressive development of the human species, and are transmitted to individuals by heredity.² Given that science and philosophy are historically intertwined, now let us consider the scientific problems with the term “evolution” that prevented evolution as it is in itself to be immediately recognized as the same evolution apprehended as factual.

First, there was a problem about the nature of science, since science itself was changing.³

²Giuseppe Mario Galli, *Spazio e Tempo nella Scienza Moderna: Meccanica Classica, Teoria della Relatività, Cosmologia* (Florence: Baccini e Chiappi, 1967), 88-91. Ioannes Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955), 69: “H. Spencer (1809-1882) tenet evolutionismum totalem, utilitarismum industrialisticum et agnosticismum relate ad realitatem supersensibilem.” Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 577, treats Herbert Spencer and evolution.

³Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 351: “Careful delineation of the wide variety of meaning attached to the concept ‘fact of evolution’.” Ibid., 327: “But perhaps most of our schools still teach evolution, not as a fact, but only as one alternative...” James A. Weisheipl, “Introduction,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xviii: “...an important revolution had been

To understand the profound change in science, a short history may be in order. The earliest Greek thinkers directed their philosophical efforts to the world of nature, the world that meets the casual observer. Aristotle, and tradition, remembers these men by the title “physicists.”⁴ The interpretation of the “physical” universe was the object of research for Thales (c.640-546 B.C.) to Empedocles (c.500- 435 B.C.) and Anaxagoras (c.500- 428 B.C.). Plato (428-347) wrote the *Timaeus*. Aristotle (384-322 B.C.) himself was the father of biology. In the Middle Ages, St. Thomas (1225-1274) defined science a number of times.⁵ St. Thomas also treated the division of the sciences many times, especially in his younger years.⁶ In the seventeenth century, science as we know it was born and its growth was phenomenal.⁷ As the nineteenth century began, that is after 1800, a great optimism for scientific progress was felt.⁸ Ernest Renan (1823-1892) believed science to be a religion. There was still Neo-Romanticism and Neo-Idealism, but scientists no longer had

taking place within science itself...” Vittorio Possenti, “Vita Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 204: “L’enorme sviluppo delle scienze moderne non ha spento, anzi talvolta ha acuito...”

⁴H. D. Gardeil, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 1.

⁵Battista Modin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 554. Aquinas *De Veritate* 11. 1. ob. 11: “Scientia nihil aliud est, quam description rerum in anima, cum scientia esse dicatur assimilatio scientiae ad scitum.” Aquinas *Summa Contra Gentiles* 1. 94: “Scientia est rei cognitio per propriam causam.” Aquinas *Summa Contra Gentiles* 1. 56: “Est ordinata aggregatio ipsarum specierum existentium in intellectu.”

⁶Robertus Masi, *Cosmologia* (Rome: Desclée, 1961), 9-10: Aquinas *De Trinitate* 5; Aquinas *Summa Theologiae* 1. 85. 1. ad 2; Aquinas *In Phys.* 1. 1; Aquinas *In Metaph.* 6. 1; Aquinas *In Metaph.* 7. 10; Aquinas *In Metaph.* 8. 5.

⁷Gardeil, *Cosmology*, 4.

⁸Filippo Selvaggi, *Filosofia delle Scienze* (Rome: Civiltà Cattolica, 1953), 17: “...nel secoloe XIX. Questo secolo si era iniziato col piu grande ottimismo nei riguardi della scienza.”

the optimism of Laplace or Comte. Mathematics entered into a period of profound crisis due to Non-Euclidean geometry of Gauss, Lobachevskij, and Riemann, and also the theories of Cantor, which eventually opened the road to the complete logicization of mathematics by G. Frege and B. Russell. Physics also entered a period of profound crisis as thermodynamics compromised the mechanistic ideal, even more in 1900 by the quantum physics of Planck and in the same year by the experiment of Michelson.⁹ That same crisis was evident in the difficulty in even defining modern psychology, which was less than a century old and was always a storm center of controversy and conflicting opinion.¹⁰ This same crisis also is evident in modern biology in the light of the confusion that has reigned over a decade about the proposition that “evolution is a (scientific) fact.”¹¹

Second, there were judgment problems with the new material of science. Scientific facts have to be the basis of a philosophy of nature, and armchair theory alone does not get the scientist very far by itself.¹² The chimpanzee genome has been published, with some opposition that humans

⁹Selvaggi, *Filosofia*, 19: “...era entrata in crisi.”

¹⁰Timothy Gannon, *Psychology: The Unity of Human Behavior* (Boston: Ginn, 1954), 3.

¹¹Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 328 “...Centennial discussion (1959) of the status of evolutionary theory today throws important light on the confusion that has reigned for a decade about this proposition ‘evolution is a fact’.” See Selvaggi, *Filosofia*, 244. Carolo Boyer, *Cursus Philosophiae*, 2nd ed. (Bruges: Desclée de Brouwer, 1939), 2: 197, where he cites Vialleton: “C’est par ces généralisations hâtives, par ces analyses incomplètes et superficielles que le transformisme a pu se développer et prendre peu à peu dans la pensée contemporaine la place qu’il occupe.”

¹²Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 131: “No philosopher of nature can avoid knowing the scientific facts.” Corey S. Powell, “Night Watchman: Martin Rees,” in *Unseen Universe*, ed. Corey S. Powell (Boone, IA: Discover Magazine Special Edition, 2007), 9: “Armchair theory doesn’t get you very far by itself...”

and apes may have had a common ancestor. Two teams, one under Eddy Rubin, director of the Department of Energy's Joint Genome Institute in Walnut Creek, California, and another team under Svante Pääbo at the Max Planck Institute for Evolution and Anthropology in Leipzig, are now sequencing the one million base pairs of the Neanderthal genome, and are moving toward publication.¹³ The increasing new material touched evolution in general in biological science and touched the evolution of man in psychological science. Examine evolutionary biology and evolutionary psychology.

Where does evolutionary biology get its new material, especially in the area of studies on evolution, and how can this new material create problems of scientific judgment? Paleontologists are accumulating enough fossils to form "family trees," while other scientists are assembling anatomic details, using biochemistry such as the experiments of Morris Goodman in 1960, using molecular genetics such as the 1975 paper by Berkeley scientists Mary-Claire King and Allan Wilson, using DNA base pairs, and including activities such as burial ceremonies and the use of fire in the analysis of hominization.¹⁴ New material in biology raises at least four problems in the linking of "evolution" and "fact" in a scientific judgment. First, studies of the genome will be able to distinguish taxonomic species better than at present, but taxonomic species are not the proper and philosophical species helpful in proving evolution, and these studies are incomplete although of

¹³Michael D. Lemonick and Andrea Dorfman, "What Makes Us Different?" *Time Magazine*, vol. 168: 15 (9 October 2006): 6, "Much of the vitriol directed at Charles Darwin...humans and African apes are descended from a common ancestor." Ibid., 7: "...soon be announcing in a major scientific publication the sequencing of one million base pairs of the Neanderthal genome. And he says he has four million more in the bag."

¹⁴Lemonick, "Different," 46, for fossils, anatomy, biochemistry, molecular genetics, and DNA. Ibid., 50, for DNA, Neanderthals, and hominization.

enormous future potential.¹⁵ Second, the use of the genome to time evolutionary changes is extraordinarily imprecise.¹⁶ Third, a number of inversions, deletions, and duplications occur in large parts of the genome that are inert and unused.¹⁷ Fourth, genes alone do not dictate the differences between species, but also the functional non-coding DNA, comprising some 3% to 4% of the genome and mostly embedded within and around the genes.¹⁸

Where does evolutionary psychology get its new material, especially in the area of studies on evolution, and how can this new material create problems of scientific judgment? Darwin is the “patron saint” of modern psychology, because of his pioneering contribution of treating emotions and their manner of expression as products of evolution.¹⁹ Although no single incident can be said to constitute the origin of psychology, it is a relatively young science whose beginnings belong to the last half of the nineteenth century.²⁰ About 1839, Ernst Weber studied stimulus and sensory experience. Theodor Fechner (1801-1887) continued these studies. The Weber-Fechner law states

¹⁵Carolo Boyer, *Cursus Philosophiae* (Bruges: Desclee de Brouwer, 1939), 2: 191, “...potest ex una specie ad aliam, si species proprio et philosophico sensu sumatur...” Lemonick, “Different,” 53: “...these studies have enormous potential.”

¹⁶Lemonick, “Different,” 53: “...using the mutation rates in the genome to time evolutionary changes is extraordinarily imprecise.”

¹⁷Lemonick, “Different,” 49: “...indeed the human, chimp, and other genomes are full of such inert stretches of DNA.”

¹⁸Lemonick, “Different,” 48: “...genes alone do not dictate the difference between species.” Ibid., “...functional noncoding DNA...is crucial.”

¹⁹Edward O. Wilson, *From So Simple a Beginning: The Four Great Books of Charles Darwin* (New York: Norton, 2006), 1253: “...to have served as part of the foundation of modern psychology. Darwin is...the ‘patron saint’ of that discipline.”

²⁰Timothy Gannon, *Psychology: The Unity of Human Behavior* (Boston: Ginn, 1954), 5: “...relatively young...no single incident can be said to constitute its origin...”

to judge the next sensation as more intense, it has to have a stimulus increase in squares. Psychophysics was the name given to this measurement. Fechner wrote the first book in the new science of psychology, *The Elements of Psychophysics* (1860). Wilhelm Wundt (1832-1920) shares with Fechner the title of father or founder of modern psychology. Wundt published the first complete psychology textbook, *Outlines of Physiological Psychology*, in three volumes; he set up the first psychology research laboratory at Leipzig; he founded the first German psychological journal, *Philosophical Studies*; and he set up the first system of psychology, the introspection method, thereby creating the first school of psychology.²¹ Wundt dominated psychology up to the 1890s. In the first decade of the twentieth century, a crisis arose in psychology: first, it fell short of its founders' excessive expectations; second, it was capable of study outside the university laboratory (while the founders demanded experiments only in the laboratory); and third, it was charged with artificiality and remoteness from life situations. The revolt against the "New Psychology" of Wundt, which maintained the mental life of man was no higher than sense or sensation, then broke into two major movements outside the laboratory: the Psychoanalysis of Sigmund Freud (1856-1939) which moved to educational testing, and Behaviorism which moved to animal studies. Franz Brentano (1838-1917) in Vienna also broke with Wundt, and founded Gestalt Psychology, meaning that the whole (*Gestalt*) exercises a determining influence on the perceptual process from beginning to end. New material in psychology raises at least five problems in the

²¹Gannon, *Psychology*, 6-8: Americans who went to Leipzig founded departments of psychology in universities in the United States: Scripture and Ladd at Yale, Baldwin at Princeton and John Hopkins, Hall at Clark University, Cattell at Columbia, Frank Angell at Stanford, and Pase at Catholic University of America. Europeans sharing the establishment of the new science of psychology were Von Helmholtz, G.E Müller, Lotze, Brentano, Stumpf, and Külpe. William James agreed with the definition of psychology as the science of conscious processes, but disagreed with the method of introspection as paramount.

linking of “evolution” and “fact” in a scientific judgment regarding man. First, confusion arises due to the difference in the foundations of the science of psychology: Wundt holding nothing but conscious processes, Watson holding nothing but behavior, Freud holding nothing but unconscious, and the Gestalt School, holding nothing but perceptual configurations.²² Second, intellectual cognition in man is more than the sense cognition shared by animals, which difference is not admitted by Wundt.²³ Third, the Neo-Scholastics assert the reality of free will in man is proved by general consensus, experience, the nature of the will, and the exigencies of the moral order, while Wundt, Spinoza, Schopenhauer, Höffding, Ziehen teach the illusion of free will is sufficiently explained from consciousness of our own activity joined with ignorance of the forces which really determine choice.²⁴ Fourth, the establishment of psychological laws is not always precise, as in the Weber-Fechner Law which is a pseudo-problem, professing to study “differences” when it only relates to “proportions.”²⁵ Fifth, scientific judgment about evolution is hindered because the broad

²²Gannon, *Psychology*, 3: “...when differences go to foundations, lead to confusion...”

²³Fernando M. Palmes, “Psychologia” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 588: “Psychologi experimentales qui sub luce doctrinae Associationismi, activitates psychicas in laboratoriiis methodo experimentali investigare coeperunt, facta ab ispsis inventa iuxta *Sensismum* expicare conati sunt.” Ibid., “Ut initiator Sensismi in moderna philosophia solet computari John Locke (1632-1704)...inter Sensistas numerantur David Hume (1711-1776), David Hartley (c.1705-1757), qui et parens psychologiae Associationis habetur; James Mill (1773-1836), John Stuart Mill (1806-1873), Alexander Bain (1818-1903), Herbert Spencer (1820-1903), J. P. Herbart (1776-1841), H. Taine (1828-1893). Ibid., “Sensismo enim inficiuntur: Materialismus, Positivismus, Empiricismus... Evolutionismus...”

²⁴Palmes, “Psychologia,” 2: 709, “Spinoza, Schopenhauer, Höffding, Wundt, Ziehen, et plurium modernorum.” Ibid., 2: 710-711: “Somniantes...hypnotizati...homines in occasione proxima ad peccandum, non possunt se dominari...Respondeo...ex extremis libertatis, nego.”

²⁵Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), 212: “...de lege psychophysica Weber-Fechner...Forte lex in quantum valet nihil exprimit nisi id quod

view of the unity of man is only in the process of development in modern psychology.²⁶

To continue with our general scientific problems with the term “evolution” that prevented evolution as it is in itself to be immediately recognized as the same evolution apprehended as factual, we come to the third major point: there were judgment problems with new scientific methods. Modern science had some roots in the sixteenth century with the spirit of the Renaissance in its love of nature and a new consciousness of man’s dominion over nature.²⁷ The scientific revolution was the experimental method, which was not slow in bearing fruit, even for the natural philosophy of Linnaeus and Buffon, men important for our evolutionary studies.²⁸ While the experimental method coincides with the philosophy of nature, the purely mathematical method does not. The philosophy of nature even inspired Descartes, with the division *res extensa* and *res cogitans*, and Kant’s view where space and time are *a priori* forms of subjectivity, while pure mathematics has distanced itself from even these philosophers.²⁹ Therefore, the mathematical

proportiones tantum intensitatum comparari possunt ita ut quae in sensationibus soleant considerari ut *differentiae* aequales, non sunt nisi *proportiones* aequales, et tunc forte totum non esset nisi pseudo-problema.”

²⁶Gannon, *Psychology*, iv: “Such a psychology is now in the process of development, but it is not yet able to offer to the psychiatrist what physiology does to the general practitioner (the doctor of medicine).”

²⁷Filippo Selvaggi, *Filosofia delle Scienze* (Rome: Civiltà Cattolica, 1953), 14: Leonardo da Vinci (1452-1510), Nicolo Copernicus (1473-1543), Giovanni Kepler (1571-1630), Tycho Brahe (1546-1610), Teofrasto Paracelsus (1403-1541), Andrea Vesalius (1514-1564).

²⁸Selvaggi, *Filosofia*, 15: In addition to Linnaeus and Buffon, there were: Huygens, Newton, Fermat, Euler, Bernouilli, Boyle, Mariotte, Torricelli, Redi, Spallanzani, and Galileo.

²⁹Marcelo Sánchez Sorondo, “La Scienza e la Fede,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 342: “La seconda rivoluzione scientifica...ma ha messo in questione il precedente schema puramente matematico, perché è un po astratto e perché non coincide completamente con la realtà.”

method used exclusively is a scientific judgment problem in joining “evolution” with “fact.” A first problem with scientific method is its proclivity to depend on mathematics alone.³⁰ A second problem in scientific method is that evolution is an interpretive tool in understanding history, rather than strict science; and this is known from the fact that evolution is a one-way process, and cannot be the subject of experimentation, just as history is linear and non-experimental.³¹ A third problem with science is that the scientist does not always use good scientific method, such as the case of Galileo who used arguments based on the Bible against the advice of his friend and admirer, Cardinal Barberini.³² A fourth problem with science, especially Positivistic science, is that imagination cannot be used to understand creation, an element in the discussion of evolution and fact.³³ A fifth problem with scientific method is that the dating of fossils and the use of genetic

³⁰Sánchez, *Scienza*, 343: “Heisenberg dice che la materia non si può capire senza il concetto aristotelico di potenza...che certi concetti non sono sufficientemente spiegati con la pura quantità o con la pura matematica.”

³¹Fiorenzo Facchini. *Evolution and Creation*. 21 August 2006
 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>> “In the world of science, biological evolution is a key interpretive tool used in understanding the history of life on earth and serves as a cultural framework for modern biology.” Sánchez, *Scienza*, 342: “...l’evoluzione...non è scienza proprio nel senso di qualcosa che è stato confermato per sperimentazione. Non si è riusciti a fare una riproduzione sperimentale della vita. Non si ha nessuna spiegazione della vita.”

³²Henry V. Gill, *Fact and Fiction in Modern Science* (New York: Fordham, 1944), 114: “Galileo case - he used arguments based on Scripture..Ptolemy and Copernicus gave reasons.” Sánchez, *Scienza*, 344: “*Fides et Ratio* appeals to renew reason in every dimension..modern science.”

³³Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 122: “It is absolutely true that all movement is a changing of a state of being. But when we hear of an act which is not a movement we are at a loss of how to think about it. No matter how hard we try, we always imagine that creation is a kind of change, which renders its notion both contradictory and impossible...St. Thomas (on creation) uses the language of the existential act, not that of being. ‘God brings things into being from nothing’ (Aquinas *Summa Theologiae* 1. 45. 2).”

variation as a clock are both unreliable, and currently vary by a big margin of error.³⁴ A sixth problem with scientific method is that some concepts, like evolution or its application to the cosmos, are easier treated in science as a class of theories, but it is very difficult to explain a class of theories, some of which (like theories of evolution) are essentially different.³⁵ A seventh problem with scientific method is that experimental science treats on the proximate causes which are admitted in science from experience, experimentation, and are measurable, but experimental science also has to give an explanation of the facts, which may involve ultimate causes in philosophy.³⁶ An eighth problem with scientific method is that it is by nature inductive, and must be helped by deduction, and every science must both inductive and deductive.³⁷ So scientific method itself may be an impediment to a judgment joining evolution with fact.

The fourth general area where there were judgment problems arise is from the diverse and

³⁴Lemonick, "Different," 50: "...fossil dating...genetic variation as a clock...big margin of error."

³⁵Adam Frank, "Seeing the Dawn of Time," in *Cosmos: Before There Was Light*, ed. David J. Eisher (Waukesha, WI.: Astronomy: Collectors' Edition, 2006), 10: "Mario Livio of the Space Telescope Science Institute in Baltimore puts it, 'Inflation (Cosmology Theory) is more of a class of theories than an individual theory.'"

³⁶Masi, *Cosmologia*, 14: "Hoc ergo sensu scientia experimentalis causas proximas facti physici considerat...philosophia naturalis...causas ultimas..." Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 4: "Science, as far as possible, uses quantitative measurements in all its findings and formulates its laws in terms of quantitative measurements... The scientist does not inquire into the hidden 'nature' of things; he is satisfied to analyze the phenomena, classify them, and determine their *proximate causes*."

³⁷James A. Weisheipl, *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xx: "Aristotle saw that not all knowledge can be scientific (deduction), that is demonstrable, for then there would be no beginning...of scientific (induction) investigation." Ibid., xxviii: "...for every science, whether it be called empirical or philosophical, must deal with substance and accidents, must be intelligible and sensible; further every science must be inductive and deductive, must demonstrate through immediate (*propter quid*) and remote (*quia*) causes."

often defective world views of scientists, which cause problems in the joining of “evolution” to “fact” in a scientific judgment. Human psychology is still comparatively new, and is characterized by many differences in outlook among its advocates.³⁸ These differences in outlook can sometimes be given philosophical names, but are better more loosely categorized as world views which sometimes contain elements of a number of philosophic systems.³⁹ The first problem is that modern definitions of human personality consider only the empirical manifestations as evolutionary fact, and neglect the unifying principle that gives human beings concrete human existence.⁴⁰ The second problem is the need to rediscover the Aristotelian theory of finality in evolution, because it is impossible not to find finality in studies of DNA.⁴¹ The third difficulty is that the “New Realism” in science, which doubts that human reason can attain reality except for a mathematical approximation that brings science nearer to the real.⁴² The fourth difficulty arises from Positivism which only

³⁸Gannon, *Psychology*, 28: “...characterized by many differences in outlook among its advocates...”

³⁹Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, 1940), 229: “...we at once find ourselves in conflict with a number of philosophical sects, ancient and modern, variously described as Sensationalists, Associationalists, Materialists, Phenomenists, Positivists, Empiricists, Evolutionists, who differing among themselves on many points agree in the primary dogma that all knowledge is ultimately reducible to sensation. According to them the mind possesses no faculty of an essentially supra-sensitive order.”

⁴⁰Gannon, *Psychology*, 454: “The older definitions of personality stress the importance of intellectual functions. Modern definitions consider only the empirical manifestations of personality neglecting the unifying principle that gives them being in a concrete human existence.”

⁴¹Sánchez, *Scienza*, 343: “È impossibile non trovare, perfino nel DNA, un’idea di finalità.”

⁴²Sánchez, *Scienza*, 343: “C’è davvero molta discussione nella scienza di oggi sul cosiddetto ‘nuovo realismo’. C’è la questione se la nostra conoscenza approdi alla realtà, oppure se sia semplicemente uno strumento per poter dialogare. La maggior parte dei fisici oggi piuttosto si accosta ad un nuovo tipo di realismo.”

admits sense knowledge, and not intellectual knowledge, yet proposes evolution as a unique and supreme law.⁴³ The fifth difficulty arises from Evolutionism as a “reductionist” view of “only science,” which tries to explain scientifically all the phenomenon of spirit and matter treated by the laws of physics and biology.”⁴⁴ The sixth difficulty is that Evolutionism seems to have gathered new force, but not new proofs, rather from Relativism.⁴⁵ The seventh difficulty in joining “evolution” and “fact” in scientific judgment is that many eminent scientists now believe that scientific theory is an “artistic creation” to devise some fruitful guide to further study; and in addition, these future theories will be entirely statistical.⁴⁶ So the defective world views of some

⁴³Selvaggi, *Filosofia*, 28: “Come il Mill era stato il logico del Positivismo, così Hippolyte Taine e Herbert Spencer si possono chiamare i metafisici del Positivismo. Essi si propongono di scoprire quella unica e suprema legge dei fenomeni che il Comte aveva indicato come l’ideale ultimo della scienza; per Taine...l’unità panteista...per lo Spencer...teoria trasformistica del Darwin.” Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 351, “Positivismus...negat nos supra cognitiones experimentales ascendere posse; omnem metaphysicam reiciunt...Hanc sententiam innumeri sectantur auctores, maxime in Germania.”

⁴⁴Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 221: “Alcuni intendono l’evoluzionismo come la dottrina che si propone di spiegare scientificamente tutti i fenomeni dello spirito e della materia...per il suo manifesto intento riduzionistico.

⁴⁵Ambrose McNicholl, “Contemporary Challenge to the Traditional Idea of Science,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 457: “The theories of relativity and the principle of indeterminacy emphasized the part played by the scientist in building up theories, which were then seen to be more subjectivist than was formerly imagined. Relativism, already widely diffused by Historicism and Evolutionism, seemed now to gather new force from such studies on the nature of sciences that had hitherto been generally accepted as prototypes of universal and absolute knowledge.”

⁴⁶Sister Olivia M. Barrett, “The Role of Science in Liberal Education,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 498: “Many eminent scientists now believe that scientific theory is an artistic creation, that the goal of scientific investigation is not to discover the nature of the real world but merely to devise some fruitful guide to further study. They believe that scientific theories of the future will be entirely

scientists present scientific problems with the term “evolution” that prevented evolution as it is in itself to be immediately recognized as the same evolution apprehended as factual.

Fifth, there was a judgment problem with certitude, which causes problems in the joining of “evolution” to “fact” in a scientific judgment. First, due to the fact that “science” is an analogical term, no one branch of science, like evolutionary biology, can be erected into a monolithic idol without destroying the integrity of truth.⁴⁷ Second, scientific hypothesis is an instrument, and not a conclusion with certitude, even though an instrument is useful for investigation.⁴⁸ Third, the working hypothesis has to be confirmed by scientific experiment to begin to furnish certitude.⁴⁹

statistical...” Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 98: “Nostris temporibus valde in usu est statistica...non est idem ac scire causam phaenomeni; attamen huiusmodi calculi, qui sunt veluti quoddam *inventarium* factorum... Cavendus semper est abusus statisticae.”

⁴⁷James A. Weisheipl, “Introduction: The Dignity of Science,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xxi: “Even in the study of the world, Aristotle recognized various approaches, each of which is legitimately called ‘science’. In other words, ‘science’ is an analogical term, and its dignity requires that it be recognized in its diversity and complementarity. No one branch can be erected into a monolithic idol without destroying the integrity of truth and the dignity of science.”

⁴⁸Jose Maria Riaza Morales, *Ciencia Moderna y Filosofia*, 2nd ed. (Madrid: BAC, 1961), 643: “Es la ‘hipótesis’ un instrumento utilísimo para el investigador...Este modelo ideal constituye una hipótesis...Una hipótesis bien escogida contribuye ponderosamente al desenvolvimiento de la Ciencia. La aparición de una buena hipótesis puede hacer progresar a la Ciencia de manera considerable.”

⁴⁹Selvaggi, *Filosofia*, pages 69-71, to show that the hypothesis does not yield certain proof; 32, that a scientific hypothesis is a provisional integration of some experiments; 35, that a model for certitude is experience followed by experiment, followed by a hypothesis, explained by metaphysics; 158, after experimentation, the working hypothesis primes the pump of the mind; 190, that the method of Galileo was to observe and experiment, then form a hypothesis, then apply deductive analysis, and finally to move to verification; 218-225, that the formation of physical theories arise from working hypotheses confirmed by experiment; 249-250, that hypotheses have to be confirmed.

Sixth, there was a judgment problem about the exclusive right of science to find truth, which causes problems in the joining of “evolution” to “fact” in a scientific judgment. The last years of the eighteenth century and the first years of the nineteenth century signaled a complete break between science and traditional philosophy. The philosophy that dominated Europe was the purely Rationalistic and Aprioristic philosophy of Descartes, Malebranche, Spinoza, Leibniz, and Wolf.⁵⁰ The rigid positions of Scholasticism, or its acceptance of science without discernment, only offered a decadent Aristotelianism and Scholasticism that did not satisfy scientists, whose own method was becoming ever more positive and experimental.⁵¹ In chemistry, Lavoisier, Proust, Dalton, Berzelius and Avogadro were active. In electricity, Galvani, Volta, Coulomb, and Cavendish were active. In mathematics, Lagrange, Legendre, Laplace and Monge were active. However, in philosophy there was nothing better to offer than the great metaphysical systems of transcendental idealism of Fichte (1762-1814), Schelling (1775-1854), and Hegel (1770-1831). In the early twentieth century, scientists refused to admit any ontological or philosophical concepts, and even to create an autonomous empirical terminology for science.⁵² Therefore, the search for truth from one single

⁵⁰Selvaggi, *Filosofia*, 16: “...la piena rottura tra scienza e filosofia...dominata in Europa dalla corrente puramente razionalistica e aprioristica...”

⁵¹Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), v: “...in qua conspicietur saeculis XVIII et XIX, propter quam a Meyerson [E. Meyerson, *L’Eplication dans les Sciences* (Paris: 1921), 2: 169] et ab aliis (immo a scholasticis nonnullis) considerata est tamquam philosophia ‘perfecte sterilis’.”

⁵²Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner’s Sons, 1959), 195: “To the extent that they approach the purity of their type, they tend, as we have said, to create an autonomous empirical terminology. Now this system of notions will not admit into its formal texture any ontological or philosophical concept.” Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 3: “Moderni psychologi aliam fere praeter empiricam psychologiam non admittunt; psychologiae tractationem metaphysicam plerique omnem exclusam esse volunt.” Sánchez, *Evoluzione*, 343: “Dopo la prima guerra mondiale quasi

empirical source, facts alone without seeking explanations, causes a problem with the joining of “evolution” and “fact” in a single scientific judgment.⁵³ A factor for the solution of the problem is that from 1900 and after, there was an increasing number of scientists who have been asking questions that were formerly looked upon as purely philosophical.⁵⁴ A second factor for the solution of the problem is that insights are available from a number of sources, empirical science, philosophy, and theology.⁵⁵ Even with these further insights, care must be taken to honor the special method of each of these three sciences, but it is not easy to keep these disciplines apart.⁵⁶ However, Catholic scientists can be encouraged by the pronouncements of the Church that when

tutti gli scienziati erano positivisti, e la tema della religione era trascurato...”

⁵³William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 9: “The reference to science by Richard Lewontin, Harvard geneticist, as science ‘the only begetter of truth’ follows logically from the philosophical commitment to materialism.” Selvaggi, *Filosofia*, 17: “La soluzione semplicistica del positivismo classico di Augusto Comte dominò negli ambienti scientifici per gran parte del secolo XIX: dare l’ostracismo ad ogni forma di metafisica e ridurre la filosofia ad una semplice sintesi o meglio ad una pura somma delle scienze particolari. Ma la soluzione positivistica instaurava un dommatismo scientifico che lo stesso successivo sviluppo della scienza si sarebbe incaricato di smentire...”

⁵⁴Michael Brown, preface to *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xii: “From the turn of the century to the present day an ever increasing number of scientists have found themselves asking questions which formerly were looked upon by them as purely ‘philosophical’.” Nogar, “Fact of Evolution,” 351: “Darwin Centennial Celebration (November 1959)...statement to teachers...universality of the evolutionary processes...integrating...sciences and the humanities.”

⁵⁵Carroll. *Creation*. 1: “Any discussion of evolution and creation requires insights from each of these three areas (Empirical science, Philosophy, Theology).”

⁵⁶Carroll. *Creation*. 1: “It is not always easy to keep these disciplines distinct.”

science adheres to its own method, it cannot come into conflict with faith.⁵⁷ Further, dialogue between philosophers, scientists, and theologians continues, just as in the International Congress on Evolution held in Rome in 2002.⁵⁸

Seventh, new theories of evolution brought new judgment problems, which cause problems in the joining of “evolution” to “fact” in a scientific judgment. First, with a new emphasis on the Anthropic Principle, we see the universe the way it is, because if it were different, we would not be here to observe it; this makes it difficult to conceive any fact of evolution of alien life.⁵⁹ Second, there are many recent theories of evolution, the very number of which argue against evolution being factual.⁶⁰ Third, evolution is not proper science, but rather a historical process, since it is a one-way process which cannot be the subject of experiment or the subject of some pure mathematical

⁵⁷Jesús Villagrassa, “Introduzione: Evoluzione, Interdisciplinarità e Metadisciplinarità,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 13: “La separazione e la frammentazione si fanno particolarmente drammatiche quando non avvengono soltanto fra due scienze particolari, ma tra la fede e la ragione, che ‘sono come due ali con le quali lo spirito umano s’innalza verso la contemplazione della verità (Pope John Paul II, *Fides et Ratio*, #1).” Wikipedia, the Free Encyclopedia. *Christoph Cardinal Schönborn*. 31 January 2007 <http://en.wikipedia.org/wiki/Christoph_Sch%C3%B6nborn>, 3: “When science adheres to its own method, it cannot come into conflict with faith.”

⁵⁸Sánchez, *Scienza*, 341: “Il Congresso ha presentato alcuni punti di convergenza tra scienza e fede.”

⁵⁹Steve Nadis, “Why You Live in a Multiverse,” in *Cosmos: Before There Was Light*, ed. David J. Eicher (Waukesha, WI: Astronomy: Collectors’ Edition, 2006), 36: “Anthropic Principle: We see the universe the way it is because if it were different, we would not be here to observe it.”

⁶⁰Nogar, “Fact of Evolution,” 343: “Biologists...They do debate the relative advantages of the mechanism of evolution proposed by the Neo-Darwinians, the Macro-Mutation-Saltation, or some form of Lamarckian theory.” La Vecchia, *Evoluzione*, 26: “Esistono circa 30 teorie diverse che tentano di dare una spiegazione del fenomeno evolutivo. Ci limitiamo ad accennare ad alcune teorie attuali.”

hypothesis.⁶¹ Fourth, the factual scientific judgment of evolution has less credibility due to scientists' proclivity to philosophize.⁶² Fifth, the factual scientific judgment of evolution has less credibility due to the mysteries of nature, among which is the mechanism of evolution.⁶³

In conclusion, there is a negative scientific judgement dividing "evolution" from "fact," therefore judging, "Evolution is not a fact." If we consider the judgement, "The snow is white," whiteness in the snow as apprehended can be verified in the snow as it is outside the mind. There are a number of scientific reasons preventing the immediate philosophical judgement, "Evolution is fact," since evolution as apprehended cannot be immediately verified in evolution as it is outside the mind.

⁶¹Sánchez, *Scienza*, 342: "...si po concludere che, evidentemente, l'evoluzione è un'ipotesi; forse è più di un'ipotesi, ma non è scienza proprio nel senso di qualcosa che è stato confermato per sperimentazione...È azzardato pensare che l'evoluzione della vita, e poi l'evoluzione umana, sia una teoria scientifica nel senso galileiano."

⁶²Selvaggi, *Filosofia*, 257: "Tuttavia nelle scienze biologiche...si corre il pericolo di passare inconsciamente da teorie veramente scientifiche a teorie filosofiche..." Vittorio Possenti, "Vita, Natura e Teleologia," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 221-222: "Eppure quando si impegnano a ricostruire una storia della vita passata nelle sue varie forme, difficilmente rimangono scienze soltanto storiche, ma entrano nel campo delle spiegazioni filosofiche di vario ordine..."

⁶³Pedro Barrajón, "Evoluzione, Problemi Epistemologici e Antropologici," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 252: "Molti scienziati sono dediti allo studio di questi meccanismi evolutivi, ma finora le diverse ipotesi di lavoro non hanno trovato unanimità." La Vecchia, *Evoluzione*, 39: "Dopo tanti anni di studi e di ricerche, l'evoluzione remane ancora oggi un problema non risolto, sia per ciò che concerne la spiegazione scientifica, sia per le modalità con cui è avvenuta e il suo sviluppo." Nadis, "Multiverse," 16: "...many cosmological riddles are unanswered, and probably will remain so for many years..."

Chapter 6: PROBLEM WITH REASONING

Here the concern is still with the “fact” of evolution. The philosophy of Evolutionism will be considered in the short academic course in section three of this paper. Here the intention is to inquire about the difficulty in syllogistic arguments for the fact of evolution, and the possible lack of certitude of the fact.¹ If the terms “evolution” and “fact” do not evidently coincide in philosophic or scientific judgements (as has appeared in the last two chapters of this dissertation), is it possible to create a syllogistic argument favoring the factual nature of evolution? Syllogistic argument (or reasoning) uses two premises, and comes to a conclusion based on the connection of the premises.²

Some Neo-Scholastic philosophers maintain that the “evolutionary hypothesis is now known to be a fact.”³ Other Neo-Scholastic philosophers maintain that there is not sufficient empirical

¹Jesús Villagrasa, “Evoluzione, Interdisciplinarietà e Metadisciplinarietà,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 2-3, mentions the program of Rafael Pascual to do just this: “Primo di tutto si deve determinare se il *fatto* dell’evoluzione si sia verificato oppure no, e con quanta certezza si possa stabilirlo.”

²Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 71: “Argumentatio (signum ratiocinii) est oratio in qua unum ex alio inferri significatur.” Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 138: “Est autem ratiocinium ea mentis operatio, per quam instituta duarum idearum comparatione cum tertia, illarum inter se identitatem vel diversitatem cognoscit.” Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, 1940), 320 et seq.: “Reasoning may be defined...that mental act by which from a comparison of two ideas with a third we ascertain their agreement or difference.”

³Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), Preface.

evidence for the fact of evolution.⁴ Even admitting evolution, one Neo-Scholastic notes, “The debate over what set off evolution and what shaped it is still open.”⁵ Therefore, some Neo-Scholastics say evolution is a fact, while others say the matter is still open.

How could there be such a debate? Why is there no agreement about the fact of evolution? Both Possenti and Norgar seem to be correct when they say that the problem is the lack of a crucial experiment to prove evolution.⁶ The second major sign indicating the problem with the factual basis for evolution is the large number of different theories of evolution.⁷ Here it should be noted that

⁴Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 224.

⁵Fiorenzo Facchini. *Evolution and Creation*. 21 August 2006
<<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>>.

⁶Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁷Pedro Barrajón, “Evoluzione, Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 250: “La teoria dell’evoluzione...proposta originalmente da Darwin e poi riformulata nel secolo XX da diversi autori.” Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 326: “...it is more accurate to speak of theories of evolution.” Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 32: “...sono state enumerate almeno una trentina di teorie diverse che tentano di chiarire il fenomeno evolutivo.” Sandro Magister. *Creation or Evolution? Here Is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>>, uses the plural for theories of evolution: “...theories about it must be experimentally verified before they can be considered scientifically valid...And for this reason the last word on evolution has not been said.” Rafael Pascual, “La Teoria dell’Evoluzione: Status Questionis,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 36-37: “In primo luogo, non si dice in nessun modo che si debba considerare l’evoluzione come un fatto, come alcuni hanno voluto...si possano proporre diverse teorie dell’evoluzione (è qui, e non prima, che si parla di questa pluralità di teorie evolutive).” Fernando Pascual, “Evoluzionismo e Bioetica: I Paradigmi di V. R. Potter, H. T. Engelhardt, e P. Singer,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 357: “...delle diverse teorie

these theories are “fundamentally” different, due to a scientific issue, since “many scientists are dedicated to the study of this mechanism of evolution, but there is no agreement as yet.”⁸ The theories are fundamentally different, because the “mechanism of evolution” has not been discovered and proved.

How can Neo-Scholastics reply to this lack of congruence of evolution to the scientific method of experimentation and the quarrels of scientific experts? There are only three basic replies to these difficulties of a lack of experimental verification, and a large number of fundamentally different theories of evolution. First, some Neo-Scholastics affirm the fact of evolution can be proved by reasoning, second, others are agnostic about the fact of evolution being proved by reasoning, and third, some Neo-Scholastics deny the fact of evolution can be proved by reasoning.

Those Neo-Scholastics who affirm the scientific fact of evolution seem to argue in two different ways. One non-syllogistic way to affirm evolution is to ask the public to rely on the opinion of experts, or rely on convergence of evidence, or a combination of the two.⁹ Another non-

evolutionary...”

⁸Barrajón, “Evoluzione,” 252: “Molti scienziati sono dedicati allo studio di questi meccanismi evolutivi, ma finora le diverse ipotesi di lavoro non hanno trovato unanimità.”

⁹Nogar, *Wisdom*, 158-159: “What is the status of the fact of biological evolution? The objective observer is convinced on expert opinion to a high degree of probability that biological evolution (including the body of man) has taken place.” Ibid., Nogar does use syllogistic reasoning as far as it will go; e.g., proof of a major premise (page 88) and proof of a minor premise (page 90). Nogar, “Fact of Evolution,” 339, quoting Le Gros Clark: “...at what point can the gradual accumulation of circumstantial evidence (as we have in evolution) can the latter be accepted as adequate for demonstrating the truth of the proposition?...if several lines of argument based upon apparently unrelated data converge on, and mutually support, the same general conclusion, the probability that this conclusion is correct may appear so high as to carry conviction to the mind of the unbiased observer.” Nogar, “Fact of Evolution,” 344: “Yet remembering the singular nature of the problem of origins and the only methods natural science has at its disposal, it is not certain demonstrable proof that we are after, but that high degree of

syllogistic way of affirming the fact of evolution appears to simply “beg the question” by affirming what ought to be proved.¹⁰ There seems to be no syllogistic alternative among the Neo-Scholastics who argue in favor of evolution; there seems to be no Neo-Scholastic philosopher who defends the “fact” of evolution by syllogistic argument in favor of the scientific “fact” (as scientific, not the philosophy of Evolutionism).

A second group are agnostic that the scientific fact of evolution can be proved by reasoning. The agnostics about evolution can be divided into at least four different groups. This is because some admit a lack of knowledge about the fundamental scientific operation of evolution,¹¹ or hope for the future,¹² or are confused,¹³ or note that biology itself reveals little on fundamental order of

convergent probability which produces conviction and removes all reasonable doubt.”

¹⁰Vincent E. Smith, “Evolution and Entropy,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 305, where Smith quotes George Gaylord Simpson, *The Making of Evolution* (New York: 1951): “...the factual truth of evolution is taken as established and the enquiring goes on from there.” Ibid., “Yet as André Lalande (*Les Illusions Évolutionnistes* [Paris: 1931]) has shown, there are paradoxes in our commitment to the theory of evolution, and one may face them without necessarily opposing evolution itself.” Pierre Perrier, “Que Nous Apprend l’Analyse Mathématique de la Micro et la Macro Évolution?” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 183: “On doit donc noter en conclusion cette capacité remarquable...l’optimum local...”

¹¹Magister. *Creation*. “Ahead of us therefore there is much work before we can fully understand the mechanisms of the evolutionary process.”

¹²Michael D. Lemonick and Andrea Dorfman, “What Makes Us Different?” *Time Magazine*, vol. 168, no. 15 (9 October 2006), 50: “For most of us though, it’s the grand question about what it is that makes us human...After 3.5 billion years of such randomness, a creature emerged that could ponder its own origins – and revel in a Mozart *adagio*. Within a few short years, we may finally understand precisely when and how it happened.”

¹³Nogar, “Fact of Evolution,” 328: “...Centennial discussions of the status of evolutionary theory today throws important light on the confusion that has reigned for over a decade about this proposition ‘evolution is a fact’.”

nature.¹⁴

A third group are those Neo-Scholastics who deny the scientific fact of evolution can be proved by reasoning. Some of these philosophers argue that reasoning to the scientific fact of evolution is impossible *a priori* because there are biological exceptions to evolution,¹⁵ empiricism yields only facts and no explanations,¹⁶ evolution is only an historical fact and not a biological fact,¹⁷ evolution is not able to be absolutely demonstrated but only checked indirectly,¹⁸ and only the

¹⁴William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2000 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 2: “Although there are debates among evolutionary theorists about the randomness and contingency at the basis of evolution, many biologists argue that at the very least biology itself does not reveal any fundamental order, purpose or meaning in nature.”

¹⁵Smith, *Evolution*, 322: “The continued existence of apparently very old living forms that did not either evolve or become extinct may be an exception to evolution as a truly absolute universal..”

¹⁶Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 124: “The grievous mistake of many philosophers in their endeavor to refute the Empiricists who have at all times, at least implicitly, denied the absolute validity of this truth (Principle of Causality) has been to try to translate into sense experience what is the most abstract and elevated intellectual realizations...experience is complete and stops with a succession of facts...The knowledge of ‘causes as causes,’ the knowledge of the principle of causality, can be had only by the immediate analysis of the subject in the proposition: “Every finite, limited, composite, changeable being has a cause...” Nogar, *Wisdom*, Preface: “Not only must we have the basic facts upon which to build our case for evolution, we must also apply rigorous logic to the inferences which are often drawn from evolutionary statements.” Boyer, *Cursus*, 2: 192: “Non potest esse maior perfectio in effectu quam in causa.”

¹⁷Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Dominicano, 1999), 224: “Si può obiettare che S. Tommaso interpreta i rapporti dei gradi di vita con la maniera secondo la disposizione metafisica e non secondo la successione storica come fanno gli evoluzionisti.”

¹⁸Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual. (Rome: Studium, 2005): 326: “Nevertheless, a scientific theory, by its very nature, is still open to verification, correction, and refinement. Of course, regarding the empirical fact of evolution, there is no absolute demonstration, because the process can only be checked

possibility (not the certainty) of evolution is able to be known.¹⁹ Some of these Neo-Scholastic philosophers argue syllogistically against the foundation concepts of the scientific theory of evolution, that these foundation concepts are not facts: struggle for existence,²⁰ natural selection,²¹ law of heredity,²² adaptation,²³ use and non-use,²⁴ and fossils as proof of evolution.²⁵ Another

indirectly.”

¹⁹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “Remember from this analysis of possibility, it is impossible to say what did occur.”

²⁰Eduardo Hugon, *Cursus Philosophiae Thomisticae*, 6 vols. (Paris: Lethielleux, 1935), 2: 306, notes that the “struggle for survival” implies that weaker animals lose. However, in reply, Hugon notes that the postulate is a sophism, and that the real law of nature is that each thing helps each other, as part of the universe going to the same goal. Secondly, conflict does not alter species, only individuals. Thirdly, it is not true that the struggle for existence always favors the stronger, and due to chance, the weaker may survive. Confer: Boyer, *Cursus*, 2: 192, argues that every Nature is ordered to survival; But every species has a Nature; Therefore every species is ordered to survive (so not survival of the fittest, and therefore not evolution). Confer: Margaret Ann McDowell, “The Rhythmic Universe,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 380: “The discovery of order as in the rhythmicity of fiddler crabs and other organisms, far from granting any substantiation to the theory of random beginnings, militates strongly against it...not that observed order is the result of chance, but rather what was thought to be chance is seen to be more likely an aspect of order.” Aquinas *In Metaph.* 6. 3: “It is plain that effects as related to some larger cause appear to have no order to each other, but to coincide accidentally, which, if they are referred to a higher common cause, are found to be ordered to each other, and not conjoined accidentally, but simultaneously produced by one *per se* cause.”

²¹Hugon, *Cursus*, 2: 306, notes that natural selection indicates nature rejects the weak and keeps the strong, so perfecting the species; for example, man by artificial selection breeds animals well. Hugon replies that man never produces a new species, only varieties. Further, if oversight ends, varieties return to type. Further, some are unsuccessful, others are sterile. Hugon also replies that if an intelligent agent like man has a hard time getting better effects, how can blind nature and irrational causes?

²²Hugon, *Cursus*, 2: 307, notes that the heredity law is that by which fixed and stable varieties are obtained by natural selection. Hugon replies such a law is a hypothesis. Hugon replies that heredity transmits only specific characters. Hugon replies that deformities and accidental characteristics do not continue indefinitely in nature, but nature goes back to normal

group of Neo-Scholastics argues that reasoning to the scientific fact of evolution is impossible because of the added assertions or added emphasis of atheism,²⁶ materialism,²⁷ and the Synthetic Theory.²⁸ Another group of Neo-Scholastics argues that reasoning to the scientific fact of evolution is impossible because reasoning ultimately involves first principles, such as the Principle of

type.

²³Hugon, *Cursus*, 2: 307, adaptation is where attention should be given to external conditions, even if not entirely sufficient for evolution. Hugon replies that external conditions can aid the evolution of pre-existing species in power or aptitude, but external conditions do not confer a new type of species. Hugon notes in the “same” circumstances, different species flourish, e.g., many species flourish in Europe, and twins in the same circumstances are often different. Hugon notes that in “diverse” circumstances, the same species flourish, e.g., wolves in Canada and Mexico. Confer: Boyer, *Cursus*, 2: 187, on biogeography.

²⁴Hugon, *Cursus*, 2: 307, comments on use and non-use in evolution where “non-use” will debilitate, diminish, or corrupt an organ, while “use” will evolve and perfect. Hugon replies that there will not become or create another organ. Hugon replies that if the theory is correct, why can’t man generate new organs, e.g., new fingers?

²⁵Hugon, *Cursus*, 2: 307-308, notes that fossils are often the foundation for scientific proof of evolution. Hugon notes that in the fossil record there is often a hiatus, with no intermediate forms; but such an intermediate form would be necessary in the Passive Evolutionary Theory. Hugon replies that many species in the fossil record did not evolve, so did not submit to the law of evolution. Hugon replies that diverse types of animal fossils are seldom found together. Hugon notes that fossils have been found where ancient animals were more perfect than their descendants. Confer: Boyer, *Cursus*, 2: 187, argues that many fossil do not differ from existing species.

²⁶Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 581: “A purposive evolution, deriving it inherent tendencies from an Intelligent Creator, should be acceptable to all.”

²⁷Klubertanz, *Philosophy*, 379: “Evolutionism is a form of materialism, and the reasons for it are the reasons for materialism.”

²⁸Nogar, “Fact of Evolution,” 328: “If the contemporary Synthetic Theory (Neo-Darwinian, mutation-selection)...the ‘fact of evolution’ (Dr. Olsen says) must be rejected as unproved and invalid.”

Causality,²⁹ the Principle of Sufficient Reason,³⁰ and the Principle of Finality,³¹ all of which are denied by the Evolutionists, at least implicitly, as part of the theory of evolution. However, it is important to note that not all Evolutionists deny finality. Finalistic Evolutionism is professed by Claude Bernard with his “directive idea,” by Schopenhauer with the “will of the species,” by Cournot with his “plastic force,” by Driesch with his “entelechy,” by Rignano with his “species memory,” by Brachet with his “creative life of the form,” by Bergson with his “élan vital or vital thrust,” by Teilhard de Chardin with his “formative psyche,” by Vignon with his “organ-forming idea,” and by Leonardi with his “virtue or capacity of transformation,” among others.³² Even these theories are defective by reason of a lack of recognition of the cause of evolution.

In conclusion, it appears that there is no syllogistic argument to defend the thesis: “Evolution is a fact.” If there was such an argument, it could possibly run: Observation and experiment prove a scientific fact; But evolution is open to observation and experiment; Therefore,

²⁹Klubertanz, *Philosophy*, 422: “Some philosophers think that they can prove the impossibility of evolution, since: Effect cannot be more perfect than cause; and since: Effect is of the same kind as its non-cognitive cause.” Barraón, “Evoluzione,” 267, cites Karl Rahner, *Hominization: The Evolutionary Origin of Man as a Theological Problem* (Freiburg: Herder, 1965; and London: Burns & Oates, 1965), 64: “How can we conceive of the growth of a being that produces in its final goal something that is superior to itself and that leads to its auto-transcendence?”

³⁰La Vecchia, *Evoluzione*, 87: “È pertanto impossibile sostenere che siamo a conoscenza delle cause sufficienti dell’evoluzione.”

³¹La Vecchia, *Evoluzione*, 89: “Da quanto abbiamo esposto finora, criticando la teoria sintetica, sembrerebbe che il problema delle origini dei viventi implichi evidentemente la questione della finalità, l’esistenza cioè di forze interne orientate a produrre determinati effetti.” Bittle, *Psychology*, 581: “A purposive evolution...should be acceptable to all.”

³²La Vecchia, *Evoluzione*, 96: “Tutte queste teorie non concordano affatto nel riconoscere la causa dell’evoluzione...Ammettono tuttavia l’insufficienza dei soli fattori casuali.”

evolution is a scientific fact. However, as has been seen, evolution is not open to observation and experiment, and therefore is not a scientific fact. Therefore, the conclusion of this chapter must be that not even reasoning by syllogism can show that evolution is a fact.

Two questions still remain as unsolved problems that arise in the treatment of argumentation relative to the proof of evolution. What about the suggestion of the Neo-Scholastic Raymond Nogar that the fact of evolution can be proved by concordant evidence from many fields? Secondly, why is it that scientific evolution is not open to observation and experiment? Consider each of these questions in turn.

The Neo-Scholastic *Argumentatio Probabilis*

The Neo-Scholastic Raymond Nogar claims that the fact of evolution can be proved from concordant evidence with the help of the expert testimony of scientists. Nogar notes that “the fundamental fact of evolution seems to be settled once and for all” among scientists, and “this may be true within that small group of professional workers in scientific fields, but it is not the case with the intelligent non-scientist who has little opportunity to follow the course of evolutionary development.”³³ In reply, other Neo-Scholastics note, “For many scientists, a theory is considered proved when it affords valuable understanding, and leads to further hypotheses, understandings and information.”³⁴ However, even this acceptance as a proved hypothesis is not admitted by scientists

³³Nogar, *Wisdom*, 31.

³⁴Klubertanz, *Philosophy*, 422. Ibid., 425: “As we have seen, a scientific theory is often considered ‘proved’ and is accepted by the scientists in the field when it effects a systematic organization and unification of data, and leads to further investigations, insights, and theories. The scientific theory of evolution performs these functions. This is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently

in the same way or within the same limits.³⁵ Even when evolution is admitted by scientists, the Neo-Scholastics note that the scientists do not know how to offer valid arguments for evolution³⁶, and the arguments that are offered “do not even prove that it (evolution) is possible.”³⁷ Against this Nogar proposes an argument based on two factors: authority of experts and the convergence of scientific evidence.³⁸ Nogar states, “The authority of the specialists’ judgement in a matter of evolution, like every other area of high specialization, is great.”³⁹ Further, Nogar argues that there is a consensus among experts.⁴⁰ In addition to expert opinion, Nogar argues convergence of evidence.⁴¹ Although Nogar does not explicitly use the argument from the lack of an alternative, it is notable that Nogar considers a possible alternative, Creationism, with the comment that it “has

with scientific justification for a scientific theory.”

³⁵Di Napoli, *Cursus*, 1: 320: “Hodie generatim Darwinismus deseritur, sed hypothesis evolutionis admittitur fere ab omnibus biologicis, non tamen eodem modo et iisdem limitibus..”

³⁶Di Napoli, *Cursus*, 1: 320: “Magna ergo divisio habetur in determinandis causis seu mediis; unde multi admittunt thesim evolutionisticam, sed nesciunt affere argumenta valida ad probandam eius universalitatem et radicalitatem.”

³⁷Klubertanz, *Philosophy*, 422: “Even when we take all the evidences together they do not prove that evolution historically occurred, they do not even prove that it is possible.”

³⁸Nogar, *Wisdom*, 159.

³⁹Nogar, *Wisdom*, 32.

⁴⁰Nogar, *Wisdom*, 157: “It is important enough to repeat that when it comes to evaluating the status of evolutionary theory, quantum theory, or any other scientific theory, it is the consensus of the unbiased experts which must be the norm.”

⁴¹Nogar, *Wisdom*, 103: “Taken singularly, the arguments may not be conclusive. Taken together, they achieve power which places them beyond coincidence. Nor can we forget what has gone on before by way of witness to evolution. The arguments of paleontology, genetics and natural selection are also drawn from apparently unrelated materials, and they too converge upon and mutually support the conclusions of the materials in this chapter.”

little support in the evidence brought forward by science.”⁴² Actually, it is Fixism that is the real opponent to Evolutionism, but Nogar does not use the argument against alternatives, except for a few pages on sequential Creationism.⁴³ At the end of the factual evidence, Nogar concludes, “The fact of evolution is more probable.”⁴⁴ Other Neo-Scholastics give rules for the legitimacy of arguments from a hypothesis: the hypothesis must be possible; the hypothesis must not be contrary to scientific observation; and the conclusion must not be proposed as a certain or unique truth.⁴⁵ There is a Neo-Scholastic probable argumentation (*argumentatio probabilis*), which is defined as argumentation in which from probable premises is drawn a probable conclusion.⁴⁶ As far as form, the probable argument does not differ from the apodictic syllogism which yields certitude and necessity, but in its probable premises the probable argument yields only a probable opinion. The opinionative conclusion of this probable argument can arise from intrinsic reasons, such as hypothesis, analogy, or statistics; or the opinionative conclusion can arise from extrinsic reasons, such as had in testimony, which is based on the statements of others in which one places faith. These are two of the elements in the argument of Nogar, namely the hypothesis supported by convergent evidence and testimony of experts. When there is convergence of probability there are

⁴²Nogar, *Wisdom*, 103.

⁴³Nogar, *Wisdom*, 92-93.

⁴⁴Nogar, *Wisdom*, 123: “...more probable...”

⁴⁵Calcagno, *Philosophia*, 1: 98, who notes that by itself, the argument from hypothesis can only yield probabilities. Calcagno bases his views on St. Thomas: Aquinas *Summa Theologiae* 1. 32. 1. ad 2; Aquinas *De Caelo* 2. 17.

⁴⁶Di Napoli, *Cursus*, 1: 155: “Argumentatio probabilis est argumentatio in qua ex praemissis verisimilibus eruitur conclusio verisimilis.”

judgments, which are independent among themselves and which have only probability. The convergence, however, offers a new motive or reason which surpasses those probabilities, and then such a probable argumentation can cause true certitude.⁴⁷ Nogar eventually claims “Finally, he (the unbiased reader) has practical certitude that the evolutionary hypothesis is for the present the most fruitful one available for biological research.”⁴⁸ Other Neo-Scholastics agree that by the convergence of probable things there can often be reductive certitude in areas such as legal court cases and history.⁴⁹ Therefore, one can answer with Nogar that the fact of evolution can be proved by testimony of experts and the convergence of evidence from many fields. Nevertheless, that proof is only within the realm of probability for several reasons. First, any certitude is diminished by the arguments that would undermine the syllogism, as argued in the whole chapter above. Second, the Neo-Scholastics note that probable argumentation (*argumentatio probabilis*) is formally no different from apodictic argumentation, but differs because the conclusion is only probable. Thirdly, Nogar himself admits that assent to the evolutionary hypothesis is not theoretical, that is, a

⁴⁷Di Napoli, *Cursus*, 2: 369: “Attamen, si habetur convergentia probabilitatum, scil. si conveniunt iudicia inter se independentia, in quibus habetur tantum probabilitas, habetur *novum motivum* superans ipsas probabilitates, quod proinde potest causare veram certitudinem.” Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 356, agrees and notes that convergence of probability can generate formal certitude, which may be the only sufficient reason for some obvious facts.”

⁴⁸Nogar, *Wisdom*, 160.

⁴⁹Di Napoli, *Cursus*, 2: 369: “Haec convergentia probabilitatum haberi potest in disciplinis physicis et historicis, ita ut saepe habeatur certitudo reductive metaphysica, se certitudo quae, initialiter ex motivis proximis non nimis excedens probabilitatem, tamen ob convergentiam motivorum reducitur ad certitudinem metaphysicam. Pro personis et eventibus historicis...est saepe validum et unicum criterium certitudinis.” Salcedo, *Philosophiae*, 1: 356: “Ita in re historica...”

judgment that a certain proposition is objectively true concerning the facts of the case, but rather assent to the evolutionary hypothesis is only practical, which indicates a judgment that a certain course of action is the best one to take under the circumstances and in view of the available information.⁵⁰

Evolution in the Genus of History

Why is scientific evolution not open to observation and experiment? Some indications involving the historical character of evolution have already been given in the consideration of the probability of the evolutionary hypothesis. Some Neo-Scholastics noted that a convergence of probabilities can often be reductive to certitude in areas such as court cases and history.⁵¹ There is a difference in method between the scientific method and the historical method, and it appears that the verification of scientific evolution is closer to the historical method than it is to the scientific method. The scientific method calls for observation, and then the formulation of a hypothesis, which is the provisional proposition apt to explain some phenomenon.⁵² The hypothesis has to be proved by experiment, which is an observation of the phenomenon needed to verify the

⁵⁰Nogar, *Wisdom*, 160: “Finally, he has practical certitude that the evolutionary hypothesis is for the present much (sic) the most fruitful one available for biological research.” Note that Nogar does not claim certitude about the fact of evolution, but about research with the hypothesis.

⁵¹Di Napoli, *Cursus*, 2: 369: “Haec convergentia probabilitatum haberi potest in disciplinis physicis et historicis...Pro presonis et eventibus historicis...est saepe validum et unicum criterium certitudinis.” Salcedo, *Philosophiae*, 1: 356: “Ita in re historica...”

⁵²Di Napoli, *Cursus*, 2: 383: “Scientiae physicae sunt scientiae quae considerant res sensibiles in quantum sensibiles et mobiles per proximas causas. Methodus scientiarum physicarum est praevalenter inductiva at complectitur tria momenta: observatio phaenomenorum, inventio legis, theoria.”

hypothesis.⁵³ Finally, there is a universal conclusion, which has already been proved, and which verifies the hypothesis.⁵⁴ This process is not the method that Nogar uses to show evolution, but Nogar uses the historical method of testimony and convergent probabilities. Other Neo-Scholastic authors note the historical character of evolution.⁵⁵ The participants in the Darwin Centennial (1959) at the University of Chicago defined evolution historically.⁵⁶ The various schools of evolution differ among themselves about a number of issues, but all agree that evolution is a historical process.⁵⁷ Evolutionary fact is circumstantial fact and the inferences of the Evolutionists are more like the judgments in legal cases, “reconstructing the past history of events.”⁵⁸

⁵³Di Napoli, *Cursus*, 2: 384: “Inventio legis exigit hypothesim, experimentum, et inductionem.” Experiment verifies the hypothesis by adding some cause to produce the effect, subtracting the cause to eliminate the effect, or varying the cause to vary the effect. Francis Bacon calls these *tabula praesentiae*, *tabula absentiae*, and *tabula graduum*. Stuart Mill gives the same method, but adds that if all other phenomena are removed, the last one present is the cause. Klubertanz, *Philosophy*, 392, adds that verification of the hypothesis can be done by the use of a control group.

⁵⁴Di Napoli, *Cursus*, 2: 384: “Inductio est conclusio universalis, quae verificat hypothesim et cuius legitimitas iam probata fuit.”

⁵⁵Mondin, *Manuale*, 224: “Si puo obiettare che S. Tommaso interpreta i rapporti dei gradi di vita secondo la disposizione metafisica e non secondo *successione storica* come fanno gli Evoluzionalisti.” Ibid., 225, where Mondin cites Jacques Maritain: “È sufficiente aggiungere a questi principi metafisici la *dimensione storica* e distendere per così dire *lungo il tempo* la gerarchia di gradi di perfezione...”

⁵⁶Nogar, *Wisdom*, 30: Evolution is definable in general terms as a one-way irreversible process in time...”

⁵⁷Nogar, *Wisdom*, 33: “There are many schools of thought about the latter question: Lamarckians, Neo-Darwinian, the Saltationists (macromutations), the Marxian school, but no matter what their differences about how, they are in one accord about the fact of the historical process.”

⁵⁸Nogar, *Wisdom*, 37: “Evolutionary fact is circumstantial fact...In reconstructing the past history of events which have led to a crime, the court must accept a general accumulation of

Evolutionary statements, especially about the historical process of evolution, have to be circumstantial facts.⁵⁹ Compared the methods of modern science, the methods of prehistory are limited.⁶⁰ The study of prehistory does not yield absolute certitude, but only a degree of probability.⁶¹ There is a close alliance between Evolutionism and Historicism.⁶² There is also a common denominator of historicity between Evolutionism and Existentialism.⁶³ There is much truth that just as Historicism is evolution applied to human history, Existentialism is evolution applied to human biography.⁶⁴ Further, there is a relation between Dialectical Materialism (Communism) and

evidence...a strong preponderance of converging evidence.”

⁵⁹Nogar, *Wisdom*, 37: “Primary and direct evidence can be furnished only by the science of paleontology (the science of reading the fossil record of the past). All other sciences give accessory information...The problem of the fact of evolution is a problem in prehistory.”

⁶⁰Nogar, *Wisdom*, 39-40: “In contrast to the testing procedures of contemporary science, the rigorous laws of induction, the caution in formulating theories and laws, the methods of prehistory may seem unsatisfactory. In many cases, they are, and paleontologists, archeologists, etc., are well aware of the limitations of their methods.”

⁶¹Nogar, *Wisdom*, 40: “...the prehistorian is not looking for absolute certitude, nor does he assert he ever has it. He is looking, quite obviously for a degree of probability. In his reconstructions of the far distant past, he desires to come as close to the truth as he can, but he will settle for as high a degree of probability as the subject matter, the problem, warrants. This will vary from problem to problem.”

⁶²Nogar, *Wisdom*, 203: “It is easy to be led from one ideology to another, for one attitude of mind easily begets another especially if there is a close alliance between them...Evolutionism provided the ideology of Historicism, founded by Wilhelm Dilthey (1833-1912), with its starting point and its empirical validation.”

⁶³Nogar, *Wisdom*, 342-343: “There are many schools which answer to the general description of Existentialism, but there is no agreement among them of a systematic kind. Many groups of Existentialists do have a common denominator in ideological historicity, and it is this common set of assumptions which is pointed up here.”

⁶⁴Nogar, *Wisdom*, 206: “But there is a great affinity between some of the basic attitudes fostered by the Existentialist movement and those fostered by Evolutionism and Historicism...And Existentialism is essentially historicity...Evolutionism applied to human biography.”

Evolutionism, based on historical process. Dialectical Materialism is that ideological system and atheistic way of life governed by the principle that the universe, composed only of matter in motion, is in a continual state of becoming and that out of this dialectical process of material evolution, human knowledge, society, economics and moral behavior will emerge with historical necessity.⁶⁵ Therefore, we can begin to conclude that the reason evolution is not open to observation and to experiment is that “the fact of evolution is essentially in the genus of history”; it is not science in the sense of tested knowledge of reversible natural processes.⁶⁶ Although history has its own scientific method, this is not the same as the methods of the physical sciences, and so it can be said that, “History, as such, is not science.”⁶⁷ Here, accordingly, is discovered the ultimate cause of the

⁶⁵Nogar, *Wisdom*, 208: “Communism is Evolutionism applied to the Economic Man.” Ibid., 209, where Nogar notes that Communism’s roots are in Hegel, Feuerbach, Proudhon, and Darwin. Ibid., 210, where Nogar defines dialectical materialism and its effects which emerge with “historical necessity.”

⁶⁶Nogar, “Fact of Evolution,” 360: “The second error...what Maritain calls the gnosticism of history...discussants at the Darwin Convention admitted...It is not science in the sense of tested knowledge of reversible natural processes. As Simpson put it: ‘That evolution is irreversible is a special case of the fact that history does not repeat itself. The fossil record and the evolutionary sequences that it illustrates are historical in nature, and history does not repeat itself.’”

⁶⁷Di Napoli, *Cursus*, 3: 549: “Historia, tamen, qua talis, non est scientia; scientificitas historiae invenitur potius in methodo, secundum quam facta certa fiunt: scientificitas methodica in inquisitione, non constitutiva in structura narrationis historicae.” Nogar, “Fact of Evolution,” 360: “Historians reproach the philosophy of history with four capital sins...H. Marrou expresses the indictment this way: First, its almost inevitably oversimplified...secondly, its self-deceptive ambition to get an *a priori* explanation of the course of...history; thirdly, its self-deceptive ambition to get at an *all-inclusive* explanation...and fourthly, its self-deceptive ambition to get at a so-called *scientific* explanation of history, the word ‘scientific’ being used here in this quite peculiar sense, which can be traced back to the sciences of nature, that with such an explanation our thought enjoys a kind of intellectual mastery over the subject matter.”

impossible attempt to form a judgement or a syllogism that “evolution is a fact.”⁶⁸

⁶⁸Klubertanz, *Philosophy*, 422: “Even when we take all these evidences together they do not prove that essential evolution historically occurred; the do not even prove that it is possible.”

Chapter 7: PROBLEM WITH BELIEF

Why is there no agreement about the scientific fact of evolution? Possenti seems to have the correct answer when he says that there does not seem to be crucial experiment to prove evolution to be a fact.¹ This leaves evolution to be a matter of dispute among scientists.²

More difficulty arises if opinion begins to move into philosophy. Both the prehistoric sciences and the historical sciences should seek to report the past and interpret the past. Historians and pre-historians should not move into the area of philosophy. The validity of the philosophic conclusions depends on the value of the empirical basis and the quality of the philosophy adopted.³

Yancey explicitly treats the controversies concerning evolution. There was significant controversy aroused by the publication of Darwin's *The Origin of Species*. The opposition to the

¹Vittorio Possenti, "Vita, Natura e Teleologia," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 222, note 22. Fiorenzo Facchini, "L'Emergenza dell'Uomo nell'Evoluzione: Aspetti Biologici e Culturali," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 104: "Il momento dell'emergenza dell'uomo nella storia della vita è un evento non facilmente individuabile."

²Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 79: "Tuttavia nelle discipline paleontologiche la dimostrazione delle filiazioni è estremamente rara, com'è documentato dalle varie ricostruzioni, compiute dai paleontologi, delle serie filogenetiche più note. Inoltre, i fossili appaiono per lo più notevolmente incompleti; si ignorano i loro meccanismi fisiologici, e non può avvenire alcun incrocio." Ibid., 162: "Questi pareri manifestamente discordi sono determinati, nel maggior numero di casi, dalla morfologia piuttosto equivoca di alcuni resti fossili, oltre che dal fatto che i rinvenimenti avvengono, per lo più in modo incompleto e frammentario." Ibid., 317: "In vista di delineare quale potrebbe essere il meccanismo secondo cui si è svolto il processo evolutivo, abbiamo quindi indicato gli argomenti a favore dell'evoluzione contenuti nelle discipline biologiche, e poi quelli contrari." Ibid., 317: "Abbiamo seguito lo stesso percorso per quanto riguarda gli argomenti favorevoli alla paleontologia, a quelli che ad essa si oppongono."

³Possenti, "Vita," 222..

theory of evolution was not limited to Catholics. However, since Darwin was an Englishman and not a Catholic, the theory of evolution somehow came to be look on as anti-Catholic. Some clergy may have moved easily from this bias to a distrust and even a fear that science itself was dangerous to faith and morals. The truth of the matter is, that long before Darwin, the Catholic Lamarck had proposed evolution to account for our present-day species of plants and animals. It is interesting to note that the chief opponent of Darwin was not a Catholic, but the Protestant scientist, Cuvier. The problem of contention between faith and science expanded when some of the followers of Darwin, notably Huxley and Spencer in England and Hackel in Germany, made unwarranted extensions of the theory into fields of philosophy and ethics. So evolution, only a modest scientific theory, itself became a philosophy, almost a creed.⁴

On the other hand, Neo-Scholastic philosophers did apply serious opposing reasons to the assertions favoring evolution.⁵ First, if man can breed animals, evolutionary nature can also. Calcagno replies that nature cannot build St. Peter's Basilica; and also that pigeon variations are not different species. Second, fossils show developmental evolution. Calcagno replies this "assumes" the latter is "caused" by the former (*Error: Post hoc, ergo propter hoc*). Third, intermediate fossils are found. Calcagno distinguishes: He concedes fixed species, but denies intermediate transitional species. Fourth, rudimentary organs prove evolution, for example man's muscles to move his ears. Calcagno replies this is a small modification, not species; perhaps these muscles are not relics;

⁴Patrick H. Yancey, "American Catholics and Science," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 508-509, "...itself became a philosophy, almost a creed." See also: L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: Witherby, 1939), 164.

⁵Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D'Auria, 1952), 2: 2-53: "Solvuntur obiectiones transformistarum."

perhaps there is an unknown use. Fifth, evolutionary ontogenesis of embryos follows phylogenesis. Calcagno denies the parity, and assigns the cause to the seed of the parents; and negates the antecedent, supported by embryologists Von Baer, Hertwig, His, Pujiula, and Carazzi. Sixth, evolution is reasonable if conjoined with the special intervention of Divine Providence. Calcagno distinguishes intervention as miraculous, or proportionate to the nature of the thing. If miraculous, evolution would be naturally impossible. If proportionate to the nature of the thing, divine intervention would destroy the old nature (for a new species), this would not be proportionate to the nature of the thing which strives for the preservation of the species.

Given the real problems, arguments, and re-formulations of the theory of evolution over the last 150 years that have either prevented the attainment of certitude by syllogistic reasoning, or diminished the public confidence that certitude can actually be obtained, it is no wonder that the public has turned to opinion, belief, ideology and even skepticism. A recent Harris Poll in the United States in June 2005 found that 55% of the 1,000 adults surveyed said children should be taught Creationism and Intelligent Design along with Evolutionism in the public schools.⁶ The same poll found that 54% did not believe humans had developed from an earlier species, and this number is up from 45% with that view in 1994. Jon Miller of Michigan State University conducted a recent poll showing that in the last 20 years, American adults favoring evolution has decreased five points from 45% to 40% and those undecided have risen from 7% to 21%.⁷ This may involve some skepticism, which is a lack of faith in reason's proper capacity to know the truth. Skepticism in

⁶Claudia Wallis, "The Evolution Wars," *Time Magazine*, 15 August 2005, 28.

⁷Harvé Ratel, "Qui Adhère à la Théorie de l'Evolution?" *Sciences et Avenir* (October 2006), 29.

modern culture first struck philosophy, and more recently science.⁸ Scientific dogmatism with its ideologies, utopias and all inclusive systems fell into crisis. No one today believes in the infallibility of science.

What are ideology, belief and opinion? Maritain defines ideology as “a collective attitude or spirit engendered *hic et nunc* in the mind of men.”⁹ Maher defines belief as that which has as its object the inevident, or what is only extrinsically evident, like authority or testimony; while the full assent of cognition arises from what is mediately or immediately intrinsically evident.¹⁰ Salcedo defines opinion as the assent or dissent offered to one part of a contradiction with fear of the opposite.¹¹

Since practically all the Neo-Scholastics are Catholic, is the Catholic Church open to evolution? The doctrine of evolution has never been condemned.¹² Pope John Paul II affirmed evolution within limits, noting that if a scientist has Materialistic pre-conceptions, his conclusions

⁸Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 76.

⁹Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), 189.

¹⁰Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, 1940), 329-330. M. Scott Peck, *Wisdom from The Road Less Traveled* (Kansas City: Ariel Books, 2001), 129: “We tend to believe what the people around us believe, and we tend to accept as truth what these people tell us of the nature of the world as we listen to them during our formative years.”

¹¹Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 352. Aquinas on opinion is: Aquinas *Summa Theologiae* 1. 79. 9. ad 4. For Aquinas on formal certitude: Aquinas *Scriptum in Liber Sententiarum* 3. 26. 2. 4: “firmitas adhaesionis virtutis cognoscitivae in suum cognoscibile.”

¹²Henry V. Gill, *Fact and Fiction in Modern Science* (New York: Fordham, 1944), 116.

should not be presented as scientific.¹³ The pope promotes dialogue. In fact, in the mid-twentieth century, there was encouraging discussion between unbiased scientists and open-minded theologians, so that there was a “steady growth of theological opinion which fully recognizes the serious value of the majority scientific opinion in the question of origins.”¹⁴

Can science contradict religious faith? The market seems flooded with books describing a death match between science and faith. In fact, much of this publicity pictures science winning, or at least chipping away at the underlying truths of faith.¹⁵ It had been often thought “that an intelligent person cannot be a Christian and an evolutionist” and the reason for this is that “much of Christian philosophy appears to stress the fixity of things, whereas evolutionary thought stresses the flux of things.”¹⁶ However, a master principle of the thought of Aquinas is that the truth of science cannot contradict the truth of faith.¹⁷ This principle has been true since the beginning of the existence of the Catholic Church up to the present.¹⁸ Cardinal Schönborn recently noted that “when

¹³Pedro Barraón, “Evoluzione, Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 249.

¹⁴Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 333.

¹⁵David Van Biema, “God and Science,” *Time Magazine*, 13 November 2006, 50.

¹⁶Nogar, *Wisdom*, preface: “...overthrow...Christian culture.”

¹⁷William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 3.

¹⁸Rafael Pascual, “La Teoria dell’Evoluzione: Status Questionis,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 26 notes: Augustine of Hippo, *Epistle* 143. 7; Pope Leo XIII, Encyclical Letter *Providentissimus Deus*; First Vatican Council, Constitution *Dei Filius*; Second Vatican Council, *Gaudium et Spes*, 36. Józef Życiński, *God and Evolution*, trans. Kenneth W. Kemp and Zuzanna Maslanka (Washington, D.C.: Catholic University of America, 2006), 70-71, notes that Karl Rahner in the book *Hominization* has a theism which is coherent with an evolutionary view of the world.

science adheres to its own method, it cannot come into conflict with faith.”¹⁹ Nevertheless, science and faith must follow their respective methods. Further, there can be no system of two truths.²⁰

Can Evolutionism be an ideology? Yes, it can. Even in 1914, Donat noticed that anthropological evolution was not only very common, but was just like a dogma.²¹ Evolution has recently been called an ideology.²² In fact, Darwinism is ranked as a sort of religion with the three great secular faiths.²³ One of the problems of ideology is that it often flows from prejudice.²⁴

¹⁹Wikipedia, the Free Encyclopedia. *Christoph Cardinal Schönborn*. 31 January 2007 <http://en.wikipedia.org/wiki/Christoph_Sch%C3%B6nborn>, 3: In the case of Julian Huxley, Will Provine, and Peter Atkins it is unequivocally the case that the borders of scientific theory have not been maintained.

²⁰Pascual, “Teoria,” 26: “Dominique Lambert finds the position of S. J. Gould (non-overlapping magisteria of science and faith) ‘discordism’. The recent position of the Catholic Church magisterium insists, certainly and justly, of the legitimate authority of science, even without a rapport between those who speak for science and those who speak for faith.”

²¹Joseph Donat, *Psychologica*, 3rd ed. (Innsbruck: Rauch, 1914), 297: “Ad instar dogmatis...” Wallis, *Evolution*, 32: “Many advocates of intelligent design complain that Darwinism has become a kind of faith in itself.”

²²Wikipedia, the Free Encyclopedia. *Christoph Cardinal Schönborn*. 31 January 2007 <http://en.wikipedia.org/wiki/Christoph_Sch%C3%B6nborn>, 2: “Evolution in the Neo-Darwinian sense – an unguided, unplanned process of random variation and natural selection – is not (science). Any system of thought that denies or seeks to explain away the overwhelming evidence for design in biology is ideology, not science.”

²³The Economist Editors, “The Story of Man,” *The Economist* 377 (24 December 2005): 9, treats the three great secular faiths born in the nineteenth century, Darwinism, Marxism, and Freudianism.

²⁴William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 8-9: “Richard Lewontin, Harvard geneticist...Science is the only begetter of truth...because we have a prior commitment, a commitment to materialism.”

Another problem is the attack on religion by otherwise reputable scientists.²⁵

Can anti-Evolutionism also be an ideology? Yes, it can. The intelligent design movement is beginning to alter the way that most fundamentalist tenet of biology are presented in public schools in the United States. New laws that in some sense challenge the teaching of evolution are pending or being considered in twenty States.²⁶ The headquarters for such ideology is the Center for Science and Culture at the nonpartisan but generally conservative think-tank called the Discovery Center, founded in Seattle in 1990. However, this is not generally the position of current Catholic thinkers.²⁷

Science and Ideology

Is evolution sometimes taken for granted as an article of faith? Dawkins insists that the critics of Darwin are wrong to say that evolution has become an article of faith among scientists. Dawkins replies to the Creationists who demand fossil life in the Precambrian Era, that the only life on earth at that time was bacteria, algae and plankton. Dawkins replies to those who object to evolution based on gaps in the fossil record, that evidence can be supplied by inference. Dawkins

²⁵James A. Weisheipl, "Introduction: The Dignity of Science," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xxi, notes that at the Darwin Centennial in 1959 in Chicago, some scientists claimed science triumphed over religion and that religion is only superstition.

²⁶Claudia Wallis, "The Evolution Wars," *Time Magazine*, 15 August 2005, 28.

²⁷Raymond J. Nogar, "From the Fact of Evolution to the Philosophy of Evolution," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 34: "pass over the debate...since history cannot be repeated and therefore 'tested out' like a scientific experiment..." Mondin, *Manuale*, 60: "Né un cieco fideismo né un presuntuoso scientismo son buoni consiglieri della ragione."

adds that the pattern in the genetic code is precisely what would be expected with the letters of the genetic code in varying degrees for all species. And in response to Behe's intelligent design argument from complexity, Dawkins argues that Darwin's theory of evolution is "a brilliant solution to the riddle of complexity; it is the only solution that has ever been proposed."²⁸ In fairness to scientists, there are some reasonable defenses to show that evolution is not always an ideology. Nevertheless, Jaki notes that Darwinism is a mixture of truth and error, so that Non-Darwinian Evolutionism is a program that is not only feasible but necessary. Evolutionary theory must be pruned of those things that are not science.²⁹

Do scientists philosophize? Sometimes scientists do not keep within the boundaries of science, but stray into areas of philosophy and theology where their neutrality ought to be observed.³⁰ "Darwinist scientists have a tendency to view evolution dogmatically, going from theory to ideology."³¹

Scientism is ideological.³² Scientism is a dogma which affirms that beyond scientific knowledge, there is no level of knowledge. There is no space for philosophical or theological vision. An ideology of Scientism exists in presenting the theory of evolution as if it had philosophic

²⁸Claudia Wallis, "The Evolution Wars," *Time Magazine*, 15 August 2005, 28.

²⁹Stanley L. Jaki, "Non-Darwinian Darwinism," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 41.

³⁰Nogar, *Wisdom*, 330.

³¹Sandro Magister. *Creation or Evolution? Here is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?=-77264&eng=y>>.

³²Barrajón, "Evoluzione," 252: "Purtroppo, esiste una ideologia scienista intorno all'evoluzione..."

validity, which would give the evolutionary hypothesis greater validity than it has. When epistemological questions are considered, there is a rejection of the ideology of Scientism because it reduces the vision of reality, denying its metaphysical aspects and the possibility of Divine Revelation.³³ In addition, a scientific theory is often considered proved and is accepted by the scientists in the field when it effects a systematic organization and unification of data, and leads to further investigations, insights, and theories; the theory of evolution performs these functions and so is almost universally accepted without real proof, but as faith.³⁴ But this assumption by scientists has led them to spurn the traditional channels of wisdom, such as supernatural religion, moral principles, perennial philosophy.³⁵

Are there other evolutionary ideologies? In addition to Evolutionism itself, examples of biological theories strongly and passionately held and still held by biologists some non-professionals are Mechanicism, and Vitalism.³⁶ Materialist ideology also presents dangers not only to faith, but also to reason.³⁷ The fact that Materialistic views of evolution easily lend themselves to ideology is

³³Barrajón, “Evoluzione,” 245. David Van Biema, “God and Science,” *Time Magazine*, 13 November 2006, 50. Życiński, *God*, 3, affirms the existence of Scientism at the turn of the twentieth century, but does not believe it exists today. Iacopo Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), 1: 320: “Hodie generatim Darwinismus deseritur, sed hypothesis evolutionis admittitur fere ab omnibus biologis, non tamen eodem modo et iisdem limitibus...”

³⁴Geroge P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425.

³⁵Michael Brown, Dominican Order Master General, preface to *The Dignity of Science*, ed. James A. Weisheipl (Washington, D. C.: Thomist Press, 1961), xi

³⁶Filippo Selvaggi, *Filosofia delle Scienze* (Rome: Civiltà Cattolica, 1953), 257.

³⁷Jesús Villagrasa, “Evoluzione, Interdisciplinarietà e Metadisciplinarietà,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 12.

illustrated in the connection between a Darwinist perspective and the most repressive totalitarian politics of the last century, namely, according to Stanley Jaki, Marx and Hitler.³⁸ According to Stanley Jaki, the enthusiasm for Darwinism by the advocates of dictatorship of the proletariat and of the master race is understandable, since Darwinism promoted class struggle. There is also an ideology of evolutionary education, as integrating all the sciences through history and the humanities.³⁹ Finally, in Scientism there is the clearest expression of Positivism and Neo-Positivism.⁴⁰ Science is the omnipotent instrument to answer all problems. Positivism is epistemological Scientism, whose founder was August Comte. Neo-Positivism is linguistic Scientism founded by Rodolph Carnap.

Philosophy and Ideology

What is the duty of philosophy in the light of ideology? Philosophy must necessarily be critical of science and even take into account the ethical dimension of scientific research.⁴¹ As opposed to Dogmatism and Skepticism, philosophy must be critical by attempting a scrutiny of the range and validity of our knowledge.⁴²

³⁸Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual. (Rome: Studium, 2005): 327.

³⁹Nogar, "From Evolution," 351.

⁴⁰Mondin, *Manuale*, 74.

⁴¹Jean-François Malherbe, "La Dimension Éthique de la Critique des Sciences," *Revue Philosophique de Louvain* 71 (August 1973): 581: "...la nécessité..."

⁴²Maher, *Psychology*, 226, also notes that even Kant notes the critical role of philosophy in his *Critique of Practical Reason*.

What is the nature of theory, such as is found in the theory of evolution? The value of theories or hypotheses should not be exaggerated too much.⁴³ The theory should not be proposed as certain. The theory should not be proposed as the one true way. Debates concerning the hypothesis of evolution continue. Among scientists, even the most recent theory, the theory of punctuated equilibrium, is under serious discussion.⁴⁴ Among educators, debates frequently arise in the area of school systems asking for direction, and some educators responding that natural selection is “only a theory.” However, in science a theory actually holds the highest rank among scientific ideas and is often well supported by data and observation.⁴⁵

Is there an ideological opposition between philosophers and empirical scientists? The philosopher has no quarrel with scientists who restrict their discussions to empirical data. However, when biologists attempt an explanation of the unity manifested by an organism and thereby try to solve a philosophical issue, the nature of the unitary organism; they have left the field of empirical science and become philosophers.⁴⁶ Other illustrations of philosophizing are: some scientists do not distinguish science and philosophy; some scientists do make dogmatic pronouncements in philosophy; and some scientists profess a materialism that is not required by evolution.⁴⁷ Science,

⁴³Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 98: “Eius valor non nimis exaggeretur, nec proponatur tamquam certa et unica vera, hoc locum per *solam* hypothesim non constat.”

⁴⁴Kate Kelly, *That’s Not in My Science Book* (Lanham, MD.: Taylor Trade, 2006), 87.

⁴⁵Kelly, *Science Book*, 85.

⁴⁶Bittle, *Psychology*, 471.

⁴⁷William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 2: “Scientists like Richard

philosophy, and theology all have their proper competence. However, it is not always easy to keep each field of inquiry apart.⁴⁸ Although evolution is proposed as an explanatory hypothesis, it is of interest to philosophers because many non-scientists and non-philosophers accept evolution as absolute truth. So the role of the philosopher is to relate the empirical positions of the scientists to ontological statements of common knowledge and of the philosophy of human nature.⁴⁹

Theology and Ideology

What influence does the Bible have in reference to ideology? The theory of evolution does not, in all probability and in itself, run counter to Christian principles or belief, or to the scriptural account in the *Book of Genesis*, but there are some scientists and philosophers who are atheistic or irreligious.⁵⁰ A number of early Christian writers maintained that creation was a single act of God at the beginning of the world. All further development came through natural agencies. In the words of St. Augustine, the Bible intends to show, not how the heavens go, but how to go to heaven.⁵¹ However, for those who read *Genesis* literally and believe God created the world along

Dawkins and Daniel Dennett.”

⁴⁸William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 1: “...not always easy to keep these disciplines distinct...”

⁴⁹Klubertanz, *Philosophy*, 412.

⁵⁰Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 579.

⁵¹Nogar, *Wisdom*, 29: “...distinguishing the religious truth of the Bible from scientific explanation of how cosmic origins took place. In the words of St. Augustine...”

with all creatures big and small in just six days, reconciliation of faith and Darwinism is impossible.⁵²

There was a Biblical Fundamentalism, called Traditionalism, rejected as heretical by the Catholic Church.⁵³ This Traditionalism was fostered by Lamennais (1752-1854), who held that the only means of attaining truth with security is authority, which is in divine revelation.

How do Roman offices of the Catholic Church see ideology and evolution? The illustrative case is the *Monitum* (Warning) of the Holy Office (now the Congregation for the Doctrine of Faith) that was issued in 1962 about the work of Father Teilhard de Chardin. Ideology was not the cause of the warning. The Holy Office wanted to avoid the influx of evolutionary ideology into Catholic theology, so the warning was to avoid an effect.⁵⁴

What is Fundamentalism, and is it an ideology? The Fundamentalists (as promoters of Creationism, although that term is very ambiguous) try to demonstrate that the arguments of the Evolutionism are false, while they seek to use the Bible, interpreted in the literal sense to prove the truth about the origins of the world and of all living things.⁵⁵ This appears to be the Fixist position, although the motive for belief is ideological. These critics of evolutionary biology make theological

⁵²Wallis, "Evolution," 32: "...no reconciling faith with Darwinism."

⁵³Irenaeo Gonzalez, "Ethica," in *Philosophiae Scholasticae Summa*, vol.3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 351: "Traditionalismus: (Lamennais 1752-1854), qui tenet rationem per se non esse capacem veritatem ullam secure cognoscendi...unice mediante aliorum auctoritate...in revelatione divina..."

⁵⁴Villagrassa, "Evoluzione," 11: "Il *Monitum* del Sant'Uffizio, nel 1962, riguardo alle opere di P. Teilhard de Chardin voleva evitare l'influsso dell'ideologia evoluzionistica sulla teologia cattolica."

⁵⁵Pascual, "Evoluzione," 25: "Questa posizione la troviamo in certi movimenti di stampo *fondamentalista*, non soltanto tra i protestanti..."

pronouncements in the area of science, and often confuse biology with philosophy.⁵⁶ These Fundamentalists are found among both Protestants and Catholics, mainly in the United States, but also in Europe. However, the Catholic scholarly opinion today is against every form of Fundamentalism, and the reason is that every type of research, scientific or theological, ought to respect the rules proper to its own field of study.⁵⁷

What is Intelligent Design? Intelligent Design is an ideological⁵⁸ theory which holds that natural processes are so complex and ingenious that they must have been created by an intelligent supernatural being.⁵⁹ Some proponents of intelligent design, who deny evolution like the Creationists, hold that various forms of life began abruptly through an intelligent agency, with their

⁵⁶William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007 <<http://www.catholiceducation.org/articles/science/sc0035.html>>, 2, notes confusion of theology and science, and between biology and philosophy. He also notes that Natural Philosophy judges the fundamental teleology of all natural things, and the need for the First Mover. He notes Metaphysics judges that all things come from God as a cause.

⁵⁷Fernando Pascual, “Evoluzionismo e Biòetica: I Paradigmi di V.R. Potter, H. T. Engelhardt e P. Singer,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 358: “...contro ogni forma di fondamentalismo...” Ibid., “Infatti, ogni ricerca deve rispettare le regole proprie del suo campo di azione.”

⁵⁸Kelly, *Science Book*, 84: “...Darwin...ideological fight...slightly new breed...intelligent design...”

⁵⁹Wallis, “Evolution,” 28: “...the man who considers himself America’s education president...George W. Bush...expressed support for the idea of combining lessons in evolution with a discussion of Intelligent Design, the proposition that some aspects of living things are best explained by an intelligent cause, as opposed to natural selection. It is a subtler way of finding God’s fingerprints in nature than traditional Creationism. ‘Both sides ought to be properly taught,’ said the President, who appeared to chose his words with care, ‘so people can understand what the debate is about...I think that part of education is to expose people to different schools of thought’.”

distinctive features already intact, such as fish with fins and birds with feathers.⁶⁰ Most proponents of intelligent design hold that evolution did occur, but by the intelligent design of an intelligent supernatural creator.⁶¹ The proponents of Intelligent Design are also careful not to bring the word “God” into the discussion, but prefer to use the language of science; this distinguishes the Intelligent Design proponents from the Creationists, who use the term God.⁶² This avoidance of the term “God” helps them avoid the legal and political pitfalls of teaching Creationism, and is also a key to the historical beginning of Intelligent Design. When the Christian Fundamentalists who denied evolution were brought to the Supreme Court in the United States in 1987, the dissenting opinion was written by Justice Antonin Scalia. Scalia wrote, Christian Fundamentalists “are quite entitled, as a secular matter, to have whatever scientific evidence there may be against evolution presented in their schools.”⁶³ That line of argument, an emphasis on weakness and gaps in evolution, is at the heart of the Intelligent Design movement, which has as its motto, “Teach the Controversy.” Is the Intelligent Design movement successful? The polls indicate that approximately 45% of Americans

⁶⁰Wallis, “Evolution,” 29: “Intelligent design...life began abruptly through an intelligent agency...with their distinctive features already intact...fish with fins...birds with feathers...” Confer: Percival Davis and Dean Kenyon, *Of Pandas and People* (Houghton Publishing), 99-100. Sandro Magister. *Creation or Evolution? Here is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?=-77264&eng=y>>, “Intelligent Design is an updated version of creation science based on a literal interpretation of the *Book of Genesis*.”

⁶¹Kelly, *Science Book*, 85: “...evolution occurred...”

⁶²Wallis, “Evolution,” 29: “...not to bring God...another sore point for hard-line Creationists...”

⁶³Wallis, “Evolution,” 29: “But some anti-Darwinists seized upon Justice Antonin Scalia’s dissenting opinion in the 1987 case...” Ibid., “You have to hand it to the Creationists. They have evolved,” jokes Eugenie Scott, executive director of the National Center for Science Education in Oakland, California, which monitors attacks on the teaching of evolution.”

believe there is no reconciling Bible faith with Darwinism, so it is no wonder that almost one third of 1,050 teachers who responded to a National Science Teachers Association online survey in March (2005) said they had felt pressured by parents and students to include lessons on Intelligent Design, Creationism, or other non-scientific alternatives to evolution in their science classes; 30% noted that they felt pressured to omit evolution or evolution related topics from their curriculum.⁶⁴

Are there serious arguments in favor of Intelligent Design? The central and appealing idea of Intelligent Design is that living things are simply too exquisitely complex to have evolved by chance mutations and natural selection, for example the human eye and the astounding ability of blood to clot.⁶⁵ Michael Behe, Lehigh University biologist, Discovery Institute Senior Fellow, and author of the 1996 book, *Darwin's Black Box*, points to the fact of the ingenious structures of living organisms, like the eye and the clotting of blood.⁶⁶ Another argument is the focused on the missing pieces in the fossil record, particularly the Cambrian Period, when there was an explosion of novel species. A third argument is from mathematical probability.⁶⁷ William Dembski, mathematician, philosopher, and theologian, is heading a new center for Intelligent Design at Southern Baptist Seminary. Dembski uses mathematical probability to try to show that chance mutations and natural selection cannot account for nature's complexity.

⁶⁴Wallis, "Evolution," 32: "...felt pressured..."

⁶⁵Kelly, *Science Book*, 86: "...eye...blood...how difficult it is to imagine that these things 'evolved'."

⁶⁶Wallis, "Evolution," 29: "...*Darwin's Black Box*...Behe's main argument...ingenious structures...eye...clotting blood..."

⁶⁷Wallis, "Evolution," 30: "...missing pieces in the fossil record...mathematics of probability..."

What is a reasonable critique of Intelligent Design? Facchini suggests at least four serious problems with the theory of Intelligent Design.⁶⁸ First, it is a methodological fallacy to critique the scientific model by the religious model, while still pretending to do science. Second, Intelligent Design forms species, but mutations to biological structures cannot by themselves explain everything since environmental changes must also occur. Third, subsequently Intelligent Design introduces a greater cause (God) than evolution to explain natural phenomena, and this cause is external to nature and corrective to nature. Fourth, with the theory of Intelligent Design it is difficult or impossible to explain extinction and lineages of dangerous genetic mutations. Brother Benignus adds a caution. Even if there is a design in nature, this does not prove a designer, if the philosophers for Intelligent Design only admit “immanent” finality in nature, and not “transcendent” finality.⁶⁹ The argument can be proposed as follows. Finality is a cause. Every goal or end is subsequent to what causes it. If the goal or end is “only” in time, then the goal would not exist during the process, so that the goal would not exist until the future. But a cause (even a final cause) must exist prior to its effect, or it is not a cause. Therefore, the intrinsic finality of things needs a cause outside of time, that is, timeless. But to be timeless is to transcend nature, for nature is in time, so what is outside of time is transcendent. This transcendent cause is demanded as the First Cause and Ordainer as the one ground or cause of creation, as Aquinas proves in the fourth

⁶⁸Sandro Magister. *Creation or Evolution? Here is the Vicar of the Church of Rome*. 21 August 2006 <<http://www.chiesa.espressoline.it/printDettaglio.jsp?=-77264&eng=y>>.

⁶⁹Brother Benignus, F.S.C., *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 503.

way.⁷⁰

Response to Ideology

Up to now, ideology has been dealt with as a problem. How can an adequate response be made to ideology? This section will consider six points. First, distinguish scientific truth from philosophic and religious truth. Second, avoid fragmentation. Third, find truth in science. Fourth, find truth in philosophy. Fifth, find truth in theology. Sixth, allow philosophy to be the link between science and theology.

First, empirical science, philosophy and theology ought to be considered separately in the initial search for truth. Every science is limited to its own sector of reality.⁷¹ Maritain believes such a differentiation of philosophy and science is not just due to a historical circumstance, but corresponds to a necessary law of the growth of speculative thought.⁷² Biology has its own proper object, and Maritain gives the example of his teacher, Driesch, who moved from biology into philosophy. Nevertheless, Maritain notes that “this union of two ‘formalities’ in the same thinking ‘subject’ should not make us forget their distinction, a distinction of fundamental importance for the

⁷⁰Brother Benignus, F.S.C., *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 468-469: “The Argument from Degrees of Perfection.” Josepho Hellin, “Theodicea,” in *Philosophae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 66: “Ex ordine qui apparet in organismis et in mundo anorganico systematis solaris, demonstratur existentia alicuius intelligentiae praeclarissimae, quae Deus est.” Aquinas *Summa Theologiae* 1. 2. 3.

⁷¹Joseph Gevaert, *Il Problema dell’Uomo: Introduzione all’Antropologia Filosofica* (Turin: Elledici, 1992), 132-133: “A un primo livello la molteplicità del sapere è dovuta al fatto che ogni scienza si limita a un settore specifico della realtà...”

⁷²Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner’s Sons, 1959), 199: “...a necessary law...”

interests of philosophy as well as for those of science.”⁷³ This distinction ought to be preserved between science and religion. However, it is important not to go too far. For example, Stephen Jay Gould speaks of the principle of non-overlapping magisteria, according to which “each subject has a legitimate magisterium, or domain of teaching authority, and these magisteria do not overlap.”⁷⁴ However, this type of thinking ignores the fact that the material object of several disciplines may be the same, as Maritain noted with biology and the philosophy of nature, and also that a doctrine of “double truth” is in conflict with the principle of contradiction.⁷⁵ Further, Gould is in danger of promoting fragmentation.

Second, fragmentation is a problem. Specialization in the sciences, much more the proposition of Gould for two separate kinds of truth, brings the risk of fragmentation.⁷⁶ Historically this fragmentation between science and philosophy has been at the root of a number of celebrated problems. One of these was the thirteenth century debate between the philosophers and theologians about the eternity of the world, which can even be considered an analogous debate between the evolutionists and their adversaries today.⁷⁷ Another case is that of Galileo, relevant to the rapport

⁷³Maritain, *Knowledge*, 198: “...Driesch...a distinction of fundamental importance for the interests of philosophy as well as for those of science.”

⁷⁴Pascual, “Evoluzione,” 26: “Non ci sono ‘due verità’, né ‘due magisteri’, come sostiene l’evoluzionista S. J. Gould...”

⁷⁵Jesús Villagrasa, “Evoluzione, Interdisciplinarietà e Metadisciplinarietà,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 15: “...non è ammissibile la dottrina della *doppia verità*, perché in contrasto con il principio di non contraddizione (cf. Fides et Ratio, numero 34).”

⁷⁶Villagrasa, “Evoluzione,” 13: “Il rischio principale è la frammentazione.”

⁷⁷Villagrasa, “Evoluzione,” 2: “Una questione analoga...è la questione della dimostrabilità razionale dell’eternità o meno del mondo creato.”

between science and theology. Galileo was in error to maintain a hypothesis as proved, mixing science and philosophy. The theologians opposed to Galileo were in error by perceiving natural science inside the ambit of theology.⁷⁸ Today, even departments in the same university are separated by the necessary particular methods and terminology proper to the distinct empirical sciences. Communication becomes very limited. Other negative effects soon become evident. There is a superabundance of data, but little or no unitary vision. This problem was addressed by Pope John Paul II in the Encyclical Letter *Fides et Ratio*, which feared that the phenomenon of fragmentation of knowledge would lead to the eventual fragmentation of man himself. It was addressed again by Pope John Paul II in his *Discourse to the Symposium: Christian Faith and Evolution* (26 April 1985), in which the pope objects that in the popular media, science concludes with some philosophic opinions as if philosophy flows from science.⁷⁹

Third, find truth in science. Weisheipl urges following the scientific optimism of Aristotle, and not abandon hope in man's speculative power.⁸⁰ Like the ancients, be appreciative of the dignity of scientific knowledge. By careful research and analysis, search for the causes of reality. Realize that hypotheses are necessary, but they are not to be confused with genuine science and are

⁷⁸Pascual, "Evoluzione," 30: "L'errore dei teologi di allora fu quello di vedere una questione di natura scientifica come se fosse appartenente all'ambito della fede."

⁷⁹Pedro Barrajón, "Evoluzione, Problemi Epistemologici e Antropologici," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 248: "Dopo aver accettato l'integrazione tra la fede e la teoria dell'evoluzione, Giovanni Paolo II ne segnala anche i limiti...Il Papa invita a fare una attenta disamina per separare ciò che è scientifico da ciò che è filosofico."

⁸⁰James A. Weisheipl, introduction to *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), xxi: "The complex process of investigating nature was recognized as extremely difficult, but Aristotle did not think it hopeless...For Aristotle the investigation of nature occupied a pre-eminent place in the pursuit of knowledge; he himself devoted most of his life to it."

not the ultimate goal of science, but rather the means to that goal.⁸¹ Acknowledge with Aristotle that not all knowledge can be “scientific,” that is, obtained by rigorous demonstration, for then there would be no beginning of science. Dialogue makes for a more complete synthetic view, but the danger of this method is the reduction of some sciences to another, or syncretism that does not honor the objectivity and rigor of science.⁸²

Fourth, find truth in philosophy. Philosophy is the great unifier of wisdom.⁸³ The possibility of this unity of wisdom is one of the great convictions of the popes, although it may appear that the modern popes are more concerned with social justice than Neo-Scholasticism.⁸⁴ Pope John Paul II considered the unification of wisdom “one of the duties of Christian thought to make a Christian Age in the next millennium (the 21st century).”⁸⁵ The unification of wisdom is possible because

⁸¹Wallis, “Evolution,” 32: “British biologist Richard Dawkins...He and other scientists say advocates of Intelligent Design do not play by the rules of science. They do not publish papers in peer-reviewed journals, and their hypothesis cannot be tested by research and the study of evidence. Indeed, Behe concedes, ‘You can’t prove Intelligent Design by an experiment’.”

⁸²Villagrasa, “Evoluzione,” 16: “Ormai non sono rari gli incontri organizzati per dare ai cultori di scienze diverse la possibilità di dialogare.”

⁸³Villagrasa, “Evoluzione,” 15, quotes from the Encyclical *Fides et Ratio*, number 85, of Pope John Paul II: “Voglio esprimere con forza la convinzione che l’uomo è capace di giungere a una visione unitaria e organica del sapere.”

⁸⁴Mariá Alejandra Stahl de Laviero, ed., *Encíclicas Sociales* (Buenos Aires: Lumen, 1992), 4: “A fines del siglo XIX asistimos al momento crucial de un proceso de cambios radicales en el campo de lo político, económico y social...Frente a este panorama social, el papa León XIII alza su voz para iluminar...la encíclica *Rerum Novarum*...Finalmente...1989 en la Europa oriental, con la caída del comunismo y la ‘desaparición’ de las ideologías, en el encíclica *Centesimus Annus* del papa Juan Pablo II, que retoma las enseñanzas de todo el magisterio social para dirigir una mirada al presente, a fin de preparar el futuro.”

⁸⁵Villagrasa, “Evoluzione,” 15: “Questo è uno dei compiti di cui il pensiero cristiano dovrà farsi carico nel corso del prossimo millennio dell’era cristiana” (*Fides et Ratio*, n. 85).

truth and reality are one.⁸⁶ Even if there are different orders of truth and knowledge,⁸⁷ unity is always possible.⁸⁸ On the one hand, the doctrine of double truth is inadmissible, because of the principle of contradiction.⁸⁹ On the other hand, each order of truth has its limits, and the various orders of truth need to aid each other.⁹⁰ Reason can attain natural truth, aided by faith.⁹¹ Reason can aid faith.⁹²

Fifth, find truth in theology. Faith perfects reason, which can be limited due to confusion

⁸⁶Benignus, *Nature*, 456: "Above both faith and reason there is truth...Aquinas... recognized no possibility of conflict or contradiction between reason and faith... 'only the false can contradict the true' (Aquinas *Summa Theologiae* 2-2. 5. 3. c.)

⁸⁷Maritain, *Knowledge*, 199: "It constitutes one of the most authentic advances, in the order of the morphology of knowledge, that thought has accomplished in the course of modern times and of which reflexive and critical philosophy has become aware." Villagrasa, "Evoluzione," 15: "Ci sono diversi ordini di verità e di conoscenza (cf. *Fides et Ratio*, n. 30 and n. 9).

⁸⁸Villagrasa, "Evoluzione," 15: "Questo compito è realizzabile, anzitutto, perchè la verità e la realtà è una."

⁸⁹Pascual, "Evoluzione," 26. Villagrasa, "Evoluzione," 15: "...non è ammissibile la dottrina della doppia verità...(cf. *Fides et Ratio*, n. 34)

⁹⁰Villagrasa, "Evoluzione," 15: "...bisogno riconoscere i limiti di ciascuno di questi ordini e come hanno bisogno di aiutarsi a vicenda nella ricerca della verità."

⁹¹Benignus, *Nature*, 450, notes that St. Thomas (Aquinas *De Trinitate* 3. 1) questions why truth able to be attained by reason should be revealed by God, and cites the five reasons given by Maimonides: reason can attain deep truth with difficulty; the thinker must be mature; since God is the highest being, truth about God must be proved; some men are not intellectually fitted; and most men are busy with the affairs of life. Thus Revelation can be necessary in some ways; see Aquinas *Summa Contra Gentiles* 1. 4.

⁹²Franciscus Xav. Calcagno, *Philosophia Scholastica: Introduction Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D'Auria, 1950), 1: 4: "...ut philosophia, ad instar fidelis ancillae, opem ferat sacrae Theologiae..." Aquinas *De Trinitate* 2. 3.

between sense knowledge and reason itself.⁹³ In particular, faith can prevent some philosophic errors.⁹⁴ These contemporary errors involve Dogmatic Naturalism, which denies the possibility of divine revelation, Secularism, which espouses a natural humanitarian religion, and Modernism, which denies that man's reason can know revealed truths.⁹⁵ As opposed to these views, St. Thomas affirms that man's knowledge begins with his senses, so that man has no "direct" experience of purely spiritual and immaterial things; but man can know immaterial things by reasoning.⁹⁶ Theology and faith itself are rational, given its premises, that man's reason is limited, and that man should have an easy way to attain his destiny, so as reasonable, theology is not, of itself, ideological.⁹⁷ There is a primacy of theology, over the speculative sciences by reason of the matter considered and the certitude obtained, and over the practical sciences because theology is ordered to the ultimate goal, eternal beatitude.⁹⁸ Then, is philosophy truly subordinated to theology? The answer is negative, first, because, without philosophy, theology would end as Fundametalism, and

⁹³Benignus, *Nature*, 454: "Faith perfects reason."

⁹⁴Calcagno, *Philosophia*, 1: 5: "...quia philosophia, luce fidei destituta, facillime in errores graves labitur."

⁹⁵Benignus, *Knowledge*, 439-443, describes the various limitations and error about human reason. Modernists are identified as Friedrich Schleiermacher (1768-1834) who claimed religion had only symbolic value, and Albrecht Ritchl (1822-1889) who claimed that religion was only a value theory. Ibid., 443: "Ritchl's value theory of religion had and still has tremendous influence."

⁹⁶Benignus, *Knowledge*, 445: "...reason is capable...no *direct* experience...very limited and inadequate."

⁹⁷Benignus, *Knowledge*, 451: "The Rationality of Faith." See Aquinas *De Trinitate* 3, 1. obj. 5.

⁹⁸Calcagno, *Philosophia*, 4. See Aquinas *Summa Theologiae* 1.1. 5.

secondly, an inferior science does not have principles immediately *per se* known, but philosophy has such principles.⁹⁹

Sixth, allow philosophy to be the link between science and theology. Just as there is due distinction and diversity of method between empirical science, philosophy and theology, there must be an ultimate link and “integration” between these for the benefit of each and all.¹⁰⁰ Fragmented wisdom must be unified in an interdisciplinary approach, which promotes contact between different disciplines and implies interaction.¹⁰¹ This interdisciplinary method is not just multidisciplinary, which juxtaposes information without interaction, nor is it just pluridisciplinary, when the juxtaposed sciences are more or less internal to the same area of wisdom. There should be an attempt at a synthesis of scientific evolution with a philosophy of life which is both consonant with the known facts and agreeable to sound Judeo-Christian philosophy.¹⁰² The exercise of interdisciplinary dialogue allows an exercise of philosophical reasoning and metaphysics which can open science to new horizons and a further integration of knowledge; and it allows the hearing and welcoming of the Christian faith.¹⁰³ Specialization is necessary for scientific progress, but has its

⁹⁹Calcagno, *Philosophia*, 4: “Haec subjectio non debet ita intelligi ut sit subordinatio veri nominis, vi cuius scientia inferior non habet principia immediata per se nota...duceret ad Traditionalismum.”

¹⁰⁰Pedro Barrajón, “Evoluzione, Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 245: “...teorie scientifiche e l’integrazione e la separazione dei diversi gradi del sapere implicite nella considerazione dell’evoluzione.”

¹⁰¹Villagrasa, “Evoluzione,” 15: “L’interdisciplinarità, invece, promuove il contatto tra le diverse discipline ed implica interazione.”

¹⁰²Nogar, *Wisdom*, Preface: “...synthesis...scientific evolution...philosophy...”

¹⁰³Villagrasa, “Evoluzione,” 12: “...si è avuta una fruttuosa esperienza di dialogo interdisciplinare e un esercizio di quella razionalità filosofica e metafisica che apre le scienze a

risks, which this interdisciplinary method of dialog can help to overcome. However, the interdisciplinary dialog itself is not immune to risk. Two dangers are discordism and concordism.¹⁰⁴ Discordism is illustrated by the extremes of the two positions: Materialistic Evolutionism and Fixist Creationism. Concordism can be a danger too, by ignoring the different, but not opposite, levels of science, philosophy and theology. There are points of contact between these different levels, for example, the origin of the world, of life, of man. So there arises the necessity of interdisciplinary study and dialog. There is a second factor, in addition to interdisciplinarity, to unify wisdom. Metadisciplinarity respects the diversity of “hierarchical” epistemology.¹⁰⁵ Without hierarchy, all the knights of the Round Table are totally equal, says Villagrasa. Interdisciplinarity favors contact between diverse wisdoms, and moves on the horizontal. Metadisciplinarity moves on the vertical level, and asks the hidden ultimate questions which science alone cannot answer. These deeper questions are the subject of philosophy. Meta-science is philosophical reflection.

In conclusion, we are now in a position to join the Neo-Scholastics in an exploration of Evolutionism, the philosophy of evolution, in its various forms, Anti-Fixist, Anti-Finalistic, Mechanistic, Materialistic, or Hylemorphic; and we are in a position to apply our results to the Neo-Scholastic philosophy of man, considering man’s being, body, soul, and future; and finally we can

nuovi orizzonti di senso, ad una maggiore integrazione del sapere...”

¹⁰⁴Pascual, “Evoluzione,” 27: “Anche qui bisogna segnalare un altro pericolo: quello del *concordismo*, che sarebbe l’opposto del *discordismo* che abbiamo presentato...”

¹⁰⁵Villagrasa, “Evoluzione,” 16-17: “Bisogna a questo punto, nel rispetto della diversità e della gerarchia epistemologica, integrare un ultimo approccio: la *metadisciplinarietà*...le questioni ulteriori che nascono da una determinata prospettiva scientifica e che quella scienza non è in grado di risolvere...In qualche modo, le metascienze si occupano di riflessioni filosofiche sulle scienze.”

explore even the equivocal uses of Evolutionism that promote evolution a fruitful concept and a universal law regarding life, the cosmos, society, and God.

PART THREE: SYNTHETIC THESES ON THE PHILOSOPHY OF EVOLUTION

Chapter 8: EVOLUTIONISM IS PHILOSOPHICALLY POSSIBLE.

The State of the Question

The Pontifical Gregorian University in Rome currently has a philosophy department that takes a very conservative view of the possibility of Evolutionism.¹ While admitting “a certain evolution” is possible, the current view is that evolution is restricted to lower groups, such as species and genera, and not for groups higher in taxonomy. The current book by Maria Teresa La Vecchia, *Evoluzione e Finalità*, is used in the Gregorian University course on evolution as the student textbook.² Her book begins with a historic and conceptual introduction to the topic of evolution (chapter one) and continues with the evolutionary theory of Neo-Darwinism and its critics (chapter two), rather than a presentation of the Neo-Scholastic arguments for or against the possibility of evolution. In place of those Neo-Scholastic philosophical arguments concerning Evolutionism, the biological fact of evolution is extensively explored (chapter three).

Nevertheless, the concession of evolution between species is an advance from the position taken earlier in the twentieth century, which held that evolution or transformation was only possible

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 62: “Gli argomenti desunti dalle varie discipline biologiche, e in particolare dagli organi rudimentali, dalla biogeografia, dagli organi omologhi appoggiano, dunque, nel loro complesso una certa evoluzione. Si tratta tuttavia di una trasformazione evolutiva che non va oltre i gruppi minori e non sembra affatto coinvolgere i gruppi maggiori.”

²La Vecchia, *Evoluzione*, title page: “ad uso degli studenti.”

within species.³ Thus in the early twentieth century, the philosophers at the Gregorian would hold the theory of permanence with regard to the philosophy of evolution.⁴

The theory of permanence, or fixism, is in opposition to the theory of evolution and maintains that every species is fixed, having come into existence through a creative act of God.

On the other hand, organic evolution is the theory that the various species and types of animals and plants derive their origin, not from distinctive creative acts of God, but through development from other pre-existing species and types. All differences in these species, even the production of entirely new species, are accounted for by modifications acquired in successive generations according to purely natural laws.⁵

Some evidence for evolution is found mainly in the fossil remains present in rock deposits of former geological periods, in the morphological and physiological similarity of organic types, and in the ontogeny and embryology of existing types. The fact of evolution has not been definitively proven by scientific research, but it is a probable theory.⁶ For the moment, the consideration of “purpose” in evolution will not be considered, but it so important that it will be fully treated in the next chapter. Also, various kinds of evolution, Mechanicist and Materialist, will be considered in

³Carolo Boyer, *Cursus Philosophiae* (Bruges: Desclée de Brouwer, 1939), 2: 192: “...non habetur evolutio ab una specie proprie dicta ad aliam.”

⁴Franciscus Xav. Calcagno, *Philosophia Scholastica, Psychologia, Theologia Naturalis* vol. 2, 3rd ed. (Naples: M. D’Auria, 1952), 2: 49: “Theoria descenditiae seu evolutionis specierum est reiicenda.”

⁵Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 592.

⁶La Vecchia, *Evoluzione*, 39: “...l’evoluzione remane ancora oggi un problema non risolto...”

subsequent chapters.⁷

Participants in the Dialogue

Adversaries to the proposal in this chapter are historic and doctrinal. Historically, the ancients thought species perpetual. G. Cuvier, father of paleontology, held perpetual species. His student, D'Orbigny admitted repeated true creations. Doctrinally, the moderns who oppose evolution and embrace the theory of permanence are the Fundamentalists.

Favoring the thesis are Bernoit de Maillet (d. 1732) who clearly proposed evolution. Some idea of transformation was had by Goethe, Oken, and Buffon. Lamarck and Darwin explained the origin of actual living species by asserting transformation of species.⁸ A number of Neo-Scholastics favor Evolutionism, such as Klubertanz, Hoenen (Gregorian University), Dougherty, Dezza (Gregorian), Renard, and O'Flynn Brennan. Some Neo-Scholastics affirm evolutionary transformism but restrict its extent. Gredt, originally in 1909, argues against monophyletic transformism.⁹ Donat in 1915, Boyer (Gregorian) in 1939, and Calcagno (Gregorian) in 1953, profess polyphyletic Transformism "within" the limits of species, although this should not be called Transfromism, but moderate or mitigated Transformism.¹⁰ La Vecchia, at the Gregorian University

⁷La Vecchia, *Evoluzione*, 32: "...sono state enumerate almeno una trentina di teorie diverse che tentano di chiarire il fenomeno evolutivo."

⁸Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 278: "...aurea huius doctrinae aetas a Carlo Darwin per opus *De Origine Specierum* (1859) inaugurata est."

⁹Josphus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 439.

¹⁰Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 795.

in Rome, in 1999, professes transformation “between” species.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, it is not easy to detect substantial change.¹¹ Further, even philosophers such as Heidegger and Sartre have misunderstood the meaning of creation, by trying to make “nothing” into an entity.¹² Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their position can be understood and respected.

Definitions and Distinctions

Evolutionism, as a philosophical system, holds that the complexity of things is due to

¹¹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 164: “A mistake commonly made is to ‘imagine’...no sensible experience...”

¹²Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 150: “Noi siamo tentati di entificare il nulla (come fatto Heidegger e Sartre) facendo di esso il polo contrario all’essere. Ma ciò che ha realtà è soltanto l’essere; mentre il nulla non è alcuna cosa bensì l’emissione di una voce o un insieme di lettere scritte. Il nulla, se facciamo bene attenzione, è assolutamente ineffabile e incogitabile e non semplicemente incognoscibile...Ma in nessun modo la creazione, propriamente parlando, può essere un cambiamento, un *fieri*, per la semplice ragione che un cambiamento esige due termini e ogni *fieri* è in un soggetto.”

accumulated changes brought about by the activity of merely material things.¹³

Essential evolution (substantial change or origin of species, whose product is natural species) is when the essential perfections are gained or lost in a series of generations.¹⁴ Inter-racial evolution (accidental or small change, whose product is natural varieties) occurs when inherited non-essential traits are changed in a series of generations. Race is defined as a group of living things with relative stable and particular inherited characteristics, not differing essentially from other groups with different inherited characteristics. Klubertanz notes that inter-racial evolution does not even prove the possibility of essential evolution.

Philosophic species is the essence considered in its full determinatedness, and is predicated of individuals with the same essence, e.g., man is a rational animal.¹⁵ Biologists in taxonomy, on the other hand, classify living things, beginning with the most inclusive category, into kingdom, phyla (type), classes, order, families, genera, and species.¹⁶ Biologists give meanings to these classifications, so that species could be: living creatures that can mate and produce fertile offspring, e.g., *Homo sapiens*. Donat notes it is often difficult to tell which qualities are essential and which are accidental, so that it is sometimes difficult to determine if a biological taxonomic species is a

¹³Geroge P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 414. Michael Ruse, "Evolution and Philosophy," in *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich (Oxford: University Press, 2005), 275.

¹⁴Klubertanz, *Philosophy*, 420.

¹⁵Renard, *Philosophy*, 76: "Corporeal creatures of distinct species differ because of the diverse specific perfection of their form."

¹⁶Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 793. Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 93.

natural species.¹⁷ Klubertanz notes that the source of confusion arose when biologists, who had studied philosophy, used terms which already had a technical meaning in the philosophy of nature and logic, like “species”, assuming a univocal meaning.¹⁸

Monophyletic evolution asserts species arise from one primitive life form, or very few.

Polyphyletic evolution asserts contemporary species arose from lines of several species.¹⁹

Evolutionism here is distinguished from evolutionary atheism, which entirely excludes the Creator. Atheism is treated in another chapter of this dissertation, where this dissertation maintains some action by the Creator. Evolutionism here is also distinguished from just the biological fact, which may not have occurred.²⁰ Evolutionism here is distinguished from evolutionary finality, in which “more perfect organisms have their origin by progress from lesser origins,” which is treated in the next chapter.²¹

Fixism, or the theory of permanence, denies all mutations of species.²² Fixism is allied with Creationism, but is not the same. Creation is production of a thing from nothing of self or subject

¹⁷Donat, *Cosmologia*, 274.

¹⁸Klubertanz, *Philosophy*, 418, note 4.

¹⁹Donat, *Cosmologia*, 296. Bittle, *Psychology*, 583.

²⁰Ferdinando M. Palmes, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 796: “...ut factum indubitabile iam a scientia demonstratum, nullum tamen argumentum certo probans afferentes...”

²¹Donat, *Cosmologia*, 296.

²²F.-X. Maquart, *Elementa Philosophiae*, 2 vol. (Paris: Andreas Blot, 1937), 2: 518. Bittle, *Psychology*, 583. Edwardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2: 305, notes that Fixism was the doctrine of Linneus, who maintained, “Tot sunt species quot Deus in principio creavit.” However, this was not creation *ex nihilo*.

(*productio ex nihilo sui vel subjecti*). Fixism was commonly held by all until the Renaissance.

Philosophically possible is distinguished from the biological fact. The fact of evolution has not yet been proven.²³ Philosophy treats the possibility in the abstract. Philosophy is the science of all things according to their ultimate causes as achieved by the light of natural reason.²⁴

Possibility is defined as the *capacity for existence* for the form of a definite possible thing: internally, that its constituent characteristics are not impossible, and perhaps additionally externally possible, if there is power to produce the thing.²⁵ Possible evolution can produce a new species.

Question Needing A Reply

The basic question here is to consider the philosophic possibility of evolution. Have organic species evolved, or are species permanent? So there is a choice between evolution of species, or alternatively a choice for the permanence, or fixity, of species. Therefore, the philosophical question is to decide between the theory of evolution and the theory of permanence.

²³Palmes, "Psychologia," 2: 796: "In statu actuali scientiae, existimamus hypothesim transformismi authenticici, de quo in thesi agimus, ut meram hypothesim laboris habendam esse."

²⁴Franciscus Xav. Calcagno, *Philosophia Scholastica, Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D'Auria, 1952), 1: 1: "Quoad rem philosophia definiri potest: scientia rerum per causas ultimas, naturali rationis lumine comparata."

²⁵Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est *capacitas ad existendum*, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

The Thomistic Foundations

Evolution presents two general problems: transformation from one species to another species, and progress to a higher species. St. Thomas had an answer to both problems. First, St. Thomas endorses secondary causality. He believed that God is a Creator, but uses secondary causes to providently rule the world. Second, St. Thomas endorses degrees of service. Aristotle and Aquinas observed that less noble creatures are in service if more noble creatures. Therefore, St. Thomas gives the general principles for the solution of the general problems with evolution.

Does St. Thomas believe in creation by God? Yes, he does. Creation is the action by which God gives existence to the universe by drawing it from nothing. This is taught in Sacred Scripture (*Genesis* 1: 1 et seq.). St. Augustine, who was the deepest patristic thinker on creation, wrote, “The creator is only the one who produces things as the first cause” (Augustine *De Trinitate* 1. 3. 9. 18).²⁶ The teaching of St. Thomas follows Augustine.²⁷ St. Thomas teaches, “Creation is the production of every thing in its entire substance which has no created or uncreated presupposit” (Aquinas *Summa Theologiae* 1. 63. 3).²⁸ St. Thomas believes that God is the creator. He teaches, “The more

²⁶Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 150: “Creatore è solo colui che produce le cose come causa prima” (Augustine *De Trinitate* 1. 3. 9. 18).

²⁷Mondin, *Dizionario*, 150: “San Tommaso riprende tutti temi della speculazione agostiniana, e li approfondisce alla luce di due importanti eventi culturali: la scoperta di Aristotle, delle sue categorie metafisiche di atto e potenza, materia e forma, sostanza e accidenti, e della sua dottrina relativa all'eternità del mondo; e la scoperta della filosofia dell'essere, concepito come *actualitas omnium actuum* e come *perfectio omnium actuum*, scoperta effettuata dallo stesso San Tommaso.”

²⁸Mondin, *Dizionario*, 150: “La creazione è la produzione di qualche cosa in tutta la sua sostanza che di questa ci sia presupposto alcunché sia creato sia increato” (Aquinas *Summa Theologiae* 1. 63. 3).

universal an effect, so much more elevated is its proper cause, because when higher is the cause, so greater are the effects over which it extends its power...Now existence is more universal than becoming, even pertaining to things which are not mobile like rocks and the like, as even philosophers note...It happens then that above the cause that only moves or changes, there exist a cause which is the first principle of being and this is none other than the Subsistent Being Himself,” (Aquinas *Summa Contra Gentiles* 2. 16).²⁹

Does St. Thomas endorse secondary causes? Yes, he does, and this is the key to the current thesis on evolution. Extrinsicism in the opponents of the existence of secondary causes is found in Plato with his Ideas, Avicenna with his Separated Intelligence, and Ibn Gabirol with the external divine will; in these cases, the secondary cause would do nothing at all because it was receiving everything from the outside. Intrinsicism in the other major opponent of the existence of secondary causes is found in Anaxagoras, who holds that the various physical, intellectual and moral operations are already performed and realized virtually from within; in this case the effects that secondary causes seem to produce are already virtually realized either in a cause itself or in others.³⁰ St. Augustine and St. Thomas affirm the absolute primacy of God as the principle cause of everything produced by nature. St. Thomas affirms there are secondary causes in nature. As proof of

²⁹Mondin, Dizionario, 151: “Quanto più universale è un effetto, tanto più elevata è la sua causa propria; perchè quanto più alta è la causa, tanto maggiore sono gli effecti a cui si estende la sua virtù. Ora l’essere è più universale del divenire, essendovi degli enti che sono immobili, a detta anche dei filosofi, come le pietre e simili. Occorre dunque che sopra la causa che solamente opera movendo e trasmutando, esista quella causa che è principio primo dell’essere e questa non può essere che l’Essere sussistente stesso” (Aquinas *Summa Contra Gentiles* 2. 16).

³⁰Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 185: “In the first case the second cause did nothing at all because it was receiving everything from the outside. Here in the second case, it does very little more...effects...already virtually realized. Its action is limited to removing obstacles...”

secondary causes, St. Thomas has three arguments (Aquinas *Summa Theologiae* 1. 105. 5).³¹ First, without secondary causes there would be no connection for creatures between their causation and the effect; creatures would be impotent and their powers in vain. Second, every being exists through its operations, so that without secondary causality, creatures existence would be imperiled. Third, less perfect things are ordered to more perfect: matter is ordered to form as the first act, and matter is ordered to operation as the second act, in such a way that operation is the goal of created things. Therefore, St. Thomas confers upon secondary causes the full share of being and efficacy to which they are due. In the real world, the nature of the effect is similar to the nature of the cause, so that warmth does not chill, and humans generate humans. So the existence of natural laws suppose that God created beings endowed with causality.³² How can the same effect be produced by two different causes (God and the natural agent) at the same time? These causes are at the same time, but not under the same relation, e.g., a workman uses an axe to cut wood, and both are causes. The analogy applies to God, but God's influence on the secondary cause penetrates more deeply, so that when God grants existence, God grants form, movement, and efficacy.³³ Thus the existence of secondary causes points to no lack of power in God, but to the immensity of God's goodness

³¹Mondin, *Dizionario*, 410, cites Aquinas *Summa Theologiae* 1. 105. 5.

³²Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 181: "Detrahere actiones proprias rebus est divinae bonitate derogare" (Aquinas *Compendium Theologiae* 1. 5-41: Aquinas *Summa Contra Gentiles* 1: 13). Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 316, notes that "Suarez pointed out that 'God does not interfere directly with the natural order, where secondary causes suffice to produce the intended effect'" (Francisco Suarez, *De Opere Sex Dierum*, 2. 10. 13)

³³Gilson, *Philosophy*, 182: "Analogous with God: God's influence on second causes penetrates more deeply...the immensity of His goodness."

(confer: *Aquinas Summa Contra Gentiles* 1. 13).³⁴ Philosophically, secondary causality in creatures is an affirmation of the principle of causality which is fundamental to classical metaphysics and especially to Thomistic metaphysics. The principle of causality regulates the relationship between cause and effect according to the definition of Aristotle, which St. Thomas made his own, declaring, “Everything that is moved is moved by another,” or in another way, “Everything that happens presupposes a principle that produces it.”³⁵

Does St. Thomas teach that lower creatures are in service of higher creatures? Yes, he does, and so reprises Aristotle who taught that “nature proceeds little by little from things lifeless to animal life” and “there is observed in plants a continuous scale of ascent toward the animal.”³⁶ This observation of natural ascent is not only helpful here for the proof of evolution in general, but is also the key to our next thesis on the finality of the evolutionary process, or evolutionary progress. There are two helpful texts from Aquinas. St. Thomas notes, “...less noble creatures are in the service of the more noble...Further, every creature is in the service of the perfection of the universe...Finally, the totality of the universe with all its parts is ordered to God as its goal” (*Aquinas Summa*

³⁴Gilson, *Philosophy*, 183: “Love is the unfathomable source of all causality...a God whose principle attribute is not power, but goodness. In a universe stripped of second causes, the most obvious proofs of the existence of God would be impossible...” Accordingly, should religious Fundamentalism deny secondary causes in favor of God, the proofs for God’s existence would be more difficult. Donat, *Cosmologia*, 255, also argues not only from divine goodness, but divine wisdom and power; he adds an argument from divine eternity in that God shares the vestige of His eternity in the longest ages it takes to evolve the world (“ita aeternitatis vestigia cernuntur, cum per longissimas aetates mundum se evolvere facit.” Confer: *Aquinas Summa Contra Gentiles* 3. 77.

³⁵Mondin, *Dizionario*, 108, cites the first formula, “Quidquid movetur ab alio movetur” (*Aquinas Summa Theologiae* 1. 2. 3), and the second formula, “Omne contingens habet causam.”

³⁶Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 202, cites Aristotle.

Theologiae 1. 65. 2).³⁷ The second text is the classic text on the evolutionary view of Aquinas, cited by Benignus, Mondin and Maritain.³⁸

But since, as was already stated, everything which undergoes motion tends as such toward a divine likeness in order to be perfect in itself, and since a thing is perfect in so far as it becomes actual, it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms. For primary matter is in potentiality, first of all, to the elemental form. While under the elemental form, it is in potentiality to the form of a compound; wherefore elements are the matter of a compound. Considered under the form of a compound, it is in potentiality to a vegetative soul; for the act of such a body is a soul. Again the vegetative soul is in potentiality to the sensitive, and the sensitive to the intellective. This is shown in the process of generation, for first in generation is the fetus living a plant life, afterwards the life of an animal, and finally the life of man. After this no later or more noble form is to be found in things that are generated and corrupted. Therefore, the last end of all generation is the human soul. Consequently, the elements are for the sake of compounds, the compounds for the sake of living things, and of these plants are for the sake of animals, and animals for the sake of man. Therefore, man is the end of all generation. (Aquinas *Summa Contra Gentiles* 3. 22)³⁹

³⁷Mondin, *Dizionario*, 406, cites Aquinas *Summa Theologiae* 1. 65. 2.

³⁸Brother Benignus, F.S.C., *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 500-501, gives the citation from Aquinas *Summa Contra Gentiles* 3: 22. Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 224-225: “Ciò che si tratta di verificare è se la sua dottrina sulla eduazione successiva delle forme dalla materia sia compatibile con la teoria della evoluzione. Maritain è convinto che tale compatibilità esista effettivamente.” Confer: Jacques Maritain, “Vers une Idée Thomiste de l’Evolution,” in *Nova et Vetera* 42 (1967), 94.

³⁹Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vols. (Madrid: BAC, 1967), 2: 133-134: “Cum vero ut dictum est, quaelibet res mota, in quantum movetur, tendat in divinam similitudinem ut sit in se perfecta; perfectum autem sit unumquodque in quantum fit actu: oportet quod intentio cuiuslibet in potentia existentis sit ut per motum tendat in actum. Quanto igitur aliquis actus est posterior et magis perfectus, tanto principalius in ipsum appetitus materiae fertur. Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur. Nam materia prima est in potentia primo ad formam elementi. Sub forma vero elementi existens est in potentia ad formam mixti: propter quod

This text from St. Thomas' third book of the *Summa Contra Gentiles*, chapter 22, deserves a most serious comparison with the theory of evolution, considering just the elements involved in both. Both Darwin and St. Thomas begin by observation, Aquinas beginning by observation of "motion." Second, both are evolutionary, at least in the wide sense, Aquinas considering everything undergoes motion "in order to be perfect." Thirdly, both appear universal, Aquinas considering "everything." Fourth, both process of evolution and the view of Aquinas are by "generation." Fifth, by creaturely generation, neither Darwin nor Aquinas treat the first creation, which does not happen by generation, but is from nothing. Sixth, neither Darwin nor St. Thomas ignore matter, Aquinas noting "matter inclined." Seventh, both Darwin and St. Thomas see evolutionary tendencies in nature itself, but Aquinas differs by noting the "appetite of matter" itself. Eighth, evolution was ongoing, since Aquinas views matter as moving "towards the last and most perfect act." Ninth, a certain determinism is involved, since Aquinas notes "appetite...must tend." Tenth, both Darwin and St. Thomas deal with species, since Aquinas notes "certain grades are to be found in the acts of forms." Eleventh, both Darwin and St. Thomas are dealing with substantial change, with Aquinas noting "elements...vegetative soul...sensitive (soul);...plant life...life of animal...life of man." Twelfth, some abiogenesis is indicated in Aquinas' teaching: "...elements...compound...in potentiality to a vegetative soul." Thirteenth, the view of Aquinas here in a philosophic (not scientific) analysis tends toward a

elementa sunt materia mixti. Sub forma autem mixti considerata, est in potentia ad animam vegetabilem: nam talis corporis anima actus est. Itemque anima vegetalis est in potentia ad sensitivam; sensitiva vero ad intellectivam. Quod processus generationis ostendit: primo enim in generatione est fetus vivens vita plantae, postmodum vero vita animalis, demum vero vita hominis. Post hanc autem formam non invenitur in generabilibus et corruptibilibus posteria forma et dignior. Ultimae igitur finis generationis totius et anima humana, et in hanc tendit materia sicut in ultimam formam. Sunt ergo elementa propter corpora mixta; haec vero propter viventia; in quibus plantae sunt propter animalia; animalia vero propter hominem. Homo igitur est finis totius generationis."

more monophylactic viewpoint, that “the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation.”

Fourteenth, both Darwin and St. Thomas see evolution at least up to human kind, although Aquinas differs by noting that “man is the end of all generation.” The comparison between Darwin, living in the nineteenth century, and St. Thomas, living in the twelfth century, should not be pushed too far, but the attempt to compare them is instructive.⁴⁰ The attempt at comparison is also complimentary to the genius of St. Thomas.

The way evolution can happen requires a limitation of form by matter for individuation into species. Substantial change must be possible for one species to change to another. Accidental change must perfect its subject and affect the whole being to bring about substantial change to a new species. St. Thomas affirms and explains material limitation of formal causality, substantial change, and that accidental change perfects the subject and affects the whole being. Therefore, St. Thomas gives the specific principles to explain evolution.

Does St. Thomas hold that species are educed from matter by the form? Yes, he does. According to St. Thomas there is a hierarchy among the causes: “Among the causes there exist the following order: the material is perfected by the formal cause, the formal by the agent cause, and the efficient by the final cause” (Aquinas *Scriptum in Liber Sententiarum* 4. 3. 1. 1. sol.1).⁴¹ It is the matter which limits and individuates the form, and “species” is an individuation. It is the form that

⁴⁰No author does a textual comparison between Aquinas and Darwin’s theory of evolution. The responsibility for the comparison rests solely on the author of this dissertation.

⁴¹Mondin, *Dizionario*, 107 cites St. Thomas: “In causis est talis ordo quod materia completur per formam, et forma per efficientem, et efficiens per finem” (Aquinas *Scriptum in Liber Sententiarum* 4. 3. 1. 1. sol. 1)

gives matter “to be,” actuates it, and by union with it makes the matter to be a body.⁴² However, St. Thomas does not view the form as necessarily simple, but says, “The more perfect form virtually contains whatever belongs to the inferior forms; therefore while remaining one and the same, it perfects matter according to the various degrees of perfection; for the same essential form makes man an actual being, a body, a living being, an animal and a man” (Aquinas *Summa Theologiae* 1. 76. 6. ad 1).⁴³ Note here that “man” is the species. The causality of these two principles is mutual, simultaneous and transcendental (the causality is intrinsic and mutual), and St. Thomas describes this as eduction from the matter, saying:

A thing naturally generated is properly said to be, since it has its ‘to be’ in its subsisting ‘to be’; form, however, cannot be said ‘to be’ in this way, since it neither subsists nor has its ‘to be’ of itself...Properly speaking, it is not the form which is, but form is that by which (something is)...This which is generated is not the form but the composit. And it is generated from matter, insofar as matter is in potency to the composit by being in potency to the form. Consequently, we cannot strictly say that the form is made in matter, but rather that it is educed from matter (Aquinas *De Potentia* 3. 8)⁴⁴

⁴²Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 220: “...it is the matter which limits and individuates the form...we cannot imagine...transcends all sense experience...”

⁴³Renard, *Philosophy*, 222, cites St. Thomas: “Forma perfectior virtute continet quidquid est inferiorum formarum; et ideo una et eadem existens perficit materiam secundam diversos perfectionis gradus. Una enim et eadem forma est per essentiam, per quam homo est ens actu, et per quam est corpus, et per quam est vivum, et per quam est animal, et per quam est homo. Manifestum est autem quod unumquodque genus consequitur propria accidentia” (Aquinas *Summa Theologiae* 1. 76. 6. ad 1).

⁴⁴Renard, *Philosophy*, 66, cites St. Thomas: “Res enim naturalis generata dicitur esse per se proprie quasi habens esse in suo esse subsistens; forma autem non sic esse dicitur, cum non subsistat nec per se esse habeat...Forma proprie non fit, sed est id quo fit...Id quod fit non est forma sed compositum...Et fit quidem ex materia, in quantum materia est in potentia ad ipsum compositum per hoc quod est in potentia ad formam. Et sic non proprie dicitur quod forma fiat in materia, sed magis quod de materiae potentia educitur” (Aquinas *De Potentia* 3. 8).

We cannot imagine such causality, for it transcends all sense experience, but intellectually we can understand why this must be.⁴⁵

Does St. Thomas affirm the possibility of evolutionary change, which would be the substantial change from one species to another species? Yes, he does make that affirmation, by affirming substantial change, by noting that even art can produce substantial change, and by affirming “privation” as an element of change. Can generation produce change that is either substantial (change between species) or accidental (change within species)? St. Thomas says:

Furthermore, since generation is movement toward form, corresponding to twofold form is twofold generation. Generation *simpliciter* (pure and simple) corresponds to substantial form, and generation *secundum quid* (relatively speaking) to accidental form. When a substantial form is introduced, we say that something comes into being *simpliciter*, as for example, man come into being or man is generated. But when an accidental form is introduced, we do not say that something comes into being *simpliciter*, but in this or that respect. Thus, when a man becomes white, it is not said absolutely that a man comes into being or is generated, but that he comes into being or is generated white” (Aquinas *De Principiis Naturae*, 6).⁴⁶

New substantial change can even be introduced by art, according to Aquinas, who teaches, “...nothing presents something to be made by art whose form...is a substantial form” (Aquinas *Summa Theologiae* 3. 75. 6. ad 1).⁴⁷ How does generation produce substantial change (between species) or

⁴⁵Renard, *Philosophy*, 220: “True, we cannot imagine such a thing, for such causality transcends all sense experience; with our intellect, however, we can understand clearly why this must be.”

⁴⁶H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas: Cosmology*, vol. 2, trans. John A. Otto (St. Louis: Herder, 1958), 2: 168-169, cites Aquinas *De Principiis Naturae*, 6.

⁴⁷Klubertanz, *Philosophy*, 423, note 12, cites St. Thomas, “...nihil prohibet arte fieri aliquid cuius forma...(est) forma substantialis” (Aquinas *Summa Theologiae* 3. 75. 6. ad 1).

accidental change (within species)? St. Thomas answers,⁴⁸ first, that privation is said only of a determined (apt) subject (Aquinas *De Principiis Naturae* 11), and secondly, that privation is the principle of becoming (Aquinas *De Principiis Naturae* 12):

Further to be noted is that although generation is from nonexistence, we do not say that negation is the principle but privation is, because negation does not determine a subject. Non-seeing, for example, can be said even of non-beings, as we might say that a dragon (fabled monster) does not see, and we say the same of beings that are not fitted by nature to have sight, as stones. But privation is said only of a determined subject, in which, namely, a certain condition (*habitus*) is by nature more apt to come about; for instance, blindness is said only of things that are by nature apt to see. Moreover, generation does not arise from non-being *simpliciter*, but from the non-being that is in some subject, for example, fire does not arise from just any non-fire but from such non-fire as is apt to acquire the form of fire. And for this reason we say that privation is the principle, and not negation. (Aquinas *De Principiis Naturae* 11).

Privation, however, differs from other principles in that the others are principles of both existence and becoming. That a statue may be produced there must be bronze and, furthermore, there must be the shape of a statue. And when the statue exists, these two must exist. Privation, on the other hand, is only a principle of becoming and not of existing. For while a statue is in process it must not yet be a statue; if it were it could not come to be, because whatever comes to be, is not, except in successive realities, as time and motion. From the moment the statue exists there is no longer the privation of statue, since affirmation and negation cannot be simultaneous, and neither can privation and possession (*habitus*). Also, privation, as explained above, is a *per accidens* principle, but the other two (matter and form) are *per se* principles. (Aquinas *De Principiis Naturae* 12)

If substantial change is the true and real evolutionary change between species, why bother with accidental change? In fact, it appears that the being of accidents is the being of substance, as it were diffusing itself. It seems, therefore, that accidents are useless for the evolutionary process, since accidents are in the substance, and the substance is manifest and made known by the its accidents. St. Thomas confirms this by saying, “The emanation of proper accidents from the subject is not by way of

⁴⁸Gardeil, *Cosmology*, 170-171, cites Aquinas *De Principiis Naturae* 11-12.

transmutation, but by a certain natural result” (Aquinas *Summa Theologiae* 1. 77. 6 ad 3).⁴⁹ Again, St. Thomas confirms this apparent uselessness, saying, “There is always a proportion between the substance and its accidents” (Aquinas *Scriptum in Liber Sententiarum* 2. 27. 1. 6 ad 1). However, in the philosophy of nature, observation can confirm mutations in the subject, resulting in new accidents.⁵⁰ Mutations can happen because substance is a dynamic reality; and secondly, mutations are united to the subject and thus affect the whole being. St. Thomas notes how accidents integrate, determine and perfect the substance, even if the forms are accidental forms (confer: Aquinas *De Malo* 4. 2 ad 9). Every accidental change is somehow, at least mediately, an actuation of the substance, so the individual should never be considered as an immutable substance, but one constantly changing, constantly becoming. Secondly, St. Thomas notes that there is a unity, although an imperfect unity, of substance and accident, and consequent to this unity every accidental change must affect the whole being. Substance and accident have some unity since the nature of the accident is to be educed from the potency of the substance, and the accident naturally tends to inhere in the substance, yet substance and accident each have their individual “to be” so their union cannot be as close and intimate as between prime matter and substantial form. St. Thomas notes that the unity of a being depends on its “to be” (Aquinas *Summa Theologiae* 1. 11. 1 *corpus*). Since there is some unity, although an imperfect unity, of substance and accident, consequent to this unity every accidental change must

⁴⁹Renard, *Philosophy*, 205, cites St. Thomas: “Emantio propriorum accidentium a subjecto non est per aliquam transmutationem sed per naturalem resultationem” (Aquinas *Summa Theologiae* 1. 77. 6. ad 3).

⁵⁰Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 220: “L’ambito proprio della filosofia della natura è appunto l’ambito della *mutatio* di ogni ordine, tipo e grado...processi di trasformazioni accidentali e sostanziali, come processi di ordinamento e di differenziazione.”

affect the whole being.⁵¹ Renard notes, “At times accidental becoming prepares and disposes the substance, at least *a longe*, for such a change (*generatio substantialis*).⁵²

Does St. Thomas affirm active evolution? The modern question of evolution did not exist in the twelfth century when St. Thomas wrote. Nevertheless, there is an evocative statement of St. Thomas that God in the beginning creates all species together not in actual form but “in power and almost as in a seed” (“*in virtute et quasi in semine*,” Aquinas *Summa Theologiae* 1. 66. 4) Such an affirmation of active evolution is confirmed by the opinion of St. Thomas that “Creatures, then, are clearly real causes not only of the ‘to be’ but of becoming” (Aquinas *Summa Theologiae* 1. 104. 1 *corpus*).

The Scholastic Solutions

The first argument is from the Principle of Causality. Whatever moves is moved by another. But that other mover creating a new species is either the first cause alone (Fixism) or includes secondary causes (Evolutionism). But secondary causes are naturally sufficient to produce the effect of new species. Therefore, included in the origin (causality) of species is secondary causes (Evolutionism).

The major premise of the above argument is the principle of causality.⁵³ The minor premise is

⁵¹Renard, *Philosophy*, 73: “Here we may note that as this new form, this new accident is being educed, the other accidental form whose place it is taking is reduced to the potency of the subject... “the generation of any being means the corruption of another” (*generatio unius formae est corruptio alterius*).

⁵²Renard, *Philosophy*, 72, note 54: “...prepares and disposes...”

⁵³Calcagno, *Philosophia*, 314: “Quidquid contingenter existit, causam sui efficientem habet.”

a complete dichotomy: either first cause alone, or all causes. The second minor is supported by the principle of sufficient reason, since secondary causes are naturally sufficient.⁵⁴ The conclusion follows, joining causality with secondary causes, which are evolutionary.

The second argument is from the Principle of Sufficient Reason. A sufficient reason establishes certainty or possibility. Evolutionism is a sufficient reason. Therefore, Evolutionism is philosophically possible.

The major premise of the argument from the principle of sufficient reason is the principle of sufficient reason itself. Noted, however, is that the sufficiency of the reason determines certainty or possibility. The minor premise states that Evolutionism, which is the origin of species by secondary causes, is a sufficient reason for origin of species. This minor premise, secondary causes are sufficient reason, must be proved.⁵⁵ Then, Evolutionism (philosophical origin of species by secondary causes) is at least philosophically possible.

The proof of the minor premise, of the argument from the principle of sufficient reason, comes from a number of Neo-Scholastic philosophers. Arguments here are given in summary form. Klubertanz argues that substantial changes are caused by created secondary agents and always take place through accidental change, which accidents are agents of substance, through material disposition.⁵⁶ Renard argues that secondary causality occurs by accidental becoming which prepares

⁵⁴Calcagno, *Philosophia*, 317: “Nihil est sine ratione sufficiente.”

⁵⁵Calcagno, *Philosophia*, 317: “Ratio: generatim est id quo intelligitur, vel intelligi potest *quid res sit, vel cur sit, vel cur cognoscatur cum veritate*. Quare, pro triplici esse nuper explicatio, alia est ratio essentia, alia ratio existentiae, alia ratio veritatis cognitionis.”

⁵⁶Klubertanz, *Philosophy*, 405: “...created secondary agents...”

and disposes the substance, at least *a longe*, for such a change (*generatio substantialis*).⁵⁷ Hoenen argues that secondary causality is the intrinsic mutability of accident and substance educed from the potency of the material by the form.⁵⁸ Dougherty argues that secondary causality comes into operation when God suspends the properties of nature directing them to other than their connatural effects.⁵⁹ Dezza argues that secondary causality is the immanent virtuality placed by the creator in the very nature of species, so that if circumstances are appropriate, the substantial change takes place.⁶⁰ O’Flynn Brennan argues that secondary causality is the passive inclination of matter always desiring the more perfect to fulfill its potency.⁶¹ Accordingly, the minor premise of the argument from

⁵⁷Renard, *Philosophy*, 72, note 54: “At times accidental becoming prepares and disposes the substance, at least *a longe* for such a change (*generatio substantialis*).”

⁵⁸Petrus Hoenen, *De Origine Formae Materialis*, 2nd ed. (Rome: Gregorian University, 1951), 5-6: “Aristoteles autem per theoriam potentiae et actus intelligibilem facit mutabilitatem intrinsecam entis, non solum secundum accidentia verum etiam secundum ipsam substantiam; et ita rationem reddere potest omnis generis motus, generationis insuper et corruptionis rerum.” Ibid., 56, where Hoenen cites St. Thomas, “Omnis forma quae educitur in esse per materiae transmutationem, est form educta de potentia materiae” (Aquinas *Summa Contra Gentiles* 2. 86).

⁵⁹Kenneth Dougherty, *Cosmology: An Introduction to the Thomistic Philosophy of Nature* (Peekskill, N.Y.: Greymoor, 1965), 166: “The Creator Who, without employing any created agent, originally produced mobile being can, without employing any such agent, impede the action of agents of the corporal universe, heighten or lessen their power or direct them to other than their connatural effects.”

⁶⁰Paolo Dezza, *Metaphysica Generalis: Praelectionum Summa ad Usum Auditorum* (Rome: Gregorian University, 1945), 202: “Ad causam materiale reducuntur dispositiones quae in materia requiruntur ad recepiendam formam, si revera causae sunt et non merae conditiones ita ut influant ad esse effectus. Cum enim dispositiones materiam disponant sub influxu causae efficientis ut actuetur per formam, patet quod ad causam materiale reducuntur.”

⁶¹Sheilah O’Flynn Brennan, “Physis: The Meaning of Nature in the Aristotelian Philosophy of Nature,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 264: “Once the natural being is in existence, form is nature as the active principle of movements necessary for its preservation in existence and the attainment of its good in general or of movements contributing to the good of the universe as a whole; and it is form, too, that

sufficient reason is proved, at least in part. A number of Neo-Scholastic philosophers have successfully argued that secondary causality is a sufficient reason for natural origin of species. Therefore, Evolutionism is philosophically possible.

Space does not permit the examination of every theory of secondary causes of evolution, but a speculative question arises as to how many theories of secondary causes can exist without repeating the same area of argumentation. Such a difficult question has never been considered. Further, it is not in the purview of this dissertation to explore metaphysics, but rather the philosophy of nature. Nevertheless, it appears that only six theories are possible. Form is either substantial or accidental. Prime matter is either substantial or accidental. Aristotle adds privation as the third element of change, and something can have substantial privation or accidental privation. This yields six alternatives. When the six theories just given are reconsidered, the following results appear. The suspension theory of Dougherty relates to substantial form. The accumulation theory of Klubertanz relates to accidental form. The passive inclination theory of O'Flynn Brennan relates to substantial privation. The eduction theory of Hoenen relates to both substantial and accidental privation. The immanent virtuality theory of Dezza relates to substantial matter. The dispositive theory of Renard relates to accidental matter. *Prima facie* it appears that any other philosophical theory affirming and explaining the natural secondary causes of evolution would be a repetition of the general theories already given.

At least one philosophical theory of how evolution is possible in operation should be examined in depth. Klubertanz appears to give the most extensive presentation, and does explain in

accounts for the particular passive potencies by which a natural being is related to natural agents, fits into the scheme of the universe and thus contributes to the good of the whole.”

considerable philosophical depth. When Klubertanz is examined here, reference will be made to the parallel presentation in St. Thomas. Klubertanz does not cite St. Thomas often. It is not the intention here to show that Klubertanz is a Thomist, but to show the continued influence of the philosophy of St. Thomas. There is a strict correlation between the presentation of the philosophy of St. Thomas in the above section “Thomistic Roots” and the major parts of the presentation of Klubertanz.

The essential argument of Klubertanz is that accidents of the agent (form) and patient (matter) are instruments of substance, so a new substance can be made by them.⁶² This is the philosophical explanation of what the scientific theory of evolution, by which a very large number of kinds of living things has been derived by means of a tremendously long series of usually very small (perhaps occasionally large) accumulation of changes, from a very few (perhaps only one) living ancestors.⁶³ Further, this is very close to St. Thomas saying, “The emanation of proper accidents from the subject is not by way of transmutation, but by a certain natural result” (Aquinas *Summa Theologiae* 1. 77. 6 ad 3).

Klubertanz inquires, “Does substantial change exist, and how does it take place?”⁶⁴ Substantial change caused by created agents always takes place through accidental change, through material dispositions. Proof of this is that creation is power over being itself, which indicates a sufficient reason for the own being of the creator (confer: Aquinas *Summa Contra Gentiles* 2. 16). But power over being itself is not found in creatures, so creatures need pre-existing matter to act.

⁶²Klubertanz, *Philosophy*, 405.

⁶³Klubertanz, *Philosophy*, 414, for the scientific definition.

⁶⁴Klubertanz, *Philosophy*, 402, “Substantial change caused by created agents always takes place through accidental change, through material dispositions.”

God acts through secondary causes (Aquinas *Summa Theologiae* 1. 105. 5).⁶⁵ St. Thomas also holds secondary agents of substantial change (Aquinas *De Principiis Naturae*, 6) and a certain unity of substance and accident (Aquinas *Summa Theologiae* 1. 11. 1 *corpus*). Examples of this substantial change are assimilation of food, production of synthetic rubber, heat making molecules move faster (physics), or instability of living molecules under high heat (chemistry). Klubertanz adds that the accidental change involve material dispositions. Squeezing a metal ring turns a circle into an ellipse, and the cause is the person (efficient cause) and the matter. Water temperature rising from 30° to 80° in the test tube is caused by the scientist (efficient cause) and the proximate dispositions of the matter.⁶⁶ The material plays a part in the change by placing limits on the efficient cause, because you cannot get a hammer out of beeswax, nor water from chlorine and oxygen. These views are similar to St. Thomas (Aquinas *Summa Theologiae* 3. 76. 6 ad 1). Klubertanz notes that the synthesis of compounds takes place in successive stages, not leaps, in the laboratory. Scientists have found by experience that synthesis and destruction of very complex compounds does not take place in a single leap, but in successive stages. This is noted by St. Thomas that God in the beginning creates all species together not in actual form but “in power and almost as in a seed” (“*in virtute et quasi in semine*,” Aquinas *Summa Theologiae* 1. 66. 4).

Klubertanz continues to elaborate his theory of evolution not just with regard to

⁶⁵Klubertanz, *Philosophy*, 413: “God usually works, in the natural order, through the secondary causes He has made.”

⁶⁶Klubertanz, *Philosophy*, 28-29, for examples of the ring in ellipse and water temperature. Ibid., 29, for the successive and slow synthesis of compounds.

transformation, but with regard to progress of species from lower species to higher species.⁶⁷ This is an affirmation of finality, which is the next chapter. Due to finality in creation, Klubertanz holds essential evolution of living things up to and including the human body (the whole man with his spiritual soul excluded). His treatment of finality involves the added concepts of equivocal causality, chance, and God's Providence as the possible explanation of living things. Klubertanz endorses essential Evolutionism as a possible explanation of living things.

Does Klubertanz affirm monophylactic evolution (one stem of all life) or polyphylactic evolution (many stems of life)? Klubertanz does not use this terminology. However, it appears that he would endorse monophylactic evolution. His definition of scientific evolution has life evolve "from a very few (perhaps only one) living ancestors."⁶⁸ Further, Klubertanz states, "We would suppose the development process would begin with a rather simple relatively undifferentiated form of life, and proceed by way of extremely small but sudden changes."⁶⁹

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or

⁶⁷Klubertanz, *Philosophy*, 425: "Essential evolution...is a possible explanation of living things."

⁶⁸Klubertanz, *Philosophy*, 414: "...large number of kinds of living things has been derived ...from a very few (perhaps only one) living ancestors."

⁶⁹Klubertanz, *Philosophy*, 424: "...a rather simple, relatively undifferentiated form of life..."

disagreement) given to one part of a contradiction with fear of the opposite.⁷⁰ Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁷¹ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁷² Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical

⁷⁰Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: "Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius."

⁷¹Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁷²Salcedo, *Philosophiam*, 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁷³

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁷⁴ However, some restricted observation of evolution is possible within species.⁷⁵

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics: Klubertanz, Renard, Hoenen, Dougherty, Dezza, and O'Flynn Brennan.

Certitude could arise if the argumentation was based on some philosophical principles. The arguments given for Evolutionism as philosophically possible were based on the principle of causality and the principle of sufficient reason.

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Klubertanz's explanation of the possibility of Evolutionism was given in depth, and appeared to be reasonable sufficient.

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being

⁷³Salcedo, *Philosophiam*, 362: "Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis."

⁷⁴Possenti, "Vita," 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, "From the Fact of Evolution to the Philosophy of Evolutionism," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: "So there is no single experiment to prove evolution."

⁷⁵Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: "Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare..."

faithful to tradition. Klubertanz's explanation of evolution in this dissertation was paralleled with citations from Aquinas.

Certitude could arise if Neo-Scholastics agree on the possibility of Evolutionism. Some fully agree, such as Klubertanz, Renard, Hoenen, Dougherty, Dezza, and O'Flynn Brennan. Others partially agree, such as Boyer, who holds evolution only within species, and La Vecchia who holds evolution between species and genus.⁷⁶

Certitude could arise due to recent scientific confirmation. Nogar considered all the convergent scientific arguments and argued in favor of evolution without restriction.⁷⁷ The Darwin Centennial Celebration at the University of Chicago in 1959, attended by 50 outstanding international experts, had excellent agreement among scientists on the fact of evolution.⁷⁸ At the Gregorian University in Rome, La Vecchia considered the arguments favoring evolution from biology and arguments opposed; and La Vecchia considered the arguments favoring evolution from paleontology, and arguments opposed; it was then that La Vecchia concluded to limited evolution. The International Congress on Evolution, in Rome from 23 to 24 April 2002, presumed that evolution was the "crossroad" of science, philosophy and theology for "a lively dialogue between specialists of varied disciplines..."⁷⁹

⁷⁶La Vecchia, *Evoluzione*, 317: "Ammessa pertanto la possibilità di un processo evolutivo almeno all'interno dei gruppi minori della sistematica..."

⁷⁷Nogar, *Wisdom*, 123: "...species...The fact of evolution is more probable."

⁷⁸Nogar, *Wisdom*, 29: "Most scientists would agree...Darwin Centennial Celebration in Chicago in 1959...fifty outstanding international experts..."

⁷⁹Rafael Pascual, ed., *L'Evoluzione: Crocevia di Scienza, Filosofia e Teologia* (Rome: Studium, 2005), vii: "L'evoluzione: crocevia di scienza, filosofia e teologia...intenso e vivace dialogo tra specialisti di diverse discipline..."

Certitude could arise if the opposite opinion is not tenable. Norgar states, “Creationism is an unsatisfactory solution to the manifold data in the in the dynamic sciences, as well as the static biological sciences, in neo-biology as well as paleobiology.”⁸⁰

Certitude could arise if the objections of adversaries are able to be answered.

FIRST OBJECTION: Like produces like (“Oportet agens esse simile facto,” Aquinas *Summa Theologiae* 1. 91. 2; and “Simile fit a suo simile,” Aquinas *Summa Theologiae* 1. 65. 4), so no substantial change is to be expected. Aristotle teaches the action of individual natural causes is necessary, predetermined. Here are treated causes that do not have free will. The acorn from an oak tree will grow into another oak.⁸¹ REPLY: Although individual lines of causality in the world are necessary, there is no necessity about their crossing or interference.⁸² At the level of the created causes involved in evolution this interference is uncaused, and so contingent. Chance interference of two lines of causality can usually be expected to spoil the effect produced, which would be regressive evolution. But it is theoretically conceivable that the chance effect, equivalent causality, would be proportionate to a higher nature.

SECOND OBJECTION: All nature is ordered to produce its proper perfection and not for its destruction. But to become another species would be to destroy the first perfection (first species).

⁸⁰Nogar, *Wisdom*, 122: “Creationism...unsatisfactory...”

⁸¹Boyer, *Philosophiae*, 192: “Propter hoc agrumentum...ex ratione causalitatis...”
Calcagno, *Philosophia*, 2: 50: “Transformismus manifeste contradicit principio causalitatis...”

⁸²Klubertanz, *Philosophy*, 423: “..no necessity about their crossing or interference. At the level of the created causes concerned, this interference is uncaused, and so contingent.”

Therefore, nature does not tend to change to another species, namely for its first species to cease.⁸³

REPLY: Nature can also be defined as the whole system of inter-related natures. Although the natural potency in a thing implies an intrinsic order to an act, giving rise to a relation between an appetite and the good, this good need not be considered as a perfection of the thing in its own particular being. In fact, in the case of non-living things, it is very difficult to determine just what is the good for them. But it is different if the general scheme of the universe is considered. Then the observed tendencies very often appear as contributing to the order and good of the whole, seen in the framework of the general intention of universal nature.⁸⁴ Further, St. Thomas notes that the existence of nature is clearly known by itself, since natural things are manifest to the senses, but it is not manifest what the nature of any thing actually is, nor is its principle of motion manifest.⁸⁵

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Reasonable arguments have been given to philosophers.⁸⁶ Belief in the Bible is not damaged for theologians.⁸⁷

⁸³Boyer, *Philosophiae*, 192: “Natura omnis ordnatur ad propriam perfectionem et non ad sui destructionem.” Calcagno, *Philosophia*, 2: 50: “...natura...tenderet in destructionem...”

⁸⁴O’Flynn Brennan, *Nature*, 256-257: “...natural potency in a thing implies an intrinsic order to an act...very often appear as contributing to the order and good of the whole...Nature taken as a whole system of inter-related natures.”

⁸⁵John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 29, cites St. Thomas: “Naturam autem esse, est per se notum, inquantum naturalia sunt manifestas sensui. Sed quid sit uniuscuiusque rei natura, vel quod principium motus, hoc non est manifestum,” (Aquinas *In Phys.* 2. 1. 8).

⁸⁶Klubertanz, *Philosophy*, 425: “The possibility of this mode of origin can be admitted by both philosopher and theologian.

⁸⁷Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 579.

Certitude can be had from the fact that evolutionism is the best answer now for the origin of the species.⁸⁸ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).⁸⁹ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, evolution predicated as the common property of every origin of species is the best answer we have now.⁹⁰

The level of certitude for “Evolutionism is philosophically possible” is at minimum at the level of the possible. The proof is the convergence of all of the above arguments, especially the

⁸⁸John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

⁸⁹Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *dici de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

⁹⁰Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it effects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution preforms these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently with sufficient scientific justification for a scientific theory.”

fulfillment of the principle of sufficient reason. This agrees with the opinion of Klubertanz.⁹¹

However, there is the suspicion that the thesis could be at the level of the probable. Maritain seems to be “convinced” that Evolutionism is compatible with the views of St. Thomas, and Bittle agrees the theory can be “probable.”⁹² Nogar would assess the thesis as “more probable.”⁹³ Therefore, we can conclude that the thesis as described and defended is at least possible, and perhaps even a “convergence of probabilities.”⁹⁴

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.⁹⁵ This is the method of Aristotle and St. Thomas.⁹⁶ This method is confirmed by the Neo-Scholastic Jacques Maritain: “It is the upward resolution toward intelligible (as compared with the sensible) being... In this process the sensible object is not

⁹¹Klubertanz, *Philosophy*, 425: “Essential evolution...is a possible explanation of living things.”

⁹²Mondin, *Manuale*, 224-225: “Ciò che si tratta di verificare è se la sua dottrina sulla eduazione successiva delle forme dalla materia sia compatibile con la teoria della evoluzione. Maritain è convinto che tale compatibilità esista effettivamente.” Confer: Jacques Maritain, “Vers une Idée Thomiste de l’Evolution,” in *Nova et Vetera* 42 (1967), 94. Bittle, *Psychology*, 592: “...it is a probable theory, provided evolution be purposive.”

⁹³Nogar, *Wisdom*, 123: “The fact of evolution is more probable.”

⁹⁴Nogar, *Wisdom*, 123, notes the convergence of probability: “But the evidence drawn from paleontology, genetics, natural selection, biogeography, taxonomy, comparative anatomy, physiology, biochemistry, embryology, and general biology certainly converge on a single conclusion.”

⁹⁵Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

⁹⁶Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

lost sight of...”⁹⁷ Yet Klubertanz rightly reminds the philosopher, “On the other hand, the factual occurrence of such evolution in the case of particular organisms, which actually existed in a given time in world history, is a question of fact whose establishment by any direct means is extremely difficult if not impossible.”⁹⁸ Thus, scientific fact, in general or regarding evolution, does touch philosophy of nature. Gardeil notes, “The respective limits of philosophical and scientific investigation are not so easy to determine as might at first appear...The philosopher of nature cannot altogether ignore...science.”⁹⁹ Why can’t Evolutionism be declared philosophically certain? The responsible philosopher cannot ignore the lingering doubt about the scientific fact of evolution.

⁹⁷Gardeil, *Cosmology*, 7, cites Maritain in the original: “...une résolution ascendant vers l’être intelligible, dans laquelle le sensible demeure, mais indirectement, et au service de l’être intelligible, comme connoté par lui...”

⁹⁸Klubertanz, *Philosophy*, 425: “...extremely difficult if not impossible.”

⁹⁹Gardeil, *Cosmology*, 7-8: “...not so easy...cannot altogether ignore...science...”

Chapter 9: EVOLUTIONISM NEEDS SOME CONCEPT OF PURPOSE.

The State of the Question

The Pontifical Gregorian University in Rome has a philosophy department that currently demands some concept of purpose in Evolutionism.¹ Purpose, or final causality, has always been a part of the explanation of reality by the Neo-Scholastic philosophers.² The principle of finality or purpose applies to every agent, and thus applies to Evolutionism. Finality is the teaching of St. Thomas and our own experience tells us “that everything that is produced through the will of an agent is directed to an end by the agent” (Aquinas *Summa Contra Gentiles* 3. 1) and “Other things that lack intellect do not direct themselves to their goal, but are directed by another” (Aquinas *Summa Contra Gentiles*, 3. 1).³ In fact, St. Thomas describes in various ways that “every agent acts for a purpose” (*omne agens agit propter finem*) on several occasions: Aquinas *Summa Contra Gentiles* 3. 1; Aquinas *Summa Contra Gentiles* 3. 2; Aquinas *Summa Theologiae*, 2-2. 1. 2.

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 111: “Da ciò consegue che la posizione materialistica o antifinalistica risulta non credibile e smentita dai fatti. L’evoluzione teistico o spiritualistico riconosce invece la finalità della natura...”

²Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 19: “Articulus Tertius: Consideratur vita secundum suam finalitatem suosque gradus.”

³Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 144: “Our own internal experience tells us” about the final cause, as St. Thomas says: “Eorum autem quae per voluntatem producuntur agentis, unumquodque ab agente in finem aliquem ordinatur: bonum enim et finis est obiectum proprium voluntatis, unde necesse est ut quae ex voluntate procedunt, ad finem ordinentur” (Aquinas *Summa Contra Gentiles* 3. 1). Concerning all creatures who lacking intellect, St. Thomas also applies the principle of finality: “Alia, vero, intellectu carentia, seipsa, in suum finem non dirigunt, sed ab alio diriguntur” (Aquinas *Summa Contra Gentiles*, 3. 1).

This need for purpose or finality is actually the central theme of the class presentation at the Gregorian University as illustrated in the current printed student notes. Finality of evolution also finds a prominent place in the title, *Evoluzione e Finalità*, of the book by Maria Teresa La Vecchia, who teaches the course at the Gregorian University.

Participants in the Dialogue

One group of adversaries to the proposal that Evolutionism needs a concept of purpose are Darwin,⁴ Haeckel, Huxley, and the Materialists, who hold that corporal agents do not act according to a goal.⁵ The Neo-Darwinism of Weismann is opposed to the concept of purpose. This Neo-Darwinism, or the Synthetic Theory, explains the theory of evolution by natural selection and by chance.⁶ In 1970, Jacques Monod (1910-1976) wrote that life evolved by chance when the first DNA was formed. Errors in the DNA were propagated by natural selection even up to the intelligence, conscience and will of man. Monod says, “The ancient covenant is broken; man finally knows he is alone in the indifferent immensity of the universe, from which he emerged by chance.

⁴F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 520: “Transformismum vero universalem exposuit et defendit C. Darwin, Anglus (1809-1882), sub form materialistica (antifinalistica).” Ibid., 521: “Haeckel (1834-1919) qui theorias Darwinianas usque ad ultimas consequentias ita evolvit...Weismann ...influxum selectionis, quem taman dicit operari non tantum inter individua sed etiam inter chromosomata cellularum generationis (selectio intragerminalis). Haec theoria designatur nomine Neo-Darwinismi.”

⁵Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 229.

⁶La Vecchia, *Evoluzione*, 39: “Al contrario, la teoria sintetica o neodarwinismo, che prosegue la concezione darwiniana, utilizzando il caso e la selezione per dare un spiegazione attendibile del fenomeno evolutivo, è contrastata radicalmente da studiosi competenti. Questi contrappongono ad essa non soltanto la loro critiche fondate, ma la relata stessa dei fatti.”

His duty, as his destiny, is not written in any place.”⁷

Another group of adversaries are the Positivists, holding experience is the only font of knowledge, and who concede that corporal agents act toward a goal but that goal is unknown, except to God.⁸ Descartes (1596-1650) is the main promoter, and maintains that it would be arrogant to investigate these proximate goals in science.⁹ It seems that Roger Bacon, Robinet, Buffon tend toward this opinion, and among the moderns Spinoza, Leibniz, Hume, the Empiricists, and Kant.¹⁰

On the other hand, those who affirm the thesis that Evolutionism needs some concept of purpose, affirm corporal bodies do act toward proximate goals which are their own operations and

⁷Battista Mondin, *Manuale di Filosofia Sistemática: Epistemologia e Cosmologia* (Bologna: Studio Dominicano, 1999), 217, gives the quotation, and adds “...Jacques Monod. Questi nell’opera *Il Caso e la Necessità: Saggio di Filosofia Naturale della Biologia Contemporanea*, sostiene che la vita e tutto l’ordine dei viventi devono la loro origine al puro caso.” Joseph Gevaert, *Il Problema dell’Uomo: Introduzione all’Antropologia Filosofica* (Turin: Elledici, 1992), 88: “La tesi di Jacques Monod sul caso appare diametralmente opposta a quella di Teilhard de Chardin. Secondo J. Monod l’evoluzione procede per caso...errori...del codice genetico.”

⁸Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 325: “The Positivists who reduce all activity in bodies to mechanical movements can see no necessity for asserting the existence of final causes. Descartes...God the sole efficient cause...and so deny intrinsic causality to creatures.” H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, Cosmology, trans. John A. Otto (St. Louis: Herder, 1958), 2: 73, notes three theories criticized by Aristotle: those who deny the very existence of chance, the Atomists who ascribe all the world to chance, and a third group who hold that chance is a cause, but mysterious and divine, and not accessible to human scrutiny” (Aristotle *Physics* 2. 4. 196 b 5).

⁹Jesu Iturrioz, “Metaphysica Generalis.” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 837: “Cartesius... asserit tamen abstinendum esse ab investigatione finis.”

¹⁰Hellin, “Cosmologia,” 2: 230. Iturrioz, “Metaphysica,” 1: 836.

effects, not as moving themselves to the goal, but as actuated to the goal by an intelligent being. The remote foundation in terms of development was laid by Anaximander, Anaximenes, Empedocles, and the Atomists.¹¹ More specific philosophers favoring finality were Socrates, Plato, Aristotle, Plutarch, Seneca, Newton, and Cuvier. This position affirming finality is common among the Neo-Scholastics. Aristotle, Aquinas and Locke represent the world of living organisms as a graduated scale of finality ascending from less perfect to more perfect. While Aquinas sees this graduated scale as involving essential differences, Locke sees almost perfect continuity involving only differences in degree.¹² In the nineteenth century, Wundt (1832-1920) and Paulsen (1846-1908) acceded to Finalism. Then there followed a vitalistic reaction to Mechanicism.¹³ In this reaction, a return to Finalism was noted in Hans Driesch (1867-1941) in biology, W. Dilthey (1832-1912) in history, R. Eucken (1846-1926) in cultural affairs, and in psychology many such as Stern and Mueller-Freienfels. Teilhard de Chardin (1881-1955) sees the universe and evolution as directed to the goal of the Omega Point.¹⁴ Pope John Paul II notes that Evolutionism may be

¹¹Dagobert D. Runes, ed., *Dictionary of Philosophy* (New York: Philosophical Library, 1950), 102.

¹²Mortimer Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 203, where he quotes Locke, "In the visible world we see no chasms or gaps."

¹³Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 659, notes the polemic between the Vitalists in reaction to the Mechanicists.

¹⁴Michael H. Murray, *The Thought of Teilhard de Chardin: An Introduction* (New York: Seabury Press, 1966), 11, describes the evolution of matter into "improbable" complexity of pre-requisites for life. Joseph Gevaert, *Il Problema dell'Uomo: Introduzione all'Antropologia Filosofica* (Turin: Elledici, 1992), 87, notes that in *The Phenomenon of Man* (1940, pub. 1955) there is finalism in the law governing complexity produces differentiation in three stages from the Geosphere through complexity of atoms and material molecules to the Biosphere where organic life is gradually more complex, to the Noosphere. Henri de Lubac, *Teilhard de Chardin: The*

envisioned as a kind of programmed creation, in which God has written into creation the laws for its evolution; and further, the Christian idea of Providence is precisely the divine and transcendent wisdom of the Creator that makes the world a cosmos rather than a chaos.¹⁵

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, the Neo-Darwinian adversaries endorse natural selection by chance, so that nature does not tend to a goal.¹⁶ In reply, we may distinguish the influence of “chance,” and perhaps admit, not the total, but the partial operation of chance. In another case, Positivist adversaries admit only the material experience and deny finality can be known. In reply, we may be able to distinguish “material” experience, and show that it is material causality that yields individuation, such as species. Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Man and His Meaning, trans. René Hague (New York: Mentor-Omega, 1967), 28, notes more finalism in the transit from the Noosphere to the Theosphere so “man can know and love God...with the whole universe.”

¹⁵Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 325.

¹⁶Hellin, “Cosmologia,” 2: 230: “Concedunt ergo dari vires determinatas ad certas actiones quasi scriptas in natura, sed tamen dicunt eas non agere propter finem, quia nullus congoscit illum finem neque ullus tendit ad finem: sic Athei, Materialistae, Agnostici, Evolutionistae...”

Definitions and Distinctions

Programmed Evolution: Pope John Paul II notes that Evolutionsim may be envisioned as a kind of programmed creation, in which God has written into creation the laws for its evolution.¹⁷ St. Thomas appears to endorse the dynamic order similar to a programmed evolution in Aquinas *Summa Contra Gentiles* 3. 22.: “Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms.”¹⁸

End (purpose, aim, goal, end in view) (Latin: *Finis*) is that on account of which or for the sake of which something is done.¹⁹ In conferring a perfection, the end has the formal nature of good. In exciting and quieting the will, the end has the formal nature of goal. What leads to the end (*finis*) is called the means (*medium*). The Latin definitions of “end” (*id propter quod aliquid fit; cuius gratia aliquid fit*) indicate true and real causality (*fit*). The other part of the definitions (*propter quod, cuius gratia*) indicate the “mode” of influence, final causality.²⁰

¹⁷Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 325.

¹⁸Mondin, *Manuale*, 223, cites St. Thomas: “Unde oportet quot in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur” (Aquinas *Summa Contra Gentiles* 3. 22)

¹⁹Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 309: “Finis est id propter quod aliquid fit.” Hellin, “Cosmologia,” 2: 228: “Finis est id cuius gratia aliquid fit, vel cuius amorem aliquid fit.” Hugon, *Philosophia*, 299: “Finis est id cuius gratia aliqua fit, i.e., propter quod agens operatur.”

²⁰Iturrioz, “Metaphysica,” 828: “...real and true causality...mode...”

Finality (tendency of things for an end): An agent can act with finality due to the goal (or the good), either by self-movement to the goal, or by being moved to the goal by another. An archer wills the goal and sends the arrow to the target; the archer moves himself to the goal by intellect and will; the arrow moved by the archer goes to the target.²¹ Intrinsic Finality is the finality which is conformed to the demands of nature; it is “in” things themselves and gives them a bent or bias or influence towards their end, e.g., such finality is observable in fire as it tends to consume dry wood, or the tendency of a plant to grow to maturity.²² Extrinsic Finality is conformed to the demands of the artificer.

Final Cause: The final cause is the end to be achieved which “invites,” in a manner of speaking, the efficient cause to work to achieve it. That which makes the production of the effect desirable is the final cause of that effect.²³

Finality As True Cause: The final cause is a true cause because the nature of a true and proper cause is to influence “to be” in another. But the final cause really causes “to be” in another. Therefore, the final cause is a true cause. Proof of the minor: The final cause really influences “to be” in another, because it is the reason why the agent acts rather than not act. Confirmation of this influence of the final cause is from universal practice in responding to “why?” Why take medicine? In order to be healthy. The responses assign a cause, and when they explain by assigning an end, it

²¹Calcagno, *Philosophia*, 313: “Aliquid sua actione vel motu tendit ad finem dupliciter: uno modo sicut seipsum ad finem movens, ut homo; alio modo sicut ab alio movens ad finem, sicut sagitta...ex hoc quod moveatur a sagittante...” (Aquinas *Summa Theologiae* 1-2, 1. 2).

²²Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 324.

²³Glenn, *Ontology*, 323.

must be said that the end is a final cause.²⁴

Finality As First Cause: The end is first in intention and last in execution.²⁵ The fact that something is desirable (desirable for the Neo-Scholastics is: *causa finalis in “actu primo” sit bonum ut appetibile*) makes it good; the fact that it is good and desired (desired for the Neo-Scholastics is: *causa finalis in “actu secundo” sit bonum ut appetitum seu desideratum*) makes things tend to it; the fact that things tend to it makes it an end or a final cause of the activity which seeks to attain it. Ultimately, the thing desired (first in intention) is actually attained (last in execution). From this analysis, the final cause “in actu secundo” is prior to the efficient cause. Further, the efficient cause is needed for the subsequent exercise of the formal and material causes.²⁶ St. Thomas says: “Although in some things the end is the last with respect to existence, in the order of causality it is always first” (Aquinas *In Metaph.* 3. 782).²⁷

Finality and Hypothetical Necessity: Aristotle and St. Thomas both take exception to those who hold absolute necessity in nature. A modern example would be the Fixists, who stress absolute

²⁴Calcagno, *Philosophia*, 1: 311-312: “...ratione causae...est influere esse in aliud...est ratio cur agens agat...et cum assignent finem, dicendum est finem esse causam.”

²⁵Gardeil, *Cosmology*, 67: “Prius in intentione, ultimus in assecutione.” Ibid., Aristotle says his predecessors scarcely suspected the final cause.

²⁶Maquart, *Philosophiae*, 2: 242: “Causa finalis est prima causarum: Ex supra dictis de causalitate finis in *actu secundo*, apparet finem causa *efficiente* priorem esse...Similiter exercitium causae *formalis et materialis* indiget exercitio causae *efficientis*, ut de se patet, et ideo posterius est causalitate agentis.” Ibid., 238: “De causa finali in *actu secundo*.” Glenn, *Ontology*, 324: “...desirable makes it good...things tend to it...making it an end or a final cause of the activity which seeks to attain it.” Gardeil, *Introduction*, pages 60, 81, and 84 for the primacy of the final cause.

²⁷Gardeil, *Introduction*, 71, where Gardeil cites St. Thomas: “Licet finis sit ultimus in esse in quibusdam, in causalitate tamen est prior semper” (Aquinas *In Metaph.* 3. 782).

necessity, as opposed to Evolution. Both Aristotle and St. Thomas hold the necessity of finality is preponderant in nature, but is hypothetical or conditional. For example, a house is built not because the materials are put together, but because a house was decided on. The end is the first in intention and the last in execution. Hypothetical necessity is tied to the condition that something is not yet effected, as St. Thomas notes: “...necessitatem ab eo quod est posterius in esse” (confer: Aquinas *In Phys.* 2. 15. 522). Ultimately, all necessity in nature rests on the final cause.²⁸

Principle of Finality: The principle is “Every agent acts for an end” (*Omne agens agit propter finem*).²⁹

Providence: Divine Providence is the conception and election of the means that things are able to attain their ends.³⁰ Providence includes all, not even the minimum thing is excluded. Providence is immediate, so that God does not relinquish His care to subordinates, e.g., angels. God is intimately present in the substance and operations of created beings; but the intimacy of the assistance God gives creatures leaves their efficacy of action absolutely intact.³¹ The Christian idea of Providence radically differs from a chance or chaotic view of the cosmos and of human affairs. It is precisely Divine Providence as the transcendent wisdom of the Creator that makes the

²⁸Gardeil, *Introduction*, 80: “The final cause came first.”

²⁹Iturrioz, “Metaphysica,” 2: 828: “Omne agens agit propter finem.”

³⁰Josepho Hellin, “Theodicea,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 332: “Providentia est conceptio et electio mediorum ut res suos fines assequi possint.”

³¹Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 178, for definitions of Divine Providence and Divine Governance.

world a cosmos rather than a chaos.³²

Governance: Governance of God consists in the real action through which the means for all things are supplied by God, means which are actually directed or can be directed to their proximate or remote goals. Governance therefore consists in the execution of Divine Providence.³³ From observation of the universal order of things, it can be deduced that God is the first principle of the universe. However, since the first principle of being is also its end, God must be the end of all things, which God relates and directs to Himself, and this amounts to governing them. Governance is also conservation. Governance differs from providence, because providence is an immanent and eternal act of God alone; while governance is an external, temporal act of God, which often is not by God alone, but by creatures concurring with God.³⁴

Divine Concurrence: God's concurrence, the cooperation of God with secondary causes to act, is the influx of God operating the same effect and the same action which also proceeds from the creature.³⁵ Both God and the creature make the same entire effect, by the totality of the effect, but not the totality of the cause. Both make the totality of the effect, by the totality of the effect, because the whole effect proceeds from each cause; but not the totality of the cause, because each

³²Haffner, "Evolution," 325, citing Pope John Paul II, *Discourse at General Audience* (14 May 1986) in *Insegnamenti di Giovanni Paolo II* 9/1 (Vatican City: Polyglot Press, 1986),1413.

³³Hellin, "Theodicea," 3: 338: "Gubernatio Dei consistit in actuali actione per quam omnibus subministrantur a Deo media quibus dirigantur de facto vel dirigi possint ad fines suos tam proximos quam remotum. Consistit ergo in executione divinae providentiae."

³⁴Hellin, "Theodicea," 3: 339: "Gubernatio differt a providentia, quia providentia est actus immanens solius Dei, et aeternus; et contra gubernatio est actio externa, temporalis et quae saepe non est a solo Deo, sed est etiam a creaturis concurrentibus cum Deo."

³⁵Hellin, "Theodicea," 3: 304: "Deus concurrat cum causis secundis immediate immediatione suppositi et virtutis...soppositum divinum est praesens...per suam omnipotentiam..."

cause is not the total and unique cause of that effect. Divine concurrence is the second part of Divine Providence. Divine concurrence is proved: first, every agent acts by God's power, since only God can produce being; and second, God is the cause of operating in everything that operates and produces the very effect this agent produces. Therefore, every agent which produces something in being does so inasmuch as it acts by God's power.³⁶

Chance: Chance can be considered as a "chance effect" or as a "cause."³⁷ As a chance effect, chance is what incidently and without intention and opinion is conjoined to an effect strictly intended by some other cause; so it must rarely happen, and never with knowledge or intent. As a cause, chance is a cause producing a fortuitous effect, an incidental (per accidens) cause; this causality is "true and certain" even if the causal influence is "unintended, unknown, and unexpected," according to many Neo-Scholastics; this cause "per accidens" is called an "equivocal cause" by Klubertanz. Aristotle gives an example of chance (with its four qualities), when the creditor just happens to meet the debtor in the marketplace. Neither wanted to meet the other (not intended), nor did they always meet there (exceptional), but they could have decided to meet there (intentional possibility), but the fact was they did not so decide (not intended).³⁸

³⁶Benignus, *Nature*, 584-585: "Proof of Divine Concurrence...no (created) agent can produce being...God operates in every operation of created agents..." Ibid., St. Thomas proves these things in several places: Aquinas *De Potentia* 3. 7; Aquinas *Summa Theologiae* 1. 105. 5; Aquinas *Summa Contra Gentiles* 3. 66-67.

³⁷Iturrioz, "Metaphysica," 846: "Casus...pro effectu casuali, est ille qui per accidens et praeter intentionem et opinionem coniungitur effectui per se intento ab aliqua causa." Ibid., "Causus sumi potest etiam pro causa, et est causa producens fortuitos effectus. Iam vero, quae de casu dicuntur reducuntur ad causam per accidens; adest vero tunc vera et certa causalitas, quamvis ea suum influxum praeter intentionem, scientiam et expectationem agentis exercet."

³⁸Gardeil, *Cosmology*, 73-74, in which he notes: Aristotle *Physics* 2. 5. 197a 33-35.

Chance as Equivocal Causality: Klubertanz gives this name to the operation of a second unexpected cause, which interferes with the first line of causality, in a chance encounter. In theory, the result of the chance encounter could be completely equivalent to the causality proper and proportionate to a nature higher than either of the interfering causes themselves.³⁹ Since in such causality there would no longer be a community of nature between cause and effect, it is very appropriately called “equivocal causality” or “equivocal generation.”

Question Needing A Reply

Does Evolutionism need a concept of purpose? The same question can be formulated more philosophically: Must there be a final cause in natural things, so that natural causes do not operate by chance, but to obtain some goal?⁴⁰

The Thomistic Foundations

Does St. Thomas hold the principle of finality, that every agent acts according to an end? Yes, he does.⁴¹ The principle is “Every agent acts for a goal” (*Omne agens agit propter finem*).

³⁹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 423: “If we apply the theory of equivocal causality to the generation of living things, we can see that essential evolution is possible.” Aquinas *Summa Theologiae* 3. 75. 6. ad 1: “...nihil prohibet arte fieri aliquid cuius forma...(est) forma substantialis.”

⁴⁰Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 452: “In rebus naturalibus admittenda est causalitas finalis; seu causae naturales non casu fortuito agunt, sed propter aliquem finem obtinendum.”

⁴¹Joseph De Finance, *Être et Agir dans La Philosophie de Saint Thomas* (Rome: Gregorian University, 1960), 324.

Aquinas describes the principle in several places: Aquinas *Summa Contra Gentiles* 3. 1; Aquinas *Summa Contra Gentiles* 3. 2; Aquinas *Summa Theologiae*, 2-2. 1. 2. Further, St. Thomas teaches that every creature (whether endowed with intelligence or not) acts for a goal: “Every agent has some intention and desire of the end” (Aquinas *Scriptum in Liber Sententiarum* 1. 35. 1.1).⁴² Further, the merit of Thomistic ontology, with respect to that of Aristotle, is the profound structure of being has found a place for the explanation of desire.

How does St. Thomas define the final cause? St. Thomas notes that our internal experience tells us “that everything that is produced through the will of an agent is directed to an end by the agent: because the good and the end are the proper object of the will; wherefore, whatever proceeds from a will must needs be directed to an end. The good which is derived is the end, and in regard to any particular action to be placed to attain it, it is called final cause” (Aquinas *Summa Contra Gentiles* 3. 1). In regard to non-rational creatures: “Other things that lack intellect do not direct themselves to their goal, but are directed by another” (Aquinas *Summa Contra Gentiles*, 3. 1).⁴³

⁴²Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 270: “Omne agens habet aliquam intentionem et desiderium finis” (Aquinas *Scriptum in Liber Sententiarum* 1. 35. 1. 1). Ibid., 270, Mondin quotes Joseph De Finance: “Il merito dell'ontologia tomistica, rispetto a quella di Aristotele, è quello d'aver trovato nella struttura profonda dell'essere la spiegazione del desiderio.”

⁴³Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 144: “Our own internal experience tells us” about the final cause, as St. Thomas says: “Eorum autem quae per voluntatem producuntur agentis, unumquodque ab agente in finem aliquem ordinatur: bonum enim et finis est obiectum proprium voluntatis, unde necesse est ut quae ex voluntate procedunt, ad finem ordinentur” (Aquinas *Summa Contra Gentiles* 3. 1). Concerning all creatures who lacking intellect, St. Thomas also applies the principle of finality: “Alia, vero, intellectu carentia, seipsa, in suum finem non dirigunt, sed ab alio diriguntur” (Aquinas *Summa Contra Gentiles*, 3. 1).

Does St. Thomas affirm finality for non-rational creatures. St. Thomas teaches that nature acts for a definite end; since a non-rational being is without intellect, this inclination to a determined end must have been impressed upon it by an intelligent cause. St. Thomas says, “Every work of nature is the work of intelligence” (Aquinas *De Veritate* 5. 2. ad 5).⁴⁴ St. Thomas also notes that “The determination of the agent to act, as in rational nature, happens by rational appetite, which is called the will; in other things it happens by natural inclination, which is called the natural appetite” (Aquinas *Summa Theologiae* 1-2. 1. 2).⁴⁵

Is finality a natural orientation of things for St. Thomas? Yes, St. Thomas views nature as operating for some final cause. St. Thomas says, “There is nothing in nature that is frustrated; because everything in nature exists for something else...So therefore, since nature operates to benefit some thing, so natural things that were not able to attain to an end which nature intended would be frustrated” (Aquinas *In De Anima* 3. 1. 17).⁴⁶

Does St. Thomas agree with the Evolutionists that survival of the species is the ultimate activity of being? No, St. Thomas holds that the full development of its own “to be” is the ultimate activity of being. St. Thomas says, “The ultimate act is ‘to be.’ Since ‘becoming’ is a passage from potency to act it is necessary that existence be the ultimate act to which anything tends as it

⁴⁴Renard, *Philosophy*, 148: “...precisely because nature acts for an definite end...”

⁴⁵Iturrioz, “Metaphysica,” 831: “Determinatio agentis ad agendum, sicut in rationali natura, fit per rationalem appetitum, qui dicitur *voluntas*; in aliis fit per inclinationem naturalem, quae dicitur *appetitus naturalis*” (Aquinas *Summa Theologiae* 1-2. 1. 2).

⁴⁶De Finance, *Être et Agir*, 324, note 34: “Natura nihil facit frustra: quia omnia quae sunt in natura sunt propter aliud, id est proveniunt ex necessitate ex his quae propter aliquid sunt...Sic igitur, cum natura operetur propter aliquid, si res naturales non possunt pervinire ad finem, quem natura intendit, essent frustra” (Aquinas *In De Anima* 3. 1. 17).

becomes something; and so the natural becoming tends toward what naturally is desired which is this, existence, the ultimate act to which everything tends” (Aquinas *Compendium Theologiae* 1. 11. 21).⁴⁷

Does St. Thomas affirm finality from the order and harmony of things joined together toward the “ultimate goal,” despite change? Yes, he does. St. Thomas teaches, “The same divine wisdom is the efficient cause (*effectiva*) of all things, and not only gives things their existence but also in things existence with order, in so far as things are joined to one another in order to the ultimate goal...in whatever way things change” (Aquinas *De Divinis Nominibus*, 4. 733).⁴⁸

Does St. Thomas admit chance in the world? Yes, he does. St. Thomas states, “From the foregoing it appears that Divine Providence does not remove fortune and chance from things” (Aquinas *Summa Contra Gentiles* 3. 74).⁴⁹

Does St. Thomas admit equivocal cause (*causa per accidens*)? Yes, St. Thomas does admit equivocal cause. St. Thomas says, “Each, that is fortune and chance, is a *per accidens* cause; and each is in those things which happen not necessarily (*simpliciter*), that is always, nor frequently; and

⁴⁷Mondin, *Dizionario*, 271.

⁴⁸Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 108: “La stessa divina sapienza è causa efficiente (*effectiva*) di tutte le cose, in quanto porta all’essere le cose, non soltanto dà alle cose l’essere, ma anche, nelle cose, l’essere con ordine, in quanto le cose si concatenano l’una all’altra, in ordine al fine ultimo. E, ancora, è causa dell’indissolubilità di questa armonia e di questo ordine, che sempre rimangono, in qualsiasi modo mutino le cose” (Aquinas *De Divinis Nominibus*, 4, 733).

⁴⁹Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vol. (Madrid: BAC, 1968), 2: 299: “Ex praemissis, etiam apparet quod divina providentia non subtrahit a rebus fortunam et casum” (Aquinas *Summa Contra Gentiles* 3. 74).

each is in those things which happen for the sake of something” (Aquinas *In Phys.* 2. 9. 446).⁵⁰

Gardeil notes the three characteristics in St. Thomas: exceptional, intentional, not intended. The event must belong to the order of finality, something that could be an object of choice. As to the definition of “per accidens cause,” St. Thomas says, “The *per accidens* cause is every one which is joined to the *per se* cause (the real cause or the real line of causality), but the second and *per accidens* cause does not have the same nature as the first and real cause” (Aquinas *In Phys.* 2. 1. 6).⁵¹

Does St. Thomas hold that chance is the only source of contingency in nature? St. Thomas follows Aristotle, who says concerning chance that “some things are for the sake of others (finalism), others not (anti-finalism).” St. Thomas holds (as do the Neo-Scholastics) that every agent acts for an end (finalism), and so he adds the word “certain ones” (*quaedam*) to the text of Aristotle: “fiunt propter finem, quaedam vero non” (Aquinas *In Phys.* 2. 8. 420-421).⁵² Aquinas is a finalist, whether the agent acts from nature or from intellect. Aquinas explains this difficult passage in Aristotle by noting that some things are a pleasure or a credit in themselves, and so to this extent their own end. Alternatively, Aristotle might have had in mind some non-chance event that is not the result of deliberate action, such as a man unconsciously stroking his beard. While this

⁵⁰Gardeil, *Introduction*, 74, cites St. Thomas: “Utrumque, scilicet fortuna et casus, est causa per accidens; et utrumque est in iis quae contingunt non simpliciter, id est semper, neque frequenter; et utrumque est in iis quae fiunt propter aliquid” (Aquinas *In Phys.* 2. 9, 446).

⁵¹Paolo Dezza, *Metaphysica Generalis: Praelectionum Summa ad Usus Auditorum* (Rome: Gregorian University, 1945), 209: “Causa per accidens dicitur omne illud quod coniungitur causae per se, sed non est de ratione eius” (Aquinas *In Phys.* 2. 1. 6).

⁵²Gardeil, *Introduction*, 75-76: “Chance (in all of Aristotle’s works) often denotes exceptional facts of any kind, even those produced without a view of an end.”

man does not act without an end; the end is in his imagination (or inner senses) but not in his intellect: it is therefore not a deliberate end. In conclusion, Aristotle is complicated because reality is complex.

Does St. Thomas hold that Divine Providence extends even to individual created things subject to chance? Yes, St. Thomas teaches that “Divine Providence is not opposed to contingent things subject to chance, or fortune, or human will” (Aquinas *Summa Contra Gentiles* 3. 75).⁵³ So it is true that chance and Divine Providence operate together in the universe. St. Thomas teaches that nothing happens in the universe by pure chance alone; all is the fruit of the power and wise action of God.⁵⁴

Does St. Thomas hold that Divine Providence penetrates down to the substantial change from old species to new species in evolution? Yes, although St. Thomas does not use those words. The words St. Thomas uses specify the corruption (disappearance) of the old form when there is the generation (substantial change) of a new form (new species). St. Thomas says, “From the preceding, it is manifest that Divine Providence penetrates up to a chain (*singularia*) of things

⁵³Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vol. (Madrid: BAC, 1968), 2: 301: “Providentia autem non repugnat contingentia, et casus et fortuna, neque voluntarium, ut ostensum est. Nihil igitur prohibet hourm providentiam esse...” (Aquinas *Summa Contra Gentiles* 3. 75)

⁵⁴Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 659, seems to raise an objection: “...caso, come ipotesi esplicativa dell’origine del cosmo. Secondo l’Angelico nulla di quanto succede nell’universo avviene per caso...” But here Mondin treats chance as “opposed” to Divine Providence. St. Thomas teaches that “Divine Providence is not opposed to contingent things subject to chance, or fortune, or human will,” for which the original reads: “Providentia autem non repugnat contingentia, et casus et fortuna...” (Aquinas *Summa Contra Gentiles* 3. 75). Chance and Divine Providence operate together in the universe. St. Thomas teaches that nothing happens in the universe by pure chance alone; all is the fruit of the power and wise action of God

generated and corrupted” (Aquinas *Summa Contra Gentiles* 3. 75).⁵⁵ Therefore, Divine Providence can be involved in Evolutionism.

Does the teaching of St. Thomas concerning Divine Providence and finality lead to a useful way to understand Evolutionism? Yes, it does. St. Thomas remarks that “Providence consists precisely in this predisposing of beings to their goal” (Aquinas *Summa Theologiae* 1. 22. 1).⁵⁶ But we have already noted the teaching of St. Thomas about the goal of lower beings: “The intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms” (Aquinas *Summa Contra Gentiles* 3. 22). So Divine Providence should “predispose beings to their goal” to which is “the last and most perfect act to which matter can attain.” While St. Thomas did not treat Evolutionism explicitly and directly, Aquinas’ doctrine of Providence and finality can be joined in what appears to be useful way to understand Evolutionism.

Does St. Thomas teach the possibility of evolutionary finality? Yes, he does by treating obediential potency. That obediential potency is the capacity which creatures possess to be elevated by God to acts and perfection beyond their natural power. St. Thomas teaches: “In any creature, passive potency can be considered under two aspects: one in relation to the natural agent; the other

⁵⁵Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vol. (Madrid: BAC, 1968), 2: 301: “Ex his autem ostensa sunt, manifestum fit quod divina providentia pervenit usque ad singularia generabilium et corruptibilium” (Aquinas *Summa Contra Gentiles* 3. 75).

⁵⁶Mondin, *Dizionario*, 502: “Ora, la provvidenza consiste precisamente in questo predisporre gli esseri al loro fine (*ratio ordinandorum in finem proprie providentia est*)” (Aquinas *Summa Theologiae* 1. 22. 1).

in relation to the Prime Mover who can bring any creature to a higher degree of perfection than the natural agent; and under this aspect the potency is known to us as the potency of obedience of a creature” (Aquinas *Summa Theologiae* 3. 11. 1).⁵⁷

The Scholastic Solutions

Klubertanz proposes a solution to Evolutionism needing a concept of purpose by explaining just how this is able to happen. Evolutionism, from one species to a new species as philosophically possible at all, was already explained through secondary causality, but what explains the progress of evolution to higher species? Briefly, essential evolution of living things up to and including the human body (the whole man with his spiritual soul excluded) is explained through equivocal causality, chance, and Providence.⁵⁸

Equivocal causality is the name that Klubertanz gives to the operation of a second unexpected cause, which interferes with the first line of causality, in a chance encounter. In theory, when one line of causality is interfered with second line of causality, the result could be completely equivalent to the causality proper and proportionate to a nature higher than either of the interfering causes themselves.⁵⁹ Since in such causality, there would no longer be a community of nature

⁵⁷Renard, Philosophy, 30: “Obediential potency...elevated by God...to acts or perfections...beyond their natural powers.” Elevated by God involves His power and Providence. Acts or perfections involve some type of Transformationism. Beyond natural powers involves Evolutionism to some higher power.

⁵⁸George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 423: “If we apply the theory of equivocal causality to the generation of living things, we can see that essential evolution is possible.”

⁵⁹Aquinas *Summa Theologiae* 3. 75. 6. ad 1: “...nihil prohibet arte fieri aliquid cuius forma...(est) forma substantialis.”

between cause and effect, it is very appropriately called “equivocal causality” or “equivocal generation.” In the quotation below we ask could St. Thomas Aquinas support Klubertanz’s equivocal causality (“whatever way things change”) by affirming multiple lines of causality (“all things”) leading to greater order (“ultimate goal”) in the universe? Yes, St. Thomas teaches, “The same divine wisdom is the efficient cause of all things, and not only gives things their existence but also in things existence with order, in so far as things are joined to one another in order to the ultimate goal...in whatever way things change” (Aquinas *De Divinis Nominibus*, 4. 733).⁶⁰

Chance events on the level of secondary created causes is an uncaused meeting or interference of two independent lines of causality, says Klubertanz.⁶¹ This chance meeting of two independent lines of causality is inexplicable, unintelligible, just like Aristotle’s example of the creditor and the debtor accidentally meeting in the marketplace. Does St. Thomas support Klubertanz by admitting chance? Yes, St. Thomas states, “From the foregoing it appears that Divine Providence does not remove fortune and chance from things” (Aquinas *Summa Contra*

⁶⁰Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 108: “La stessa divina sapienza è causa efficiente (*effectiva*) di tutte le cose, in quanto porta all’essere le cose, non soltanto dà alle cose l’essere, ma anche, nelle cose, l’essere con ordine, in quanto le cose si concatenano l’una all’altra, in ordine al fine ultimo. E, ancora, è causa dell’indissolubilità di questa armonia e di questo ordine, che sempre rimangono, in qualsiasi modo mutino le cose” (Aquinas *De Divinis Nominibus*, 4, 733).

⁶¹Klubertanz, *Philosophy*, 423: “...on the level of secondary causes...inexplicable, unintelligible.” Note that some other Neo-Scholastics like Iturrioz have different words, but substantially the same concept as Klubertanz; Iturrioz calls the second cause “true” but only a “per accidens” cause, which is very much like equivalent causality. Iturrioz, “Metaphysica,” 846: “Causa sumi potest etiam pro causa, et est causa producens fortuitos effectus. Iam vero, quae de casu dicuntur reducuntur ad causam per accidens; adest vero tunc vera et certa causalitas, quamvis ea suum influxum praeter intentionem, scientiam et expectationem agentis exercet.”

Gentiles 3. 74).⁶²

Providence is involved, Klubertanz rightly concludes.⁶³ A chance event happens only with regard to a to the created causes involved. There is no chance if we take into consideration all the causes involved. What is chance with regard to creatures is actually planned by Divine Providence. And because the two independent lines of causality are unified in the divine intellect, there is a unified cause to account for a single effect. In this was chance and Divine Providence can explain the origin of effects higher than their created causes. Could St. Thomas support Klubertanz's view of the influence of Providence? Yes, he can for St. Thomas teaches: "Providence consists precisely in this predisposing of beings to their goal" (Aquinas *Summa Theologiae* 1. 22. 1).⁶⁴

Klubertanz does an excellent work of explanation. However, he does not put his proof into a syllogistic argument. It appears several arguments can be developed from the principle of finality and the principle of sufficient reason.

The first argument is from the Principle of Finality. Every agent acts toward a goal.⁶⁵ But Evolutionism is a process in which agents act for the origin of species. Therefore, evolutionary

⁶²Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vol. (Madrid: BAC, 1968), 2: 299: "Ex praemissis, etiam apparet quod divina providentia non subtrahit a rebus fortunam et casum" (Aquinas *Summa Contra Gentiles* 3. 74).

⁶³Klubertanz, *Philosophy*, 423: "What is chance with regard to creatures is planned by God. And because the two independent lines of causality are unified in the divine intellect, there is a unified cause to account for the single effect. Thus chance with Providence can explain the origin of effects that are higher than their created causes."

⁶⁴Mondin, *Dizionario*, 502: "Ora, la provvidenza consiste precisamente in questo predisporre gli esseri al loro fine (*ratio ordinandorum in finem proprie providentia est*)" (Aquinas *Summa Theologiae* 1. 22. 1).

⁶⁵Iturrioz, "Metaphysica," 2: 828: "Omne agens agit propter finem."

agents have finality, or purpose.

The major premise of the above argument is the principle of finality. The minor premise is the definition of Evolutionism, minimally that the agents of evolution work for the origin of (new) species, and at maximum the agents of evolution work for a higher grade of species. Klubertanz (backed by the principles of Aquinas) give a philosophical explanation of how this evolution to a higher grade can happen. The conclusion follows from the “action” of evolutionary agents.

Another, second, argument is from the Principle of Finality. Material causality inclines (finality) toward a higher grade of being. But Evolutionism involves material causality. Therefore Evolutionism inclines (finality) toward a higher grade of being.

The major premise of the above argument is the principle of finality: every agent acts toward a goal,⁶⁶ and it is a fact that such a goal (higher grades of being) exists.⁶⁷ The minor premise is explained by Evolutionism involving the possibility of inherited characteristics, which are not formal, but on the side of material dispositions, which is peculiar to living things;⁶⁸ the appetite of

⁶⁶Iturrioz, “Metaphysica,” 2: 828: “Omne agens agit propter finem.”

⁶⁷Aquinas *Summa Contra Gentiles* 3. 22: “...it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms.”

⁶⁸Klubertanz, *Philosophy*, 419: “At first sight this (material dispositions ...peculiar to living things) seems to be in conflict with the principle of activity: “Every agent acts according to its form” (*Omne agens agit sibi simile*). But it must be remembered that the generation of living things is not wholly compatible to ordinary transient activity. In transient activity...no part of the agent becomes the effect. In generation, a part of the parent, prepared by the immanent activity of the same being, is separated, and becomes the new being. In other words, not only the formal perfection, but a part of the matter of the parent, is transmitted to the offspring. Therefore, there can be traits and dispositions which from the viewpoint of species and definition are material (and individual), but which likewise from the viewpoint of inheritance, constitute a distinct and stable

matter inclines it to higher grades of being.⁶⁹ Therefore, Evolutionism inclines (finality) to a higher grade of being.

The third argument is from the Principle of Sufficient Reason. A sufficient reason is needed for transformation (finality) to a higher grade of being. But equivocal causality, chance and Providence are a sufficient reason for transformation (finality) to a higher grade of being. But again Evolutionism involves equivocal causality, chance and Providence. Therefore, Evolutionism involves causality that is a sufficient reason for transformation (finality) to a higher grade of being.

The major premise of the argument above is the principle of sufficient reason itself: Nothing exists without a sufficient reason.⁷⁰ The major premise asserts that transformation exists,⁷¹ and that higher grades of being exist.⁷² The first minor premise philosophically explains the elements

‘race’ within the species.”

⁶⁹Aquinas *Summa Contra Gentiles* 3. 22: “...it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms.”

⁷⁰Calcagno, *Philosophia*, 1: 317: “Principium hoc sic enuntiatur: Nihil est sine ratione sufficiente...Ratio: generatim est id quo intelligitur, vel intelligi potest quid res sit, vel cur res sit, vel cur cognoscatur cum veritate.”

⁷¹Klubertanz, *Philosophy*, 405, argues that substantial changes are caused by “created secondary agents” and always take place through accidental change, which accidents are agents of substance, through material disposition.

⁷²Aquinas *Summa Contra Gentiles* 3. 22: “...it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms. For primary matter is in potentiality, first of all, to the elemental form. While under the elemental form, it is in potentiality to the form of a compound; wherefore elements are the matter of a

necessary for transformation to a higher grade of being, avoiding determinism by equivocal causality, and avoiding indeterminism by Providence;⁷³ and this is supported by science.⁷⁴ The second minor defines Evolutionism as a process that involves multiple causalities, both contingent and divine,⁷⁵ and the need for causality in the transformation to a higher grade of being is supported by the principle of causality: Whatever contingently exists has its efficient cause.⁷⁶ Therefore, Evolutionism involves causality that is a sufficient reason for transformation (finality) to higher grades of being.

Is the theory of equivocal causality of Klubertanz adequate enough to explain regressive evolution? Yes, it is adequate.⁷⁷ “Regressive evolution” is that type of evolution in which the

compound. Considered under the form of a compound, it is in potentiality to a vegetative soul; for the act of such a body is a soul. Again the vegetative soul is in potentiality to the sensitive, and the sensitive to the intellective. This is shown in the process of generation.”

⁷³Klubertanz, *Philosophy*, 423: “If we apply the theory of equivocal causality to the generation of living things, we can see that essential evolution is possible.”

⁷⁴Klubertanz, *Philosophy*, 424: “It has been found that during the processes of mitosis (for single-celled living things) and meiosis (in bisexual reproduction), living things are particularly susceptible to outside interference.”

⁷⁵Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 96-97: “Many evolutionists have sought to put forward evolution itself as a substitute for finality in nature...Evolution is not a cause that does something; it is a process that is gone through.” Klubertanz, *Philosophy*, 423: “...two independent lines of causality...”

⁷⁶Calcagno, *Philosophia*, 1: 314: “Quidquid contingenter existit, causam sui efficientem habet.” Iturroioz, “Metaphysica,” 809. Confer: Aquinas *Summa Theologiae* 1. 2. 3. where St. Thomas proves the existence of God in the “third way”; Aquinas *Summa Theologiae* 1. 48. 1; Aquinas *Summa Theologiae* 1. 106, 5; Aquinas *Summa Contra Gentiles* 2. 15; Aquinas *Summa Contra Gentiles* 3. 69.

⁷⁷Klubertanz, *Philosophy*, 422: “...essentially different...instance of lesser perfection virtually contained in a greater.”

offspring would be essentially less perfect than the parent, and on the scientific level an example are parasites. In this case of regressive evolution the equivocal causality would allow the emergence of a lesser perfection virtually contained in a greater. Thus chance and Providence can also explain the origin of effects that are lower than their created causes.

Does the common doctrine of Neo-Scholastic philosophers support the theory of Klubertanz? A number of Neo-Scholastic philosophers affirm the principle of finality without directly considering its application to Evolutionism. However, since the principle of finality is a “first principle” of absolute certainty and universal application, so considered by Neo-Scholastic philosophy,⁷⁸ their affirmations cited below confirm the application of the principle of finality to Evolutionism. Thus, they confirm the absolute need for finality in evolution.

Calcagno notes that natural bodies operate for an end because always or frequently they operate in a constant way to gain what is the best.⁷⁹ This is finality.

De Finance notes that potency or appetite is a relation. The inclusion of the goal in the appetite is the good which the appetite demands.⁸⁰ This is internal finality.

⁷⁸Iturrioz, “Metaphysica,” 1: 835: “...circum principium finalitatis...eius absoluta certitudo...in tota sua universalitate...” Ibid., 836: “Philosophia Scholastica finalismum clarissime et constantissime docuit, de qua doctrina Suárez scripsit: ‘Hoc est receptum dogma et quasi primum principium in philosophia et theologia’.”

⁷⁹Calcagno, *Philosophia*, 366, cites St. Thomas: “Videmus quod aliqua quae cognitione caret scilicet corpora naturalia, operantur propter finem. Quod apparet ex hoc quod semper aut frequentius eodem modo operantur, ut consequantur id quod est optimum. Unde patet quod non a casu, sed ex intentione perveniunt ad finem” (Aquinas *Summa Theologiae* 1. 2. 3; Aquinas *De Veritate* 5. 2)

⁸⁰Joseph De Finance, *Être et Agir dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 199-200, on potency as a relation: “...la matière, comme telle, est vide d’actualité, mais ce vide n’est pas seulement négation: il est puissance, proportion, ordination complémentaire...Il y a pour les êtres une façon d’être les uns dans les autres tout en s’opposant:

Dougherty notes that the Creator can “direct them (creatures) to other than their connatural objects. All this God can do without undoing the nature of mobile being. It is to be noted that properties flow from the nature of a thing, but they do not constitute its nature or essence. Consequently, God can suspend actions proper to a being without destroying its essence.”⁸¹ Dougherty’s use of “direct” indicates finality, and “other...objects” implies Evolutionism. This rich text also involves Providence and Governance.

Donat notes that material in all its changes “quasi” desires this, that it become man.⁸² Form is educed from the potency of the material (except for the human soul which is created). All other forms depend for their existence...depend on the material in becoming.⁸³ This is internal finality.

Gardeil proves the principle of finality, citing Aristotle, from the regularity in nature, from art imitating nature, and from adaptation of plants and animals that can be observed in nature.⁸⁴

et c’est la relation.” Ibid., 203, on inclusion of the final cause in the appetite as the good which the appetite demands: “Si l’objet de l’appétit est présent au sujet par cela même qui l’oppose à celui-ci que le sujet et l’objet, par leur individualité la plus intime, communient dans la participation à l’acte d’exister.”

⁸¹Kenneth Dougherty, *Cosmology: An Introduction to the Thomistic Philosophy of Nature* (Peekskill, N.Y.: Greymoor, 1965), 166.: “...direct them to other than their connatural objects...”

⁸²Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 143: “Materia Appetit Formam, quatenus ad unionem cum forma ordinata est. Sed materia aequaliter omnes formas appetit, non magis perfectiores, quam imperfectas. Attamen, quia inter species progressus est, ut materia per species imperfectas ad perfectiores assurgat usque in hominem, hinc veterum sententia dixit, materiam in omnibus mutationibus id quasi appetere, ut evadat homo.”

⁸³Donat, *Cosmologia*, 144-145: “Forma educitur de potentia materia, excepta unica forma, quae materialis non est, scilicet anima humana, quippe quae creatur. Reliquae vero formae omnes in esse suo a materia pendent...etiam in fieri a materia pendent...”

⁸⁴Gardeil, *Cosmology*, 77: “Aristotle’s demonstration of finality in nature finds him at his resourceful best...”

Concerning a metaphysical proof, Gardeil cites Aquinas that movement must have a goal.⁸⁵

Concerning irrational creatures, St. Thomas notes: “The entire irrational world is related to God as an instrument is to a principle agent (Aquinas *Summa Theologiae* 1-2. 1. 2).⁸⁶

Glenn explicitly notes, everything that acts, acts on account of an end (*omne agens agit propter finem*).⁸⁷ The apple-tree has a way of producing apples, and the pear-tree produces pears. Internal finality is not difficult to prove, Glenn says, since the most positivistic of scientists relies on this constancy of nature. Glenn cites finality in St. Thomas, without a reference note, “If the agent were not determined to the producing of a certain effect, it would not produce this effect rather than that.”⁸⁸

Hugon proposes, “All natural things act according to an end.” Proof arises from the fact that the removal of the first cause (final cause) removes all the others since material and formal causes depend on the efficient cause, which in turn depends on the final cause, and secondly, chance does not result in action that is consistent and uniform.⁸⁹

⁸⁵Gardeil, *Cosmology*, 78: “Agens non movet nisi ex intentione finis. Si enim agens non esset determinatum ad aliquem effectum, non magis ageret hoc quam illud; ad hoc ergo quod determinatum effectum producat, necesse est quod determinatur ad aliquid certum, quod habet rationem finis” (Aquinas *Summa Theologiae* 1-2. 1. 2).

⁸⁶Gardeil, *Cosmology*, 79: “Tota irrationalis natura comparatur ad Deum sicut instrumentum ad agens principale” (Aquinas *Summa Theologiae* 1-2. 1. 2).

⁸⁷Glenn, *Ontology*, 326: “With St. Augustine, St. Thomas Aquinas, and the Scholastics generally, we assert as true the ancient doctrine of Aristotle that creatures tend to their ends, and ultimately to the last end, by a true intrinsic finality whether it be executed knowingly or unknowingly.”

⁸⁸Glenn, *Ontology*, 327: “...St. Thomas...”

⁸⁹Hugon, *Philosophia*, 2: 300: “Omnes res naturales agant propter finem...Argumentum primum: ...sublato fine nulla possibilis remanet actio...prima omnium causarum est finis. Ergo, si

La Vecchia notes that efficient cause has to have an orientation to one specific goal.⁹⁰ The goal is the end, the movement of the efficient cause is the finality.

Renard notes that our own internal experience verifies St. Thomas that everything that is produced is directed to an end (Aquinas *Summa Contra Gentiles* 3. 1).⁹¹ This is internal finality.

Do Neo-Scholastic philosophers confirm the various elements in Klubertanz's theory of equivocal causality, namely chance and Providence? A number of Neo-Scholastic philosophers give confirming opinions concerning chance. Ayala maintains that chance is an integral part of the evolutionary process.⁹² De Finance confirms finality, Providence and chance in that "the ordination of the universe to man is found in the order of essences...But because divine action respects the activity of natures, it suppressed neither contingency, nor liberty, nor even chance" and bases his views on Aquinas *Summa Contra Gentiles* 3. 72-74.⁹³ Nogar affirms chance by writing, "...chance

subtrahatur causa finalis, omnes aliae subtrahentur...sublato finis omnis actio vana et impossibilis evadit. Argumentum secundum:...quae a casu procedunt non fiunt constanter et uniformiter."

⁹⁰La Vecchia, *Evoluzione*, 39: "Si rende evidentemente necessario affermare che le cause efficienti che hanno determinato l'evoluzione manifestano un orientamento che denota uno specifico senso."

⁹¹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 144.

⁹²Francisco J. Ayala, "Two Revolutions: Copernicus and Darwin," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 65: "Chance is an integral part of the evolutionary process...without mutation...without natural selection...have jointly driven the marvelous process. The theory of evolution manifests chance and necessity jointly..."

⁹³De Finance, *Être et Agir*, 325: "L'ordination de l'univers à l'homme serait donc à chercher dans l'ordre des essences. Mais parce que l'action divine respecte les natures en les mouvant, elle ne supprime ni le contingency, ni la liberté, ni même le hasard (Aquinas *Summa Contra Gentiles* 3. 72-74)."

systems are involved in the process out of which order emerges.”⁹⁴ Further, a number of Neo-Scholastic philosophers agree with Klubertanz by giving confirming opinions concerning Providence. Benignus notes that necessity and contingency of created beings do not bind God because they are not conditions of God’s operation, but conditions produced by that operation, citing St. Thomas: “The order of Divine Providence is unchangeable and certain in this that these things which are provided by it happen, every one, in that manner which it provides, whether necessarily or contingently” (Aquinas *Summa Theologiae* 1. 22. 4. ad 2).⁹⁵ Haffner cites Pope John Paul II who sees causality, chance and Providence in the universe, and is concerned that secular humanists might “ignore the law of causality and so would allow the cosmos to be a sufficient cause and explanation unto itself...chance...on human affairs which are then seen as merely fortuitous rather than providential.”⁹⁶ Finally, a number of Neo-Scholastic philosophers agree with Klubertanz by giving confirming opinions concerning the concordant operation of God with His creatures. Benignus notes that Divine Concurrence is the second part of Providence.⁹⁷ Hellin confirms the

⁹⁴Nogar, *Wisdom*, 312, for the affirmation of chance, and Nogar also agrees with Klubertanz (and Aquinas) that chance is integrated into the harmony of the universe by Providence: “The point is not that there exists no waste, no trial and error, no chance in nature, but that these discordant systems are manifestly co-ordinated into a larger system which is beautifully designed.”

⁹⁵Benignus, *Nature*, 592: God prepares for some effects “contingent causes, so that they occur contingently, according to the condition of the secondary causes” (Aquinas *Summa Theologiae* 1. 22, 4; confer Aquinas *Summa Contra Gentiles* 3. 94). Thus, Benignus affirms Providence, causality, and even chance if the contingent is able to be or not to be.

⁹⁶Haffner, “Magisterium,” 325: “...chance...Providence...causality...chance...fortuitous rather than providential.”

⁹⁷Benignus, *Nature*, 584: “Divine Concurrence is (the second part of Divine Providence) the action of God in the action of every created agent giving it the power to act, moving it to act, and producing the effect which it produces...(confer: Aquinas *De Potentia* 3. 7).”

operation of Divine Concurrence so that the whole effect proceeds from each cause, but not the totality of cause, because each cause is not the total and unique cause of that effect.⁹⁸ Therefore, Neo-Scholastic philosophers do confirm the various elements in Klubertanz's theory of equivocal causality, namely chance and Providence.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁹⁹ Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.¹⁰⁰ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic

⁹⁸Hellin, "Theodicea," 3: 304: "Deus concurrat cum causis secundis immediate immediatione suppositi et virtutis...suppositum divinum est praesens...per suam omnipotentiam...totalitate effectus...non totalitate causae...Actio creaturae identificatur cum actione externa Dei."

⁹⁹Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: "Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius."

¹⁰⁰Jesu Iturriz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipsa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.¹⁰¹ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.

Certitude could arise from some observable fact or experiment. There is no experiment to prove evolution.¹⁰² However, some restricted observation of evolution is possible within species and as a biological ascent.¹⁰³ Further, in art, finality is evident as the goal of the artist.¹⁰⁴ Proof of the

¹⁰¹Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

¹⁰²Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

¹⁰³Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...” La Vecchia, *Evoluzione*, 317: “...abbiamo osservato l’evidente ascesa biologica che si manifesta nella comparsa degli organismi viventi e che culmina nell’essere

principle of finality, noted by Aristotle, is observed from the regularity in nature, is observed from art imitating nature, and from adaptation of plants and animals that can be observed in nature.¹⁰⁵

Concerning a metaphysical proof, Gardeil cites Aquinas that movement must have a goal.¹⁰⁶

Concerning irrational creatures, St. Thomas notes: “The entire irrational world is related to God as an instrument is to a principle agent (Aquinas *Summa Theologiae* 1-2. 1. 2).¹⁰⁷

Certitude could arise from some philosophical explanation that exists for the need of concept of finality in Evolutionism. Explanations were given by several Neo-Scholastics, notably Klubertanz, who gave a detailed explanation of how finality works in evolution.¹⁰⁸ His view on finality was supported by Calcagno, De Finance, Dougherty, Donat, Gardeil, Glenn, Hugon, La Vecchia, and Renard. Klubertanz’s view of chance in Evolutionism was supported by Ayala, De Finance, and Nogar. Klubertanz’s view of Providence in Evolutionism was supported by Benignus and Haffner. That chance and Providence work together in Divine Concursus was supported by Benignus and

umano.”

¹⁰⁴Aquinas *Summa Theologiae* 3. 75. 6. ad 1: “...nihil prohibet arte fieri aliquid cuius forma...(est) forma substantialis.”

¹⁰⁵Gardeil, *Cosmology*, 77: “Aristotle’s demonstration of finality in nature finds him at his resourceful best...”

¹⁰⁶Gardeil, *Cosmology*, 78: “Agens non movet nisi ex intentione finis. Si enim agens non esset determinatum ad aliquem effectum, non magis ageret hoc quam illud; ad hoc ergo quod determinatum effectum producat, necesse est quod determinatur ad aliquid certum, quod habet rationem finis” (Aquinas *Summa Theologiae* 1-2. 1. 2).

¹⁰⁷Gardeil, *Cosmology*, 79: “Tota irrationalis natura comparatur ad Deum sicut instrumentum ad agens principale” (Aquinas *Summa Theologiae* 1-2. 1. 2).

¹⁰⁸George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 423: “If we apply the theory of equivocal causality to the generation of living things, we can see that essential evolution is possible.”

Hellin.

Certitude could arise if the argumentation was based on some philosophical principles. Two arguments for finality in Evolutionism were given, one based on the principle of finality and the other based on the principle of sufficient reason.

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. But the explanation is sufficient.¹⁰⁹

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas has a theory of biological ascent (Aquinas *Summa Contra Gentiles* 3. 22) that approaches programmed evolution.

Certitude could arise if Neo-Scholastics agree on the possibility of the principle of finality as universally applicable, including applicability to Evolutionism. The Neo-Scholastics and their philosophical predecessors do agree.¹¹⁰

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. Science has found that during the process of mitosis (for single-celled living things) and the process of meiosis (in bisexual reproduction), living things are particularly susceptible to outside interference, which is equivocal causality.¹¹¹ Confirmation of equivocal causality is from Stephen Scherer of the

¹⁰⁹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 423: "If we apply the theory of equivocal causality to the generation of living things, we can see that essential evolution is possible."

¹¹⁰Glenn, *Ontology*, 326: "With St. Augustine, St. Thomas Aquinas, and the Scholastics generally, we assert as true the ancient doctrine of Aristotle that creatures tend to their ends, and ultimately to the last end, by a true intrinsic finality whether it be executed knowingly or unknowingly."

¹¹¹Klubertanz, *Philosophy*, 423: "...mitosis...meiosis...particularly susceptible...we have a basis for the possibility of evolution..."

Hospital for Sick Children in Toronto who has identified 1,576 apparent random mutations between the genome of the chimpanzee and the human; more than half occurred sometime during human evolution.¹¹²

Certitude could arise if the opposite opinion is not tenable. The opposite opinion would be a denial of the principle of finality, which is not possible since the principle of finality is an analytic principle, universal and necessary.¹¹³

Certitude could arise if the objections of adversaries are able to be answered.

OBJECTION: To act toward a goal demands knowing the goal. But natural agents cannot know the goal. Therefore, natural agents cannot act for a goal. REPLY: Rational agents can act for a goal, formally and self-directing. Irrational agents can act for a goal, materially and executively, as something directed by another toward a goal, just as the arrow was shot at the target by the bowman.¹¹⁴

OBJECTION: The goal of an action, finality, is only attained at the end of the act. REPLY: The

¹¹²Michael D. Lemonick and Andrea Dorfman, "What Makes Us Different?" *Time Magazine* vol. 168, no. 15 (9 October 2006): 48.

¹¹³Hugon, *Metaphysica*, 3: 717: "Universalissime sumptum, prout complectitur omnia quae agunt propter finem, sive directive, sive apprehensive, sive executive, principium finalitatis hoc modo exprimitur: Omnis effectus est propter finem. Porro hoc principium esse analyticum liquido ostenditur. Principium analyticum dicitur quod est universale, necessarium, et in quo praedicatum est de ratione subiecti...constat...omne agens *necessario* agere propter finem..."

¹¹⁴Calcagno, *Philosophia*, 366, cites St. Thomas: "Videmus quod aliqua quae cognitione caret scilicet corpora naturalia, operantur propter finem. Quod apparet ex hoc quod semper aut frequentius eodem modo operantur, ut consequantur id quod est optimum. Unde patet quod non a casu, sed ex intentione perveniunt ad finem" (Aquinas *Summa Theologiae* 1. 2. 3; Aquinas *De Veritate* 5. 2)

goal is first in order of intention, and last in order of execution.¹¹⁵

OBJECTION: Some Neo-Scholastics have said evolution is impossible, because of the principle of causality: the effect cannot be more perfect than the cause. REPLY: This can be answered by the theory of equivalent causality. There are multiple causes.

OBJECTION: Some Neo-Scholastics have said evolution is impossible, because of the principle of causality: the effect must be the same kind as its non-cognoscitive cause. REPLY: This can be answered by the theory of equivalent causality. There are different causes.

OBJECTION: Observable nature presents no signs of purpose or finality. REPLY: This conclusion is far from self-evident. Even the survival of the fittest in the struggle for existence has life itself as the end and goal of the struggle.¹¹⁶

OBJECTION: The chief criticism leveled at the evolutionists is based on their tendency to forget that not all evolution means progress.¹¹⁷ REPLY: The theory of equivocal causality of Klubertanz is adequate enough to explain regressive evolution.¹¹⁸ "Regressive evolution" is that type of evolution in which the offspring would be essentially less perfect than the parent, and on the scientific level an example are parasites.

Certitude can be had from the possibility of philosophers and theologians admitting this mode

¹¹⁵Iturrioz, "Metaphysica," 1: 834: "Sic clarescit quomodo finis sit primum in ordine intentionis, quatenus initio seriei actuum allicientia metaphisica finis ponitur; ultimum in executione, quatenus obtento fine, omnis ulterior actio suspenditur, ut pax, quies, et gaudium in possessione boni succedat."

¹¹⁶Benignus, *Nature*, 497: "...life itself is the end or goal of the struggle."

¹¹⁷Runes, *Dictionary*, 102.

¹¹⁸Klubertanz, *Philosophy*, 422: "...essentially different...instance of lesser perfection virtually contained in a greater."

of origin without damage to their other beliefs.¹¹⁹

The level of certitude for “Evolutionism needs some concept of purpose,” is at minimum at the level of the metaphysically certain. The proof is the principle of finality, which is an analytic principle, universal and necessary.¹²⁰ Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Hellin, who rates this thesis “most certain.”¹²¹

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature still presents some problems, even for the philosopher. First, nature is unquestionably endowed with finality. But that is not to say that one can always identify the specific end of each thing and each activity in nature.¹²² Second, when the principle “every agent acts for an end” (*omne agens agit propter finem*) is rigorously applied, it is to the nature, and not to the individual as such. We do not want to assign to each event a distinct finality when we say “*natura nihil facit frustra*” (Aquinas *De Anima* 3. 1. 17).

¹¹⁹Hellin, “Cosmologia,” 2: 239: “Thesis haec est certissima in philosophia et “de fide” in Theologia, quia non est aliud nisi dogma Providentiae Divinae.”

¹²⁰Hugon, *Metaphysica*, 3: 717: “Universalissime sumptum, prout complectitur omnia quae agunt propter finem, sive directive, sive apprehensive, sive executive, principium finalitatis hoc modo exprimitur: Omnis effectus est propter finem. Porro hoc principium esse analyticum liquido ostenditur. Principium analyticum dicitur quod est universale, necessarium, et in quo praedicatum est de ratione subiecti...constat...omne agens *necessario* agere propter finem...”

¹²¹Hellin, “Cosmologia,” 2: 239: “Thesis haec est certissima in philosophia...”

¹²²Gardeil, *Introduction*, 79: “...not ...always identify...” Benignus, *Nature*, 498: “...nature presents no unmistakable signs of teleology...”

The opaqueness proper to material explains the imperfect intelligibility of facts.¹²³ Third, nature is a complex reality, and the whole explanation of its course and events must be sought in all the causes. To produce a certain kind of thing, it will be necessary to use a certain kind of material; or, this kind of agent must be had to perform this kind of work. The attainment of the final goal, then, does depend, in some manner and measure, on the matter and the other pre-existing causes. The end is the principle cause and condition to which all other causes are subordinate and secondary. Whatever the material, formal and efficient causality contribute to a thing they do so by virtue of the final cause; and inversely, whatever a thing owes to them, it owes still more to the final cause. St. Thomas says, “The philosopher of nature should give both causes, namely the material and the final, but more the final, because the end is the cause of the matter but the opposite is not true. It is not true that the end is such because the matter is such, but rather the matter is such because the end is such” (Aquinas *In Phys.* 2. 15. 533).¹²⁴

¹²³De Finance, *Être et Agir*, 324: “C’est dans la nature, non dans l’individu comme tel...omne agens agit propter finem...à chercher dans son rapport avec la finalité de l’espèce. L’opacité propre à la matière explique...”

¹²⁴Gardeil, *Introduction*, 82: “Sic igitur manifestum est, quod in rebus naturalibus dicitur esse necessarium quod se habet per modum materiae vel materialis motus; et ratio huius necessitatis est ex fine; propter finem enim necessarium est esse materiam talem. Et Naturalis quidem assignare debet utramque causam, scilicet matrialem et finalem; sed magis finalem, quia finis est causa materiae, sed non e contra. Non enim finis est talis quia materia est talis; sed potius materia est talis quia finis est talis” (Aquinas *In Phys.* 2. 15. 533).

Chapter 10: EVOLUTIONISM IS INCOMPATIBLE WITH MECHANICISM.

The State of the Question

The Pontifical Gregorian University's philosophy department considers Evolutionism incompatible with Mechanicism.¹ Not even animals function like a machine.² However, Mechanicism, although mentioned, is not a central consideration of the current course at the Gregorian University.

Our reason for considering the philosophy of evolution as explained by Mechanicism is that this theory was held by a number of promoters of evolution, among many different theories of evolution, including the Intelligent Design theories of the eighteenth and nineteenth centuries.³

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 318: "...approfondire tali differenze. Si è dimostrato tuttavia che gli animali, e non soltanto quelli appartenenti ai gradini più elevati della scala zoologica, non si possono considerare macchine, ma esseri viventi provisti di una vita interiore complessa, pure se irriducibilmente differente da quella umana."

²Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 211: "Per un primo approccio al fenomeno della vita, possiamo mettere a confronto un essere non vivente con un essere vivente, come per esempio un blocco di marmo con un cane...potere di crescere...capacità di rispondere agli stimoli esterni...potere di riprodursi secondo la propria specie." Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 494: "Life is immanent action." Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 418, notes that some kind of immanent motion in living things can typically be directly observed, or the thing is judged to be dead. Confer Aquinas *Summa Theologiae* 1. 18. 2.

³La Vecchia, *Evoluzione*, 32: "...sono state enumerate almeno una trentina di teorie diverse che tentano di chiarire il fenomeno evolutivo." Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 14, notes that the "mechanisms" of evolution, "how it takes place, remain too subtle for him (the educated person)...For it is true that the experts are divided in their opinions about how evolution takes place..." Paul K. Wason, "Living Purpose: A Study of Purpose in the World as a Source of New Spiritual Information," in *Spiritual*

Generally, the Positivists maintain that evolution can be philosophically explained by Mechanicism.⁴

This thesis makes an attempt to reply to Meristic Mechanicism, that the theory that evolution is all and only a mechanical process in matter.⁵

Participants in the Dialogue

Adversaries to the proposal in this chapter are the Mechanicists, who admit only material and local motion.⁶ Among the ancient Mechanicists were Thales of Miletus (640-548 BC),

Information, ed. Charles L. Harper Jr. (Philadelphia: Templeton Foundation, 2005), 302: “There are other approaches to Design. Design arguments of the 18th and 19th centuries are mechanistic, not unlike the science of the time.”

⁴Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 325: “The Positivists who reduce all activity in bodies to mechanical movements can see no necessity for asserting the existence of final causes. Descartes (1596-1650) and his followers make God the sole efficient cause of activities in the universe, and so deny intrinsic causality to creatures. Certain modern scientists of name follow this system. Such theorists are unfortunate; they wed themselves to a scheme or philosophy and then face reality to meet the requirements of the scheme. They cut heads to fit hats.” Thomas Mautner, ed., *Dictionary of Philosophy* (London: Penguin, 1997), 438: “According to Positivist theories of knowledge, all knowledge is ultimately based on sense-experience...important representatives, apart from Comte, were Herbert Spencer, Ernst Haeckel...” Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 175: “Prima (sententia) est Mechanicismi Rigidi: Haec theoria dicit in corporibus non dari nisi mutationes locales...Sic Positivistae.” Confer: George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 369, on Positivism. Ibid., 364, on Logical Positivism.

⁵Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 3: 27, uses the term “Organicism,” which he defines, “Ad duas classes revocari possunt diversa philosophorum placita de natura principii vitalis: ad materialistarum nempe et animismum; materialismum, qui asserti vitam a materia vel materiae viribus repetendam esse, animismum qui tenet principium vitale a materia et materiae viribus realiter distingui.”

⁶Paolo Dezza, *Metaphysica Generalis: Praelectionum Summa ad Usum Auditorium* (Rome: Gregorian University, 1945), 316-317: “...contra Mechanicistas sive antiquos sive modernos, qui, merum motum localem admittentes, negant omnem veram mutationem et

Anaximander (610-547 BC), Anaximenes (588-524 BC), Empedocles (495-435 BC), Anaxagoras (500-428 BC), Democritus (500-460 BC).⁷

Starting with the seventeenth century, the success of mathematics and physics inclined some philosophers such as Descartes and Gassendi to abandon Vitalism and substitute Mechanicism. Many scientists followed them, and applied classical mechanics and the science of physics to biological models. Promoters were Giovanni Alfonso Borelli, student of Galileo, whom Newton himself recognized as a forerunner of the theory of universal gravitation. Both Descartes and Leibniz proposed the analogy of man being like a machine.⁸

Charles Darwin's *Origin of Species* (1859) made organic evolution acceptable to the scientific world; and Herbert Spencer, already in 1852, had promoted Mechanicism for the survival of the fittest by the principle of natural selection.⁹ Extreme Mechanicism of a thoroughgoing materialistic type was propounded by T. H. Huxley (1825-1895), F. Büchner (1824-1899), J. Moleschott (1822-1893), K. Vogt (1817-1895), E. Haeckel (1834-1919). Moderate Mechanicism,

consequenter compositionem ex actu et potentia, etiam ex substantia et accidente. Mutationes explicare contendunt per diversam dispositionem et motum localem elementorum quae ipsas res constituunt.'

⁷Josepho Hellin, "Cosmologia," in *Philosophia Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 116, for the list of Rigid Mechanicists. However, Dezza, *Metaphysica*, 317, will only admit Empedocles, Anaxagoras, Democritus, and he adds Leucippus, who with Democritus belonged to the school of Classical Mechanicism in Abdera, in Thrace. Roberto Masi, *Cosmologia* (Rome: Desclée, 1961), 30, agrees with the judgment that Leucippus and Democritus promoted Classical Mechanicism.

⁸Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 201: "Giovanni Alfonso Borelli, allievo di Galileo...Descartes, Leibniz..." Hugon, *Philosophia*, 3: 28: "...sicut horologium..."

⁹Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 577.

which accepts no principle of vital activity that is distinct from material forces, was propounded by C. Lloyd Morgan in his theory of “emergent evolution”: species are not mere resultants of pre-existing forces but something new and unpredictable. Thus, “life” is conceived as a novel quality emerging from a special arrangement of non-living matter, when the latter has arrived at a certain level of organization.¹⁰ So among these moderns, three conclusions are evident. First, the active forces are still material and ordinary physico-chemical forces. Second, these forces operate in a mechanistic and fortuitous fashion, and so are rightly called Mechanicism. Third, there is no essential difference in Mechanicism between organic and inorganic bodies.

Because Mechanicism admits only the material or material forces, it is rightly designated as anti-Vitalistic Merism. Anti-Vitalistic means it denies spirit, in favor of the material. Merism means Mechanicism explains everything only, “merely,” in a materialistic and mechanistic fashion. Mechanicism is opposed to Vitalistic Merism, which is the mere added summation of very small parts.¹¹ William Harvey (1578-1657) postulated “vital spirits” as operating in the medium of the blood. Also A. Haller (1707-1777) added “vital energy.”

The Neo-Lamarkians are also Mechanicists.¹² In France, these are Giard, Le Dantec, Delage, Caullery, and Rabaud. Elsewhere, these are Eimer, Cope, Kassovitz, von Wettstein, and Lotze.

The modern scientific mentality has been dominated by the Mechanicist conception, more and

¹⁰Bittle, *Psychology*, 466: “...brought on by Darwin’s theory of general evolution. Extreme Mechanicism...Moderate Mechanicism...”

¹¹Bittle, *Psychology*, 469: “Vitalistic Merism...mere added summation of very small parts.”

¹²F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 1: 521: “...retinent tantum explicationem mechaisticarum mutationum.”

more joined with that of the Atomistic.¹³ Mechanicism has directed scientific research toward the determination of prime elements as absolutely immutable and non-distributable entities which form all bodies by way of simple aggregation and disaggregation, actually remaining in the composit.

When Freud, Jung, Adler and others began to explore areas of the preconscious, they found that human nature was not as mechanistic as had been assumed. “The old ideas of oversimplified mechanical behaviorism had to give way to a kind of indeterminism in the biological and anthropological sciences.”¹⁴

Favoring Mechanicism, at least partially, appear only two Neo-Scholastic philosophers, who also accepted the views of Descartes. These philosophers were Palmieri and Tongiorgi, who denied the reality of philosophical “accidents.” Tongiorgi professes Mitigated Mechanicism, in which he admits atoms, motion, and forces of at least extrinsic and intrinsic locomotion; all bodies come from diverse disposition, number, and distance of the atoms.¹⁵ Mechanicists generally admit only local motion, and by denying every other true motion consequently deny composition from act and potency, from substance and accident.¹⁶

¹³Mondin, *Manuale*, 145: “La concezione meccanicistica ...ha dominato la mentalità degli scienziati...”

¹⁴Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 216: “...mechanical behaviorism had to give way....”

¹⁵Hellin, “Cosmologia,” 2: 263: “Omnia corpora fiunt ex diversa dispositione et numero et distantia horum corpusculorum...Sic Tongiorgi et alii.”

¹⁶Dezza, *Metaphysica*, 316-317: “...contra Mechanicistas sive antiquos sive modernos... Sententiae cartesianae adhaeserunt quidam scholastici saeculi praeteriti, ut Palmieri et Tongiorgi, qui non negantes possibilitatem accidentium distinctorum a substantia, negant de facto talia accidentia dari.” Hellin, “Cosmologia,” 2: 253, cites only Tongiorgi, but also many modern scientists with Democritus and Descartes.

Maritain maintains, “In our day modern biology manifests a very strong anti-mechanistic reaction.”¹⁷ He is not the only Neo-Scholastic to see Mechanicism defended by only “a few.”¹⁸ Mondin apparently disagrees, writing in 1999, maintains that “The analogy between living organism and machine, particularly the clock, that was proposed by Descartes and Leibnitz, has enjoyed enormous fortune even up to our own day;”¹⁹ but in his consideration of modern physics Mondin admits that “this statistical and Mechanistic vision of corporal reality has been rejected by the most recent physics.”²⁰ But the philosopher Nietzsche maintained life was just a jump, a growth, a process, a continual activity. Further, many contemporary biologists, Rush, Asimov, Canquihem and others tend toward Mechanicism. J. H. Rush says life is essentially change, a process, continual activity. Bergson held that life is a vital jump or a vital slide. Today the more favored Mechanistic approach to life is by way of molecular biology.²¹ Obviously, these would oppose St. Thomas’ view of life as

¹⁷Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner’s Sons, 1959), 193.

¹⁸Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 230: “Materialismus radicalis, qui etiam mechanicus dicitur, a paucis iam defenditur.”

¹⁹ Mondin, *Manuale*, 202: “L’analogia tra organismi viventi e macchine, in particolare l’orologio, fa proposta anche da Cartesio e Leibniz e godette enorme fortuna fino ai nostri giorni.” H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 43: “So it is that Descartes thought extension was substance and substance was extension. The same mechanistic bias led him to repudiate the objectivity of sensible qualities. In this he was a true disciple of the ancient Atomists, even as others were before him.” Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), 172, notes that Descartes made the same error, but he did not conclude like the Ancient Philosophers that forms were created or pre-existed... He said that there were no forms and no intrinsic motion. St. Thomas replies so clearly that it would seem he read Descartes.

²⁰Mondin, *Manuale*, 145: “Ma questa visione statistica e meccanicistica della realtà corporea è stata smentita dalla fisica più recente.”

²¹Mondin, *Manuale*, 201: “Oggi la teoria più sequita è quella della biologia molecolare...”

spontaneous, internal, immanent, and to the advantage of the operating agent.²² Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

On the other hand, a number of philosophers defend the thesis that Mechanicism is incompatible with Evolutionism. Even Aristotle in the last two chapters of Book Two of the *Physics*, argued the fallacy of the Mechanicist's philosophy of cause. Aristotle argued that the Mechanicist philosophy of causality would lead to a denial of final causality (Aristotle *Phys.* 2. 8. 198 b 12-14).²³ Among the Neo-Scholastics, Mechanicism is opposed by almost all, for example, Dezza,²⁴ Hellin,²⁵ Hugon,²⁶ and Maquart.²⁷

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue,

²²Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 658: "...Rush, Asimov, Canquilhaem...Bergson...Ma è più esatta definizione di San Tommaso...L'espressione 'azione perfetta del soggetto operante' risulta quindi perfettamente adeguata a definire la vita" (Confer: Aquinas *Summa Theologiae* 1. 18. 2).

²³H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 76: "...if true, amounts to the suppression of final cause. Aristotle answers with a full defense of finality in nature."

²⁴Dezza, *Metaphysica*, 316-317: "...thesis est contra mechanistas sive antiquos sive modernos..."

²⁵Hellin, "Cosmologia," 2: 256: "Atomismus philosophicus seu Mechanismus non bene explicat essentiam corporum."

²⁶Hugon, *Philosophia*, 304: "Organismus mere mechanicus intrinsece repugnat."

²⁷Maquart, *Philosophiae*, 2: 527: "Evolutio universalis, usque ad corpus humanum exclusive, nullae contradicit exigentiae rationis, dummodo teneatur illam fieri non pure mechanice..."

every attempt should be made to clarify that truth. In this case, the Mechanicists confuse the predictable laws discovered by science with their belief, by and large, that “every cause-and-effect sequence resolves itself into a chain of necessary, blind determinants.”²⁸ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Evolutionism is the philosophy of evolution affirmed in the previous theses.

Mechanicism is the doctrine which holds that all things are an aggregate of atoms lacking powers and properties, and endowed only with extrinsic mechanical motion.²⁹ Biological Mechanicism is atomism applied to organic nature.³⁰

Rigid Mechanicism is the theory that corporal bodies have only local motion, and from these changes are explained all of the phenomena of the world. In short, there is no force or activity distinct from passive motion. In Evolutionism only natural selection would be possible. This is the position of the Positivists.³¹

Mitigated Mechanicism (also called Dynamic Atomism) is the doctrine which holds extended atoms, motion, and external motive forces, such as impetus; however, there are no intrinsic forces.³²

²⁸Gardeil, *Introduction*, 2: 76.

²⁹Maquart, *Philosophiae*, 2: 11: “Similiter Mechanicistae pro quibus omnia sunt aggregata atomorum viribus proprietatibusque carentium, soloque motu mechanice ab extrinseco praedita.”

³⁰Bittle, *Psychology*, 637: “Mechanism, i.e., atomism, as applied to organic nature.”

³¹Hellin, “Cosmologia,” 175: “...non dari nisi mutationes locales...Sic Positivistae.”

³²Hellin, “Cosmologia,” 175: “...vires motrices externas...non vero vires intrinsecas...”

Merism is the doctrine that the organic body is nothing more than an aggregate resulting from the additive summation of cells, chromosomes, and genes; the latter, in turn are mere aggregates of molecules, atoms, electrons and the like.³³

Incompatible in this case indicates that Mechanicism would not provide a sufficient reason for Evolutionism.

Life is defined by Aristotle as “movement not communicated and immanent” (Aristotle *De Anima* 2. 1. 403 b 16).³⁴ Aquinas agrees that life is the power of immanent movement (Aquinas *Liber de Causis* 18).³⁵ Life is predicated analogically of plants, animals, and man.

Question Needing A Reply

The general question asks whether Mechanicism, which asserts the essence and activity of corporal bodies can only be explained by extension and local motion, is an adequate theory to explain Evolutionism? Mechanicism holds universal Evolutionism arises from materialistic merism (only matter exists) which establishes that from primitive monads, infinitely modified by the local motion of mechanical forces, all beings have their beginnings.³⁶ Question one: is there “more”

³³Bittle, *Psychology*, 637: “Merism...doctrine that the organic body is nothing more...”

³⁴Mondin, *Dizionario*, 657: “...Aristotele...la classica definizione...Anche l’approccio di San Tommaso al problema della vita è fondamentalmente quello filosofico.” Ibid., “Il potersi muovere da sé...(Aquinas *Liber de Causis* 18).

³⁵Maritain, *Degrees of Knowledge*, 180: “On the other side, it would appear that ‘organization’ must no longer be regarded as the privilege of living matter. The atom is also ‘organized,’ but without the progressive equilibrium and self-perfecting activity (*actio immanens*) characteristic of life.”

³⁶Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2: 304: “Evolutionismus porro universalis confunditur cum ipsomet materialistarum monismo, qui statuit

activity than only extrinsic local motion in corporal bodies? Question two: are there “intrinsic” locomotive powers? Question three: are there corporal activities which produce motion and are “distinct” from mere local motion? If the answer to all these questions is in the affirmative, then Evolutionism is incompatible with the theory that asserts these negative positions, which is Mechanicism.

The Thomistic Foundations

The problem of the origin of life has given rise in the last centuries to a debate between the Mechanicists and the Vitalists. This problem was not confronted directly and explicitly by St. Thomas.³⁷ Nevertheless, there are a number of locations in the writings of St. Thomas that are helpful in understanding and solving the question of life and its evolution. First, St. Thomas endorses the Aristotelian definition of life, which differs from the Mechanicist position that man is only like a machine.³⁸ Secondly, St. Thomas endorses the four causes of Aristotle, avoiding the mistake of Mechanicism, which at most admits only the efficient cause.³⁹ Third, St. Thomas explains two types of operations, as opposed to the exclusive view of transient operations (like local motion)

ex monera primitiva in infinitum modificata per vires mechanicas, omnia entia orta fuisse, ne homine quidem excepto... Ita Haeckel, Spencer, etc.”

³⁷ Mondin, *Dizionario*, 659: “...polemiche tra I meccanicisti e I vitalisti, non viene mai affrontato direttamente ed esplicitamente da San Tommaso...”

³⁸ Hugon, *Philosophia*, 3: 28: “...sicut horologium...”

³⁹ H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 76: “...if true, amounts to the suppression of final cause. Aristotle answers with a full defense of finality in nature.”

held by Mechanicism.⁴⁰ Fourth, St. Thomas notes the error of the Mechanicists who think that forms (like extension for Descartes) are the same as substance.⁴¹

Does St. Thomas endorse the Aristotelian definition of life, unlike the Mechanicists who maintain no essential difference between organic and inorganic bodies? Yes, St. Thomas defines any living being as “a substance to which pertains according to its nature to move itself, or to bring itself in any way to operation” (Aquinas *Summa Theologiae* 1. 18. 2).⁴²

Does St. Thomas endorse the four causes of Aristotle, instead of just the efficient cause of some Mechanicists? Yes, St. Thomas endorses the Aristotelian classification of causes.⁴³ St. Thomas also endorses a hierarchy among the causes, so that, “Among the causes there exists the following order: the material is perfected by the formal cause, the formal by the agent cause, and the

⁴⁰Hellin, “Cosmologia,” 263: “...essentia corporum, ut explicetur quomodo corpora possint habere, non solum motum localem...” Mechanicists generally admit only local motion, and by denying every other true motion consequently deny composition from act and potency, from substance and accident; confer Hellin, “Cosmologia,” 2: 175: “Prima (sententia) est Mechanicismi Rigidi: Haec theoria dicit in corporibus non dari nisi mutationes locales...Sic Positivistae.”

⁴¹H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 43: “So it is that Descartes thought extension was substance and substance was extension. The same mechanistic bias led him to repudiate the objectivity of sensible qualities. In this he was a true disciple of the ancient Atomists, even as others were before him.” Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), 172, notes that Descartes made the same error, but he did not conclude like the Ancient Philosophers that forms were created or pre-existed... He said that there were no forms and no intrinsic motion. St. Thomas replies so clearly that it would seem he read Descartes: “Revera tam clare eum exponit S. Thomas, ac si legisset Cartesius.”

⁴²Ferdinando M. Palmes, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 413: “...definientes quolibet ens vivens esse ‘substantiam cui convenit secundum suam naturam movere seipsam, vel agere se quocumque modo ad operationem’ ”(Aquinas *Summa Theologiae* 1. 18. 2).

⁴³Mondin, *Dizionario*, 106: “San Tommaso riprende la classificazione aristotelica delle cause...”

efficient by the final cause” (Aquinas *Scriptum in Liber Sententiarum* 4. 3. 1. 1. sol. 1).⁴⁴ Further, St. Thomas maintains that, “It is necessary that the causes are four. In fact, because cause is what gives to what follows the being of something (*cum causa sit ad quam sequitur esse alterius*) in the examination of that being (the being of the effect) there is able to be two different points of view, one absolute, the other relative. By considering being absolutely, the cause of the being is the form, because it is the form which makes the thing actual. By considering being relative to the potency for existing which it had before acquiring actuality, we have to admit two other causes, given that potency can pass to act only in virtue of something that is already in act. One is treating of the material and the agent. The agent has the function of reducing the material of the potency to act. But the action of the agent tends to something determinate, in fact every agent tends to what is appropriate for it. Now, that to which the action of the agent tends is called the final cause. So then it is necessary that there be four causes: formal, material, efficient, and final” (Aquinas *In Phys.* 2. 10. 240).⁴⁵

Does St. Thomas distinguish between transient and immanent operations, unlike the Mechanicists who admit only the transient operations? Yes, St. Thomas clearly makes such a distinction between transient and immanent operations.⁴⁶ St. Thomas teaches, “There are two kinds of operations. Some are transient (*transiens*) from one subject to another as heating from fire to

⁴⁴Mondin, *Dizionario*, 107: “In causis est talis ordo quod materia completur per formam, et forma per efficientem, et efficiens per finem” (Aquinas *Scriptum in Liber Sententiarum* 4. 3. 1. 1. sol. 1).

⁴⁵Mondin, *Dizionario*, 106: “È necessario che le cause siano quattro...”

⁴⁶Mondin, *Dizionario*, 657-658: “Ora, essendo due i tipi di operazioni, secondo queste si distinguono i viventi dai non-viventi.”

wood...The other kind of operation is non-transient (*non transiens*) from some extrinsic cause, but remains in the same subject that acts, for example to sense, to know, to will and the like... The first kind of operation is common to living and non-living, while the second kind (not transient) pertains exclusively to living things (*secundum operationum genus et proprium viventis*). Because these operations are perfective of the operating subject” (Aquinas *De Potentia Dei* 10. 1). St. Thomas also distinguishes transient from immanent (not transient), saying “Quarum haec est differentia, quia prima actio non est perfectio agentis quod movet, sed ipsius movi, secunda autem actio est perfectio agentis” (Aquinas *Summa Theologiae* 1. 18. 3 ad 1).⁴⁷

Does St. Thomas expose the error (substantification or “reification” of the material form)⁴⁸ of the Mechanicists who consider forms as if these forms (*ens quo*) were the same as substances (*ens quod*)? St. Thomas says: “Many persons fall into error about forms because they consider them as they consider substances; which from this appears to happen that forms just like substances are labeled abstractly, like white or power, or something of that kind; whence following some figure of speech so judge them as if they actually were substances. From this then follows the error both of those who hold pre-existence of forms as well as those who hold forms to be created. They think that forms would have ‘becoming’ just as substances; and therefore not finding from where forms are generated, they say forms are created or pre-exist in material; not attending to the fact that just as “being” does not pertain to form (*principium quo*) but to the subject (*ens quod*) through the form, so neither does “becoming,” which terminates at being (*esse*), so becoming is not of the form but of the

⁴⁷Palmes, “Psychologia,” 2: 415: “...Operatio immanens... ‘movere se’ ...est perfectio agentis”(Aquinas *Summa Theologiae* 1. 18. 3. ad 1).

⁴⁸Hoenen, “Cosmologia,” 172: “Hunc errorem vocabimus *substantificationem formae materialis*.”

subject. So also form is called being (*ens*) not because it is, if we speak properly, but because something is from it (*ea*), so also the form is said ‘to become’ not because it is becoming, but because from it (*ea*) something ‘becomes,’ when for example the subject is reduced from potency to act” (Aquinas *De Virtutibus in Communi* 11).⁴⁹

The Scholastic Solutions

Is there more than local motion? Are there intrinsic powers? Are the intrinsic powers distinct from mere local motion? If affirmative, living creatures are more than machines, and Mechanicism is not a sufficient explanation for Evolutionism.

Concerning the first question, are there are at least some “extrinsic” locomotive activities distinct from local motion? Yes, there is more activity than only extrinsic local motion in corporal bodies.⁵⁰ One proof is the flight of an arrow which continues in motion even after it leaves the bow, when the extrinsic cause of projection ceases. Another proof cites the experience of local motion, and notes that its cause cannot be “other motion” because motion by definition is pure successive

⁴⁹Hoenen, “Cosmologia,” 172: “Multis error accidit circa formas ex hoc quod de eis iudicant sicut de substantiis iudicatur; quod quidem ex hoc contingere videtur, quod formae per modum substantiarum signantur in abstracto ut albedo vel virtus vel aliquid huiusmodi; unde aliqui modum loquendi sequentes sic de eis iudicant ac si esset substantiae. Et ex hinc processit error tam eorum qui posuerunt latitationem formarum quam eorum qui posuerunt formas esse a creatione. Aestimaverunt enim quod formis competeret fieri sicut competit substantiis; et ideo non inveniunt ex quo formae generentur possuerunt eas creari vel pre-existere in materia; non attendentes quod sicut esse non est formae sed subiecti per formam, ita nec fieri, quod terminatur ad esse, est formae sed subiecti. Sicut enim forma ens dicitur non quia ipsa sit, si proprie loquimur, sed quia aliquid ea est; ita et forma fieri dicitur non quia ipsa fiat sed quia ea aliquid fit, dum scilicet subiectum reducitur de potentia in actum” (Aquinas *De Virtutibus in Communi* 11).

⁵⁰Hellin, “Cosmologia,” 176: “...vis movens localiter non est aliquis motus, sed causa motus distincta a motu.” Donat, *Cosmologia*, 70: “Non omnes vires corporeae tantum motrices...”

presence in space; so there is a cause of local motion distinct from the motion itself.

Concerning the second question, are there intrinsic locomotor forces? Yes, there are intrinsic locomotive powers.⁵¹ There are elastic forces, “intrinsic” and not merely passive, distinct from locomotion. There are forces of affinity, such as magnetic attraction of iron. There are forces of valence for the stable combination of protons and neutrons in the elements.

Concerning the third question, are there corporal activities which produce motion and are distinct from mere local motion?⁵² Yes, there are activities in corporal bodies, which even though they produce motion, are nevertheless “distinct” from mere locomotor powers. This is proved by the same facts that have been already mentioned, since elastic activity, magnetic affinity and valence, are all intrinsic forces distinct from motion itself. Further, these forces cannot be reduced to motion, since motion by definition is a successive progression in space, but elasticity, for example, has return to shape, indifferent to location in space.

Therefore, since the answer to all three questions is in the affirmative, then Evolutionism is incompatible with the theory that asserts these positions negatively, which is Mechanicism. Mechanicism is not an adequate theory to explain Evolutionism. Therefore, the answer to the general question whether Mechanicism can explain Evolutionism is in the negative.⁵³

⁵¹Hellin, “Cosmologia,” 177-179: “...probatur multiplici facto...vires elasticae, quibus corpus deformatum recuperat suam formam; atqui hae sunt vires locomotrices distinctae a motu et intrinsecae...” Donat, *Cosmologia*, 71: “...cohaesionis activitas...vis cohaesiva...affinitate chemica...de gravitate...”

⁵²Hellin, “Cosmologia,” 179: “...vires intrinsecae distinctae a motu; atqui illae non possunt reduci ad vires solum locomotivas...indifferens a quodlibet ubi...”

⁵³Hellin, *Cosmologia*, 261: “Atomismus philosophicus seu Mechanismus non bene explicat essentiam corporum.” Here it is useful to note that “operatio sequitur esse” which *operatio* is Evolutionism and which *esse* is the essence of the corporal body which is not well

The proof of the thesis that Evolutionism is incompatible with Mechanicism can be stated syllogistically.

There is an argument from the Principle of Causality. The effect cannot be greater than the cause. Mechanicism (cause) cannot yield life (greater effect). Therefore, Mechanicism cannot be the cause of life.

The major premise of the above argument is the principle of causality. The minor premise is proved because if Mechanicism (cause) yield life (greater effect), it would follow (*per absurdum*) that all machines are alive. The minor premise is also proved metaphysically because the mechanical is dynamism by an external efficient cause, while life (by definition) is internal self-actuation. The conclusion follows that Mechanicism cannot yield life.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁵⁴ Possibility is defined

explained by Mechanicism. Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 413: "Recte scholastici notam characteristicam vitae in immanentia teleologica reponunt, definientes quolibet ens vivens esse 'substantiam cui convenit secundum suam naturam movere seipsam, vel agere se quocumque modo ad operationem' "(Aquinas *Summa Theologiae* 1. 18. 2)

⁵⁴Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: "Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius."

as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁵⁵ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁵⁶ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁵⁷

⁵⁵Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁵⁶Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

⁵⁷Salcedo, *Philosophiam*, 1: 362: "Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove the mechanism of evolution.⁵⁸ However, some restricted observation of the mechanism of evolution is possible within species.⁵⁹ Mechanicists allege that natural selection is the mechanism for evolution, but the great number of evolutionary theories would indicate that Evolutionists themselves are not satisfied with the completeness of this explanation.⁶⁰ Observation is also invoked by Mondin who studies the phenomenon of life by comparing a non-living being such as a block of marble with a living being such as a dog.⁶¹ The dog is not a machine since it can move itself, and can die. Palmes also notes “from observation” that if the animal is only moved

...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁵⁸Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁵⁹Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

⁶⁰Paul K. Wason, “Living Purpose: A Study of Purpose in the World as a Source of New Spiritual Information,” in *Spiritual Information*, ed. Charles L. Harper Jr. (Philadelphia: Templeton Foundation, 2005), 301: “Selectionist (natural selection as mechanism) explanations are powerful but not necessarily complete...Many biological features make more sense if we assume a history of descent with modification...then...freely creative design.” La Vecchia, *Evoluzione*, 32: “...sono state enumerate almeno una trentina di teorie diverse che tentano di chiarire il fenomeno evolutivo.” Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 14, notes that the “mechanisms” of evolution, “how it takes place, remain too subtle for him (the educated person)...For it is true that the experts are divided in their opinions about how evolution takes place...”

⁶¹Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 211: “Per un primo approccio al fenomeno della vita, possiamo mettere a confronto un essere non vivente con un essere vivente, come per esempio un blocco di marmo con un cane...potere di crescere...capacità di rispondere agli stimoli esterni...potere di riprodursi secondo la propria specie.”

mechanically by another, it is dead by defect of life.⁶²

Certitude could arise from some philosophical explanation that exists. However refutations of Mechanicism were given by several Neo-Scholastics: Hellin,⁶³ Mondin,⁶⁴ and Maritain, who maintains, “In our day modern biology manifests a very strong anti-mechanistic reaction.”⁶⁵

Certitude could arise if the argumentation was based on some philosophical principles. However, the principle of sufficient reason is violated because Mechanicism cannot adequately explain Evolutionism.⁶⁶

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. The theory of Mechanicism is not sufficient to explain Evolutionism.⁶⁷

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being

⁶²Palmes, “Psychologia,” 418: “Hoc patet ex observatione...sed movetur tantum ab alio, tunc dicitur animal mortuum per defectum vitae.”

⁶³Hellin, “Cosmologia,” 2: 256: “Atomismus philosophicus seu Mechanismus non bene explicat essentiam corporum.”

⁶⁴Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 211: “Per un primo approccio al fenomeno della vita, possiamo mettere a confronto un essere non vivente con un essere vivente, come per esempio un blocco di marmo con un cane...potere di crescere...capacità di rispondere agli stimoli esterni...potere di riprodursi secondo la propria specie.”

⁶⁵Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner’s Sons, 1959), 193.

⁶⁶Ferdinando M. Palmes, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 413: “Recte scholastici notam characteristicam vitae in immanentia teleologica reponunt, definientes quolibet ens vivens esse ‘substantiam cui convenit secundum suam naturam movere seipsam, vel agere se quocumque modo ad operationem’ ”(Aquinas *Summa Theologiae* 1. 18. 2).

⁶⁷Hellin, “Cosmologia,” 173: “In corporibus sunt activitates locomotrices extrinsecae et intrinsecae et aliae quae ad activitatem pure locomotricem reduci non possunt.” Confer: Aquinas *Summa Theologiae* 1-2. 49. 5; Aquinas *Summa Contra Gentiles* 3. 69-70.

faithful to tradition, but Mechanicism revives “the nominalistic interpretation of science to pit Ockham once more against St. Thomas Aquinas.”⁶⁸

Certitude could arise if Neo-Scholastics agree, but their agreement is against Mechanicism. Examples of this opposition to Mechanicism among the Neo-Scholastics are Dezza,⁶⁹ Hellin,⁷⁰ Hugon,⁷¹ and Maquart.⁷²

Certitude could arise due to recent scientific confirmation by convergent scientific arguments, but Maritain, who studied scientific biology under Dreisch at Heidelberg, notes that scientific biology has a strong anti-mechanistic reaction.⁷³

Certitude could arise if the opposite opinion is not tenable, but the opposite opinion, that Evolutionism is helped by Hylemorphism, is tenable. Mondin notes the decline of Mechanicism’s

⁶⁸Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 235: “...particular form of determinism...is rather that of Spencer and his mechanical Darwinism...Even scientists were joining the chorus...ideas were not true, but became true in proportion to their practical verification: reviving the nominalistic interpretation of science to pit Ockham once more against St. Thomas Aquinas.”

⁶⁹Dezza, *Metaphysica*, 316-317: “...thesis est contra mechanicistas sive antiquos sive modernos...”

⁷⁰Hellin, “Cosmologia,” 2: 256: “Atomismus philosophicus seu Mechanicismus non bene explicat essentiam corporum.”

⁷¹Hugon, *Philosophia*, 304: “Organicismus mere mechanicus intrinsece repugnat.”

⁷²Maquart, *Philosophiae*, 2: 527: “Evolutio universalis, usque ad corpus humanum exclusive, nullae contradicit exigentiae rationis, dummodo teneatur illam fieri non pure mechanice...”

⁷³Maritain, *Degrees of Knowledge*, 193: “In our own day modern biology manifests a very strong anti-mechanistic reaction.”

view of corporal reality and the contemporary return to the Aristotelian theory of Hylemorphism.⁷⁴

Mondin cites Selvaggi, a professor at the Gregorian University in Rome, as confirmation of this return to Hylemorphism.

Certitude could arise if the objections of adversaries are able to be answered. However, all objections raised by the Mechanicists can be answered.

OBJECTION: The arrow from the bow is not impelled by a extrinsic locomotor force distinct from the local motion of the arrow, but only by the conservation of motion. REPLY: If admitted, there exists an external “independent” *conservative cause* of motion, which is not the motion itself because motion is not a productive thing.⁷⁵

OBJECTION: Activities like elasticity, affinity, and valence cause diverse movements. REPLY: Therefore you admit “internal” independent causes of motion. Further, you then admit these qualities, or principles, or activities are essentially distinct among themselves, and not reducible to each other.⁷⁶

OBJECTION: Activities like electric and magnetic fields cause motion and are reducible to local motion. REPLY: Electric and magnetic fields “cannot be reduced” to local motion, because their goal is not to cause successive position in space, but only to dispose elements under those forms

⁷⁴Mondin, *Manuale*, 145: “Ma questa visione statistica e meccanicistica della realtà corporea è stata smentita dalla fisica più recente... ‘Impone il ritorno alla teoria aristotelico-ilemorfistica...’ (F. Selvaggi, *Filosofia del Mondo*, 509).

⁷⁵Hellin, “Cosmologia,” 177: “...datur saltem causa conservativa motus, quae causa non est ipse motus...”

⁷⁶Hellin, “Cosmologia,” 179: “...dari vires, quae sunt distinctae a motu...” Donat, *Cosmologia*, 71, adds gravity.

with which they have an affinity.⁷⁷

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. No Neo-Scholastic philosopher could accept Mechanicism, because it retarded the “authentic philosophy of nature.”⁷⁸ No theologian could accept Mechanicism’s view of God, namely Deism, where God is the clockmaker who winds the clock and disappears.⁷⁹ No theologian could accept the thesis of Mechanicism that created substances cannot be true efficient causes, since this leads to the Occasionalism of Malebranche (died 1715), who denied true efficient causality to creatures, only allowing creatures to be “occasions” of Divine action.⁸⁰

Certitude can be had from the fact the Mechanicism is not the best answer to explain

⁷⁷Hellin, “Cosmology,” 182: “...sed solum disponere...”

⁷⁸Maritain, *Degrees of Knowledge*, 179: “For some three centuries during which the facination of mechanistic metaphysics was imposed on the science of nature, the authentic Philosophy of Nature was like a separated soul. During that time it go rid of many impurities. Today it is re-establishing contact with Experimental Science. That contact is natural and necessary.”

⁷⁹James Gutman, ed., *Philosophy A to Z* (New York: Grosset and Dunlop, 1963), 13-14: “Descartes purported to be a revelational theist. But...Enlightenment Deism resulted.” Josepho Hellin, “Theodicea,” in *Philosophia Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 34: “Quarta sententia est innatistarum, qui dicunt Deum non posse a nobis certo cognosci demonstratione ulla, sed solum cognosci speciebus intelligibilibus innatis naturaliter...Cartesius...”

⁸⁰Donat, *Cosmologia*, 69: “...activitates in corporibus vigere, sed eas a solo Deo fieri contenderunt. Inter eos miram doctrinam Occasionalistae excogitarunt, quorum princeps Malebranche (obit 1715) sententiam, quae creaturis veram efficientiam concedit...res creatas tantum occasiones esse, quae si ponerentur, Deum ipsum illos effectus producere, quos res creatae efficere nobis videantur.”

Evolutionism now,⁸¹ but some intrinsic vital element must be present. Maritain notes that biological scientists of his time were turning against Mechanicism.⁸² Maritain also notes that even the poets of our time reject Mechanicism in favor of the autodetermination of living forms.⁸³

The level of certitude for “Evolutionism is incompatible with Mechanicism” is at the level of the metaphysically certain. The proof is the principle of causality, since the effect cannot be greater than the cause. Further, the convergence of all of the above arguments are proof, especially the lack of fulfillment of the principle of sufficient reason. This agrees with the opinion of Palmes.⁸⁴

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.⁸⁵ This is the method of Aristotle and St. Thomas.⁸⁶ This

⁸¹John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

⁸²Maritain, *Degrees of Knowledge*, 193: “In our own day modern biology manifests a very strong anti-mechanistic reaction.”

⁸³Maritain, *Degrees of Knowledge*, 196: “If Claudel, with regard to auto-determination of living forms, speaks of ‘notes which play themselves by extending fingers on all sides,’ and Uexküll writes in a similar vein: ‘Every organism is a self singing melody’.”

⁸⁴Palmes, “Psychologia,” 417: “Proponimus hanc definitionem ut *certo* bonam et ut *optime cohaerentem*, non modo cum doctrinis Scholasticorum tum philosophicis tum etiam theologicis, verum etiam cum conclusionibus scientificis et certis scientiarum biologicarum; ac proinde, ut summe aptam ad ultiores investigationes philosophicas de natura et proprietates vitae.”

⁸⁵Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

⁸⁶Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

method is confirmed by the Neo-Scholastic Jacques Maritain, as he explains “the appearance of mechanism” while at the same time explaining the inadequacies of Mechanicism: “...in physiology. If for example, muscle must be considered, according to the studies of Hill and Meyerhof, as an absolutely special moving power (chemico-collodial) of a type unknown in mechanics, that doesn’t prevent the appearance of mechanism. ‘The mechanism appears (apart from certain secondary lacunae) as entirely physico-chemical, involving no reaction, ...no force that has not been met in inanimate matter and rigorously subject to the law of conservation of energy’ (Louis Lapicque, in the collective volume *L’Orientation Actuelle des Sciences*, 1930). What is here ‘entirely physico-chemical’ is the ensemble of energetic and material means of the phenomenon. Materially physico-chemical, the phenomenon itself is formally vital, it is the auto-actuation of the subject, and it implies that the physico-chemical energies in play are precisely the means, instruments of a radical principle of immanent activity.”⁸⁷ Secondly, the Neo-Scholastics concede that through every bodily activity local motion is produced, even though they deny that this motion is all and only local motion.⁸⁸

⁸⁷Maritain, *Degrees of Knowledge*, 193, note one, where Maritain explains the material is the appearance of the phenomenon while “Materially physico-chemical, the phenomenon itself is formally vital, it is the auto-actuation of the subject, and it implies that the physico-chemical energies in play are precisely the means, instruments...”

⁸⁸Hellin, “Cosmologia,” 175: “Concedunt quidem per omnem activitatem corporum produci motum localem, non autem produci solum motum localem...” Ibid., Hellin gives an explantaion: “Motus localis est conditio omnis activitatis corporeae; actio enim semper est in proximum objectum: corpus autem non potest esse proximum alii nisi per motum localem alterutrius: ipsa intention qualitatum, ut maior calefactio, praesupponit motum localem quo coniungantur causa et passum.” Donat, *Cosmologia*, 71: “Concedendum est, in pluribus vel fortasse in omnibus phaenomenis et effectibus corporeis motus simul...”

Chapter 11: EVOLUTIONISM IS INCOMPATIBLE WITH MATERIALISM.

The State of the Question

The Pontifical Gregorian University in Rome currently opposes the merely materialistic explanation of Evolutionism.¹ Materialism alone cannot explain the process of evolution, but is nevertheless the foundation of the evolutionary synthetic theory. The current course at the Gregorian deals only briefly with Materialism.²

Materialism is defective opinion about the nature of life, and thus Materialism is not sufficient to explain Evolutionism.³

Participants in the Dialogue

Adversaries to the proposal in this chapter about Materialism are of two kinds.⁴ Some Materialists say the vital principle is the material body. Other Materialists admit some vital principle,

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 317: "...teoria sintetica. Ma numerose e radicali sono le critiche studiosi competenti muovono a questa concezione evidentemente materialistica..."

²La Vecchia, *Evoluzione*, 114-116.

³La Vecchia, *Evoluzione*, 110: "Ma anche su questo punto di vista la concezione materialistica urta contro la realtà dei fatti." Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 477: "Opiniones quae circa naturam principii vitalis errant per defectum...reducuntur...opinio eorum qui principium vitale ut corpus aliquod concipere videntur...opinio qui, licet admittant principium aliquod vitale,...illud tamen non aliquid substantiale sed merum accidens esse profitebimur, materiae communi inhaerens."

⁴Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 325: "The Materialists who deny the existence of everything but matter and its physical and chemical processes..."

distinct from the structure of the organism and from the physico-chemical forces of raw material, and this vital principle is actually superior to the material; nevertheless, this vital principle is not something substantial but a mere accident, inherent in common matter.

Materialists who conceive of the vital principle as just the material body are Francis Bacon (1561-1626), Pierre Gassendi (1592-1655), and many Mechanicists. Among the moderns there are those who hold the vital principle to some kind of imponderable fluid, nervous energy, magnetic force, or electromagnetic force.⁵ “It has been said that during the 1960s (and since), Materialism became one of the few orthodoxies of American academic philosophy, and analytic philosophy elsewhere has shown a similar tendency,” notes Mautner.⁶

Materialists, who admit some superior vital principle not as something substantial but a mere accident, inherent in common matter, are those who do not distinguish between living corporal substance and non-living corporal substance. The substance is not the vital principle, but the accident inhering in common matter. Authors of this kind are: Haller, Wolff, Blumenbach, Treviranus, Ioannes Müller, Liebig, Bonnet, Needham, and Maupertius. Among the more modern authors are those who explain life by referring to diverse entities and hypothetical forces which direct and perfect the vital process.⁷ However, some of these moderns write without philosophic precision,

⁵Thomas Mautner, ed., *Dictionary of Philosophy* (London: Penguin, 1997), 341-342: “Materialism is the theory that matter alone exists...Democritus, Epicurus...Gassendi, Hobbes, Meslier, La Mettrie, Helvétius, Holbach, etc.” Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 230, lists Democritus, Epicurius, Lucretius, La Metterie, Helvetius, Holbach, Feuerbach (d. 1872), C. Vogt (d. 1845), Moleschott (d. 1893), Büchner (d. 1899), E. Haeckel.

⁶Mautner, *Dictionary*, 342: “...materialism...orthodoxies of American academic philosophy...”

⁷Palmes, “Psychologia,” 478, gives a good example of a lack of precise philosophy in this area. Hans Driesch (1867-1941), founder of experimental embryology, began as a Materialist and

so that interpretation of their thought is sometimes doubtful; even the term Materialism is referred to as Physicalism, which has at least two meanings.⁸

Relative to our theme of evolution,⁹ some forms of derived Positivism expressly turn to and evolve a metaphysical character really contained in their professed principles, and they produce explanations that are metaphysical (even if Materialist) relative to phenomena: Charles Darwin (1809-1882),¹⁰ Herbert Spencer (1820-1903) and his ontological synthesis of the “universal law of evolution”¹¹ and Karl Marx (1810-1883).¹²

later changed to Vitalism after much experimental work. However, he gave a name “entelechy” to the vital principle, with an entirely new and hypothetical definition. He was a Kantian Idealist in this matter. Confer: Mautner, *Dictionary*, 151-152.

⁸Mautner, *Dictionary*, 424: “First, ...view advocated by some Logical Positivists, especially Neurath (who also coined the term in 1931 and gave it currency)...language...refers to material...; Second, ... the view that everything...basic physical entities. This is the modern version of Materialism.”

⁹Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 467: “The next period is that of materialistic evolutionism, brought on by Darwin’s theory of general evolution. Extreme mechanism of a thoroughgoing materialistic type were propounded by T. H. Huxley (1825-1895), F. Büchner (1824-1899), J. Moleschott (1822-1893), K. Vogt (1817-1895), E. Haeckel (1834-1919), and many others.”

¹⁰Umberto Degl’Innocenti, “L’Origine dell’Anima Umana,” *Doctor Communis* 11 (1958), 189: “Dai tempi di Carlo Darwin (1809-1882) prese voga la teoria dell’evoluzione che applicata all’uomo ne fa derivare il corpo e l’anima dalle scimmie. È materialistico e anche – come abbiamo visto – il traducianismo corporeo di Tertulliano...” Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 228: “The material order of nature, as Marx understood it, was conceived as having a history, that is to say, as following a Darwinian evolution, whose law was essentially the same as Hegel’s dialectics>”

¹¹Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2: 304: “Evolutionismus porro universalis confunditur cum ipsomet Materialistarum monismo, qui statuit ex monera primitiva in infinitum modificata per vires mehcnicas, omnia entia orta fuisse, ne homine quidem excepto. Ita Haeckel, Spencer, etc.”

¹²Philippus Soccorsi, *Questiones Scientificaе cum Philosophia Coniunctae: De Vi Cognitionis Humanae in Scientia Physica* (Rome: Gregorian University, 1958), 254: “Nonnullae

Favoring the thesis would be all Neo-Scholastics, who would hold it as common doctrine with all the Aristotelian¹³ and Scholastic philosophers. Palmes¹⁴ is a example of the Neo-Scholastic affirmation of the inadequacy of Materialism in the explanation of life. Gredt, however, believed that extending evolution to man was Materialism.¹⁵

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, the Materialist begins his philosophy by observation of the visible, physical and material world, where the Neo-Scholastic also begins, and then Neo-Scholastic continues the investigation; matter, according to common signification, is the

formae Positivismi derivati expresse animadverterunt et evolverunt notam metaphysicam...variae scholae scientificae...Darwin...Spencer et eius synthesis (ontologica) de ‘universali lege evolutionis’...Marx...” Gilson, *Philosophy*, 228: “Against the crude mechanical materialism of the eighteenth century, (Feuerbach) he always maintained that Materialism was the foundation of the edifice of human essence and knowledge...Marx and Engels were not slow in perceiving that Feuerbach had verged on Materialism of the future, even though he himself was not able to see it.”

¹³H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, trans. John A. Otto (St. Louis: Herder, 1958), 60: “Democritus was known for a deterministic explanation of nature. Aristotle found the out-and-out materialism of Democritus a very unfinished view of nature, revealing at most only one aspect. Nature, Aristotle was sure, was far more resourceful than Democritus and the Atomists had surmised.”

¹⁴Palmes, “Psychologia,” 478: “...doctrinam communem omnibus philosophis aristotelico-scholasticis.”

¹⁵Josephus Gredt, *Elementa Philosophica*, 2 vols. (Freiberg: Herder, 1921), 443: “De evolutione ad hominem extensa breviter dicimus eam continere materialismum.”

same as extended body.¹⁶ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, the reasoning Materialists can be understood and respected.

Definitions and Distinctions

Materialism is the doctrine which finds the ultimate solution of all phenomena, physical and psychic, in the nature and activity of universal matter or force.¹⁷

Matter, according to common signification, is the same as extended body. In modern use, matter is the opposite of either form or spirit.¹⁸

Matter, in the technical definition of Aristotle and the Neo-Scholastics, denotes the potential element in being, potential and indeterminate, and in opposition to “form” which represents the element of determination and actualization. Note that the potency we treat here is not merely the possibility (*potentia obiectiva*) but is real potency (*potentia subiectiva*) and this potency penetrates to the very nature of being, whether in the genus of substance or accident.¹⁹

Form is the element of determination and actualization. Real change exists, both substantial (e.g., evolution of species) and accidental. These changes demand new forms. These forms are not

¹⁶Mondin, *Dizionario*, 374: “Materia, secondo il significato più commune, è l’inseme dei corpi estesi.”

¹⁷Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 637: “...ultimate solution...universal matter or force.”

¹⁸Mondin, *Dizionario*, 374: “Materia...rappresenta l’elemento potenziale, indeterminato...”

¹⁹Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956): 171: “Recolamus insuper potentiam de qua hic sermo est non esse meram possibilitatem, potentiam obiectivam, sed esse potentiam realem, i.e., subiectivam; et haec potentialitas penetrat usque ad rationem ipsam entis sive in genere substantiae sive accidentis.”

being in the strict sense (*ens quod*) but only the principle “by which” (*ens quo*) being (*ens quod*).

Eduction is the way in which the form arises from the potency of the material. It would be mistaken to think that the active form somehow comes for the outside to activate the potency of the matter. Form is “educed” from the potency of the material; eduction is the opposite of induction. The definition of eduction is that form arises in the composite which comes from the pre-existing material, without the form becoming and the form would then be introduced (into the composite).²⁰ It is noteworthy that the human soul is not educed from the material, but is created; all other forms depend in their existence on the material, i.e., they need its support; so also all other forms depend on the material in becoming, in so far as the material also concurs in their production as a sustaining subject. This is the reason why forms are not only “in” (not induction alone) matter, but become “from” matter (educed from the potency of the material).²¹

Principle is philosophically defined as that from which something proceeds in any way.²² Every cause is a principle, because it gives being by an internal process to the thing caused.²³ Not every principle is a cause, but can be a condition or circumstance. Principle by definition is wider

²⁰Hoenen, *Cosmologia*, 306: “Eductio ita definiri vel describi potest: formam educi e potentia materiae est formam oriri in composito, quod fit ex materia praeiacente, quin forma fiat et introducatur.”

²¹Donat, *Cosmologia*, 144-145: “...excepta unica forma, quae materialis non est, scilicet anima humana...Reliquae vero formae omnes in esse suo a materia pendent, i.e., eius sustentatione indigent; ideo etiam in fieri a materia pendent...cur formae non tantum in materia, sed ex materia fieri seu ‘educi de potentia materiae dicantur.’”

²²Palmes, “Psychologia,” 459: “Principium ...philosophice loquendo definitur ‘id a quo aliquid quocumque modo procedit.’ Ibid., “Latius enim patet principium quam causa.”

²³Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 293: “...debet esse processio interna...”

than cause.

Principle can be divided into the “principle which” (*principium quod*) defined as what truly and properly is said to operate, like the soul; or principle can be the “principle by which” (*principium quo*) defined as what can either be a substantial constituent of the nature which is operating, like prime matter and substantial form, or can be only an accidental power by which something operates, like the will. The distinction is an important one, because in ordinary speech, and sometimes even in scientific description, an elliptical and brief method of presentation is used, saying, the intellect thinks or the will chooses. Properly speaking it is only the substantial soul, the supposit, which thinks with the intellect or desires with the will.

Cause is a principle essentially influencing being in another.²⁴ Causes are also defined as all those things from which the known thing is, becomes, or is known.²⁵ In the physical order, Aristotle teaches the efficient cause produces the thing; the final cause is the reason for the production; the material cause is that from which the thing is produced or constituted; and the formal cause, which the material determines to a certain type of being or action, is one with the material in the intrinsic constitution of the thing. In the metaphysical order, cause is the intimate essence of the thing conceived as the root of its properties.

Nature, a term with many meanings, is used here in the physical sense, namely, the quiddity (what it is), or the essence of the thing. Nature is called *quiddity* in order to define what the thing is; *essence* by its order to being; and *nature* by its order to operations of which it is the principle and

²⁴Calcagno, *Philosophia*, 292: “Causa definitur; Principium per se influens esse in aliud.”

²⁵Palmes, “Psychologia,” 388: “Causae...illa sunt omnia unde res cognoscenda est, vel fit, vel cognoscitur.”

cause. Aristotle defines nature as: “The principle and cause of its motion and quiet in which it is first and essentially and not on the level of accident” (Aristotle *Physics* 2. 1. 192 a 40).²⁶ Therefore, nature truly influences motion (*motus*), and the conservation of the mover or the preservation in motion (*quies*); and the definition excludes habits, potencies, and accidents, which are the instruments by which natural agents operate.

Vital Principle is the internal principle of life which is the substantial constitutive element of the nature or substance of the living body, or as accidental powers of the substantial nature itself.²⁷ In the first case, this intrinsic principle of life (the soul) is called “ultimate,” because nothing further need be sought in the living substance. In the second case (accidental powers), the principle is called the “proximate” principle of vital operation, by which living nature operates vitally.

Soul is the ultimate intrinsic principle of life, and can be defined as “the first (i.e., substantial or formal) act of a physical, organized body which has the potency of life.”²⁸ Although the soul is substantial, it is not a complete substance (*ens quod*) but an incomplete substance (*ens quo*). In the terminology of Aristotle, the actuating and specifying principle of material substance is called “substantial form.” The potential and restrictive principle is called “first matter” or “prime matter.” Klubertanz notes that the substantial form of an inanimate thing has no special name, but the

²⁶Palmes, “Psychologia,” 458: “Ab Aristotele definitur: ‘Principium et causa motus et quietis eius in quo est, primo et per se et non secundum accidens’ (Aristotle *Physics* 2. 1. 192 a 40).

²⁷Palmes, “Psychologia,” 465: “Intrinseca principia vitae sunt semper aliquid ad corpus ipsum vivens aliquomodo pertinens, sive ut elementum substantiale constitutivum ipsius naturae vel substantiae, sive ut vires accidentales ipsius naturae substantialis.”

²⁸Klubertanz, *Philosophy*, 50-54: “The soul is substantial but not complete...not the efficient cause...Yet the soul is the formal cause...”

substantial form of a living thing is called “soul.” The soul is not the efficient cause of the body, the parents are. The soul is not even the efficient cause of the operations of a living thing, the supposit (the whole thing) is the efficient cause.

Accident, philosophically, is defined as a being (*ens*) whose quiddity must be in another as in the subject of inhesion, e.g., white in a man.²⁹

Substance, philosophically, is defined as being (*ens*) whose quiddity must not be in another.³⁰

Supposit is a substantial unity. Even in Latin, in texts such as Hoenen, the classical word “supposit” is replaced by the more modern term “composite.” Composite or supposit is a being with a complete nature subsisting in itself, with its own proper act of existing.³¹ The concept is very important because all operations of inorganic things, plants and beasts are the operations of the composite or supposit.³²

Person is a supposit which has a rational nature.³³

Question Needing A Reply

First, does Materialism, which affirms some accident inhering in common matter but

²⁹Palmes, “Psychologia,” 478: “Nominis accidentis intelligimus, ens cuius quidditati debetur esse in alio tamquam in subiecto inhaesionis.”

³⁰Palmes, “Psychologia,” 478: “Substantia vero est ens cuius quidditati debetur esse non in alio.” Klubertanz, *Philosophy*, 35: “Substance: that to whose essence belongs the act of existence (esse) in itself and not in another.”

³¹Klubertanz, *Philosophy*, 35: “Supposit is a substantial unit.”

³²Hoenen, *Cosmologia*, 303-304: “Nam omnes operationes corporum, in quibus talis forma adest, sunt operationes non formae solius, sed compositi.”

³³Klubertanz, *Philosophy*, 35: “Person is a supposit which has a rational nature.”

superior to matter, give a sufficient explanation for Evolutionism?³⁴ Second, does Materialism, which affirms the material body itself is the vital principle, give a sufficient explanation for Evolutionism?

The Thomistic Foundations

The thesis to be proved is that Evolutionism is incompatible with Materialism. St. Thomas agrees with the thesis for several reasons. First, the vital principle (soul) is not the body (material). Second, the spiritual soul of man is not material. Third, matter is only a component of natural bodies. Therefore, matter is not the only reality, as the Materialists claim. And so, matter is not the only cause of the evolutionary process as the Materialists claim, thereby making mere Materialism incompatible to explain or to cause evolution. So Evolutionism is incompatible with Materialism.

Does St. Thomas maintain that the vital principle, or soul, is not the material body? Yes, St. Thomas affirms the error of those who make the soul the same as the material body. St. Thomas teaches: “Others are more in error, who make the soul to be the body. Their opinions, although diverse and varied, are all refuted together as follows. Living beings, since they are natural things, are composites from material and form. They are composed of body and soul, which makes living things actual. Therefore, it is necessary that one of these be form and the other matter. The body is not able to be form, because the body is not ‘in’ another, as in matter or in the subject. Thus, the soul is the form. Therefore, (the soul) is not the body, because no body is form” (Aquinas *Summa*

³⁴Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 325: “The Materialists who deny the existence of everything but matter and its physical and chemical processes...”

Theologiae 1. 75. 1).³⁵

Does St. Thomas maintain that the spiritual soul of man is not material? Yes, St. Thomas affirms the spirituality of the human soul against the Materialists. St. Thomas notes: “It is necessary that the intellective soul act on its own, having its own operation without the help of the corporeal object. And because everyone acts in so far as in act, it happens that the intellective soul would have an essence per se not dependent on the body” (Aquinas *In De Anima* 1).³⁶

Does St. Thomas hold that matter is only one component of natural bodies? Yes, St. Thomas holds that matter, together with form, is one of the two constitutive elements of material things, and therefore “enter into the constitution of any material reality” (Aquinas *In Phys.* 2. 2). Matter and form constitute the intrinsic causes of a thing, which alone do not sufficiently explain the causes of a thing, since they need two extrinsic causes, agent and goal, as St. Thomas notes: “It is necessary then that beyond matter and form, that some other principle acts and this is called the efficient, or moving, or agent, or principle of movement. And thus as Aristotle says in the *Metaphysics*, every agent operates in so far as it tends to something, it is necessary that there be a

³⁵Palmes, “Psychologia,” 2: 463: “Fuerunt autem et alii magis errantes, ponentes animam esse corpus. Quorum opiniones licet fuerint diversae et variae sufficit eas hic communiter reprobare. Viventia enim, cum sint quaedam res naturales, sunt composita ex materia et forma. Componuntur autem ex corpore et anima, quae facit viventia actu. Ergo oportet alterum istorum esse formam, et alterum materiam. Corpus autem non potest esse forma: quia corpus non est in altero sicut in materia et subjecto. Anima igitur est forma. Ergo non est corpus: cum nullum corpus sit forma” (Aquinas *Summa Theologiae* 1. 75. 1; Aquinas *Summa Contra Gentiles* 2. 65; Aquinas *Summa Contra Gentiles* 2. 80; Aquinas *In De Anima* 2-14).

³⁶Mondin, *Dizionario*, 45: “È necessario che l’anima intellettiva agisca per conto proprio, avendo un’operazione propria senza l’aiuto di un organo corporeo. E poiché ciascuno agisce in quanto in atto, occorre che l’anima intellettiva abbia l’essere per sé non dipendente dal corpo (oportet quod anima intellectiva habeat esse per se absolutum non dependens a corpore)” (Aquinas *In De Anima* 1).

fourth principle, that to which the mover looks, and this is called the goal” (Aquinas *De Principiis Naturae* 3. 350-351).³⁷

St. Thomas also explains how confusion might arise about the nature of matter for the Materialists. St. Thomas explains that the matter is an incomplete substance. St. Thomas also holds that form is also an incomplete substance. St. Thomas holds that the composite of matter and form is a complete substance. The mistake of the Materialists is the “substantification of the material form,” which means that the Materialists make matter a complete substance (*ens quod*), instead of an incomplete substance (*ens quo*).

Does St. Thomas teach that matter is an incomplete substance? Yes, St. Thomas does, and he also notes that, in common speech, matter (incomplete existence) is sometimes used for the subject (complete existence). St. Thomas says: “Matter, accordingly, differs from subject, because the subject is not what has existence by reason of something added to it, but it has complete existence of itself (*per se*); just as man does not have existence through whiteness. But matter has existence by reason of what is added to it, since of itself it has incomplete existence. So it is that absolutely speaking the form gives existence to matter; but the accident does not give existence to the subject, rather the subject gives existence to the accident, although sometimes one is used for the

³⁷Mondin, *Dizionario*, 375: “La materia insieme alla forma è uno dei due elementi costitutivi dell’essenza delle cose materiali, e quindi ‘entra nella costituzione di qualsiasi realtà materiale’ (Aquinas *In Phys.* 2. 2).” Ibid., “Materia e forma costituiscono le cause intrinseche di una cosa... ‘È necessario dunque che oltre la materia e la forma, ci sia qualche altro principio che agisca e questo dicesi causa efficiente, o movente, or agente, o principio del movimento. E poiché come dice Aristotele nella *Metafisica*, ogni agente opera in quanto tende a qualche cosa, è necessario ci sia un quarto principio: ciò a cui mira colui che opera, e questo si dice fine’ ” (Aquinas *De Principiis Naturae* 3. 350-351).

other, namely matter for the subject, and conversely” (Aquinas *De Principiis Naturae* 4).³⁸

Does St. Thomas teach that form is also an incomplete substance? Yes, St. Thomas does, by teaching: “... if that form would not be subsistent, its being (*esse*) would only be in this, that it might be united to that whose form it is” (Aquinas *De Potentia Dei* 3. 9. ad 6).³⁹ Hoenen, of the Gregorian University, elaborates on this text by noting that “act” does not happen, and later be united to “potency.” When act and potency form the composite, this is the very “becoming” of act. Those who wrongly believe that act happens and then is united to potency, make the error of “substantification of material form.”⁴⁰ This means that the form would wrongly be considered a complete substance (*ens quod*) instead of an incomplete substance (*ens quo*). St. Thomas says, “The error of many about forms happens because they judge forms (*ens quo*) as if they were judging about substances (*ens quod*)” (Aquinas *De Virtutibus in Communi* 11).⁴¹ St. Thomas again judges that the material form is not first in time or nature, but “forms begin to actually exist when the composite is formed, not that these forms become (*fiant*) essentially (*per se*), but only incidentally (*per accidens*) (through the composit)” (Aquinas *Summa Theologiae* 1. 45. 8. ad 1).⁴²

³⁸Gardeil, *Philosophy*, 168: “...subject...has complete existence of itself (*per se*)... matter... has incomplete existence...”

³⁹Hoenen, *Cosmologia*, 171: “...forma illa non sit subsistens, sed esse suum sit solum in hoc quod uniatur ei cuius est forma...” (Aquinas *De Potentia Dei* 3. 9. ad 6).

⁴⁰Hoenen, *Cosmologia*, 172: “Hunc errorem vocabimus *substantificationem formae materialis*.”

⁴¹Hoenen, *Cosmologia*, 172: “Multis error accidit circa formas ex hoc quod de eis iudicant sicut de substantiis iudicatur...forma ens dicitur non quia ipsa sit, si proprie loquimur, sed quia aliqua ea est; ita et forma fieri dicitur non quia ipsa fiat sed quia ea aliquid fit, dum scilicet subiectum reducitur de potentia in actum” (Aquinas *De Virtutibus in Communi* 11).

⁴²Hoenen, *Cosmologia*, 305: “...formae incipiunt esse in actu, compositis factis; non quod ipsae fiant per se sed per accidens tantum” (Aquinas *Summa Theologiae* 1. 45. 8. ad 1).

Does St. Thomas make the joining of matter and form into a complete substance, or composite? Yes, St. Thomas does consider the composite the complete substance and the cause of action. St. Thomas teaches: “All these opinions (Platonists, Avicenna, and others) seem to come from one root; they were seeking the cause of forms, as if these forms were acting by themselves (*ens quod*). But just as Aristotle proved (Aristotle *Metaphysics* 7. 26-28), what properly happens belongs to the composite...Just as ‘becoming’ belongs to the composite, and strictly speaking not to the forms, in the same way and correlatively ‘to act’ or ‘to cause’ does not strictly speaking touch the form but rather the composite. Just as the form is only incidently (*per accidens*) said to be able to become, so also the cause causing the form is only incidental (*per accidens*)” (Aquinas *Summa Theologiae* 1. 65. 4).⁴³

The Scholastic Solutions

The thesis that Evolutionism is incompatible with Materialism is generally supported by Neo-Scholastic philosophers, who give arguments against monistic Materialism.

Calcagno argues against Materialism that material operations are external and transient, while “immanent actions are without a doubt required for vital effects.”⁴⁴ Calcagno also argues that

⁴³Hoenen, *Cosmologia*, 311: “Omnes autem hae opiniones (Platonicorum, Avicennae, aliorum) ex una radice provenisse videntur; quaerebant enim causam formarum, ac si ipsae formae fierent secundum seipsas. Sed sicut probat Aristoteles (Aristotle *Metaphysics* 7. 26-28), id quod proprie fit, est compositum...Sicut fieri est compositi, non formae stricte loquendo eodem modo et correlative facere, causare, stricte loquendo non tangit formam sed compositum; sicut forma tantum per accidens dici potest fieri ita et causa eam per accidens tantum causat” (Aquinas *Summa Theologiae* 1. 65. 4).

⁴⁴Calcagno, *Philosophia*, 27: “...numquam evadere posse actiones immanentes, quod sine dubio requireretur ad effectus vitales gignendos.”

material organisms alone cannot explain the constancy of phenomena.⁴⁵

Donat has two arguments against Materialism. First, matter needs a sufficient reason for its existence since it is contingent; and matter cannot be its own sufficient reason. Second, matter cannot effect the marvelous order in the universe from mere chance.

Gevaert argues that Materialism is insufficient, especially anthropologically.⁴⁶

Hoenen argues against Materialism that substantial material forms do not have being (*esse*) by themselves (*per se*), as proved by the principle: operation follows being (*agere sequitur esse*). But, substantial material forms have no operations that are intrinsically independent of matter, as proven from observation of the material form in inorganic substances, in plants and in brute animals.⁴⁷

Palmes argues against Materialism that no theory up to now, or is possible, to philosophically explain the nature of vegetative life, negating the reality of the vital principle.⁴⁸

Renard argues against Materialism. He notes that the Materialists postulated internal necessity, namely nature itself, as the complete solution to the problem of finality. Renard replies that this

⁴⁵Calcagno, *Philosophia*, 24: “Et primo posset quis explicare phenomena quae apparent in materia organica ex causa fortuito; sed nemo non vidat eiusmodi explicationem esse plane ineptam...constantia et semper recurrunt...”

⁴⁶Gevaert, *Problema*, 94-95: “Secondo J.-P.Sartre ‘ogni materialismo ha per effetto che l’uomo consideri tutti gli uomini, compreso se stesso, come oggetti...Si perde la vista, prima di ogni ricerca scientifica e accanto a essa, la natura ha un ricchissimo significato er l’uomo.’”

⁴⁷Hoenen, *Cosmologia*, 307: “Forma substantialis materialis non habet esse per se, nec fit per se, sed in generatione compositi educitur e potentia materiae.”

⁴⁸Plames, “Psychologia”, 2: 464, argues against Materialism with a proof *a priori* based on the principle of causality: vegetable life is an operation of a diverse and higher order than the inorganic; therefore it must have a cause that is diverse and of a higher order, which is called the soul. Further, vegetable life is a diverse and different species than the inorganic; if the proposition is admitted; the very admission of this proposition is to admit that Evolution is incompatible with Materialism, since material is that lower inorganic species

argument from necessity, and the powers of adaptation in nature, is the very argument that St. Thomas uses to prove the finality of nature. Renard notes the superiority of the argument of St. Thomas because the Evolutionists start and end in the first degree of abstraction.⁴⁹

In addition to these shorter critiques of Materialism, it may be helpful to order some of the material in syllogistic form to more clearly elaborate the arguments.

ACCIDENTAL POWERS: First, concerning an accidental vital principle, metaphysical argumentation proves that an accident cannot be the vital principle.⁵⁰ The vital principle is a ultimate and intrinsic principle of the living organism. But no accident can be a ultimate intrinsic principle. Therefore, no accident can be the vital principle.

Proof to the major is the definition of the vital principle. Proof of the minor is from the definition of accident, which defines accident as “in” the substance; so properly speaking it is not the vital powers that act, but the living substance that acts through the vital powers.

ACCIDENTAL POWERS: Second, concerning an accidental vital principle, physical argumentation proves that an accident cannot be the vital principle.⁵¹ If the vital principle would be just a complex of accidental powers, either it naturally needs a substantial subject, or not. But neither alternative is able to be maintained. Therefore, an accident (or complex of accidents) cannot be the

⁴⁹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 152: “Error of the Materialist Evolutionists...is precisely Thomas’ argument from the finality of nature. There is, however, one very great difference: the Evolutionists do not go far enough, they stop at necessity. Starting out in the first degree of abstraction...without rising above the grosser and material aspects of reality.”

⁵⁰Palmes, “Psychologia,” 478: “Minor constat ex definitione accidentis.”

⁵¹Palmes, “Psychologia,” 479: “... subjectum substantiale horum accidentium ea naturaliter exigeret: vel non...”

vital principle.

Proof of the major is by complete disjunction, either affirmative or negative. If negative, not needing a substantial subject, there is no explanation of why life should only come from (substantial subject) life. If affirmative, needing a substantial subject, this need makes the substantial subject (not the accidents) different from common matter which does not have such an exigency. Therefore, an accident cannot be the vital principle.

MATERIAL ITSELF: First, concerning a material vital principle, metaphysical argumentation proves that the material body cannot be the vital principle.⁵² The vital principle as defined here is the first *principle quo* of life, intrinsic to the living thing, as is evident from the definition. But, the first *principle quo* of life, intrinsic to the living thing, cannot be some material body. Therefore, the material body cannot be the vital principle.

The proof of the major is the definition itself. The proof of the minor is that some body can be the principle quo, either in so far as “it is” a body, or else in so far as “it is such a kind” of body. It can be neither: not in so far as it is a body, because then all and every body would be alive;⁵³ not in so far as it is such a kind of body by virtue of some properties, since those accidental properties cannot be the vital principle (proved in the two “accidental power” arguments above).

MATERIAL ITSELF: Second, concerning a material vital principle, physical argumentation proves that the material body cannot be the vital principle.⁵⁴ If the vital principle were a material

⁵²Palmes, *Psychologia*,” 479: “...corpus esset principium quo vitae...”

⁵³Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2: 28: “...alioquin omne corpus viveret...”

⁵⁴Palmes, “*Psychologia*,” 434: “Nequit dici quod principium vitale efficienter agat in materiam organismi ad perficiendas vitales operationes...esset transeuntes...Ergo non esset

body, its causality would be in the genus of efficient cause, and the effect would be local motion. But the vital principle is defined by immanent activity. Therefore, the material body cannot be the vital principle.

Proof of the major is that material corporal bodies are *principia quod*, by definition. Proof of the minor is by definition of the vital principle, which is obtained from observation of immanent activity.⁵⁵ Another proof of the minor is the common observation that living things are essentially different from machines, in self-operation even opposite to the preferred, self-repair, and reproduction.⁵⁶

The proof of the thesis that Evolutionism is incompatible with Materialism can be stated syllogistically.

There is an argument from the Principle of Causality. The effect cannot be greater than the cause. Materialism (cause) cannot yield life (greater effect). Therefore, Materialism cannot be the cause of life.

The major premise of the above argument is the principle of causality. The minor premise is proved because if Materialism (cause) yields life (greater effect), it would follow (*per absurdum*) that there would be no difference between dead material and live material, since both are equally material. The minor premise is also proved metaphysically because the material dynamism is from an external

immanentes organismo...”

⁵⁵Maritain, *Degrees of Knowledge*, 180: “On the other side, it would appear that ‘organization’ must no longer be regarded as the privilege of living matter. The atom is also ‘organized,’ but without the progressive equilibrium and self-perfecting activity (*actio immanens*) characteristic of life.”

⁵⁶Hugon, *Philosophia*, 30: “E contra vivens vim in se habet seipsum evolvendi, perficiendi, imo et reficiendi...reproducere valet ipsas substantias viventes...”

efficient cause, while life (by definition) is internal self-actuation.⁵⁷ The conclusion follows that Materialism cannot yield life.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁵⁸ Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁵⁹ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁶⁰ Summary of Probabilities is defined as an accumulation of

⁵⁷Hugon, *Philosophia*, 29: “Operatio vitalis est motus ab intrinsico et immanens.”

⁵⁸Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

⁵⁹Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: “Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁶⁰Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui

probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁶¹

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁶² There is some restricted observation of evolution possible within species.⁶³ Observation, however, shows evolution cannot be explained by Materialism, since

enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

⁶¹Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁶²Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁶³Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

observation of the material alone does not distinguish between inanimate matter and animate matter.⁶⁴

“The theory (of Monistic Materialism) is inadequate, because it fails to give an explanation of ‘the whole man’,” says Bittle.⁶⁵ Further, if nothing exists but matter and material energy, everything in man must be able to be interpreted strictly in terms of matter and material energy. Unexplained is the ordinary phenomena of sensation; the sensation of “blue” is totally different from the physical stimulus of a definite frequency of light waves striking the retina. Unexplained is cognition and consciousness by the material movements of the substance of the brain. Unexplained are abstract and universal ideas, while everything material is concrete and particular. Unexplained is intellection which is spiritual and intrinsically independent of material conditions, so that it cannot be reduced to material activity. Unexplained is the human mind, even if Materialism can explain the human body.

Certitude could arise from some philosophical explanation that exists for Materialism as an explanation of evolution or life in general. However, refutations of Materialism were given by several Neo-Scholastics: Palmes,⁶⁶ Bittle,⁶⁷ Hugon.⁶⁸

⁶⁴Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner’s Sons, 1959), 196: “He (Buytendijk) vivifies his experimental researches by contact with certain ideas that belong properly to the Philosophy of Nature, for example the phenomenological intuition of the ‘organic’.” Bittle, *Psychology*, 555: “Materialism accounts for the body, but it does not account for the mind. Yet the mind is as much a part of man as his body. The theory is inadequate...”

⁶⁵Bittle, *Psychology*, 555: “Little need be said here in refutation of Materialsistic Monism ... not even the ordinary phenomena...inadequate...” Ibid., “Like Idealism, it is an over-simplified system which evades the real issue by denying the existence of an essential part of man’s nature.”

⁶⁶Palmes, “Psychologia,” 477: “Principium vitale non est merum accidens nec corpus aliquid...”

⁶⁷Bittle, *Psychology*, 555: “...refutation...”

⁶⁸Hugon, *Philosophia*, 2: 27-28: “Materialismi diversae formae reducuntur ad organicismum...prima conclusio...intrinsece repugnat.”

Certitude could arise if the argumentation was based on some philosophical principle, but the principle of causality rejects Materialism as the vital principle. This argument from the principle of causality states that the effect cannot be greater than the cause. But, Materialism (cause) cannot yield life (greater effect). Therefore, Materialism cannot be the cause of life and its continued evolution.

Certitude could arise if the explanation is sufficient, but the Materialists themselves argue against the facts, according to La Vecchia.⁶⁹ Metaphysically, it is clear that prime matter needs substantial form to create a composite, so an explanation by Materialism alone is not sufficient.⁷⁰

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. However, Aquinas would affirm that Evolutionism is incompatible with Materialism, because it would be an error to judge forms (*ens quo*) as if substances (*ens quod*).⁷¹ Also, Materialism is inadequate to explain the vital principle. St. Thomas affirms the error of those who make the soul the same as the material body. St. Thomas teaches: “Others are more in error, who make the soul to be the body. Their opinions, although diverse and varied, are all refuted together as follows. Living beings, since they are natural things, are composites from material and

⁶⁹La Vecchia, *Evoluzione*, 110: “Ma anche su questo punto di vista la concezione materialistica urta contro la realita dei fatti.” Ferdinando M. Palmes, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 477: “Opiniones quae circa naturam principii vitalis errant per defectum...reducuntur...opinio eorum qui principium vitale ut corpus aliquod concipere videntur...opinio qui, licet admittant principium aliquod vitale,...illud tamen non aliquid substantiale sed merum accidens esse profiteamur, materiae communi inhaerens.”

⁷⁰Hoenen, *Cosmologia*, 309, notes that substantial material forms are educed in the substantial generation from the potency of the material. Evolution of new species would be substantial generation. Ibid., Hoenen says, “Formae substantiales materiales in generatione substantiale educuntur e potentia materiae.”

⁷¹Hoenen, *Cosmologia*, 172: “Error...circa formas...iudicant ac si esset substantiae...” (Aquinas *De Virtutibus in Communi* 11).

form. They are composed of body and soul, which makes living things actual. Therefore, it is necessary that one of these be form and the other matter. The body is not able to be form, because the body is not ‘in’ another, as in matter or in the subject. Thus, the soul is the form. Therefore, (the soul) is not the body, because no body is form” (Aquinas *Summa Theologiae* 1. 75. 1).⁷²

Certitude could arise if Neo-Scholastics agree, but their agreement rejects Materialism.

Examples of this rejection are: Calcagno,⁷³ Donat,⁷⁴ Givaert,⁷⁵ Palmes.⁷⁶

Certitude could arise due to recent scientific confirmation by convergent scientific arguments, but Materialism cannot account for scientific laws, the constancy of ever-recurring effects.⁷⁷

⁷²Palmes, “Psychologia,” 2: 463: “Fuerunt autem et alii magis errantes, ponentes animam esse corpus. Quorum opiniones licet fuerint diversae et variae sufficit eas hic communiter reprobare. Viventia enim, cum sint quaedam res naturales, sunt composita ex materia et forma. Componuntur autem ex corpore et anima, quae facit viventia actu. Ergo oportet alterum istorum esse formam, et alterum materiam. Corpus autem non potest esse forma: quia corpus non est in altero sicut in materia et subjecto. Anima igitur est forma. Ergo non est corpus: cum nullum corpus sit forma” (Aquinas *Summa Theologiae* 1. 75. 1; Aquinas *Summa Contra Gentiles* 2. 65; Aquinas *Summa Contra Gentiles* 2. 80; Aquinas *In De Anima* 2-14).

⁷³Calcagno, *Philosophia*, 25: “...plane ineptam...”

⁷⁴Donat, *Cosmologia*, 221, argues against Materialism from the principle of sufficient reason from the contingency of matter itself; and Donat also argues against Materialism from the fact the matter alone cannot effect the marvelous order in the universe

⁷⁵Gevaert, *Problema*, 94-95: “Secondo J.-P.Sartre ‘ogni materialismo ha per effetto che l’uomo consideri tutti gli uomini, compreso se stesso, come oggetti...Si perde la vista, prima di ogni ricerca scientifica e accanto a essa, la natura ha un ricchissimo significato er l’uomo.”

⁷⁶Palmes, “Psychologia,” 478: “...doctrinam communem omnibus philosophis aristotelico-scholasticis.”

⁷⁷Calcagno, *Philosophia*, 25: “Et primo quidem posset quis explicare phenomena quae apparent in materia organica ex causa fortuito; sed nemo non vidat eiusmodi explicationem esse plane ineptam, tum quia phenomena illa sunt constantia et semper recurrunt...” Gevaert, *Problema*, 95: “Si perde la vista, prima di ogni ricerca scientifica e accanto a essa, la natura ha un ricchissimo significato er l’uomo.”

Certitude could arise if the opposite opinion is not tenable, but it is Materialism that appears untenable.⁷⁸ Also Materialism is not the only alternative in opposition to Dualism and Idealism⁷⁹

Certitude could arise if the objections of adversaries are able to be answered.⁸⁰ However, the Materialists are the adversaries in this case, and all their objections can be answered.

OBJECTION: Life consists in a marvelous harmony of diverse elements. But harmony is not something substantial, rather consisting in the disposition of accidents. Therefore, life does not demand substance. REPLY: Harmony is the exercise of life, something accidental, we concede.

However, the question here is not about the exercise of life, but what causes that exercise.

OBJECTION: A substance is either a body or a spirit. But the vital principle in plants and animals is not spirit. Therefore, the vital principle is corporeal. REPLY: Distinguish the major that a complete substance (*quod*) is either body or spirit; the vital principle can be an incomplete substance (*quo*) and intrinsically dependent on material, so is neither body nor spirit.

OBJECTION: The vital principle moves a body by contact. But contact is not able to be done except between bodies. Thus, the vital principle is a body. REPLY: Distinguish the major: the vital principle moves a body by contact of power, intrinsically, formally and substantially constituting it, and so elevating its corporal powers to operation virtually, concede; moves a body mechanically, deny.

⁷⁸H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, trans. John A. Otto (St. Louis: Herder, 1958), 60: "Democritus was known for a deterministic explanation of nature. Aristotle found the out-and-out materialism of Democritus a very unfinished view of nature, revealing at most only one aspect. Nature, Aristotle was sure, was far more resourceful than Democritus and the Atomists had surmised."

⁷⁹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 364: "Materialism is not the only alternative to Dualism and Idealism..."

⁸⁰Palmes, "Psychologia," 480-482: "Obiectiones"

Certitude can be had from the possibility of philosophers and theologians admitting Materialism without damage to their other beliefs. However, the use of Materialism is inadequate for the explanation of phenomena of the universe, so that “no one would not see explanations of this kind to be completely inept.”⁸¹ Theologians would have a problem with Materialism, because “the Materialist Evolutionists thought they had destroyed God.”⁸²

The level of certitude for the thesis “Evolutionism is incompatible with Materialism” is at minimum at the level of the metaphysically certain. The proof is the principle of causality, that the effect cannot be greater than the cause. Further, the convergence of all of the above arguments are proof, especially the lack of the fulfillment of the principle of sufficient reason, since matter needs determining form. This agrees with the opinion of Palmes.⁸³ Calcagno also agrees to certitude.⁸⁴

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.⁸⁵ This is the method of Aristotle and St. Thomas.⁸⁶ The great

⁸¹Calcagno, *Philosophia*, 25: “...nemo non vidat eiusmodi explicationes esse plane ineptam...”

⁸²Renard, *Philosophy*, 152: “The Materialist Evolutionists thought they had destroyed God. They postulated internal necessity, namely nature itself...”

⁸³Palmes, “Psychologia,” 478: “Thesim (Principium vitale non est merum accidens nec corpus aliquod) defendimus ut *certam*.”

⁸⁴Calcagno, *Philosophy*, 27: “Operationes materiae inorganicae ...sed certe asserere nobis..numquam evadere posse...”

⁸⁵Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

⁸⁶Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, materia sensibilis, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

achievement of Aristotle was to understand matter, which his predecessors, especially Parmenides and Heraclitus had a difficult time doing. Concerning this understanding of matter, not just in its obvious aspect of an entity experienced by the senses or by scientific instruments, but rather as substantially constitutive of all physical reality, natural reality, is one of the greatest achievements of the philosophic genius of Aristotle (Confer: Aristotle *Physics*; Aristotle *Metaphysics*).⁸⁷

In Evolutionism, is the philosophical understanding of matter essential? Evolution is a process of change. Aristotle presents matter as an essential element in the phenomenon of change, the phenomenon which so polemicized Parmenides and Heraclitus. According to Aristotle, in order to understand the phenomenon of motion there must be a potential principle, which takes from the material all that it is to become. In all changes between two opposite terms, there must exist a permanent subject for the change, so for change of place, something is first here and then there; in quantitative change something is greater or lesser; in qualitative change something can be healthy or sick; so in the same way substantial change (as in Evolutionism) must have something which is present in the process of generation or corruption (Aristotle *Metaphysics* 8. 1. 1042 a 30).⁸⁸

In Evolutionism, is the potency of matter merely static and passive in relation to the activity of form? Matter, in the technical definition of Aristotle and the Neo-Scholastics, denotes the potential element in being, potential and indeterminate, and in opposition to “form” which represents the element of determination and actualization. Note that the potency we treat here is not merely the

⁸⁷Mondin, *Dizionario*, 374: “Materia...come costitutivo sostanziale di ogni realtà fisica, naturale, è una delle massime conquiste del genio filosofico di Aristotele.”

⁸⁸Mondin, *Dizionario*, 374: “... ‘nella stessa maniera anche nelle mutazioni sostanziali si dovrà ammettere qualche cosa che sia presente e nel processo di generazione e nel processo di corruzione’ ”(Aristotle *Metaphysics* 8. 1. 1042 a 30).

possibility (*potentia obiectiva*) but is real potency (*potentia subiectiva*) and this potency penetrates to the very nature of being, whether in the genus of substance or accident.⁸⁹

In Evolutionism, is the real function of matter something that can be ignored or substituted? Material things are the very things generated and corrupted, according to Aristotle. So material has a function that cannot be substituted in the explanation of change. In fact, matter is the subject of becoming because it is the substratum which is generated and corrupted.⁹⁰

⁸⁹Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956): 171: “Recolamus insuper potentiam de qua hic sermo est non esse meram possibilitatem, potentiam obiectivam, sed esse potentiam realem, i.e., subiectivam; et haec potentialitas penetrat usque ad rationem ipsam entis sive in genere substantiae sive accidentis.”

⁹⁰Mondin, *Dizionario*, 376: “...una funzione insostituibile...infatti si ha il divenire proprio...”

Chapter 12: EVOLUTIONISM IS COMPATIBLE WITH HYLEMORPHISM.

The State of the Question

The Pontifical Gregorian University in Rome currently has a philosophy department that endorses both biological and psychological evolution, an endorsement of matter and form, and the consequent endorsement of potency and act.¹ Nevertheless, the emphasis of the current course is more on the biological fact of evolution than on the deeper philosophical explanation of the possibility of evolution, except for the arguments favoring its final causality.

The Scholastic² philosophers have generally followed Aristotle³ and Aquinas in the endorsement of the theory of Hylemorphism,⁴ that all mobile creatures are composed of act and potency.⁵ Since Evolution involves the change of creatures, act and potency are both necessary for an

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 4: “Ma la nostra attenzione andrà in particolare alle origini dell’Uomo. L’Uomo è Uomo per le sue caratteristiche fisiche, fisiologiche e psichiche, ma soprattutto per quelle psichiche. E all’evoluzione biologica accosteremo un’evoluzione della psiche, forse meglio fondata e meno controversa di quella biologica.”

²Joseph Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 268: “Scholasticum, quia ab scholasticis fuit valde excultum.”

³Hellin, “Cosmologia,” 2: 268: “Et aristotelicum seu peripateticum quia ab Aristotele inventum est ut responderet aprioris Parmenidis et Heracliti, et ut explicaret mutationes substantiales quas videbat in mundo.”

⁴Hellin, “Cosmologia,” 2: 268: “Hylemorphicum, ex *hyle* quod est materia, et *morphe*, quod est forma, quia corpora constituuntur ex materia et forma.”

⁵Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 309: “...tutte le creature, incluse quelle angeliche, sarebbero composte di materia e forma; solo Dio è senza materia, purissimo spirito.”

adequate philosophical explanation of evolution.

Evolution is a process, so some act and potency, and privation, are involved. Observation reveals that matter is involved with evolution, and the Neo-Scholastic views matter as the principle of individuation, which determines “this” creature and its species.⁶ Matter, however, is potency and needs to form to educe it to act. Substance is involved in the evolutionary process, since evolution moves from one substance (species) to a new substance (new species). Accidents are involved in evolution, since it appears that some dispositions are needed in the matter prior to any substantial change. Further, accidents are important for observation of any evolution, since the accidents, not the substance, are what is visible; for example, when the tall white man is seen, the accidents (tall, white) are seen directly, and the substance (man) is inferred from the accidents and dispositions. Therefore, in order to give a philosophical explanation of evolution, all these elements must somehow be accounted for. This is done by the hylemorphic system.⁷

The history of Hylemorphism began with Aristotle (384-322 B.C.), who studied natural being with a search for its ultimate principles.⁸ He began his search by determining the intrinsic principles of

⁶Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 392: “Utrum materia sit principium individuationis seu multiplicationis numerice formarum in eadem specie.”

⁷Hellin, “Cosmologia,” 2: 268: “Systema autem dicitur, quia constat propositionibus quae sunt inter se ligatae et ordinatae ad respondendum problemati proposito.”

⁸Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 69: “Aristotle’s quest for the first principles of nature...he enunciates two more of his primary teachings, the doctrine of Hylemorphism and the doctrine of the causes.”

natural being.⁹ Aristotle assumed the fact of change and motion. “We must take for granted,” he says, “that things of nature, either all or some, are in motion. This, as a matter of fact, is clearly evident by induction” (Aristotle *Physics* 1. 2. 185 a 12-14).¹⁰ With the acceptance of change or movement goes the acceptance of multiplicity.¹¹ Multiplicity is a fact of immediate experience, since being that changes undergoes successive multiplicity. Being that changes and undergoes successive multiplicity has to be made of more than one element or principle. Aristotle reasons from obvious experience, like the change of something from colored to white, which has to have a starting point of change, which is something colored (*terminus a quo*) and an ending point of change, which is something white (*terminus ad quem*).¹² However, Aristotle also recognized the need for some common ground to supply continuity between one term and to another, from the colored thing to the white thing. Aristotle provided philosopher with a third term in the process of change, a subject. It is the subject that makes change intelligible, since the subject in privation to a form (a non-white thing) acquires that form (becomes a white body). Therefore Aristotle concludes that no more than three principles are necessary to explain every change in the physical world.¹³ First, there must be a subject that undergoes the change: matter. Second, there must be a determination received by the subject:

⁹H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 17: “...at the outset is the intrinsic principles, the primary constituents...The moderns would generally call a theory of matter.”

¹⁰Gardeil, *Cosmology*, 2: 19, who cites Aristotle *Physics* 1. 2. 185 a 12-14.

¹¹Gardeil, *Cosmology*, 2: 20: “Being that changes undergoes successive multiplicity...”

¹²Gardeil, *Cosmology*, 2: 21: “Common experience shows that this process embraces two terms or footings...the term acquired (*terminus ad quem*)...and the starting point (*terminus a quo*) ... the ultimate term of this change as form, and its point of departure as privation.”

¹³Gardeil, *Cosmology*, 2: 23: “...matter...form...privation.”

form. Third, there must be a antecedent absence of this determination: privation.

Aristotle's adversaries to the Hylemorphism are the Eleatics who denied the very possibility of change, and so did away with the problem of the ultimate principles of natural being. Anaxagoras went to the other extreme, and maintained that the principles were infinite.¹⁴

Aristotle confronted and refuted both these views (Aristotle *Physics* 1. 8). The Eleatics, like Parmenides, asserted that becoming is impossible, because being cannot come from being (this already *is*), and it cannot come from non-being, which they said was utter nothingness. Aristotle answered that generation or becoming springs from both a kind of being (the subject, matter) and from a kind of non-being (privation).¹⁵ Aristotle also proposed another answer to the Eleatic difficulty, that change is possible because between being and nothingness, there is an intermediate state, which is being in potency.¹⁶ So, for example in something becoming white, what is white in potency becomes white in act.

Aristotle also was concerned to defend substantial change (Aristotle *De Generatione et Corruptione* 1. 2. 315 a 26-28). Substantial change was philosophically impugned by two separate schools of thought.¹⁷ Thales, Anaximander, and Anaximenes held all things were made of the same

¹⁴Vincentius Arcidiacono, *Questiones Scientificae ex Mathematica: De Geometriis* (Rome: Gregorian University, 1962), 3: "Tota ista disputation non mansit vana, quia occasionem dedit Aristoteli (384-322 B.C.), utrumque extremum dilemmatis solvere...statuendo structuram *ilemorfisticam* corporis physici."

¹⁵Gardeil, *Cosmology*, 2: 23: "...generation springs both from a kind of being...and from a kind of non-being..."

¹⁶Gardeil, *Cosmology*, 2: 23: "...the distinction of act and potency...from being in potency to being in act...intermediate state, which is potential being or being in potency."

¹⁷Gardeil, *Cosmology*, 2: 26-27: "...all change came to mere accidental modification...but in absolute generation the subject cannot be a substance, since this is precisely what changes. The

ultimate element, so all change came to mere accidental modification of some primordial substance, like air, earth, water, or fire. Another group of philosophers, the Atomists, also Empedocles and Anaxagoras, supposed several specifically distinct elements, but change in those elements was no more than association or dissociation of pre-existent elements, each retaining its separate and distinct nature, so that all change came to a mere accidental modification. In substantial change, such as in evolution, the pre-existent substance ceases to be and a completely new substance comes to be. But if the substratum either had its own determinate nature, or had a plurality of elements already invested with their own specific determination, the new subject would not be one specific nature, but be a composite of two or more natures. Now, some underlying principle is necessary because every generation requires a subject. In substantial change, therefore, the subject cannot be a substance (*ens quod*), but must be a principle without any positive determination whatever, a principle (*ens quo*) to which we give the name “prime matter.”

Participants in the Dialogue

The first group of adversaries deny composition from material and form, and also all essential difference between any bodies.¹⁸ These are the Mechanicists¹⁹ and Mitigated Mechanicists, also called

subject must therefore be a principle without any positive determination whatever, a principle to which we give the name ‘prime matter’.”

¹⁸Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 562-562, treats this group under Materialistic Monism.

¹⁹Hellin, *Cosmologia*, 2: 262: “Leucippus, Democritus, Lucretius, Epicurus. Fundamentum sumpserunt ex theoria Parmenides valde modificata.”

Dynamists.²⁰ The Mechanicists admit extended atoms and motion, and at most some purely motive forces. The Dynamists admit extrinsic and intrinsic forces, like Tongiorgi, who admits material resistance, and Newton, who admits just two forces, attraction and repulsion.²¹ Hellin replies that this opinion cannot be admitted because of the contradiction between the two seeming similar opinions.²² The Mechanicists deny any powers which cannot be reduced to local motion, and the Dynamists deny the formal extension of bodies.²³ Akin to these philosophies are the Empiricists, like John Locke, who only admit sensible impressions and who never concede the existence of substance. For Locke substance is a reality, but an unknown substratum for sensible qualities.²⁴ The Empiricists have no answer to the composition of substance because they do not ask the question; so evolution, which is the process of departing from one substance and acquiring another substantial form, must be

²⁰Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2: 31-32: “Quidam semi-Organicistae, ut Haller, Broussais, Bichat admittunt in organismo quasdam proprietates vitales a materiae viribus distinctas, ex quibus vitam repetunt. Alii irritabilitatem tantum, alii sensibilitatem et contractibilitatem, alii plures alias gratitudo ponunt. Sed, omissis aliis argumentis, sufficiat animadvertere auctores illos in circulum vitiosum incedere. Vita procedit ex proprietatibus vitalibus, proprietates autem vitales ex dispositione organica. Sed ipsa dispositio organica inter praecipua vitae phaenomena recensetur. Ergo, ipsa ex proprietatibus vitalibus repetenda est; ergo idem per idem explicatur.”

²¹Hellin, *Cosmologia*, 2: 263: “...vires, saltem locomotrices extrinsecas et intrinsecas..Sic Tongiorgi et alii.” Ibid., “Newton admisit duas, nempe attractivam et repulsivam.”

²²Hellin, *Cosmologia*, 2: 291: “...vel negant vires...ut Mechanicistae...vel negant extensionem formalem, ut Dynamistae.”

²³Mondin, *Manuale*, 199: “...ritenere la vita un fenomeno singolare, irriducibile alla materia: esso trae origine dall’alto, dall’Uno, dal Nous, dal Logos, dello Spirito, da Dio.”

²⁴Henri Renard, *The Philosophy of Being* (Milwaukee: Bruce, 1957), 209: “Empiricists:... For Locke, substance is a reality, but only an unknown substratum, a mere support for sensible qualities. Hume simply denies the objectivity of substance.” George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 368: “Positivism: Either there is no substance hidden under the accidents; or if there is, it is unknowable and useless. Reality is an activity without anything that acts.”

philosophically unexplained by the Empiricists.

A second group of adversaries admit substantial forms, but not prime matter.²⁵ They admit substantial forms in order to account for substantial change. They deny prime matter, because they allege that the subjects moving from one state to another are protons and electrons.²⁶ They acquire the form of this or that atom, but do not acquire or lose the state of such protons or electrons.

The third opinion is that commonly held by the Neo-Scholastics. Elementary bodies are composed of prime matter and substantial form, united as from substantial potency and act, which potency and act are really distinct. There is some difference of opinion among Neo-Scholastics about the ulterior determinations of material, form and the composite. Hellin notes that Aristotle founded his

²⁵Bittle, *Psychology*, 562-563, would also include less modern, but more philosophical, groups such as Psycho-Physical Parallelism, Idealistic Monism, and Panpsychism. An example of Psycho-Physical Parallelism by Hans Driesch is noted both in Bittle, *Psychology*, 472, and also in Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), 198: "According to this conception (of Hans Driesch) an organism is a corporeal substance already constituted and existing, in which resides in addition, an alien principle, a vital spirit or vital energy...We have already pointed out the importance of these works in a study published in 1910 on 'Neovitalisme en Allemagne et le Darwinisme' (*Révue de Philosophie*, 1 October 1910) and in the preface of the French translation of *La Philosophie de l'Organisme* (Paris: Riviere, 1921)." More Psycho-Physical Parallelism is noted by George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 358, notes that Plato held man to be composed of two substances, body and soul, each more or less complete. Arguments against this theory are that it destroys the unity of man, it cannot explain knowledge without the senses, and there is a confusion of efficient and formal causes so that the soul "in" the body is unintelligible. Palmes, *Psychologia*, 2: 759, also gives Plato as an adversary of the hylemorphic theory. An example of Idealistic Monism is noted in Bittle, *Psychology*, 472: "J. S. Haldane: the difference is more in the attitude of the reasoning subject." An example of Panpsychism is noted in Bittle, *Psychology*, 474: "Some modern biologists call the principle of unity *hormé* (urge, drive) postulating its existence due to purposive developmental evolution found in organisms. Also, Bergson's life force passes in creative evolution from one generation to another. This life force creates all species of living beings in the process of evolution. All matter is thus endowed with an impetus of life."

²⁶Hellin, *Cosmologia*, 2: 291: "...subiectum transiens de uno statu in alium sunt protones et electrones...sed non acquirunt aut amittunt statum talis protonis et electronis."

Hylemorphism on the view that there cannot be a discontinuity of atoms, while most Neo-Scholastics hold Hylemorphism which admits the theory discontinuity and Scientific Atomism²⁷. This opinion is most common and admitted by Neo-Scholastics such as Fabri (1607-1683), Zanchi (1710-1762), Hauser (1713-1762), and Liberatore (1810-1892). The disputed point is not a major one and Calcagno, who cites other professors at the Gregorian University such as Boyer and Hoenen, does not even bring up any difference of opinion.²⁸ Calcagno views the essentials as enough to verify substantial change, and substantial change is precisely what is involved in evolution of species.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue,

²⁷Hellin, *Cosmologia*, 2: 292: "P. Echarri ait nostrum Hylemorphismum...esse essentialiter distinctum ab aristotelicum." Ibid., "Nam P. Lepidi, O. P., ait 'Peripateticam sententiam ut verosimiliorem propugnamus, utpote quae rationabilius tutiusque respondet animo quaerenti de modo quo mutationes et compositiones substantiales in natura fiunt. Eam tamen ut sententiam omnino certam, quae animum ab omni formidine liberet, defendere non audemus.'"

²⁸Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D'auria, 1950), 1: 387: "...non possumus aliter concipere materiam primam et formam substantialem, considerando mutationes substantiales..."

every attempt should be made to clarify that truth. In this case, Renard²⁹ and Calcagno³⁰ both note the need to argue from substantial change. Even some Scholastics, such as William of Occam³¹ or Duns Scotus,³² had serious, even fatal, problems for their philosophy when they considered the principle of individuation differently than the hylemorphic system. The deeper reason why there is a problem with understanding the hylemorphic theory is that while matter as pure potency is not nothing, and it is a reality, prime matter cannot be conceived by the imagination.³³ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Hylemorphism is the theory according to which the corporeal substance, essentially (*per se*)

²⁹Renard, *Philosophy*, 66: “Finally whenever a substantial change occurs, that is, when the nature of a given substance becomes something else, e.g., a plant dies, animal generated; two facts take place and have to be carefully distinguished...form which has been present actuating the matter is corrupted...reduced to the footing of matter..the new material form is not created but educed...”

³⁰Calcagno, *Philosophia*, 389: “...exestintiam mutationem substantialium...ex hoc... deducuntur.”

³¹Renard, *Philosophy*, 208: “William of Occam denies everything that is not individual. For Occam there are no principles of being (act, potency, matter, form). Substance is either identified with accidents, or it is a mere idea. But prime matter is an existing being, and so the individual will be a composite not of many principles but of many beings.”

³²Renard, *Philosophy*, 208: “Duns Scotus: The individual is immediately apprehended by the intellect. This principle makes for an exaggerated realism. Matter and form are conceived as beings existing in their own rights, not as St. Thomas does: principles of being united transcendently and actuated in the order of existence by a unique ‘to be’.”

³³Renard, *Philosophy*, 63: “Matter and form are co-principles. In the first place, we say matter is pure potency...it is not nothing, it is reality. Although it cannot be conceived except by reason of its relation to its exigency for form.”

one, is composed of two metaphysical and substantial principles, prime matter and substantial form.³⁴

This theory is the cornerstone of the philosophy of nature. Hylemorphism is the ultimate explanation of corporeal being as such.³⁵

Life is the totality of biological phenomenon in the strict sense, so that nutrition is one essential exhibited by certain bodies showing life.³⁶ Here we do not consider spiritual life, moral life, social life, or religious life.³⁷ Life, defined more metaphysically, is that something acts immanently or moves itself. Donat gives this definition and proof: immanent action is action which proceeds from an agent and terminates in an agent while remaining in that same agent, or consists in moving one's self; but life

³⁴Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1991), 144: "L'ilemorfismo, secondo cui la sostanza corporea, una per sé, è composta di due principi metafisici e sostanziali, la materia prima e la forma sostanziale, è la massima scoperta del genio filosofico e metafisico dei Aristotele: è una scoperta che ha valore perenne..."

³⁵Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), "Ilemorfismo è la dottrina aristotelica che considera ogni sostanza materiale come costituita di materia (hyle) e forma (morphe). Aristotele ha introdotto questa dottrina per spiegare due impotante fenomeni: il divenire e l'identità-diversità degli individui di una stessa speice." Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 139: "De Doctrina Peripatetica: ...Docet, omnia corpora, sive elementa, sive chemice composita sunt, ex duplici parte substantiali composita esse, una parte plane indeterminata, *materia prima*, quae in omnibus corporibus eadem sit, altera parte determinante, quae in variis speciebus diversa sit et *forma substantialis* appellatur. Eadem doctrina etiam nomen Hylemorphismum gerit." Confer Calcagno, *Philosophia*, 1: 387.

³⁶Mondin, *Manuale*, 199: "...la vita biologica in senso stretto, ossia 'l'insieme di fenomeni presentati da certi corpi e di cui l'essenziale è la nutrizione,' e non la vita spirituale, la vita morale, sociale, religiosa, etc."

³⁷Mondin, *Dizionario*, 656: "Scientificamente la vita è concepita come una particolare struttura della materia...Filosoficamente la vita viene definita come principio primo della realtà organica...Teologicamente la vita è considerata come dono speciale di Dio con cui l'uomo viene reso partecipe della natura stessa di Dio (Confer: 2 Pt. 1: 4)."

is such an action; therefore life is immanent action.³⁸ Life is analogous concept, applicable to plants, animals, man and God.³⁹

Cause is all that in some way contributes to the production of something.⁴⁰ Aristotle divides causes into four species: material, formal, efficient, and final. Aristotle's attention was above all concentrated on causality since the study of the causes is the principle objective of science (Aristotle *Metaphysics* 1. 2. 983. 20-30).

Prime Matter is an incomplete substance, which as the determinable part, constitutes a substantial corporeal composite.⁴¹ Aristotle defines prime matter as "the first subject of any thing, the subject by which (*ens quo*) something becomes (substance) when it (the prime matter) is in it (the substance) but not as an accident"; thus it is a incomplete "subject"; and "first" to distinguish it from second matter which has accidents; and "when it is in" to indicate not a privation, but an intrinsic principle of the composition of the thing; and "by which...something becomes" to indicate that it is the

³⁸Donat, *Cosmologia*, 158-159: "Vita in eo consistit, quod aliquid immanenter agit sive se ipsum movet...Actio immanens est actio, quae ab agente procedit et cum termino resultante in agente manet, seu quae consistit in se movendo...Atqui, vita est talis actio..." Calcagno, *Philosophia*, 27: "In analysi chemica organismorum numquam inventum est principium vitale."

³⁹Gredt, *Philosophiae*, 1: 299: "Vita est conceptus analogus."

⁴⁰Mondin, *Dizionario*, 106: "È tutto ciò che in qualche modo contribuisce alla produzione di qualche cosa." Ibid., Mondin notes that this definition is based on Aristotle: "quod influxum quemdam ad esse causat" (Aristotle *Metaphysics* 5. 1. 751).

⁴¹Hellin, *Cosmologia*, 2: 290: "Materia Prima est substantia incompleta, quae ut pars determinabilis, constituit compositum substantiale corporeum." Donat, *Cosmologia*, 141-142: "Materia prima...substantia incompleta ex se indeterminata, quae cum alia parte substantiali determinante, quae forma dicitur, ad unam per se substantiam corpoream componitur... Compositum ex materia prima et forma subiectum accidentium est ideoque materia secunda." Donat, *Cosmologia*, 141: "Nomine materiae omnes intelligimus subiectum corporeum sive extensum, quod qualitates sensibilibus subiaceret iisque determinatur, veluti marmor, quod figuram Mercurii habet. Iam igitur materia corporea a peripateticis in primam et secundam dividitur."

substance and not an accident.⁴² The Scholastics have a Latin saying to remind themselves about prime matter: “Materia prima secundum se non est quid (not a substance), non est quale (not quality), non est quantum (not quantity), nec aliquid eorum quibus ens determinatur (not other accidents)”⁴³ Prime matter is important for evolution because it is the subject of substantial mutation, and the origin of a species is substantial mutation.

Second Matter is the composit of matter and form which is the subject of accidental mutation.⁴⁴

Substantial Form is an incomplete substance which as the determining part, constitutes the substantial corporeal composit.⁴⁵ Substantial form is important for evolution because it constitutes the species in a determinate manner of being.⁴⁶

⁴²Hugon, *Philosophia*, 2: 129: “est subiectum primum cuiusque rei, ex quo, cum inisit fit aliquid et non per accidens.” Gardeil, *Cosmology*, 30, follows St. Thomas’ translation of the Greek: “Primum subiectum ex aliquid fit per se et non secundum accidens, et inest rei iam factae” (Aquinas *In Phys.* 1. 15. 281). Renard, *Philosophy*, 63: “Matter is defined as the first intrinsic and potential principle of a corporal essence.”

⁴³Gardeil, *Cosmologia*, 30, for the negative properties of prime matter.

⁴⁴Calcagno, *Philosophia*, 842-843: “Materia secunda vero dicitur aut per respectum materiam primam praesuppositam, aut ipsum compositum quod ex unione materiae et formae resultat.” Donat, *Cosmologia*, 142: “Compositum ex materia et forma subiectum accidentium est ideoque materia secunda vocatur; accidentia enim quibus substantia ultra esse substantiale determinabitur, actus secundus nominantur.”

⁴⁵Hellin, *Cosmologia*, 2: 290: “Forma Substantialis est substantia incompleta, quae ut pars determinans, constituit compositum substantiale corporeum.” Donat, *Cosmologia*, 144: “Forma substantialis est substantia incompleta materiam complens in esse substantiale.” Hugon, *Philosophia*, 2: 139: “Iuxta Philosophum definiri potest forma substantialis: Actus primus una cum materia prima unum per se constituens. Gardeil, *Philosophy*, 32: Substantial form is “id quo res determinabitur ad certum modum essendi.”

⁴⁶Hugon, *Philosophia*, 2: 139: “Plures aliae traduntur definitiones (de forma substantiali). Proprium munus formae est rem constituere in determinato essendi modo, ipsique tribuere speciem; unde non raro; unde non raro ipsa forma *species* dicitur.”

Transcendental relation is the way in which matter and form are related, that is, by their very entity they tend toward each other, they need each other. No bond is required in a union like this. Matter and form are united immediately and exist by a single “to be.” This is the reason the substance is called perfectly one (*unum per se*).⁴⁷

The Composite from each reality does not merely consist in a juxtaposition or compenetratio, although this may be necessary, but in mutual communication, through which the potency of the material is realized and actuated through the form, and the form actuates the potency of the material.⁴⁸ From the union of matter and form results the substantial composit, which is the concrete being we observe in all of nature.⁴⁹

Intrinsic Change happens when the same real and physical thing intrinsically differs from what is formerly was, e.g., when cold water becomes hot.⁵⁰ For true intrinsic change requires, first, *some*

⁴⁷Renard, *Philosophy*, 63: “Matter and form are related transcendently..by their very entity they tend toward each other.” Confer: *Ibid.*, 82: “By a transcendental concept we mean one which is somehow predicable not only of the individual (which is true of every universal) but even of every difference between individual and individual. The concept of being is just that.”

⁴⁸Hellin, *Cosmologia*, 2: 291: “Compositum ex utraque realitate non consistit in mera iuxtapositione aut compenetratio, licet haec sint necessaria, sed in mutua communicatione, per quam potentia materiae realizetur et actuetur per formam, et forma actuet potentialitatem materiae.”

⁴⁹Gardeil, *Cosmology*, 33: “...the concrete being we meet in nature. What exists (*quod existit*) in nature is not matter or form taken separately, but the composit of the two. So, to speak precisely, the true principle or subject of substantial corruption (change) is the composit (and not the matter or form individually), and the true term of substantial generation (becoming) is another composit. The Latin ‘corrupt’ means ‘to break up.’ Generation and corruption are always reciprocal (*generatio unius, corruptio alterius*).” Note that evolutionary origin of species is generation of one species and corruption of another.

⁵⁰Calcagno, *Philosophia*, 1: 387: “Habetur ergo mutatio intrinseca quando aliquid idem reale et physicum aliter se habet intrinsecus ac se habebat antea, puta cum aqua de frigida fit calida.”

act or perfection which is acquired or lost by the change, and second, *some real subject* which is able to have or lose an act; in other words, the subject of itself is indifferent to both act and its privation.⁵¹ In the example of the water just given, water is the real subject, which is passive potency to heat or lack of heat; the heat itself is the act or perfection, which is acquired or lost by change. When true mutation happens, as the subject moves from one act to another act, in order that it has a place in the conversion, the subject of the mutation must be in potency to both acts. So when someone changes from error to a knowledge of truth, there is a subject, namely the intellect, which is capable of having both acts, of error or of truth.

Substantial Change is a change that reaches even to the substantial being (*esse*) of the body.⁵² Such a substantial change in material bodies needs two elements, namely some true physical reality which is indeterminate in the genus of substance (called prime matter), for otherwise there would be change without a subject. The act corresponding and determining prime matter to this or that species of corporeal substance, is called substantial form. Therefore, if there is substantial change in bodies, it is necessary to conclude that corporeal bodies consist of two elements, both in the genus of substance, with one as potency and the other as act.⁵³

⁵¹Calcagno, *Philosophia*, 1: 387: “Haec igitur requiritur ad mutationem veri nominis...Actus aliquis, seu perfectio...Subiectum aliquod reale...indifferens ad utrumque, nempe ad actum, vel ad privationem eius.”

⁵²Calcagno, *Philosophia*, 1: 387: “Si datur mutatio, quae pertingit usque ad esse substantiale corporum...fateri oportet quod ipsa substantia rei corporea constat realitate aliqua vera et physica, quae est indeterminata in genere substantiae...secus haberetur mutatio sine subiecto...vocatur materia prima, actus vero ei correspondens...dicitur forma substantialis.”

⁵³Calcagno, *Philosophia*, 1: 388: “...mutationes substantiales...duplici elemento, quorum utrumque est in genere substantiae, sed unum se habet ut potentia, aliud ut actus.”

Questions Needing A Reply

Are there actually substantial changes in natural bodies? Thus, is it correct to infer that every natural body consists of two substantial principles, one potential, and the other actual? Are act and potency really distinct between themselves?

The Thomistic Foundations

The problem of the origin of life has given rise in the last centuries to a debate between the Mechanicists and the Vitalists. The problem was not confronted directly or explicitly by St. Thomas.⁵⁴ However, the solution lies in the Aristotelian doctrine of Hylemorphism which St. Thomas did endorse and explain: “Even in spiritual substances, or angels, there is a composition of act and potency (only God is pure act). In fact, when two elements are found in a thing, of which one complements the other, the relation of one to another is like the relationship of potency to act. Now, in a created intellectual substance are found two elements, that is essence (*substantia*) and existence, which is not the essence itself: existence is the complement of the existing essence, because each being is in act in so far as it has existence. It remains therefore that in every so called substance there is a composition of act and potency” (Aquinas *Summa Contra Gentiles* 2. 53).⁵⁵

⁵⁴Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 659: “...polemiche tra I meccanicisti e I vitalisti, non viene mai affrontato direttamente ed esplicitamente da San Tomasso...”

⁵⁵Thomas Aquinas, *Suma Contra Los Gentiles*, Latin-Spanish bilingual ed., 2 vols. (Madrid: BAC, 1968), 1: 538-539: “Ex hoc autem evidenter apparet quod in substantiis intellectualibus creatis est compositio actus et potentiae (Confer: Aquinas *Scriptum in Liber Sententiarum* 2. 3. 1. 1; Aquinas *De Spiritualibus Creaturis* 1). In quocumque enim inveniuntur aliqua due quorum unum est complementum alterius, proportio unius eroum ad alterum est sicut proportio potentiae ad actum: nihil enim completur nisi per proprium actum. In substantia autem intellectuali creata inveniuntur duo: scilicet substantia ipsa; et esse eius, quod non est ipsa

Does St. Thomas think that “to live” is an operation like to see, to think, or to feel, or is “to live” a mode of being for St. Thomas? It is a mode of being, because the proper function of the vital form is the immanent regulation of lower activities, an “in-formation.” St. Thomas says, “To live for living things is to be” (Aquinas *In De Anima* 1. 1. 16)⁵⁶.

Does St. Thomas hold, contrary to Hylemorphism, that prime matter (*ens quo*) can exist without form (be an *ens quod*), or even exist ahead of substantial form? No, St. Thomas holds the hylemorphic theory. St. Thomas holds, that it would be absurd “to say that matter could exist before form and without form, for that would be to say that it is being in act without act, a clear contradiction” (Aquinas *Summa Theologiae* 1. 66. 1).⁵⁷ Hence prime matter is not nothing, it is a reality, although it cannot be conceived except by reason of its relation to its exigency to form. Even when actuated by a form it is a privation of all other corporeal forms.

Does St. Thomas view matter as the principle of individuation, which determines “this” creature and its species. St. Thomas holds: “It must be said that those things which differ in number in the genus of substance, not only differ accidentally, but also in form and in material. But if it is asked whence these forms differ from one another, there is no other reason except because the difference is in the signate material. Nor is there found another reason why this material is divided from that

substantia. Ipsum autem esse est complementum substantiae existentis: unumquodque enim actu est pre hoc quod esse habet. Relinquitur igitur quod in qualibet praedictarum substantiarum sit compositio actus et potentiae” (Aquinas *Summa Contra Gentiles* 2. 53). Mondin, *Dizionario*, 309, gives the Italian translation and an interpretation.

⁵⁶De Finance, *Être et Agir*, 263-264: “Vivere viventibus est esse” (Aquinas *In De Anima* 1. 1. 16).

⁵⁷Renard, *Philosophy*, 63: “Dicere igitur materiam praecedere sine forma, est dicere ens actu sine actu, quod implicat contradictionem” (Aquinas *Summa Theologiae* 1. 66. 1).

material, unless because of quantity. Therefore material subject to dimensions is understood to be the principle of this diversity” (Aquinas *De Trinitate* 4. 2. ad 4).⁵⁸

At such time that there is sufficient empirical evidence for the “fact” of evolution, St. Thomas gives the ontological picture in the philosophy of nature. There is no opposition between Hylemorphism, Creationism and evolution. St. Thomas notes that prime matter is in potency to acquire a form, which is a metaphysical tendency. There can be successive acquisitions of form. If the temporal dimension is added, this potency to acquire a form is an evolutionary tendency.⁵⁹

The Scholastic Solutions

First, are there really substantial mutations in natural bodies? Yes, and it can be proved.⁶⁰ Non-living bodies differ substantially from living bodies. But many non-living bodies, by way of nutrition, are transformed into living bodies. Therefore, there are substantial mutations in natural bodies.

The major premise is evident from the many and profound differences between living and non-

⁵⁸Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D’auria, 1950), 1: 392: “Utrum materia sit principium individuationis seu multiplicationis numerice formarum in eadem specie.” Ibid. 392-393: “Dicendum, quod illa quae differunt numero in genere substantiae, non solum differunt accidentibus, sed etiam forma et materia. Sed si quaeratur quare haec forma differt ab alia, non est alia ratio nisi quia est in alia materia signata. Nec invenitur alia ratio quare haec materia sit divisa ab illa, nisi propter quantitatem. Et ideo materia subiecta dimensionem intelligitur esse principium huius diversitatis” (Aquinas *De Trinitate* 4. 2. ad 4).

⁵⁹Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 224.

⁶⁰Calcagno, *Philosophia*, 1: 389: “Dantur revera in corporibus naturalibus mutationes substantiales.”

living bodies, that no one can maintain there are only accidental differences. The minor premise is also certain, for non-living things do actually participate in life after assimilation in nutrition. Therefore, there are substantial mutations in natural bodies.

Second, is it correctly inferred that all natural bodies consist of two substantial principles, one potential and the other actual? Yes, and it can be proved.⁶¹ Two things are required in every substantial mutation: first, a subject which is the body in potency; and formal terminals (*termini formales*) of mutation through which what is in potency is actuated and determined to this or that species of bodily substance. But in *substantial* mutation, the subject, the term from which (*a quo*) and the term to which (*ad quem*) must be in the genus of *substance*, as is obvious. Therefore, natural bodies consist of two substantial principles, one potential and the other actual.

Third, are the two substantial principles, one potential and the other actual, really distinct between themselves? Yes, and it can be proved.⁶² It is evident that the potential principle is really distinct from the actual principle, because the material is the same in both terminals of transmutation; but the forms of that material are truly diverse, since one disappears with transmutation and the other form begins to exist. Confirmation of this is had from inverse mutation, which happens at the death of a living body; in death, the living body regresses to a non-living body.

⁶¹Calcagno, *Philosophia*, 1: 389-390: "Unde rite infertur copora omnia naturalia constare duobus principiis substantialibus, uno potenciali, altero actuali."

⁶²Renard, *Philosophy*, 65: "Confirmation of the Real Distinction between Matter and Form: ...If real distinctions were denied, each would have its own 'to be' and then substance (the composit) would not be perfectly one (*unum per se*) but there would have to be a union of two substantial realities...Conclusion: Matter and form are principles 'by which' being is, not beings which are." Calcagno, *Philosophia*, 1: 389-390: "...duobus principiis substantialis, uno potenciali, altero actuali, realiter inter se distinctis." Ibid, 1: 390: "...in morte...Confer Hoenen, *Cosmologia*, 286."

The proof of the thesis that Evolutionism⁶³ is compatible with Hylemorphism can be stated syllogistically.

The first argument is from the Principle of Causality. The effect must be in proportion to its cause. Hylemorphism (cause) explains substantial change (e.g., change to a new species) (proportionate effect). Therefore, Hylemorphism can be the proportionate cause of substantial change. Evolution needs a proportionate cause for the substantial change to new species. Therefore, Evolutionism is compatible with Hylemorphism

The major premise of the above argument is the principle of causality. The minor premise is proved metaphysically because Hylemorphism (formal cause and material cause) explains substantial change (proportionate effect). The minor premise is also proved metaphysically because the Hylemorphism provides both the act and the internal constituent of individuation for being this specific kind of species. The conclusion follows that Hylemorphism is a proportionate cause of new species. Since Evolutionism deals with new species, it is fittingly compatible with Hylemorphism.

The second argument is from the Principle of Sufficient Reason. A sufficient reason is needed for substantial change. But Hylemorphism provides a sufficient reason for substantial change to a new species. But again Evolutionism involves substantial change to new species. Therefore, Evolutionism is compatible with Hylemorphism.

The major premise of the argument above is the principle of sufficient reason itself: Nothing

⁶³Mondin, *Dizionario*, 309: “Aristotle ha introdotto questa dottrina (Hilemorfismo) per spiegare due importanti fenomeni: il divenire e l’identità-diversità degli individui di una stessa specie...l’identità-diversità, è dovuta alla identità specifica derivata dalla forma e dalla moltiplicazione causata dalla materia.” While Mondin points out the value of Hylemorphism for identity within species, it proves useful for diversity between species, although this was not a specific problem for Aristotle.

exists without a sufficient reason.⁶⁴ The major premise asserts that substantial change exists,⁶⁵ and that higher grades of life exist.⁶⁶ The first minor premise philosophically explains Hylemorphism has the elements necessary for substantial change to new species; these are act and potency. The second minor premise notes that Evolutionism involves substantial change to new species. Therefore, Evolutionism is compatible with Hylemorphism.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁶⁷ Possibility is defined as

⁶⁴Calcagno, *Philosophia*, 1: 317: “Principium hoc sic enuntiatur: Nihil est sine ratione sufficiente...Ratio: generatim est id quo intelligitur, vel intelligi potest quid res sit, vel cur res sit, vel cur cognoscatur cum veritate.”

⁶⁵Klubertanz, *Philosophy*, 405, argues that substantial changes are caused by “created secondary agents” and always take place through accidental change, which accidents are agents of substance, through material disposition.

⁶⁶Aquinas *Summa Contra Gentiles* 3. 22: “...it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms. For primary matter is in potentiality, first of all, to the elemental form. While under the elemental form, it is in potentiality to the form of a compound; wherefore elements are the matter of a compound. Considered under the form of a compound, it is in potentiality to a vegetative soul; for the act of such a body is a soul. Again the vegetative soul is in potentiality to the sensitive, and the sensitive to the intellective. This is shown in the process of generation.”

⁶⁷Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353:

the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁶⁸

Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁶⁹ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own

“Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

⁶⁸Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: “Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁶⁹Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

existence.⁷⁰

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁷¹ Some restricted observation of evolution is possible within species.⁷² Aristotle assumed the fact of change and motion from observation.⁷³ “We must take for granted,” he says, “that things of nature, either all or some, are in motion. This, as a matter of fact, is clearly evident by induction” (Aristotle *Physics* 1. 2. 185 a 12-14).⁷⁴ Donat notes, relative to Hylemorphism, that Scholastic philosophy of nature can learn a lot “from experience.”⁷⁵

Certitude could arise from some philosophical explanation that exists. Hylemorphism is demonstrated in the observation of substantial change. Substantial change is a change that reaches

⁷⁰Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁷¹Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁷²Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

⁷³Hellin, *Cosmologia*, 2: 269-270: “Dicit ergo Aristoteles dari unitatem logicam entium...dari etiam pluralitatem realem entium, quia haec datur ab experientia et quae datur ab experientia neganda non sunt.”

⁷⁴Gardeil, *Cosmology*, 2: 19, who cites Aristotle *Physics* 1. 2. 185 a 12-14.

⁷⁵Donat, *Cosmologia*, 140: “...quod philosophia Scholastica docet, cognitionem humanam ab experientia inchoandam esse, maxime verum id est, si agitur de corporum natura.”

even to the substantial being (*esse*) of the body.⁷⁶ Such a substantial change in material bodies needs two elements, namely some true physical reality which is indeterminate in the genus of substance (called prime matter), for otherwise there would be change without a subject. The act corresponding and determining prime matter to this or that species of corporeal substance, is called substantial form. Therefore, if there is substantial change in bodies, it is necessary to conclude that corporeal bodies consist of two elements, both in the genus of substance, with one as potency and the other as act.⁷⁷

Certitude could arise if the argumentation was based on some philosophical principles. The principle of causality and the principle of sufficient reason were employed to show Evolutionism is compatible with Hylemorphism.

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Hylemorphism has been shown to be more than adequate for an explanation of substantial change, but the change from one species to another in evolution is a substantial change. Therefore, Hylemorphism provides a more than adequate (*"necesse est"*) sufficient reason for substantial evolutionary change.⁷⁸ Further, Hylemorphism not only explains the substantial change of inorganic to organic by nutrition, but explains the opposite substantial change of organic to inorganic by death.⁷⁹

⁷⁶Calcagno, *Philosophia*, 1: 387: "Si datur mutatio, quae pertingit usque ad esse substantiale corporum...fateri oportet quod ipsa substantia rei corporea constat realitate aliqua vera et physica, quae est indeterminata in genere substantiae...secus haberetur mutatio sine subiecto...vocatur materia prima, actus vero ei correspondens...dicitur forma substantialis."

⁷⁷Calcagno, *Philosophia*, 1: 388: "...mutationes substantiales...duplici elemento, quorum utrumque est in genere substantiae, sed unum se habet ut potentia, aliud ut actus."

⁷⁸Calcagno, *Philosophia*, 1: 388: "Si igitur dantur, in corporibus mutationes substantiales, necesse est concludere quod substantia corporum naturalium constat duplici elemento..."

⁷⁹Calcagno, *Philosophy*, 1: 390: "Haec omnia confirmari possunt ex mutatione inversa quae locum habet in morte corporum viventium."

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. The problem was not confronted directly or explicitly by St. Thomas.⁸⁰ However, the solution lies in the Aristotelian doctrine of Hylemorphism which St. Thomas did endorse and explain: “Even in spiritual substances, or angels, there is a composition of act and potency (only God is pure act). In fact, when two elements are found in a thing, of which one complements the other, the relation of one to another is like the relationship of potency to act. Now, in a created intellectual substance are found two elements, that is essence (*substantia*) and existence, which is not the essence itself: existence is the complement of the existing essence, because each being is in act in so far as it has existence. It remains therefore that in every so-called substance there is a composition of act and potency” (Aquinas *Summa Contra Gentiles* 2. 53).⁸¹

Certitude could arise if Neo-Scholastics agree on the possibility of Hylemorphism. Agreement is had by Neo-Scholastics in general.⁸² Among these Neo-Scholastics are the following: Brother

⁸⁰Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 659: “...polemiche tra i meccanicisti e i vitalisti, non viene mai affrontato direttamente ed esplicitamente da San Tommaso...”

⁸¹Thomas Aquinas, *Suma Contra Los Gentiles*, Latin-Spanish bilingual ed., 2 vols. (Madrid: BAC, 1968), 1: 538-539: “Ex hoc autem evidenter apparet quod in substantiis intellectualibus creatis est compositio actus et potentiae (Confer: Aquinas *Scriptum in Liber Sententiarum* 2. 3. 1. 1; Aquinas *De Spiritualibus Creaturis* 1). In quocumque enim inveniuntur aliqua due quorum unum est complementum alterius, proportio unius erourm ad alterum est sicut proportio potentiae ad actum: nihil enim completur nisi per proprium actum. In substantia autem intellectuali creata inveniuntur duo: scilicet substantia ipsa; et esse eius, quod non est ipsa substantia. Ipsum autem esse est complementum substantiae existentis: unumquodque enim actu est pre hoc quod esse habet. Relinquitur igitur quod in qualibet praedictarum substantiarum sit compositio actus et potentiae” (Aquinas *Summa Contra Gentiles* 2. 53). Mondin, *Dizionario*, 309, gives the Italian translation and an interpretation.

⁸²Benignus, *Nature*, 70 “This doctrine, first formulated by Aristotle, remains today one of the major theories of the constitution of natural bodies, and nearly all Scholastic philosophers maintain that it is the only adequate theory.” Palmes, “Psychologia,” 478: “...doctrinam

communem omnibus philosophis aristotelico-scholasticis.”

⁸³Benignus, *Nature*, 70: “The primary proof of Hylemorphism is based on the fact of substantial change, and is simply the amplification of Aristotle’s previous analysis of change. The negative principle, privation, is dropped out of the picture and the two positive principles, the substratum or matter, and the form, are more precisely defined. They are now presented as intrinsic principles of change, and the account of change is completed by the introduction of two extrinsic principles, the agent or efficient cause and the end or final cause. Thus the doctrine of Hylemorphism and that of the four causes are so closely related as to be in fact two sides of the same theory of nature.”

⁸⁴Klubertanz, *Philosophy*, 35, does not use the word Hylemorphism. However, he describes and later uses “substance,” “accident,” “act,” and “potency.” Ibid., 318, Klubertanz notes that primary matter is the principle of a “certain community of being,” which in evolutionary terms would be a species: “Primary matter (first matter) is the potential, intrinsic principle of material substance, which is the ground of change, limitation and individuation, and of a certain community of being.”

⁸⁵Paolo Dezza, *Filosofia: Sintesi Scolastica*, 5th ed. (Rome: Gregorian University, 1960), 109: “Le Prove dell’Ilemorfismo:...Se ogni perfezione limitata e moltiplicata é necessariamente composta di atto e potenza, siccome tutti I corpi materiali, and le minime particelle, sono limitati e moltiplicati non solo specificamente (aqua, oro, ferro, etc.) ma anche numericamente, nella stessa specie (molte molecole di aqua e di ferro, molti atomi di idrogeno e ossigeno, etc.), ne seque che ci deve essere in questi elementi una composizione di atto e potenza, che trattandosi di sostanze materiali prendono il nome di forma sostanziale e materia prima. É questo un argomento strettamente metafisico la cui forza probative facilmente sfugge a chi non é assuefatto all’indagine speculativa.”

⁸⁶Gardeil, *Cosmology*, 213, notes Hylemorphism concerns change, is a principle of mobile being, has analogical applications, and can be contrasted to Atomism. Ibid, 31, Gardeil’s proof of Hylemorphism notes: “Were matter in act before receiving a form, it would of itself be a substance, and every supervening act would be no more than an accidental act or form. Once more, then, matter is pure potency. This, without a doubt, is Aristotle’s true meaning. It is also a meaning that St. Thomas and his followers were adamant in defending...”

⁸⁷Hellin, *Cosmologia*, 290: “Probatur Hylemorphismus in Elementis.” Ibid., 274: “Fundamentum absolute necessarium ad statuendum hoc systema erat factum quod praesupponebatur certum, nempe mutationes substantiales...Et ideo dicebatur corpora in fieri constare ex materia prima, quae recipit formam, ex forma substantiali quae recipitur, et ex privatione formae quae recipienda est, quae privatio est in materia iam disposita et exigente novam formam.”

Palmes,⁹² Possenti,⁹³ and Renard.⁹⁴ In addition, Hugon lists the Neo-Scholastics who adhere to Hylemorphism as Sanseverino, Liberatore, Zigliara, Cornoldi, Pesch, Pope Pius IX, Pope Leo XIII, Farges, De Vorges, Mielle, Nys, and others.⁹⁵

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. Calcagno notes, with references to fellow professors at the Gregorian University, that celestial bodies

⁸⁸Marquart, *Philosophiae*, 2: 39: “Probatur doctrina hylemorphica ope argumenti ex mutationibus substantialibus.”

⁸⁹Maritain, *Degrees of Knowledge*, 177: “We know that a body as such is constituted by two complementary ontological principles, one purely potential and determinable, the other specifying and determining, which we call ‘prime matter’ and ‘substantial form’.”

⁹⁰Masi, *Cosmologia*, 94: “Fundamentum Metaphysicum Argumentorum ad Hylemorphismum Demonstrandum...doctrina de actu et potentia...”

⁹¹Mondin, *Manuale*, 144: “Il Valore dell’Ilemorfismo...è la massima scoperta del genio filosofico e metafisico di Aristotele...”

⁹²Palmes, *Psychologia*, 2: 759: “Anima rationalis est vere, per se, essentialiter et immediate corporis humani forma et substantialis; non nisi sensu theoriae Hylemorphicae Aristotelico-Scholasticae.”

⁹³Vittorio Possenti, “Vita, Natura e Teleologia,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 220: “...è accessibile all considerazione della filosofia attraverso l’analisi del divenire (dialettica atto-potenza) e la dottrina ilemorfica...”

⁹⁴Renard, *Philosophy*, 63: “Matter and form are co-principles...matter is pure potency...it is not nothing, it is a reality, except it cannot be conceived except by reason of its relation to its exigency for form. Even when actuated by a form it is a privation of all other corporeal forms. It would be absurd, then, to imagine matter existing without form, for that would be to say that it is being in act without act, a clear contradiction,” according to St. Thomas (Aquinas *Summa Theologiae* 1. 66. 1).

⁹⁵Hugon, *Philosophia*, 171-172: “Hylemorphismus apud modernos. At studio et opera Neo-Scholasticorum, Sanseverion, Liberatore, Zigliara, Cornolid, Pesch, etc., hortante Pio IX et postea Leone XIII, Hylemorphismus redivivus apparuit et scholas ecclesiasticas iterum invasit, ac iam in pace possidet. Multi huic studio operam navaveer et questionem egregie versarunt, ut Zigliara, Pesch, Farges, De Vorges, ielle, Nys, at alii complures.”

are composed of the same elements as terrestrial bodies, and since those elements are transmutable among themselves, it can be generally concluded that all natural bodies consist of prime matter and substantial form.⁹⁶ Hoenen, of the Gregorian University, had to correct St. Thomas about the identity of celestial and terrestrial bodies. St. Thomas believed that “the material of the celestial body is not the same as the (terrestrial) elements” (Aquinas *Summa Theologiae* 1. 66. 2. corpus et ad 4; Aquinas *De Caelo* 1. 6; confer: Aquinas *Scriptum in Liber Sententiarum* 2. 12. 1. 1).⁹⁷ Modern science (“*hodie patet*”) has shown that celestial and terrestrial matter are alike, therefore supporting Hylemorphism. Science has already turned from the Positivistic, Materiaistic, and Mechanistic point of view toward a fuller explanation of types of Vitalism.⁹⁸

Certitude could arise if the opinions opposed to Hylemorphism are not tenable. But the

⁹⁶Calcagno, *Philosophia*, 1: 390: “...fas est concludere generatim, omnia corpora naturalia constare materia prima et form substantiali. Confer: Hoenen, *Cosmologia*, 286-287; Boyer, *Cursus Philosophiae*, 1: 472.”

⁹⁷Hoenen, *Cosmologia*, 287: “S. Thomae...qui putabat corpora caelestia et subluminaria non esse ‘transmutabilia ad invicem’...unde ‘non est eadem materia corporis caelestis...’ Quia autem hodie patet corpora caelestia ex iisdem constare elementis ac terrestria, eodem modo corruptibilia sunt...”

⁹⁸Maritain, *Degrees of Philosophy*, 195: “From this point of view, the works of Hans Driesch devoted to *Entwicklungsphysiologie* have considerable historical importance. Following Driesch, and under the influence of either Bergson, or of Scheler and the phenomenological school, or of Aristotelian-Thomistic philosophy, biologists renowned for their experimental research have undertaken to rehabilitate concepts such as ‘organic,’ ‘life,’ ‘immanent activity,’ even ‘soul’ that science of the last century considered its duty chastely to discard. They are not afraid to philosophize, to insist with August Krogh and Rémy Collin on the necessity of ‘the exercise of freedom of spirit’ in science, to note the agreement of their conception with one philosopher or another and even with the intuitions of a poet of genius like Claudel.”

opposite Mechanicist (Atomist)⁹⁹ and Dynamicist (Moderate Mechanism)¹⁰⁰ theories are not tenable.¹⁰¹

Planes also shows that Hylozoism¹⁰² and Pantheism¹⁰³ are not tenable.

Certitude could arise if the objections of adversaries are able to be answered. Objections against Hylemorphism can be answered.¹⁰⁴

OBJECTION: Your argument for Hylemorphism is not general; at most it is valid for living bodies and for non-living bodies assimilated by nutrition. But not all chemical elements are assimilated by nutrition. Therefore, the argument does not cover these inorganic elements. REPLY: The assertion is denied. The conclusion of the argument extends to all inorganic bodies, by way of analogy. Inorganic bodies that substantially change to living bodies are not of the different genus as those which are assimilated. Therefore, these bodies must also be composed of material and form.¹⁰⁵

OBJECTION: Assimilation of inorganic elements by organic in nutrition is not substantial change, because the inorganic is subject to the influx and direction of the organic body. REPLY: The assertion

⁹⁹Calcagno, *Philosophia*, 1: 382: "Atomismus philosophicus sive rigidus sive moderatus reiiciendus est."

¹⁰⁰Calcagno, *Philosophia*, 1: 385: "Systema Dynamicum quoad compositionem corporum reiici debet."

¹⁰¹Maritain, *Degrees of Knowledge*, 198: "The authentic conception of the organism, the 'animist' or 'hylemorphist' conception is opposed to vitalism, so understood, no less than to mechanism."

¹⁰²Palmes, *Psychologia*, 423: "Hylozoismum: Falsum est mundum esse unum ens per se vivum et unicum."

¹⁰³Palmes, *Psychologia*, 424: "Pantheismum: Etiam excluso Pantheismo, falsum quoque est entia non organizata aliqua vita pollere."

¹⁰⁴Calcagno, *Philosophia*, 1: 390: "Obiectiones..."

¹⁰⁵Calcagno, *Philosophia*, 1: 390: "...conclusio argumenti extendi potest ad omnia corpora inorganica, ope analogiae."

is denied. If the subordination of the inorganic elements was not substantial change, the inorganic would not be substantially changed into the living body. Accordingly, the living body would not be an essential (*per se*) unity, but would be composed of many diverse substances only in an accidental union.¹⁰⁶

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. St. Augustine notes that prime matter and substantial form do explain substantial change (Augustine *Confessions* 12. 6-7).¹⁰⁷ Philosophers like Palmes use the theory of Hylemorphism to explain the rational soul.¹⁰⁸ Donat says Hylemorphism is a certain in application both in philosophy and theology.¹⁰⁹

Certitude can be had from the fact the Hylemorphism is the best answer now to explain process of evolution.¹¹⁰ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a

¹⁰⁶Hoenen, *Cosmologia*, 283-284: “...quae in anorganicis per se existit, in vivente autem informatur per animam...Haec autem explicatio sustineri non potest. Hic enim supponitur ut possibile id quod Parmenide iure reiectum est et cuius oppositum dein ab omnibus agnoscebatur: ex ente non fit ens...Concludere ergo debemus: principium illud commune non est ens sed est potentia ens simpliciter.”

¹⁰⁷Calcagno, *Philosophia*, 1: 387: “...sapienter notavit S. Augustinus (Augustine *Confessions* 12. 6-7) non possumus aliter concipere materiam primam et formam substantialem, quam considerando mutationes substantiales...”

¹⁰⁸Palmes, *Psychologia*, 2: 759: “Anima rationalis est vere, per se, essentialiter et immediate corporis humani forma et substantialis; non nisi sensu theoriae Hylemorphicae Aristotelico-Scholasticae.”

¹⁰⁹Donat, *Cosmologia*, 140: “...certa et immo cum fide concerta sunt et quorum in theologia et philosophia scholastica saepe mentio fit, systema peripateticorum cum aliqua diligentia exponendum est.”

¹¹⁰John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the

“provisional” universal (*ut nunc*).¹¹¹ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. There is some difference of opinion among Neo-Scholastics about the ulterior determinations of material, form and the composit. Hellin notes that Aristotle founded his Hylemorphism on the view that there cannot be a discontinuity of atoms, while most Neo-Scholastics hold a type of Hylemorphism which admits the theory of discontinuity and Scientific Atomism.¹¹² Nevertheless, this is more a problem in application,¹¹³ since every Neo-Scholastic uses the elements of Hylemorphism. Further, even those reluctant to ascribe absolute certitude to Hylemorphism, like Lepidi just cited by Hellin, note that Hylemorphism is “more true,” “more reasonable,” and a “safer” as a point of view. Thus, the compatibility of Hylemorphism with

investigation of nature.”

¹¹¹Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *dici de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

¹¹²Hellin, *Cosmologia*, 2: 292: “P. Echarri ait nostrum Hylemorphismum...esse essentialiter distinctum ab aristotelicum.” Ibid., “Nam P. Lepidi, O. P., ait ‘Peripateticam sententiam ut verosimiliorem propugnamus, utpote quae rationabilius tutiusque respondet animo quaerenti de modo quo mutationes et compositiones substantiales in natura fiunt. Eam tamen ut sententiam omnino certam, quae animum ab omni formidine liberet, defendere non audemus.”

¹¹³Donat, *Cosmologia*, 140: “...maxime quod applicationem eius ad organismos et hominem attinet, quae certa...”

Evolutionism is the best current explanation of evolution.

The level of certitude for “Evolutionism is compatible with Hylemorphism” is at minimum at the level of the metaphysically certain. The proof is the principle of causality and sufficient reason. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Calcagno.¹¹⁴ Mondin thinks that Hylemorphism “is the greatest discovery of the philosophic and metaphysical genius of Aristotle, and it is a discovery that has perennial value.”¹¹⁵ Donat says Hylemorphism is “certain.”¹¹⁶

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.¹¹⁷ This is the method of Aristotle and St. Thomas.¹¹⁸ This method is confirmed by the Neo-Scholastic Jacques Maritain: “It is the upward resolution toward intelligible (as compared with the sensible) being... In this process the sensible object is not lost sight of...”¹¹⁹

¹¹⁴Calcagno, *Philosophia*, 1: 389: “...opus est demonstrare existentiam mutationem substantialem; ut enim apparet ex dictis in praecedente declaratione, ex hoc fundamento cetera omnia, logica consecutione, deducuntur. Sit itaque.”

¹¹⁵Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1991), 144: “L’ilemorfismo, secondo cui la sostanza corporea, una per sé, è composta di due principi metafisici e sostanziali, la materia prima e la forma sostanziale, è la massima scoperta del genio filosofico e metafisico dei Aristotele: è una scoperta che ha valore perenne...”

¹¹⁶Donat, *Cosmologia*, 140: “...certa...systema peripateicum...”

¹¹⁷Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹¹⁸Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

¹¹⁹Gardeil, *Cosmology*, 7, cites Maritain in the original: “...une résolution ascendant vers l’être intelligible, dans laquelle le sensible demeure, mais indirectement, et au service de l’être

Hylemorphism itself must be proved by rational argument. Yet it is the material that is very important because it is the principle of individuation, as St. Thomas holds: “It must be said that those things which differ in number in the genus of substance, not only differ accidentally, but also in form and in material. But if it is asked whence these forms differ from one another, there is no other reason except because the difference is in the signate material. Nor is there found another reason why ‘this’ material is divided from ‘that’ material, unless because of quantity. Therefore material subject to dimensions is understood to be the principle of this diversity” (Aquinas *De Trinitate* 4. 2. ad 4).¹²⁰ While it is the material that is important, it is the cause of problems in several ways. First, there is a tendency to confuse the role of material, because “A mistake commonly made is to ‘imagine’ formal and material cause in terms of efficient cause...whereas no sensible experience can bring a realization of material and formal causality.”¹²¹ Second, although material is familiar, its change may not be, so, “One difficulty that troubles the moderns did not worry Aristotle, the practical recognition of substantial change.”¹²² Third, the role of the material perceived can be more deterministic or dynamic, both of which can be maintained in an extreme way, so that “it is part of its (philosophy’s) task to root out the

intelligible, comme connoté par lui...”

¹²⁰Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol.1, 3rd ed. (Naples: M. D’auria, 1950), 1: 392: “Utrum materia sit principium individuationis seu multiplicationis numerice formarum in eadem specie.” Ibid. 392-393: “Dicendum, quod illa quae differunt numero in genere substantiae, non solum differunt accidentibus, sed etiam forma et materia. Sed si quaeratur quare haec forma differt ab alia, non est alia ratio nisi quia est in alia materia signata. Nec invenitur alia ratio quare haec materia sit divisa ab illa, nisi propter quantitatem. Et ideo materia subiecta dimensionibus intelligitur esse principium huius diversitatis” (Aquinas *De Trinitate* 4. 2. ad 4).

¹²¹Renard, *Philosophy*, 164: “...no sensible experience...”

¹²²Gardeil, *Cosmology*, 27: “...difficulty...practical recognition of substantial change.”

double illusion of Mechanicism and Vitalism (of Driesch).”¹²³ Fourth, philosophically speaking, the difference between biology and physics in this matter of certitude is due to the difference in necessity and contingency between living things and non-living things, because although “inanimate (non-living) things have activities that are contingent only with respect to the First Cause; living things have activities that are contingent even with respect to secondary causes (that is, their effects can be impeded by unfavorable conditions, or by defects in their own matter, as in sterility).¹²⁴ Fifth, prime matter is not able to be known in itself, because something is able to be known in so far as it is in act, for intelligibility if founded on being; and being is only properly predicated about something that actually exists.¹²⁵

¹²³Maritain, *Degrees of Knowledge*, 198: “In fact, it is part of its (philosophy’s) task to root out the double illusion of Mechanism and Vitalism (of Driesch) according to this conception an organism in a corporeal substance already constituted and existing in which resides in addition, an alien principle, a vital spirit or vital energy...”

¹²⁴Klubertanz, *Philosophy*, 393: “...living things...contingent even with respect to secondary causes...or by defects in their own matter...”

¹²⁵Hugon, *Philosophia*, 133: “Materia non potest cognosci in seipsa. Unumquodque enim cognoscitur secundum quod est actu; nam intelligibilitate fundatur in ente; ens vero proprie dicitur de re quae actu est.”

Chapter 13: CERTAINLY, MAN IS ESSENTIALLY DIFFERENT FROM OTHER ANIMALS.

The State of the Question

The Pontifical Gregorian University in Rome has a philosophy department that currently maintains an irreducible difference between man and the other animals.¹ The current course at the Gregorian University explores the difference between man and animals extensively (chapter six of the student notes). The external and internal sense faculties are treated. The relationship of animal instinct to human intelligence is examined. Language is noted as an important factor in the discontinuity between man and the other animals. La Vecchia who currently teaches the course on evolution is an expert in philosophical linguistics.² Finally, an examination and critique of animal experiments comes to the conclusion that there is an essential difference between man and the other animals.

The Scholastic philosophers of the twentieth century, and Scholastic philosophers generally, have always maintained that although man shares sensation and sense knowledge with the animals, man is essentially different.³ Observation and natural history lead to the conviction that animals in

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 318: "...approfondire tali differenze. Si è dimostrato tuttavia che gli animali, e non soltanto quelli appartenenti ai gradini più elevati della scala zoologica, non si possono considerare macchine, ma esseri viventi provisti di una vita interiore complessa, pure se irriducibilmente differente da quella umana."

²Maria Teresa La Vecchia, *Le Origini del Linguaggio* (Rome: Gregorian University, 1987).

³La Vecchia, *Evoluzione*, 318: "Occorreva a questo punto considerare anzitutto se l'innegabile differenza che si pone tra psiche umana e psiche animale, quella differenza che si è

general have a sensitive psychic life, and sometimes that life is most perfect in its own order. It must be conceded that in certain ways that sensitive life of animals is even more perfect than the sensitive life of mankind.

Regarding the term “intelligent,” some authors, who consider the sensitive life of animals, describe the perfection of animal activity as more or less “intelligent.”⁴ This way of speaking is entirely inappropriate, arises from false doctrine, errors and confusion, and is without philosophic proof; such use of “intelligent” ought to be avoided in writings on experimental science.

The truth contained in the thesis is very important and extremely useful.⁵ Scientifically, it leads to a better understanding of the nature of man and his dignity. The position of the adversaries would deprive man of that dignity. Further, under a moral and practical aspect, human dignity emphasizes the need of charity to the poor. Animal protection societies fill another type of need.

Participants in the Dialogue

Adversaries are almost all Materialists, Sensists, and Associationists, who refuse to acknowledge the essential difference between the intellect and sense. Philosophers akin to Sensism are John Locke (1632), E. B. De Condillac (1715-1780), Alexander Bain (1818-1903), Herbert Spencer

soliti definire qualitativa tra i materialisti dialettici ed essenziale nella nostra filosofia, possa in qualche modo essere colmata.”

⁴Ferdinando M. Palmes, “Psychologia,” in *Philosophicae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 447: “Non pauci auctores, potius naturalistae quam philosophi...eam intelligentiae tribuunt, de animalibus loquentes plus minusve intelligentibus....omnino impropria est, a falsis doctrinis inducta et pluribus erroribus confusionibusque obnoxia, improbanda a philosopho, et quoad eius fieri possit, etiam in tractationibus scientiae experimentalis vitanda.”

⁵Palmes, “Psychologia,” 2: 448: “Nec veritatem continet parvi momenti sed valde utilem.”

(1820-1903), J. P. Herbart (1776-1841), John Stuart Mill (1806-1873) and H. Taine (1828-1893).

They explain all intellectual functions either by outright denial, or by contending that they are simply the simple association of images.⁶ Associationalism promoted by David Hume (1711-1776) is an outmoded form of Sensism which is concerned almost wholly to explain knowledge by way of association of images, or images and sensations.⁷ In America, Associationalism was called Structuralism. The Gestalt psychologists who opposed Associationalism are also Sensists.⁸

Other adversaries are Spiritists and Theosophists, and all who believe in the transmigration of souls or reincarnation.

Adversaries are found among many Evolutionists, especially Darwinists, and all those who assert the origin of the human species from some species of animal.⁹

Adversaries are found among some experimental psychologists, especially promoters of the experiments of W. Köhler. Also in this group would be J. F. Ebbinghaus (1850-1909) and W. Wundt (1832-1921).¹⁰

⁶Palmes, "Psychologia," 2: 448: "Sic thesim negant: Materialistae, Sensistae, et Associationistae...Spiritistae et Theosophi...Evolutionistae...Darwiniani...aliqui psychologi experimentales...W. Köhler..."

⁷Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 316-321: "A prominent part of Hume's philosophy is his theory of Associationalism."

⁸Bittle, *Psychology*, 324-326: "...has risen in opposition to Sensationalism... Perception... resultant of the total sensory impression."

⁹Ioannes Di Napoli, *Manuale Philosophiae: ad Usus Seminariorum*, 4 vols. (Turin: Marietti, 1955-1958), 4: 69: "In Anglia, Positivismus coniungitur cum...Evolutionismo...Darwin, Spencer..." George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 372: "Sensism is implicitly a variety of materialism and in modern times almost always connected with Evolutionism."

¹⁰Palmes, "Psychologia," 2: 588: "...psychologi experimentales..."

Adversaries like Pythagoras, Axaxagoras, the Platonists, the Neo-Platonists, and especially Porphyrius, Montaigne, and Flourens have maintained that beasts have rational souls.¹¹

Proponents of the thesis are all the Scholastics following Aristotle, Christian philosophers, the Neo-Scholastics, and even many experimental psychologists.¹² Aristotle and Aquinas represent the natural world of living organisms as a graduated scale ascending from less to more perfect forms of life. “Aquinas sees the graduated scale as involving essential differences,” notes Adler.¹³ Proponents of the thesis are such Neo-Scholastics as Palmes,¹⁴ Klubertanz¹⁵ and La Vecchia.¹⁶

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, instinct on the part of animals directs

¹¹Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2; 53: “...brutis animam attribuit sed rationalem.”

¹²Hugon, *Philosophia*, 2: 53: “...belluis veram animam adstruit, sed sensitivam tantum, nullatenus rationalem et subsistentem.”

¹³Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 203: “...involving essential differences.”

¹⁴Palmes, “Psychologia,” : 448: “Nullum dari in animalibus functionem intellectualem...”

¹⁵George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 155: “To sum up this section, we conclude that there is no proof that animals possess an intellect, and there is positive proof that they do not.”

¹⁶La Vecchia, *Evoluzione*, 318: “Occorera a questo punto considerare anzitutto se l’innegabile differenza che si pone tra psiche umana e psiche animale, quella differenza che si è soliti definire qualitativa tra i Materialisti Dialettici ed essenziale nella nostra filosofia...”

them to the more complicated and more wonderful activities.¹⁷ Further, the question is complicated because man himself is partly animal.¹⁸ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Animal is an any organic being endowed with both vegetative and sense life, which is not commonly called “man.”¹⁹ Also well known from zoology and natural history is the fact that some animals are more perfect than others, and that animals can be classified in distinct categories.

Instinct is an innate disposition which determines the organism to perceive or pay attention to any object of a certain class, and to experience in its presence a certain emotional excitement and an impulse to action which finds expression in a specific mode of behavior in relation to that object.”

Bittle notes that instinct can be modified to a minor extent, so a bird will use paper or stings for nest-building instead of leaves and twigs. Nevertheless, animal behavior is the concrete connecting of concrete acts to concrete ends.²⁰ Perceptual insight and memory suffice to give an explanation for

¹⁷Palmes, “Psychologia,” 2: 449: “...tanto evidentius quanto complicatior et mirabilior est, illud non est nisi impulsu naturae, videlicet *instinctu ductum operari*, nulla dirigente activitate proprie intellectuali, speciatim nulla idea universali, nec ulla cognitione relationis.”

¹⁸Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 200: “...man is partly animal...some activities of man and animals are similar, but many are not: science created in response to a need to know. Animals do not wonder.”

¹⁹Palmes, “Psychologia,” 2: 446: “Animal hic intelligimus ens organicum quodlibet, vita vegetativa et sensitiva praeditum, quod non ut homo communiter habeatur.”

²⁰Bittle, *Psychology*, 219: “Instinct..innate disposition...impulse to action...” Ibid., 219: “Instinct can be modified to a certain extent by the experience of the animal...an innate dispositive...”

animal behavior. Everything in animal activity takes place on the sense level, so that the animal is intrinsically dependent on matter.

Estimative power (*vis aestimativa*), according to St. Thomas, is a cognitive power in man much like instinct. But man perceives useful and harmful things not just in a purely sensory way, St. Thomas calls this sense in man a cognitive power (*vis cogitativa*) or “particular reason” to distinguish it from intellectual reason.²¹ Cardinal Mercier calls this estimative power “the sense of well-being” (*le sens du bien-être*). The Scholastics acknowledged a central sense (*sensus communis*) as a mental power in man to consciously perceive, distinguish and synthesize the objects and operations of the presently active external senses. T. V. Moore combines the estimative power with this central sense into what he calls the “synthetic sense.” In man, this estimative power is much weaker, and much less determinative, than instinct in animals.

Man is any member of the species *Homo sapiens* today, male or female. Man is a rational animal.²² We abstain from any dealing with any early species of man, although some Neo-Scholastics, such as Marcozzi and La Vecchia at the Gregorian University in Rome, include *Homo sapiens neanderthalis* as truly members of mankind.²³ We also abstain from treating “primitive” tribes, which

²¹Bittle, *Psychology*, 223: “St. Thomas Aquinas...Cardinal Mercier...T.V. Moore...”

²²Klubertanz, *Philosophy*, 302: “Man is a substance, material, living, sensitive, rational...Man is a rational animal.”

²³Vittorio Marcozzi, “Differenza fra l’Anima Umana e l’Anima delle Bestie,” *Doctor Communis* 11 (May- December 1958), 132-134: “La scoperta dell’Uomo di Neanderthal, morfologicamente assai diverso sia dagli uomini attuali...I Neadertaliani dunque, non soltanto lavorarono le pietre, ma ebbero riti funerari e idee religiose...Dunque, tutti gli uomini hanno un’anima sostanzialmente uguale, perchè tutti hanno manifestazioni spirituali.” Note that it is the position of Marcozzi that since prehistoric man presents manifestations of the spiritual, primitive man had a soul completely similar to ours. Marcozzi argues that tools show a labor intentionally thought out. Tools and pottery show adaptation of means to an end. This is the sign of a logical

Grancelli denies have any ideas; Marcozzi gives a list of articles by twenty-two Ethnologists confirming that even “primitives” today have an idea of God and morality.²⁴ We note the Neanderthals and tribal members in the world today to show that all men have a soul substantially equal when the cultural aspects of life are considered.

The sense life of man is evident from the personal experience of everyone.²⁵ Men can see, hear, smell, taste, and touch. In the function of many of these lower senses of man, these senses are very much inferior to the sensitive life of many animals.

The psychic life of man is composed of many activities that complement and complete the sense life of man, which activities are commonly called intellectual or rational.²⁶ At first glance, these psychic faculties appear to be distinct from the sensitive functions. Descriptively, they are the psychological foundation of all the other perfections by which man exceeds the other animals. These acts render man capable of scientific life, artistic life, moral life, social life and religious life.

The essential difference between man and the other animals is the ability of man to operate in a psychic order superior to the order of sense alone. The psychic operations of man cannot be totally reduced to the sensitive order.

Psychic activities of cognoscitive order, which are called intellectual, and which render man

mind, so Marcozzi argues that prehistoric man had a reasoning faculty just like ours.

²⁴Marcozzi, “Differenza,” 127: “Alcuni Autori negano l’esistenza di concetti o di idee, alemo superiori, nei primitivi. Il Grancelli.... Ibid., 130, for the list of articles on the culture of the “primitives,” which show that all men have a soul substantially equal.

²⁵Palmes, “Psychologia,” 2: 447: “Hominis vita sensitiva ut constat propria cuiusque experientia, realis est...”

²⁶Palmes, “Psychologia,” 2: 447: “Hominis vita sensitiva...longe imperfectior... completur... multiplicibus aliis activitatibus psychicis...”

capable of all further perfections which make human life superior to the life of brute animals can be concretely enumerated as follows.²⁷ The ability to form universal concepts from material things that are perceived by the senses. The ability to form concepts of supra-sensible things. The ability to perceive multiple relations formally as such. The ability to elicit formal judgments. The ability to form logical reasoning processes. The ability to know oneself and one's acts by formal reflection, and to be able to attribute these formally to oneself. However, since these functions can differ between various persons, the argument for the superiority of mankind can be restricted to the two more principle intellectual functions of man, which are the universal concept and the concept of relationship.

Person is defined as rational supposit.²⁸ Rational nature is conscious of itself, also through reflection, and so it can also intentionally possess itself; it is also free and therefore ruler of itself and its own acts, which it has and exercises. All supposits are subordinated to persons as an immediate end, and as a means by which a person might attain its proper goal; person is not subordinated to anything as a means, but directly can move to the attainment of its own proper goal.

Question Needing A Reply

Since the essential difference between man and the other animals lies in the order of intelligence, the question arises whether in the psychic life of animals are found at least some of the

²⁷Palmes, "Psychologia," 2: 447: "Ut autem concrete loquamur, praecipuae activitates ordinis cognoscitivi quae intellectuales vocantur et hominem capacem reddunt ad omnes ultiores perfectiones quibus vita humana vita brutorum superior redditur, hae sunt quae sequuntur: ...universales...rerum suprasensibilium... relationes...iudicia...ratiocinia...reflexione."

²⁸Jesu Iturrioz, "Metaphysica Generalis," in *Philosophicae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 757: "Persona definitur suppositum rationale..persona vero nulli ut medium subordiat, sed directe suum proprium finem assequitur."

activities that can be called truly and properly intellectual.²⁹

The Thomistic Foundations

Does St. Thomas teach about the nature of animals? Yes, following the teaching of Aristotle, St. Thomas assigns one type of soul to animals, the sensitive soul. St. Thomas says, “The animal is characterized by sense, that is to say from the sensitive soul, as from its essential form” (Aquinas *Summa Theologiae* Supplementum 79. 2. ad 3).³⁰

How does St. Thomas divide the animal kingdom? For St. Thomas, the great division is between man and the other animals. St. Thomas bases this division on the vital principle of animals, which is totally material like the rest of creation, except for man. St. Thomas maintains: “The brute animals, plants, minerals and all mixed bodies are corruptible, either totally or partially, sometimes due to the material which loses its form, at other times due to the form not remaining in act. Therefore such beings do not have a necessary relation to incorruptibility. So in the final renewal these (animals and material creatures) will not remain, but only incorruptible creatures” (Aquinas *Summa Theologiae* Supplementum 91. 5).³¹

²⁹La Vecchia, *Evoluzione*, 318: “Occorrerà a questo punto considerare anzitutto se l’innegabile differenza che si pone tra psiche umana e psiche animale, quella differenza che si è soliti definire qualitativa tra i Materialisti Dialettici ed essenziale nella nostra filosofia.” Palmes, “Psychologia,” 2: 447: “...non est quaestio de nomine, sed de re; agitur enim tantum utrum in vita psychica animalium reperiatur aliqua...vere et proprie intellectuales dici debet.”

³⁰Mondin, *Dizionario*, 48: “L’animale è caratterizzato dal senso, ossia dall’anima sensitiva, come dalla sua forma essenziale (Aquinas *Summa Theologiae* Supplementum 79. 2. ad 3).”

³¹Mondin, *Dizionario*, 49: “Gli animali bruti, le piante, i minerali e tutti i corpi misti si corrompono, sia come totalità, sia nelle loro parti, tanto secondo la materia, la quale perde la sua forma, tanto secondo la forma che non rimane in atto. Quindi codesti esseri non hanno nessun

Does the intellect of man depend on the senses? Yes, St. Thomas and all the Scholastics maintain that “There is nothing in the intellect which is not first in some way in the senses.”³² Therefore man is like the animals in that man has *extrinsic* dependence of the intellect on the senses. St. Thomas maintains: “It is the property of the human intellect to know the forms that have an individual subsistence in material, but not in so far as they are in determined material. Now, to know what exists in a determined material, not as it is found in that material, means to abstract the individual form represented by the phantasm from the material. Thus it is necessary to conclude that our intellect knows material things by abstraction from phantasms, and that from such a knowledge of material things we are able to come to a certain knowledge of immaterial things” (Aquinas *Summa Theologiae* 1. 85. 1).³³

Does St. Thomas teach that animals have a sense appetite associated with instinct? Yes, St. Thomas affirms instinct in animals, by noting: “The animals have a natural instinct, inserted in them by

ordine all’incorruttibilità. Dunque nel rinnovamento finale essi non rimarranno ma soltanto le creature incorruttibili” (Aquinas *Summa Theologiae* Supplementum 91. 5).

³²Benignus, *Nature*, 199: “We say that the intellect is extrinsically and not intrinsically dependent upon the brain (and the organism) because, while the intellect needs and uses the brain to get the materials for thought and to return thought upon the world, the act of thought itself, in all its three stages, conception, judgment, and reasoning, is effected solely by the intellect itself (Confer: Aquinas *Summa Theologiae* 1. 75. 2. ad 3). Note that the brain gets its input from the senses, so the Scholastics say: Nihil est in intellectu quod non prius aliquo modo est in sensibus.

³³Mondin, *Dizionario*, 66: “È proprietà dell’intelletto umano conoscere le forme che hanno una sussistenza individuale nella materia, ma non in quanto sono in una determinata materia. Ora, conoscere ciò che esiste in una determinat materia, non però come si trova in quella materia, significa astarre la forma dalla materia individuale rappresentata dai fantasmi. Dunque è necessario concludere che il nostro intelletto conosce le cose materiali mediante l’astrazione dai fantasmi (abstrahendo a phantasmatibus), e che da una siffatta conoscenza delle cose materiali possiamo raggiungere una certa conoscenza delle cose immateriali” (Aquinas *Summa Theologiae* 1. 85. 1).

divine reason, through which the animals exercise external and internal movements similar to the movements from reason” (Aquinas *Summa Theologiae* 2-2. 46. 4. ad 2).³⁴

Does instinct more or less determine animals to act in a certain uniform way, so that this observation allows St. Thomas to deny that sense and intellect are the same? Yes, according to St. Thomas, animals are moved by their very nature to determined acts: “Sense is found in all animals. But animals other than man do not have intellect. This is clear because animals do not operate in diverse and opposite ways (from their nature) as if they had an intellect; but animals are moved by nature toward certain determined and uniform operations in the same species, so that every swallow builds a nest in the same way. Therefore the intellect and sense are not the same” (Aquinas *Summa Contra Gentiles* 2. 66).³⁵

If man has some operations similar to plants and beasts, why would St. Thomas think that man is different? St. Thomas answers that some activities of man are under the control of man: “A human act is not any act by a man or in a man, because in some acts man operates like plants or beasts, even if the act is proper to man. Now with respect to other things, man alone has this property, to be the ruler of his own acts (*sui actus est dominus*), so whatever act of which man is the ruler, is properly a

³⁴Mondin, *Dizionario*, 49: “Gli animali hanno l’istinto naturale, inserito in essi dalla ragione divina (*ex divina ratione eis inditum*), mediante il quale esercitano dei moti esterni e interni simili ai moti della ragione” (Aquinas *Summa Theologiae* 2-2. 46. 4. ad 2).

³⁵Thomas Aquinas, *Suma Contra Los Gentiles*, Latin-Spanish bilingual ed., 2 vols. (Madrid: BAC, 1968), 1: 591: “Sensus enim in omnibus animalibus invenitur. Alia autem animalia ab homine intellectum non habent. Quod ex hoc apparet, quia non operantur diversa et opposita, quasi intellectum habentia; sed, sicut a natura mota, determinatas quasdam operationes, et uniformes in eadem specie, sicut omnis hirundo similiter nidificat. Non est igitur idem intellectus et sensus” (Aquinas *Summa Contra Gentiles* 2. 66).

human act” (Aquinas *De Virtutibus in Communi* 1. 4).³⁶

Does St. Thomas also make an essential distinction between sense and intellect? St. Thomas answers that the essential distinction between man and animals is that animals only know the singular by way of sense, while man can know the universal by intellect. St. Thomas notes: “Only rational created nature has an immediate relation to God: because other creatures do not attain to the universal, but only to the particular, either by participating in divine goodness by just existing, just as inanimate things, or else by living and knowing singulars, just as plants and animals. Rational nature, as far as it knows the universal nature of the good and of being, has an immediate order to the universal principle of being” (Aquinas *Summa Theologiae* 2-2. 11. ad 3).³⁷

Does St. Thomas treat language? No, St. Thomas does not treat language directly and systematically.³⁸ However, St. Thomas has taken some positions with regard to language. The theological significance of language is to speak to God (Aquinas *Scriptum in Liber Sententiarum* 1. 22. 1. expositio textus). Concerning the Biblical senses of language, St. Thomas gives primacy to the

³⁶Mondin, *Dizionario*, 72: “Si dice atto umano non qualsiasi atto compiuto dall’uomo o nell’uomo, perche in alcuni atti gli uomini operano come le piante e i bruti, bensì un atto proprio dell’uomo. Ora, rispetto alle altre cose, l’uomo ha questo di proprio, di essere padrone del proprio atto (*sui actus est dominus*): pertanto qualsiasi atto di cui l’uomo è padrone, è propriamente un atto umano” (Aquinas *De Virtutibus in Communi* 1. 4).

³⁷Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 317: “Sola autem natura rationalis creata habet immediatum ordinem ad Deum; quia caetera creaturae non attingunt ad aliquid universale, sed solum ad aliquid particulare, participant divinitatem vel in essendo tantum, sicut inanimata, vel etiam vivendo et cognoscendo singularia, sicut plantae et animalia. Natura autem rationalis, in quantum cognoscit universalem boni et entis rationem, habet immediatum ordinem ad universale essendi principium” (Aquinas *Summa Theologiae* 2-2. 11. 3).

³⁸Mondin, *Dizionario*, 355: “...mai affrontato direttamente e sistematicamente il problema del linguaggio.”

literal sense, but admits some allegorical interpretation (Confer: Aquinas *Summa Theologiae* 1. 1. 10. ad 1). Concerning the pedagogical function of language, St. Thomas notes: “The teacher proposes to the disciple the signs of intelligible thing from which the agent intellect collects intelligible forms, and impresses them on the possible intellect. These same words of the master, heard or read, have the same effect, in causing knowledge in the intellect of things external to the soul, because the intellect takes from both (thing and word) by intelligible forms, although the words of the master have more immediate effect in causing knowledge than the sensible object existing outside the soul, because (words) are signs of intelligible forms” (Aquinas *De Veritate* 11, 1. ad 11).³⁹

The Scholastic Solutions

No intellectual function is found in the life of brute animals, which can be concretely enumerated as follows.⁴⁰ The ability to form universal concepts from material things that are perceived by the senses. The ability to form concepts of supra-sensible things. The ability to perceive multiple relations formally as such. The ability to elicit formal judgments. The ability to form logical reasoning

³⁹Mondin, Dizionario, 356: “L’insegnante propone al discepolo dei segni delle cose intelligibili da cui l’intelletto agente coglie le forme intelligibili, e le imprime nell’intelletto possibile. Per cui le parole stesse del maestro, udite o viste per iscritto, hanno lo stesso effetto, nel causare la scienza dell’intelletto, delle cose esterne all’anima, poichè da entrambe l’intelletto trae le forme intelligibili, benchè le parole del maestro abbiano un effetto più immediato nel causare la scienza, che gli oggetti sensibili esistenti fuori dell’anima, poichè sono segni delle forme intelligibili” (Aquinas *De Veritate* 11. 1. ad 11).

⁴⁰Palmes, “Psychologia,” 2: 447: “Ut autem concrete loquamur, praecipuae activitates ordinis cognoscitivi quae intellectuales vocantur et hominem capacem reddunt ad omnes ulteriores perfectiones quibus vita humana vita brutorum superior redditur, hae sunt quae sequuntur: ...universales...rerum suprasensibilium... relationes...iudicia...ratiocinia...reflexione.”

processes.⁴¹ The ability to know oneself and one's acts by formal reflection, and to be able to attribute these formally to oneself. However, since these functions can differ between various persons, the argument for the superiority of mankind can be restricted to the two more principle intellectual functions of man, which are the universal concept and the concept of relationship. Therefore, animals lack an intellect, as is evident from the positive nature of self activity in complex operations, and from the defect in animals of multiple perfections which naturally flow from the intellect. Consider each:

Considering the positive nature of self activity⁴² even in the most perfect operation of animals: First, in the most complicated and most marvelous activity, animals act from the impulse of nature,⁴³ instinct, otherwise their superior activity would exceed that of the human intellect; what proves too much, proves nothing (*quod nimis probat, nihil probat*). Second, animals lack a universal idea of perfecting their work, and are led only by concrete images; otherwise they would act in multiple and varied ways, such as man, with a universal idea of house, builds diverse houses. Third, animals do not perceive formal relations, such as between cause and effect, such as the dog taking meat in a friendly way from the thief. Fourth, animals do not perceive the most obvious relation, between means and end, even when the finality of marvelous operations is lost, such as the captive beaver building a dam,

⁴¹Umberto Degl'Innocenti, "L'Origine dell'Anima Umana," *Doctor Communis* 11 (1958): 199: "...corrisponde e si adequa alla natura spirituale dell'anima stessa, quale ce la manifestano le sue operazioni più alte: le operazioni dell'intelletto e della volontà, per cui l'uomo si differenzia essenzialmente dagli animali bruti."

⁴²Palmes, "Psychologia," 2: 449: "Ex ratione positiva sese gerendi animalium etiam in perfectioribus operationibus."

⁴³Hugon, *Philosophia*, 2: 56: "De ratione substantiae rationalis est ut non sit determinata ad unum in appetendo. At animalia bruta sunt determinata ad unum. Ergo, non sunt substantiae rationales."

or the bees who prepare the cells of the queen, even though they lack a queen.

Concerning the defect in animals of multiple perfections⁴⁴ which naturally flow from the intellect: First, animals have a lack of conceptual speech which naturally flows from the intellect and without which there is no utility and joy of sharing thoughts and desires; while all men use conceptual languages, and no one denies that animals are incapable of conventional language.⁴⁵ Animals do make sounds of warning, fear, attack, but these are only called language by analogy, interpreted anthropomorphically. Second, animals have a defect of perfectability and progress.⁴⁶ What some wish to call progress in animals does not exceed the sensitive and instinctive order.⁴⁷

⁴⁴Palmes, "Psychologia," 2: 450: "Ex defectu quarundam perfectionum quae intellectum naturaliter consequuntur...ex defectu locutionis conceptualis...ex defectu perfectibilitatis et progressus."

⁴⁵La Vecchia, *Evoluzione*, 318: "...abbiamo trovato del linguaggio umano, distinguendolo dalla comunicazione animale...Il complesso fenomeno del linguaggio ci è apparso particolarmente significativo, perchè sembra che in esso, più facilmente che altrove, sia possibile colmare le innegabili differenze tra l'uomo e gli animali." De Finance, *Essai sur l'Agir Humain* (Rome: Gregorian University, 1962), 177-178, notes the importance of language to manifest the social and interpersonal character, and language makes that character evident. Economist, "Words in Code," *The Economist Magazine* 383 (2 June 2007), 88: "Language makes humans unique and genes active in developing the brain make language possible." Gredt, *Philosophiae*, 364-365, notes that while beasts emit natural sounds and have organs of sound, animals do not speak. Klubertanz, *Philosophy*, 159: "Animals may imitate, but they do not extend the field of recognition of these signs...no construction of new signs (even children invent languages of their own)...no metaphor...no poetry;...language is a power of the intellect in man (operation follows being: *operatio sequitur esse*). Marcozzi, "Differenza," 139, notes that animals emit natural expressions of state of soul, but animals do not emit any symbolic language, even though animal vocal organs are capable of sound and animal brain structure appears capable of sound in chimpanzees and orangutans.

⁴⁶Hugon, *Philosophia*, 2: 53: "De ratione substantiae rationalis est ut possit seipsam perficere, et progredi in scientiis, in artibus, in virtute,. At nullo ex his modis animal progreditur."

⁴⁷Hugon, *Philosophia*, 2: 57: "Nec etiam brutum disciplina excolitur proprie dicta, sed tantum methodo quadam sensitiva et empirica....ex factis ita repetitis acquirit quamdam disciplinae speciem, sed modo mere empirico..."

Therefore, animals do lack intellect,⁴⁸ since there is no sign of intellectual function in animals, neither from positive marvelous activity, nor from defect of perfection. The lack of an intellect is an essential discontinuity between animals and man.

Further proof that man is essentially different from the other animals is that intellectual cognition in man is irreducible to sensitive cognition.⁴⁹

Proof exists that cognition in man is irreducible to sensitive cognition.⁵⁰ Intentional objects which a rational man perceives in his intellection, looking within himself, appear rather diverse from sensitive objects he perceives or his imagination reproduces, and not just diverse from sense objects but irreducible to these sense objects. Such intentional objects are objects of universal concepts by which any human sensitive perception is intrinsically completed. There are other intentional objects which are immaterial, so that they would have no material properties, such as volume, extension, or location in space. Therefore, cognitions which as intellections are experienced by everyone are diverse from sensitive cognition or reproduction by imagination, and are irreducible to these objects. Therefore, if the intellective cognition of man is irreducible to sensitive cognition, then there is an

⁴⁸Palmes, "Psychologia," 2: 448: "Ergo animalia prorsus intellectu carent."

⁴⁹Palmes, "Psychologia," 2: 589: "Cognitio intellectualis irreductibilis est ad cognitionem sensitivam."

⁵⁰Palmes, "Psychologia," 2: 590: "Probatio: Obiecta intentionalia, quae homo rationis compos sua intellectione percipit, ipsi introspicienti apparent prorsus diversa ab obiectis sensitive ab ipso perceptis vel imaginatione sua reproductis, et ad haec obiecta prorsus irreductibilia. (Obiecta conceptuum universalium...obiecta...immaterialia...). Ergo cognitiones quae ut intellectiones ab omnibus habentur prorsus diversae sunt a cognitionibus sensitivis vel imaginatione reproductis, et ad has prorsus irreductibiles. Consequentia ab obiectis ad cognitiones quibus obiecta cognoscuntur omnino legitima est; nec aliter quam ex obiectis de cognitionibus iudicium ferre possimus."

essential discontinuity between man and the other animals.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁵¹ Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁵² Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁵³ Summary of Probabilities is defined as an accumulation of probable

⁵¹Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: "Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius."

⁵²Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁵³Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁵⁴

Certitude could arise from some observable fact or experiment. Marcozzi, at the Gregorian University in Rome, notes that the *a posteriori* method is founded on the essentially evident principle that every being cannot manifest something it does not have; so there is a possibility of knowing the operator, at least in part, from its operations.⁵⁵ Experiments⁵⁶ show that anthropoids can go through an obstacle course, remove impediments to get food, use diverse objects to attain a goal, and in some cases animals can adjust the means for the goal; however, none of these attainments involved the use of reason for systematic research, from hypothesis to experience to the correct solution. Animals were either trained, or saw the solution previously, or used instinct, or succeeded by chance attempts.

⁵⁴Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁵⁵Marcozzi, “Differenza,” 124: “...ogni essere non può manifestare se non ciò che possiede. Donde la possibilità di conoscere l’operante, almeno in parte, dalle sue operazioni.”

⁵⁶Marcozzi, “Differenza,” 136: “...sono le osservazioni...bisogna vedere come l’animale risolve il problema...La soluzione così ottenuta si spiega agevolmente mediante l’istinto e l’associazione d’immagini.”

“Observation and experiment show that animals even the most elevated have manifestations, even marvelous, only materially; men instead, purely spiritual,” notes Marcozzi.⁵⁷ Marcozzi notes the fact that all men have a superior culture, is obvious and needs no demonstration.⁵⁸ This is confirmed by Arcidiacono, at the Gregorian University in Rome, who states that “Mathematics produces technical achievements that liberate man from the servitude of material.”⁵⁹ Babolin, from the same Gregorian University, notes the unique achievements of man in art and culture, education, morality, and religion.⁶⁰

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics. Nogar notes that man is unique and is essentially different from the animals.⁶¹ Calcagno illustrates the physical discontinuity between man and the apes.⁶² De Finance notes that animals have only biological goals, but man has a horizon, an ultimate term of reference into

⁵⁷Marcozzi, “Differenza,” 125: “L’osservazione e gli esperimenti dimostrano che gli animali, anche più elevati, hanno manifestazioni, per quanto meravigliose, soltanto materiali. L’uomo, invece...esclusive di natura spirituale.”

⁵⁸Marcozzi, “Differenza,” 127: “Quanto agli uomini appartenenti a culture superiori, non c’è bisogno di dimostrazione.”

⁵⁹Vincentius Arcidiacono, *Questiones Scientifical ex Mathematica: De Numeris et Mensuris* (Rome: Gregorian University, 1962), 205: “Exinde illae opulentissimae praestationes technicae quae terram replent ut homo subleventur a servitute materiae.”

⁶⁰Sante Babolin, *L’Uomo e il Suo Volto: Lezioni di Estetica* (Rome: Gregorian University, 1997), 295, for art and culture; 295-301 for art and education; 302-309 for art and morality; and 310-316 for art and religion.

⁶¹Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 131: “Man is unique among all the animals and so is his evolution; this difference is one of kind, not merely of degree...cultural factors bid fair to dominate the biological factors...”

⁶²Calcagno, *Philosophia*, 51.

which he can insert his perceptions into a wider totality.⁶³ Di Napoli notes the disjunction between men and apes is both physiological and psychological.⁶⁴ Donat argues that the human soul is essentially diverse, and so is higher in every order from the beast.⁶⁵ Donat also argues that animals lack intellect, since there is no intellectual activity: no tools, no art, no education, no progress, no cognition of supra-sensibles (e.g., honesty, obligation, religion), and no ability to match means with the proper goals.⁶⁶ Gredt argues that brutes do not have an intellect, but only a sensitive soul (*anima sensitiva*); and Gredt also argues that brutes are unable to connect cause and effect.⁶⁷ Hoenen argues that since all the intrinsic operations of the animal depend on matter, consequently also does the substantial form of brutes.⁶⁸ Iturroz argues that animals do not formally know the nature of the goal and the means, nor in the goal do they know the useful relation between the means and the goal, nor do animals discern an object as convenient in itself or because of another.⁶⁹ Klubertanz argues: “The object of the sensory appetite is a good known by sense; the object of the will is the good known by the intellect; hence the power of appetite that is proper to man is in the will” essentially different from

⁶³De Finance, *Essai sur l'Agir Humain* (Rome: Gregorian University, 1962), 32, for the psychic life of animals is reduced to biological goals, and so a lower level of being. Ibid., 127, for the specifically human trait of an intellectual horizon.

⁶⁴Ioannes Di Napoli, *Manuale Philosophiae: ad Usus Seminariorum*, 4 vols. (Turin: Marietti, 1955-1958), 182.

⁶⁵Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 311-318.

⁶⁶Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 194.

⁶⁷Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 1: 325, for animals lack of intellect. Ibid., 1: 364, for inability to connect cause and effect.

⁶⁸Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), 300.

⁶⁹Iturroz, “Metaphysica,” 2: 834.

animals.⁷⁰ La Vecchia notes that, “Differently from the lower animals, man not only knows, but man knows that he knows...He is then essentially more elevated and more perfect than any other organism.”⁷¹ Marcozzi argues that the ideas of man are intrinsically independent of material.⁷² Palmes argues that animals lack an intellectual life by which the sense life is completed and man is raised to a higher perfection; Palmes also argues that animals do not have the true free will.⁷³

Certitude could arise if the argumentation was based on some philosophical principles. The principle of causality would be violated if animals were able to function on an intellectual level as men do; because the effect (language, progress, conceptual thought) would be greater than the cause (*anima sensitiva*).⁷⁴ The principle of sufficient reason would be violated in animals for the same reason, but would be satisfied in mankind because the intellectual soul would be the sufficient reason for human progress, language, art, culture, morality and religious practice.⁷⁵

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason.

⁷⁰George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 230.

⁷¹La Vecchia, *Evoluzione*, 114: “A differenza degli animali inferiori, l’Uomo non solo sa, ma sa di sapere...Egli è dunque essenzialmente più elevato e più perfetto di ogni altro organismo.”

⁷²Marcozzi, “Differenza,” 125.

⁷³Palmes, “Psychologia,” 446, for animals lacking intellectual life. Ibid., 690, for his treatment of liberty.

⁷⁴Benignus, *Nature*, 203: “Is it possible that a merely material being should have interests and aspirations which are immaterial...?” Ibid., 204; “...there can be no more in the effect than in the cause...”

⁷⁵Benignus, *Nature*, 202: “Indeed we have come to name these pursuits of the cultured man or society ‘the humanities.’ In both the individual and society, advancement is conditioned by – is, perhaps, identical with – the increasing subordination of material interests and pursuits to spiritual interests.”

But the explanation is based on the vital principle of man and the vital principle of brutes.⁷⁶ The spiritual vital principle of man is not able to be reduced to the material vital principle of brutes.

Likewise, the material vital principle of brutes is not an adequate cause for the spiritual effects seen in man alone. Therefore, the explanation of the essential difference between man and brute satisfies the principle of sufficient reason.

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas maintains an essential distinction between man and animals, because animals only know the singular by way of sense, while man can know the universal by intellect. St. Thomas notes: “Only rational created nature has an immediate relation to God: because other creatures do not attain to the universal, but only to the particular, either by participating in divine goodness by just existing, just as inanimate things, or else by living and knowing singulars, just as plants and animals. Rational nature, as far as it knows the universal nature of the good and of being, has an immediate order to the universal principle of being” (Aquinas *Summa Theologiae* 2-2. 11. ad 3).⁷⁷

Certitude could arise if Neo-Scholastics agree on the fact of an essential difference between

⁷⁶Marcozzi, “Differenza,” 140: “Finalmente gli animali non hanno facoltà spirituali, perchè non progrediscono, non inventano nulla spontaneamente. È proprio delle facoltà intellettive scoprire, inventare, perchè, astraendo dai dati del senso, può cogliere la natura delle cose e le leggi universali che le reggono...Gli animali sono legati ai dati del senso e non possono astrarre da questi perfettamente: gli animali hanno l’anima materiale.”

⁷⁷Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 317: “Sola autem natura rationalis creata habet immediatum ordinem ad Deum; quia caetera creaturae non attingunt ad aliquid universale, sed solum ad aliquid particulare, participant divinitatem vel in essendo tantum, sicut inanimata, vel etiam vivendo et cognoscendo singularia, sicut plantae et animalia. Natura autem rationalis, in quantum cognoscit universalem boni et entis rationem, habet immediatum ordinem ad universale essendi principium” (Aquinas *Summa Theologiae* 2-2. 11. 3).

man and the other animals. Nogar, for example, notes “Man is different in kind, not just in degree.”⁷⁸ Other Neo-Scholastics who agree have been mentioned with the arguments they proposed for the essential difference between man and brute. These Neo-Scholastics are: Calcagno, De Finance, Donat, Di Napoli, Gredt, Hoenen, Iturrioz, La Vecchia, Macozzi, and Palmes.

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. Regarding the term “intelligent,” some authors, who consider the sensitive life of animals, describe the perfection of animal activity as more or less “intelligent.”⁷⁹ This way of speaking is entirely inappropriate, arises from false doctrine, errors and confusion, and is without philosophic proof; such use of “intelligent” ought to be avoided in writings on experimental science. Nogar notes that there is a distinction between the psychosocial factors of man and his biological, or genetic, factors, so that the psychosocial is not reducible to the biological.⁸⁰ Köhler comments on anthropoid experiments, which illustrate the exclusively material operations of animals, that the object has to fall in the same visual field, so that the necessary means have to be in the same visual material field as the goal.⁸¹ Révész, who raised a baby chimpanzee with his own baby son, noted that even with an enormous number of experiments, he was never able to find even the minimum traces of the comprehension of a problem in

⁷⁸Nogar, *Wisdom*, 131: “...different is one of kind...not merely of degree.”

⁷⁹Fredinando M. Palmes, “Psychologia,” 2: 447: “Non pauci auctores, potius naturalistae quam philosophi...eam intelligentiae tribuunt, de animalibus loquentes plus minusve intelligentibus....omnino impropria est, a falsis doctrinis inducta et pluribus erroribus confusionibusque obnoxia, improbanda a philosopho, et quoad eius fieri possit, etiam in tractationibus scientiae experimentalis vitanda.”

⁸⁰Nogar, *Wisdom*, 131: “The psychosocial factors are not reducible to the biological (or genetic) factors.”

⁸¹Marcozzi, “Differenza,” 137: “...Köhler, che gli Antropoidi sperimentati...se non quando i vari oggetti, di cui hanno bisogno, cadono nel medesimo campo visivo...non si capisce...”

animals.⁸² Marcozzi notes that the scientific study of fossils and living Anthropoids today has shown no change in 10 to 15 million years (from the Miocene), with no utensils, no weapons, no huts, no spiritual life or conscience.⁸³

Certitude could arise if the opposite opinion is not tenable. The opposite opinion is not only not tenable (as proved from metaphysical and also from *a posteriori* arguments), but the opposite opinion is also dangerous. No one can be indifferent to the allegation of a mere qualitative distinction between man and the animals, instead of an essential difference between man and the other animals. The lack of an essential difference between man and other animals would not only degrade the honor and the good name of our own race, but there would be real danger of minimizing human dignity.⁸⁴ So the question of complete and total solidarity with other animals is not a speculative one, but one connected with the nature of man. If man is only and merely an animal in nature, then human dignity (and with it morality and culture) is indeed at risk.

Certitude could arise if the objections of adversaries are able to be answered. However, the objections of the adversaries can be answered.

OBJECTION: Your arguments prove that animals do not have human intelligence, but they do not

⁸²Marcozzi, "Differenza," 138: "Il Révész...Malgrado il numero enorme di prove, asseriscere il Révész, non ho potuto constatare la minima traccia di comprensione del problema."

⁸³Marcozzi, "Differenza," 140: "Ora, gli Antropoidi da quanto esistono...Miocenico...non hanno fatto un passo innanzi..."

⁸⁴Umberto Degl'Innocenti, "L'Origine dell'Anima Umana," *Doctor Communis* 11 (1958): 178: "Nessuno perciò resta indifferente al problema...ma addirittura il pericolo d'una menomazione della dignità umana."

lack all intelligence.⁸⁵ For example, animal intelligence is real but less perfect; second, even men have distinct grades of intelligence; third, newborn humans have less intelligence than animals of the same age; fourth, men have less intelligence than angels, but still have real intelligence. REPLY: The assertion is denied. First, animal cognition is only of the sensitive order, and not just “less perfect.” Second, although there are grades of human intelligence, all men have abstraction for universals, reasoning, language, progress. Third, the argument concerns definitive intelligence, not the growth of intelligence in infants. Fourth, although man’s intelligence is less than the angels, animals do not even have the lowest level of intelligence, but only sense cognition and instinct.

OBJECTION: In particular, the thesis does not prove from defect of progress, since animals do learn, for example, sheepdogs.⁸⁶ Further, if animals do not have progress, this is not a lack of intellect, but perfection of intellect that sees progress already attained. REPLY: The assertion is denied. Even if animals learn, they do so by repetition, not by intellectual explanation. Further, even if the progress of animals is most perfect in the sensitive order (by instinct), this progress cannot be applied to higher goals (rationally chosen by men).

OBJECTION: The thesis is not demonstrated by a lack of ability for conceptual language, for animals have natural language.⁸⁷ Further, the natural language of animals is truly conceptual, for it is described in comparison to human language. REPLY: The assertion is denied. Their natural sounds prove the

⁸⁵Palmes, “Psychologia,” 2: 452: “Generatim, argumenta non probant animalia carere omni prorsus intelligentia, sed ad summum intelligentia simili humanae.”

⁸⁶Palmes, “Psychologia,” 2: 453 “Falsum est animalia non progredi; cum multa addiscant disciplina quae antea nesciebant...”

⁸⁷Palmes, “Psychologia,” 2: 454: “Speciatim etiam ex defectu loquelaе conceptualis non demonstratur thesis. Quia: Lictet bruta carrent locutione conceptuali conventionali seu artificiosa, non destituuntur taman locutione conceptuali naturali, quae abunde ipsis sufficit.”

animals have what is needed for conceptual language, but there is no conceptual language. Further, if the natural language of animals was truly conceptual, it would be the animal that communicates the concept, instead of the human researcher describing it.

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Modern philosophy, even the most recent, accurately tends to make a distinction between the human person and all the rest of corporal beings. Therefore, man is called a subject, and the rest of corporal being are objects; man is a person, and the rest are things. Accordingly, no philosopher should be disturbed by the those who hold an essential difference between man and brutes, or even man and the rest of the world.⁸⁸ No theologian would be disturbed by the essential difference between man and brute, since the theologian already endorses the superiority of mankind, due to the direct and immediate creation of the human soul by God.⁸⁹

The level of certitude for “Man is essentially different from the other animals” is at minimum at the level of the metaphysically certain. The proof is the principle of causality. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Hugon who holds the thesis as “certain.”⁹⁰ This also agrees with Klubertanz, who notes in the analysis of animal activity, “Everything that is necessarily implied by a given activity, can be asserted to be present with certitude.”⁹¹

⁸⁸Iturrioz, “Metaphysica,” 1: 758: “Philosophia moderna, etiam recentissima...Sic homo dicitur *subiectum*, relinqua sunt *obiecta*; homo est *persona*, reliqua sunt *res*.”

⁸⁹Bittle, Psychology, 592: “The spiritual soul of man is created.”

⁹⁰Hugon, *Philosophia*, 2: 53: “...haec est doctrina certa...”

⁹¹Klubertanz, *Philosophy*, 124: “...by a given activity...present with certitude.”

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.⁹² This is the method of Aristotle and St. Thomas.⁹³ Man is an animal⁹⁴ and shares the sensitive operations of animals, so that our knowledge must come from similarity or dissimilarity.⁹⁵ Further, we only know the nature of man and the other animals by their activity, because direct knowledge of anything is hidden.⁹⁶ So it necessary to know things indirectly by a knowledge of their activity or manifestations, avoiding the error of those who only seek facts and not conclusions, or the error of those who, without first consulting nature, construct their system *a priori*.

⁹²Gardeil, *Cosmology*, 7: "...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense."

⁹³Gardeil, *Cosmology*, 4: "...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system..."

⁹⁴Benignus, *Nature*, 200: "Remember man is partly animal."

⁹⁵Klubertanz, *Philosophy*, 124: "Part of the basis of this knowledge is an argument from similarity: for we see that animals have sense organs more or less like ours, and so we can suppose that the activity of these organs is similar to our own comparable activity. This argument affords a reasonable supposition."

⁹⁶Marcozzi, "Differenza," 124: "Se conosce la natura delle cose dalle loro attività e manifestazioni. Poichè ci sfugge la conoscenza diretta della natura di qualsiasi cosa, è necessario accontentarci di conoscerla soltanto indirettamente dalla conoscenza delle sue attività o manifestazioni..." Klubertanz, *Philosophy*, 151: "...we have no direct experience of the inner or conscious activities of brute animals, we can arrive at some knowledge ...by an analysis of their external behavior."

Chapter 14: POSSIBLY, THE HUMAN BODY HAS EVOLVED.

The State of the Question

The Pontifical Gregorian University's faculty of philosophy maintains the possibility of evolution by an anticipation and predisposition in the prehominids and the hominids for the body of man.¹ However, contemporary proof of the origin of the body of man from fossil remains is incomplete and fragmentary.²

The thesis that the human body has evolved is the application of the general theory of evolution to the specific case of man.³ Since it has already been shown that there is an essential difference

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 260: "L'elemento di connessione e di concatenamento tra psiche razionale, specificamente umana, e psiche sensitiva, propria dell'animale, potrebbe essere cercato con più frutto in altra direzione, nella linea evolutiva che ha condotto all'Uomo. Durante il processo di Ominazione, i Preominidi a gli Ominidi pur appartenendo al commune phylum evolutivo dei Primati, ma differenziandosi nettamente dagli actuali Anthropoidi, hanno anticipato e predisposto l'organismo umano, mentre si andavano divesrificando in modo sempre più netto dai predessori animali."

²La Vecchia, *Evoluzione*, 162: "Ma fin dagli anni cinquanta alcuni antropologi di fama, come il Sergi, si rifiutavano di includerlo nella famiglia umana, collocandolo, insieme con le Australopithecinae, tra i Preominidi. Questi pareri manifestamente discordi sono determinati, nel maggior numero dei casi, dalla morfologia piuttosto equivoca di alcuni resti fossili, oltre che dal fatto che i rinvenimenti avvengono, per lo più, in modo incompleto e frammentario."

³Ferdinando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 802: "Est, videlicet, hypothesis generalis evolutionismi vel transformismi authentici circa primam vitae originem et diversitatis viventium, ad originem hominis explicandam simpliciter applicata." Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 127: "The general reason for a detailed and specific concern for the origin of man is that he is by far the best known, most loved, and most important creature of nature. Both practically and speculatively, whatever is known in science or done in art is a product of human endeavor." Umberto Degl'Innocenti, "L'Origine dell'Anima Umana," *Doctor Communis* 11 (1958): 178: "La ricerca della propria origine ha sempre

between man and the other animals, the consideration here is limited to the material body of man. The issue is important, since Neo-Scholastic philosophers such as Karl Rahner have pointed out that man is a spirit “in the world,” so that the body in the world has its own special importance.⁴

Neo-Scholastics earlier in the twentieth century proposed their treatment of this question with a wide scope. For example, in 1959, Palmes argued, “The hypothesis of the mere animal origin of the human species is naturally impossible, however it is understood.”⁵ Since then, more distinctions have been considered.⁶ Further, the scientific base for the philosophy of nature continues to develop at a rapid pace, and the judgment of philosophy depends on the facts of science.⁷

stuzzicato la curiosità degli uomini.”

⁴Pedro Barrajón, *Evoluzione*, “Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 264: “Il corpo ha dunque una grande importanza nella visione crisitana dell’uomo...L’uomo è uno spirito ‘incarnato,’ uno spirito ‘nel mondo,’ per usare l’espressione di Rahner.”

⁵Palmes, “Psychologia,” 2: 802: “...quomodolibet intelligatur...”

⁶Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 131: “Consequently the distinction between his biological faculties and psychosocial faculties must be recognized to be of prime evolutionary importance. The psychosocial factors are not reducible to the biological (or genetic) factors, even though they came on the human scene together with important biological modifications. Anthropology must study man with full allowance for this distinction; what is more cultural factors bid fair to dominate the biological factors in the future of evolution of man. The study of primate ancestors, or any other animal behavior, cannot give a full account of the origins of, the nature of, or the future of the psychosocial novelty which has arisen in the advent of *Homo sapiens*.

⁷Palmes, “Psychologia,” 2: 803: “Nomine ‘fundamenti scientifici’ ...intelligimus factum aliquod vel veritatem seu conclusionem aliquam, sive ordinis experimentatis seu ad scientias positivas biologicas et anthropologicas pertinentem, sive oridinis philosophici, propriam philosophiae naturalis, vel metaphysicae. Veritates, enim, et conclusiones philosophiae non minus scientificae sunt quam veritates vel conclusiones scientiae experimentalis.”

Participants in the Dialogue

General theories of the origin of all species can be reduced to four.⁸ Creationism, or rather Productionism (God produces from pre-existing matter), so that every species is produced by God, the more perfect after the imperfect, from inorganic matter. Passive Evolution under the influence of God, by which God uses lower species to generate higher species, which is the opinion of such as D'Hulst, De Sinety, Bouyssonie, Wassman, Gemelli, Marcozzi, and many other Catholics.⁹ Active Evolution holds that God in the beginning produced all species at once, but not in their actual form, but virtually and as if in a seed, so that as just as the pregnant mother is to the fetus, so the world itself is the pregnant cause of the birth of species. Passive Evolution without the influence of God, which accounts for evolution only by natural causes and by chance happening, which is the opinion of such philosophers as Mivart, Le Roy, Teilhard de Chardin, and others.¹⁰

Adversaries to the proposal in this chapter are some of the Neo-Scholastics of the first half of the twentieth century. For example, Calcagno argues against anthropological transformism, the evolution of the body of man, based on physical science alone.¹¹ Palmes likewise argues that the

⁸Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux), 1: 305: "Quomodo ergo una species alteri successerit, et, generatim, quae sit specierum origo...Creationismi, seu potius Productionismi...Evolution Passiva sub Dei influxu...Evolutio Activa...Evolutionis Passivae absque influxu divino..."

⁹Ioannes Di Napoli, *Manuale Philosophiae: ad Usus Seminarioum*, 4 vols. (Turin: Marietti, 1955-1958), 2: 179: "...per specialem Dei actionem, in quantum Deus transformaverit prius corpus simii in corpus humanum et postea in illud animam creatam infuderit."

¹⁰Di Napoli, *Manuale*, 2: 179: "corpus habuisse originem a simio...sine speciali influxu Dei..."

¹¹Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D'Auria, 1952), 2: 51: "Alter (Transformismus Mitigatus) restringitur ad solum corpus; sed neque hoc modo admitti potest, ut constat ex multis et profundis differentiis

evidence for the evolution of the body is insufficient from physical science.¹² However, Palmes adds that the evolutionary origin of the body of man is impossible without the special intervention of God, and argues extensively; nevertheless, Palmes does not continue the discussion of evolution of the body of man, with divine intervention.¹³ Maquart also argues that the hypothesis of the evolution of the body of man has to be proved, but says that science cannot prove either the mode of the evolution of the body of man,¹⁴ nor can science prove the morphological continuity between man and his supposed animal predecessors.¹⁵ Concerning the mode, Maquart (1937) did not have the scientific information

inter organismum hominis et simiorum. Statura erecta hominis, duplex manus, forma dentium, oris conformatio, explicatio frontis, perfectio cerebri, magnitudo anguli facialis, excellentia in functionibus sensitivis at locomotivis, aliaque multa, omnino prohibent quominus homo dici possit simius evolutus.” Nogar, *Wisdom*, 138, argues in favor of evolution, and notes: “Man falls naturally into place, for morphological reasons, among the Primates.”

¹²Palmes, “Psychologia,” 2: 808: “...originem tantum corporis humani per descendentiam a belluavia generationis procedere, *non alia argumenta* ordinis experimentalis adduncant ad suam sententiam probandam, quam ea quae ipsis transformismus authenticus (corpus et anima) suppeditat...”

¹³Palmes, “Psychologia,” 2: 809-810: “Impossible est transformationem belluae in hominem fieri in supposito generante...Impossible quoque est transfromationem belluae in hominem firei in supposito generato...” Ibid. 810, Palmes makes the statement that there is no basis for asserting the special intervention of God in the evolution of the human body, but this appears to ignore (Confer: Hugon, *Philosophia*, 1: 305) both Passive Evolution under the influence of God and/or Active Evolution under the influence of God. Palmes actually says, “Ergo nisi supponatur specialis Dei interventus, qui certum gratis asseritur...” Nogar, *Wisdom*, 303, quotes Dobzhensky: “Evolution is the method whereby Creation is accomplished.”

¹⁴F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 2: 548: “Nullo autem facto scientifico cognosci potest modus productionis corporis primi hominis, qui a libera Dei volutntate pendet.”

¹⁵Maquart, *Philosophiae*, 2: 548: “Aliunde, etiam probata continuitate morphologica inter bruta superiora et hominem, exinde non licet ullam conclusionem inferre circa originem unius ab altro: continuitas haec esset statica, problema vero originis dynamismum spectat.”

now available concerning DNA and similar discoveries.¹⁶ Concerning the morphological continuity, it appears that Maquart uses the same comparative demonstration as Calcagno, the demonstration of morphological differences between living Primates and man; but both the Primates and *Homo sapiens* have been evolving like branches on a tree in different directions, and the correct judgement must rather take into account the common ancestor. In short, the scientific method of comparison used by Maquart is erroneous. Donat objects that there are no facts that demonstrate anthropological evolution, but he was writing in 1914 when there were less facts.¹⁷ For example, the Neanderthal man was found near Düsseldorf in 1856, and Donat noted that the species seemed to be inferior to recent man, but more noble than monkeys; while La Vecchia, after serious analysis, maintains that the Neanderthal concluded the process of Hominization.¹⁸ Gredt argues that to say man evolved from the brutes is as if to deny the spirituality of the human soul; but more modern Neo-Scholastics hold the creation of the soul by God, so the direct and immediate creation of the human soul by God does not directly affect the evolution of the human body one way or another.¹⁹

¹⁶Nogar, *Wisdom*, 131: “Genetically and by natural processes (selection etc.) the material preparation for the mental novelty seems (to the anthropologist) to have come about like all the other evolutionary changes he knows.”

¹⁷Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 296, concerning lack of facts for the evolution of the body of man. Ibid., 306, for his opinion on the Neanderthals.

¹⁸La Vecchia, *Evoluzione*, 314: “Con l’*Homo sapiens neanderthalis* l’evoluzione psichica, compresa nel processo di Ominazione, che aveva avuto inizio fin delle *Australopithecinae* del Sud Africa, si può ritnere conclusa.”

¹⁹Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 1: 443, and Gredt does not treat anthropomorphic evolution extensively: “...breviter dicimus...” Nogar, *Wisdom*, 303: “The special causality of God in the origin of man’s body need not be an immediate one.”

Proponents of the thesis are such Neo-Scholastics as Nogar,²⁰ Klubertanz,²¹ Benignus,²² and La Vecchia.²³ Even in 1927, Hugon was willing to admit the evolutionary development of the body of man as long as God was involved “to form the human body from the body of the brute.”²⁴

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue,

²⁰Nogar, *Wisdom*, 131: “The biological continuity of man and the other animals seems to be assured. Genetically, and by natural processes (selection, etc.) the material preparation for the mental novelty seems (to the anthropologist) to have come about like all the other evolutionary changes he knows. He believes that this is as far as his scientific discipline can take him.”

²¹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “...possible that the human body...not seem to be impossible...”

²²Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 498: “Mechanical forces that (first) led to life are made intelligible only if we consider them as intended for that very end. Even with imperfect and deficient forms, nature is directed toward life.” Ibid., 501: “The Angelic Doctor...very relevant to the problem of evolution...ultimately to live on the highest possible level, that is to say, as the body of man.”

²³La Vecchia, *Evoluzione*, 260: “L’elemento di connessione e di concatenamento tra psiche razionale, specificamente umana, e psiche sensitiva, propria dell’animale, potrebbe essere cercato con più frutto in altra direzione, nella linea evolutiva che ha condotto all’Uomo. Durante il processo di Ominazione, i Preominidi a gli Ominidi pur appartenendo al commune phylum evolutivo dei Primati, ma differenziandosi nettamente dagli attuali Anthropoidi, hanno anticipato e predisposto l’organismo umano, mentre si andavano divesrificando in modo sempre più netto dai predessori animali.”

²⁴Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 2; 164: “...difficultas est de corpore. Absolute non repugnat Deum potuisse ex corpore belluino humanum copus efformare, nempe taliter immutando materiam belluinam, ut apta fieret animae rationali recipiendae.”

every attempt should be made to clarify that truth. In this case, the scientific basis for the evolution of the human body has increased.²⁵ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Anthropological Evolutionism is the theory of those who hold the first individual or first individuals of the human species originated, by way of generation, from living organisms distinct and inferior in nature in the animal kingdom.²⁶

Generation of a natural thing is defined as the production of a thing from the presupposed subject.²⁷ Generation is the opposite of creation. Metaphysically speaking, the thing which (*ens quod*) happens by generation, or is produced, or is generated, is only the substantial composit.²⁸ The

²⁵George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: "What is required is that, either during the formation of the germ cells or at the moment of their union, the material parts undergo such a modification that they become like the human ovum or sperm, or the fertilized human ovum...To sum up. Essential evolution of living things up to and including the human body...as explained through equivocal causality, chance, and Providence, is a possible explanation of the origin of those living things."

²⁶Palmes, "Psychologia," 2: 802: "Hypothesis originis belluinae speciei humani est assertio eorum qui tenent primum vel prima individua speciei humanae orta esse, via generationis, ab organismis viventibus distinctae et inferioris naturae ad regnum animale pertinentibus."

²⁷Palmes, "Psychologia," 2: 776: "... illa qua ens naturae fit vel efficitur ex praesupposito subiecto vel materia a generante aliquomodo procedente, atque ens generatum partialiter saltem intrinsece constituyente...Ideo recte et breviter generatio rerum naturae definiri potest: production rei ex praesupposito subiecto."

²⁸Palmes, "Psychologia," 2: 776: "Proprie loquendo, illud quod generatione fit, producitur, vel generatur, est tantum compositum substantiale: forma vero substantialis, proprie loquendo, non producitur nec fit, nec generatur, sed est generativa, seu eductiva et unitiva formae, non in formam sed tantum in compositum ex materia et forma terminatur."

substantial form, properly speaking, is not produced, nor becomes, nor is generated, but is only that by which (*id quo*) the composit arises, or is generated, or is produced. For the generative act, or the act educative and unitive of form, does not terminate in the form but only in the composit from material and form.

The “solid scientific foundation” which would be required to sustain the evolutionary origin of the body of man would require, if there is no certitude, at least probability in the mind of an unprejudiced and impartial person to be able to make a judgment with serenity of mind.²⁹

The “special intervention of God” signifies here that God made the first living thing or the first organic living thing from material already existing prior to life, which material had been created by God. In other words, God produced the substantial form (the soul) of the first living organism, dependent on some pre-existing material created by God, through educative action if the concern is with living things distinct from man, dependent on the merely passive potency of the material, and in no way dependent on the active and exigitive potency of the material. In man, God creates the human soul immediately and directly.

Negatively, “the special intervention of God” is not any of the following.³⁰ It is not miraculous, which is the operation of God above nature, against nature or besides the laws of nature, where nature is already constituted in its naturally existing being; but in the origin of the human body is considered the production or constitution “from” this nature. It is not creation, which is production from nothing of self or subject, because the living body is not produced from nothing. It is not the general

²⁹Palmes, “Psychologia,” 2: 803: “...sin minus certitudinem, saltem probabilitatem...”

³⁰Palmes, “Psychologica,” 2: 778: “...specialis interventus Dei...Non...miraculosa...de natura constituenda vel producenda...Neque...creatio proprie talis...Nec...concursus generalis...non est specialis...”

concurrence of God, by which God as the Prime Cause concurs with all the effects of secondary causes, because such intervention by God is general, not special.

Question Needing A Reply

God does intervene even in morphological changes for the origin of the body of man, by willing and causing these changes, even though God may use secondary causes.³¹

The Thomistic Foundations

Does St. Thomas endorse a universal hierarchy in which nature is directed toward life? Yes, St. Thomas has a global view of the world moving toward the same goal.³² St. Thomas maintains: “But since, as was already stated, everything which undergoes motion tends as such toward a divine likeness in order to be perfect in itself, and since a thing is perfect in so far as it becomes actual, it follows that the intention of everything that is in potentiality is to tend to actuality by way of movement. Hence the more final and the more perfect an act is, the more the appetite of matter is inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain grades are to be found in the acts of forms. For primary matter is in potentiality, first of all, to the elemental form.

³¹La Vecchia, *Evoluzione*, 314: “Dio, tuttavia, facendo esistere un’anima spirituale nei primi uomini, si servì pure di cause naturali (‘cause seconde’) che entrarono progressivamente in azione, modificando opportunamente quegli organismi. Anche le modificazioni morforlogiche Dio le ha volute e causate.”

³²Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 319, note 22: “...postmodum vero vita animalis, demum vero vita hominis...homo enim est finis totius generationis” (Aquinas *Summa Contra Gentiles* 3. 22).

While under the elemental form, it is in potentiality to the form of a compound; wherefore elements are the matter of a compound. Considered under the form of a compound, it is in potentiality to a vegetative soul; for the act of such a body is a soul. Again the vegetative soul is in potentiality to the sensitive, and the sensitive to the intellective. This is shown in the process of generation, for first in generation is the fetus living a plant life, afterwards the life of an animal, and finally the life of man. After this no later or more noble form is to be found in things that are generated and corrupted. Therefore, the last end of all generation is the human soul. Consequently, the elements are for the sake of compounds, the compounds for the sake of living things, and of these plants are for the sake of animals, and animals for the sake of man. Therefore, man is the end of all generation. (Aquinas *Summa Contra Gentiles* 3. 22)³³

Does St. Thomas teach that lower creatures are in service of higher creatures? Yes, he does, and so reprises Aristotle who taught that “nature proceeds little by little from things lifeless to animal

³³Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vols. (Madrid: BAC, 1967), 2: 133-134: “Cum vero ut dictum est, quaelibet res mota, in quantum movetur, tendat in divinam similitudinem ut sit in se perfecta; perfectum autem sit unumquodque in quantum fit actu: oportet quod intentio cuiuslibet in potentia existentis sit ut per motum tendat in actum. Quanto igitur aliquis actus est posterior et magis perfectus, tanto principalius in ipsum appetitus materiae fertur. Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur. Nam materia prima est in potentia primo ad formam elementi. Sub forma vero elementi existens est in potentia ad formam mixti: propter quod elementa sunt materia mixti. Sub forma autem mixti considerata, est in potentia ad animam vegetabilem: nam talis corporis anima actus est. Itemque anima vegetalis est in potentia ad sensitivam; sensitiva vero ad intellectivam. Quod processus generationis ostendit: primo enim in generatione est fetus vivens vita plantae, postmodum vero vita animalis, demum vero vita hominis. Post hanc autem formam non invenitur in generabilibus et corruptibilibus posteria forma et dignior. Ultimus igitur finis generationis totius et anima humana, et in hanc tendit materia sicut in ultimam formam. Sunt ergo elementa propter corpora mixta; haec vero propter viventia; in quibus plantae sunt propter animalia; animalia vero propter hominem. Homo igitur est finis totius generationis.”

life” and “there is observed in plants a continuous scale of ascent toward the animal.”³⁴ This observation of natural ascent is helpful to understand the evolutionary progress toward the human body.³⁵ St. Thomas notes, “...less noble creatures are in the service of the more noble...Further, every creature is in the service of the perfection of the universe...Finally, the totality of the universe with all its parts is ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).³⁶

Does St. Thomas consider the human body as an essential, a fundamental, and a principle of life of the human being? Yes, St. Thomas had a vision of man that is full, complete, and integral: body and soul; and although he valued the spiritual dimension of man, the somatic element was no less important.³⁷ St. Thomas notes that if you could say the soul is man, then you would have to admit that “the sensitive soul completes its operation without the body; because in such a case, all the operations which we attribute to man would be exclusively from the soul; because everything is identified with the subject which causes its own operations. So man will be the being who causes the operation of man. But sensation is not the operation of the soul alone (as already proved). Since sensation is a human

³⁴Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 202, cites Aristotle.

³⁵Nogar, *Wisdom*, 323: “Thomas Aquinas...repeatedly argued that...a good governor shows his wisdom and power not by doing everything himself but by deputing his well-disposed ministers to assist him. So also God manifests His perfection of government and providence by working through His creation and its natural laws to produce effects that would otherwise have to come by way of a miraculous intrusion upon nature. Confer: Aquinas *Summa Theologiae* 1. 22. 3; Aquinas *Summa Theologiae* 1. 103. 6; Aquinas *Summa Contra Gentiles* 3. 76; Aquinas *Summa Contra Gentiles* 3. 77; Aquinas *Summa Contra Gentiles* 3. 83; Aquinas *Summa Contra Gentiles* 3. 94; and other parallel passages.”

³⁶Mondin, *Dizionario*, 406, cites Aquinas *Summa Theologiae* 1. 65. 2.

³⁷Mondin, *Dizionario*, 626: “Da lui l’uomo è apprezzato non solo nella dimensione spirituale che è certamente più importante, ma anche nella dimensione somnatica, ritenuta non meno essenziale all’uomo.”

operation, and there would be no operation of the soul more proper and specific, it is clear that man is not only a soul, but a composit togetherness, which is the result of the union of body and soul” (Aquinas *Summa Theologiae* 1. 75. 4).³⁸

Does St. Thomas endorse secondary causes? Yes, he does, and this is the key to the current thesis on evolution. St. Thomas affirms the absolute primacy of God as the principle cause of everything produced by nature, but St. Thomas also affirms there are secondary causes in nature. As proof of secondary causes, St. Thomas has three arguments (Aquinas *Summa Theologiae* 1. 105. 5).³⁹ First, without secondary causes there would be no connection for creatures between their causation and the effect; creatures would be impotent and their powers in vain. Second, every being exists through its operations, so that without secondary causality, creatures existence would be imperiled. Third, less perfect things are ordered to more perfect: matter is ordered to form as the first act, and matter is ordered to operation as the second act, in such a way that operation is the goal of created things. Therefore, St. Thomas confers upon secondary causes the full share of being and efficacy to which they are due. In the real world, the nature of the effect is similar to the nature of the cause, so that warmth does not chill, and humans generate humans. So the existence of natural laws suppose

³⁸Mondin, *Dizionario*, 142: Si potrebbe dire che “l’anima sensitiva compie le sue operazioni senza il corpo; poiché in tal caso tutte le operazioni che si attribuiscono all’uomo sarebbero esclusive dell’anima; perché ogni cosa si identifica con il soggetto che svolge le operazioni della medesima. Perciò l’uomo sarà quell’essere che svolge le operazioni dell’uomo. Ma il sentire non è un’operazione dell’anima soltanto (come è già stato provato). Essendo dunque il sentire un’operazione dell’uomo, sabbene non sia la sua operazione più propria e specifica, è chiaro che l’uomo non è soltanto anima ma un insieme, che risulta composta di anima e di corpo” (Aquinas *Summa Theologiae* 1. 75, 4).

³⁹Mondin, *Dizionario*, 410, cites Aquinas *Summa Theologiae* 1. 105. 5.

that God created beings endowed with causality.⁴⁰

The Scholastic Solutions

That the body evolved from some lower form to the human body can be argued several ways. First, God uses secondary causes wherever possible. Second, there is a universal hierarchy in which the lower is in service of the higher, and has an appetite for the higher. Third, there is a reasonable philosophical explanation of how the evolution of the body of man could take place, Klubertanz's theory of passive evolution under the influence of God. Fourth, the general opinion of Neo-Scholastics concerning the evolution of the human body has changed as manifest by the International Congress in Rome, 23 to 24 April 2002, at the Pontifical Atheneum *Regina Apostolorum*.

First, God uses secondary causes whenever possible.⁴¹ St. Thomas teaches that God, like a good governor, does not do everything Himself. First, if God did everything Himself, creatures in the world would be deprived of causality. Second, if God did everything Himself, our personal experience of our own personal causality would be a false perception. Third, if God did everything Himself there would be little or no basis for personal responsibility, ethics, or morality. Fourth, there is already a philosophical system rejected by the Neo-Scholastics, called Occasionalism, which has creatures as

⁴⁰Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 181: "Detrahere actiones proprias rebus est divinae bonitate derogare" (Aquinas *Compendium Theologiae* 1. 5-41: Aquinas *Summa Contra Gentiles* 1: 13). Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 316, notes that "Suarez pointed out that 'God does not interfere directly with the natural order, where secondary causes suffice to produce the intended effect' (Francisco Suarez, *De Opere Sex Dierum*, 2. 10. 13)

⁴¹Nogar, *Wisdom*, 303: "The special causality of God in the origin of man's body need not be an immediate one."

only the occasion of divine action and God the only true cause of everything. Fifth, other Neo-Scholastics, such as La Vecchia at the Gregorian University in Rome, believe this view of secondary causality can be applied to the evolution of the body of man.⁴²

Second, there is a universal hierarchy in which the lower is in service of the higher, and has an appetite for the higher.⁴³ Hugon holds that there is an ontological nexus, by reason of nature, for the world as it moves to the same goal.⁴⁴ Hugon describes this as first a “to be” in minerals, to which is added “to live” in vegetable life, to which is added “to sense” in animal life, so that man has “to be,” “to live,” “to sense,” and “to reason.” Hugon notes that this was so common a philosophic opinion that the Scholastics had an axiom, “The top of the inferior touches the lowest superior.”⁴⁵ Gilson also endorses such a universal hierarchy: “That hierarchy is not based on the assumption that the lower possesses whatever the higher possesses, but on the fact that the lower has a feeble participation in what the higher possesses. Thus the animal, whose nature is purely sensitive, is deprived of reason but is endowed with a kind of prudence and natural power to evaluate which is a feeble participation in

⁴²La Vecchia, *Evoluzione*, 314: “Dio, tuttavia, facendo esistere un’anima spirituale nei primi uomini, si servì pure di cause naturali (‘cause seconde’) che entrarono progressivamente in azione, modificando opportunamente quegli organismi. Anche le modificazioni morforlogiche Dio le ha volute e causate.”

⁴³Nogar, *Wisdom*, 131: “...the material preparation for the mental novelty...”

⁴⁴Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 302: “Quia res mundanae ad eundem finem conspirant, debent nexu quodam colligari. Triplex autem concipitur nexus: *ontologicus*, seu rationem naturae, *dynamicus*, seu ratione causalitatis, *teleologicus*, seu ratione finalitatis. De nexu dinamico et teleologico sufficienter disseruimus...”

⁴⁵Hugon, *Philosophia*, 302-303: “Quae omnia, iuxta Scholasticos in aliquo communi conveniunt...Ex axioma Scholasticorum: Supremum inferioris attingit infimum superioris.”

human reason.”⁴⁶ Benignus comments on the text of St. Thomas (Aquinas *Summa Contra Gentiles* 3. 22). Benignus says, “The Angelic Doctor is teaching something that is very relevant to the problem of evolution, something that makes evolution intelligible. What he is teaching is that primary matter is appetite or urge to live and ultimately to live on the highest possible level, that is to say the body of man.”⁴⁷

Third, Klubertanz has been able to give a reasonable philosophical explanation of how the evolution of the body of man could take place. The Neo-Scholastic, Joseph Gredt, in 1909, argued against the evolution of the human body. However, by 1953, the attitude of some Neo-Scholastics had changed. Klubertanz argues that “it seems possible that the human body could take its rise in this way,” by equivocal causality, chance, and Providence. Even Klubertanz admits that the complexity of the interference of the equivocal causality would be staggering, but it does not seem impossible.⁴⁸

What is the general theory of Klubertanz? He affirms essential evolution of living things up to and including the human body (the whole man with his spiritual soul excluded) through equivocal causality, chance and Providence.⁴⁹ This is a possible explanation of the origin of living things.

How does Klubertanz specifically envision the possibility of human body evolution? Either

⁴⁶Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 211: “...universal hierarchy...lower has a feeble participation in what the higher possesses.”

⁴⁷Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), “The Angelic Doctor...very relevant to the problem of evolution...ultimately to live on the highest possible level, that is to say, as the body of man.”

⁴⁸George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “...possible that the human body...not seem to be impossible...”

⁴⁹Klubertanz, *Philosophy*, 425: “...through equivocal causality, chance and Providence, is a possible explanation of the origin of those living things.”

during the formation of the germ cells, or at the moment of their union, the material parts undergo such a modification that they become like the human ovum and sperm, or the fertilized human ovum. Then at the instant when the proper material dispositions are present in this being, God would create in the matter, in this way essentially disposed, a human soul, in the same way He creates the soul in the course of normal human generation. Klubertanz reminds his readers that it is impossible to say what did occur.

Fourth, Neo-Scholastics now commonly hold the philosophical possibility of the evolution of the body of man. Even in 1959, Palmes noted that Christian Evolutionists, even Catholics, admit creation by God, at least of primordial matter... and by generation and progressive transformation descended diverse actual organisms and even the body (*organismus hominis*) of man, except however the human soul, which as spiritual would only be able to be created by God.”⁵⁰ During the International Congress in Rome, 23 to 24 April 2002, at the Pontifical Atheneum Regina Apostolorum, Fiorenza Facchini delivered a paper entitled “The Emergence of Man.” In his English Summary, Facchini noted “...the physical conditions necessary (fit environment, development of the brain), with particular reference to the Australopithecines, among which the lineage that brought to the human beings can be individuated...These are arguments to consider that documents of cultural behavior are already found with *Homo habilis*. They become more evident with *Homo erectus* and above all with *Homo sapiens*.”⁵¹

⁵⁰Palmes, *Psychologia*, 2: 803: “...etiam organismus hominis descenderent...excepta tamen anima humana quae, utpote spiritualis, a Deo tantum creata fuisset.”

⁵¹Fiorenzo Facchini, “L’Emergenza dell’Uomo nell’Evoluzione: Aspetti Biologici e Culturali,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 89: “...particular reference to the Australopithecines, among which the lineage that brought to the human beings can be individuated...cultural behavior already found with *Homo habilis*...*Homo erectus*...*Homo*

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁵² Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁵³ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁵⁴ Summary of Probabilities is defined as an accumulation of probable

sapiens.”

⁵²Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

⁵³Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: “Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipsa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁵⁴Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁵⁵

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁵⁶ However, some restricted observation of evolution of the body of man is possible within the species.⁵⁷ Such observation had been done by the study of the fossil record and morphology, but La Vecchia believes that such a study should be done in the opposite direction, back to the origins of material culture.⁵⁸ The researcher should look for observable evidence of

⁵⁵Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁵⁶Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁵⁷Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

⁵⁸La Vecchia, *Evoluzione*, 260: “L’elemento di connessione e di concatenamento tra psiche razionale, specificamente umana, e psiche sensitiva, propria dell’animale, potrebbe essere cercato con più frutto in altra direzione...”

hominization in the development of tools and pottery, in funeral burials and the remains of respect, and evidence of art.⁵⁹

Certitude could arise from some philosophical explanation that exists, which applies general evolution to the body of man. Explanations were given by several Neo-Scholastics: Klubertanz from equivocal causality, chance and Providence,⁶⁰ and La Vecchia on the predisposition of Prehominids up to Hominids.⁶¹

Certitude could arise if the argumentation was based on some philosophical principles. Although the evolutionary development of the body of man needs a cause, “the special causality of God in the origin of man’s body need not be an immediate one.”⁶² Further, since the body of man is material, the evolution of the material world would seem to be a sufficient reason for the eventual origin of the body of man.⁶³

⁵⁹La Vecchia, *Evoluzione*, 5: “L’affiorare della coscienza riflessa e del concetto dell’io nelle sepolture con riti, le pratiche magiche o religiose, evidenti anche nelle prime manifestazioni artistiche, mostrano che il processo di Ominazione poteva ritenersi definitivamente compiuto e vche l’uomo era divenuto autenticamente Uomo.”

⁶⁰George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “What is required is that, either during the formation of the germ cells or at the moment of their union, the material parts undergo such a modification that they become like the human ovum or sperm, or the fertilized human ovum...To sum up. Essential evolution of living things up to and including the human body...as explained through equivocal causality, chance, and Providence, is a possible explanation of the origin of those living things.”

⁶¹La Vecchia, *Evoluzione*, 260: “Durante il processo di Ominazione, i Preominidi a gli Ominidi pur appartenendo al comune phylum evolutivo dei Primati, ma differenziandosi nettamente dagli attuali Anthropoki, hanno anticipato e predisposto l’organismo umano, mentre si andavano diversificando in modo sempre più netto dai predessori animali.

⁶²Nogar, *Wisdom*, 303: “The special causality of God in the origin of man’s body need not be immediate one.”

⁶³Nogar, *Wisdom*, 131: “...the material preparation for the mental novelty...”

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. But the explanation of Klubertanz appears to be sufficient when “at the instant when the proper material dispositions are present in this being, God would create in the matter thus essentially disposed a human soul, in the same way in which He creates the soul in the course of normal human generation.”⁶⁴ Also, there does not seem to be any sufficient reason why material evolution stop just prior to the origin of the material human body.

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. The explanation is rooted in Aristotle and St. Thomas Aquinas. St. Thomas reprises Aristotle who taught that “nature proceeds little by little from things lifeless to animal life” and “there is observed in plants a continuous scale of ascent toward the animal.”⁶⁵ This observation of natural ascent is helpful to understand the evolutionary progress toward the human body.⁶⁶ St. Thomas notes, “...less noble creatures are in the service of the more noble...Further, every creature is in the service of the perfection of the universe...Finally, the totality of the universe with all its parts is

⁶⁴Klubertanz, *Philosophy*, 425: “...proper material dispositions...in the same way He creates the soul in the course of normal human generation.”

⁶⁵Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 202, cites Aristotle.

⁶⁶Nogar, *Wisdom*, 323: “Thomas Aquinas...repeatedly argued that...a good governor shows his wisdom and power not by doing everything himself but by deputing his well-disposed ministers to assist him. So also God manifests His perfection of government and providence by working thorough His creation and its natural laws to produce effects that would otherwise have to come by way of a miraculous intrusion upon nature. Confer: Aquinas *Summa Theologiae* 1. 22. 3; Aquinas *Summa Theologiae* 1. 103. 6; Aquinas *Summa Contra Gentiles* 3. 76; Aquinas *Summa Contra Gentiles* 3. 77; Aquinas *Summa Contra Gentiles* 3. 83; Aquinas *Summa Contra Gentiles* 3. 94; and other parallel passages.”

ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).⁶⁷

Certitude could arise if Neo-Scholastics agree on the possibility of the evolution of the body of man. Prominent Neo-Scholastics who agree on the philosophical possibility of the evolution of the body of man are: Nogar,⁶⁸ Klubertanz,⁶⁹ Benignus,⁷⁰ and La Vecchia.⁷¹

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. Benignus states that “St. Thomas’ answer (that primary matter is appetite or urge to live and ultimately to live on the highest possible level, that is to say, as the body of man) and the answer of science are in no way in conflict or disagreement; indeed, they amount to the same thing...”⁷² Bittle

⁶⁷Mondin, *Dizionario*, 406, cites Aquinas *Summa Theologiae* 1. 65. 2.

⁶⁸Nogar, *Wisdom*, 131: “The biological continuity of man and the other animals seems to be assured. Genetically, and by natural processes (selection, etc.) the material preparation for the mental novelty seems (to the anthropologist) to have come about like all the other evolutionary changes he knows. He believes that this is as far as his scientific discipline can take him.”

⁶⁹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “...possible that the human body...not seem to be impossible...”

⁷⁰Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 498: “Mechanical forces that (first) led to life are made intelligible only if we consider them as intended for that very end. Even with imperfect and deficient forms, nature is directed toward life.” Ibid., 501: “The Angelic Doctor...very relevant to the problem of evolution...ultimately to live on the highest possible level, that is to say, as the body of man.”

⁷¹La Vecchia, *Evoluzione*, 260: “L’elemento di connessione e di concatenamento tra psiche razionale, specificamente umana, e psiche sensitiva, propria dell’animale, potrebbe essere cercato con più frutto in altra direzione, nella linea evolutiva che ha condotto all’Uomo. Durante il processo di Ominazione, i Preominidi e gli Ominidi pur appartenendo al commune phylum evolutivo dei Primati, ma differenziandosi nettamente dagli attuali Anthropoidi, hanno anticipato e predisposto l’organismo umano, mentre si andavano divesrificando in modo sempre più netto dai predessori animali.”

⁷²Benignus, *Nature*, 502: “St. Thomas’ answer...science are in no way in conflict.” Ibid., 501: “...that primary matter is appetite...to live...as the body of man.”

states: “The dissent of man from brute ancestry is on purely scientific and philosophic grounds, a tenable but doubtful theory.”⁷³ Facchini noted “...the physical conditions necessary (fit environment, development of the brain), with particular reference to the Australopithecines, among which the lineage that brought to the human beings can be individuated...These are arguments to consider that documents of cultural behavior are already found with *Homo habilis*. They become more evident with *Homo erectus* and above all with *Homo sapiens*.”⁷⁴

Certitude could arise if the opposite opinion is not tenable, but Klubertanz notes, “It (evolution of the human body by equivocal causality) is certainly not the only way in which man could have come to be.”⁷⁵ However, Productionism, the production of the body of man by God from pre-existing material, unnecessarily diminishes the use of secondary causes. “Unnecessary” is mentioned because the matter of the body is pre-existing. “Necessity” does occur in the case of the immaterial soul of man, since it is necessary for God to create an entity that is not material and is not intrinsically dependent on material. Further, according to St. Thomas (Aquinas *Summa Contra Gentiles* 3. 22), matter already has an appetite to be in service of the higher forms of life, so that Productionism would unnecessarily seem to duplicate the already established plan of God.

Certitude could arise if the objections of adversaries are able to be answered. But the objections of the adversaries in general are the same general objections to evolution itself, which have

⁷³Bittle, *Psychology*, 592: “...tenable...”

⁷⁴Fiorenzo Facchini, “L’Emergenza dell’Uomo nell’Evoluzione: Aspetti Biologici e Culturali,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 89: “...particular reference to the Australopithecines, among which the lineage that brought to the human beings can be individuated...cultural behavior already found with *Homo habilis*...*Homo erectus*...*Homo sapiens*.”

⁷⁵Klubertanz, *Philosophy*, 425: “...certainly not the only way...”

already been answered. The specific objection to the evolution of the body of man is that man is essentially different than the other animals, and this is due to man's rational soul. However, this does not directly touch the evolution of the body of man; and all Neo-Scholastics have always maintained the direct and immediate creation of the subsistent soul of man. Again, Di Napoli⁷⁶ notes that evolution of the body of man would be impossible if some philosopher held, the eternity of material, or the spontaneous generation of life, or the identity of the monkey and man, or mechanistical transformation without finality and without the influx of God; but here in this argument for the evolution of the body of man, none of these issues is proposed. Later, the spontaneous generation of life will be considered, but the matter makes no difference here, in the treatment of the origin of the body of man.

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Klubertanz notes, "The possibility of this mode of origin can be admitted by both philosopher and theologian," although he notes later, "There are some theological problems involved in such an admission...competent theologians think these problems can be solved; at any rate, a difficulty in itself does not constitute a refutation."⁷⁷ The theologian can accept the evolution of the body of man, since this fits the recent schema proposed by Marcozzi, who said God's intervention is necessary and evident at "the coming of man," because God directly and

⁷⁶Di Napoli, *Manuale*, 2: 181: "Hypothesis evolutionis corporis humani a simio philosophice non est impossibilis...Atqui hypothesis evolutionis spiriutalisticae in seconda forma (quam ponimus in tratatione) nullam illarum thesium admittit; ergo philosophice hypothesis evolutionis spiriutalisticae non est impossibilis."

⁷⁷Klubertanz, *Philosophy*, 425: "...can be admitted by both philosopher and theologian..."

immediately creates the soul of man.⁷⁸ Palmes quotes the encyclical of Pope Pius XII, *Humani Generis*, which explicitly states that the pope does “not prohibit” the doctrine of evolution in so far as “inquiring about the origin of the human body from already existing and living material.”⁷⁹

Certitude can be had from the fact that evolution is the best answer now for the origin of the human body.⁸⁰ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).⁸¹ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, evolution of the body of man is the best answer

⁷⁸Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 330: “V. Marozzi would say that there are at least three phases in which God’s intervention is necessary and evident: ‘The appearance of life, this is of the first living organisms; the evolutionary possibilities with which God imbues these organisms; and finally the coming of man, whose spiritual qualities implicate God’s special interventions.’”

⁷⁹Palmes, *Psychologia*, 2: 804: “non prohibet quominus evolutionismi doctrina, quatenus nempe, de humani corporis origine inquit ex iam existente et vivente materia oriundi” (Pope Pius XII, Encyclical Letter “*Humani Generis*” in *Acta Apostolic Sedis* 42 [1950]: 593).

⁸⁰John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

⁸¹Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *dici de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

we have now.⁸²

The level of certitude for “Possibly, the human body has evolved” is at minimum at the level of possible. Given the assembled proofs and their convergence, the proposition of the evolution of the human body may be even philosophically probable. The major proof is the principle of secondary causality. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Klubertanz who says, “It seems possible that the human body itself could take its rise in this way...it does not seem to be impossible.”⁸³ Bittle, in 1945, notes: “As a working hypothesis, the descent of man through evolution, if we exempt man’s soul, is tenable, but the fact itself has not been proved.”⁸⁴ Di Napoli says the evolutionary origin of the body of man is philosophically “not impossible.”⁸⁵ In fact, given more biological arguments (Di Napoli is writing in 1954), Di Napoli would even be willing to say the proposition of the evolution of

⁸²Fiorenzo Facchini, “L’Emergenza dell’Uomo nell’Evoluzione: Aspetti Biologici e Culturali,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 89: “The emergence of man implies a discontinuity, recognizable essentially in culture, which appears as transcending the characteristics and the laws of the other living beings.” Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it effects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution performs these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently with sufficient scientific justification for a scientific theory.”

⁸³Klubertanz, *Philosophy*, 425: “...possible...not impossible...”

⁸⁴Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 593: “...is tenable...”

⁸⁵Di Napoli, *Manuale*, 2: 181: “Hypothesis evolutionis corporis humani a simio philosophice non est impossibilis... ergo philosophice hypothesis evolutionis spiritualisticae non est impossibilis.”

the body of man is “probable.”⁸⁶

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.⁸⁷ This is the method of Aristotle and St. Thomas.⁸⁸ This view is confirmed by the Neo-Scholastic Karl Rahner who argues for the importance and dignity of the material body of man.⁸⁹ However, Facchini notes that, “The moment of the appearance of Man in the history of life is an event that is not easy to be individualized. When, where, and how the human threshold has been reached is still now a topic of interpretations and hypothesis.”⁹⁰ Further, Klubertanz notes that no realistic philosophy can be complete, unless it includes a philosophy of nature; and it is in the area of the philosophy of human nature where most of the problems occur in philosophy of nature.⁹¹

⁸⁶Di Napoli, *Manuale*, 2: 179: “Aliis verbis, possibilitas vel etiam probabilitas philosophica....”

⁸⁷Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

⁸⁸Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

⁸⁹Pedro Barrajón, *Evoluzione*, “Problemi Epistemologici e Antropologici,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 264: “Il corpo ha dunque una grande importanza nella visione crisitana dell’uomo...L’uomo è uno spirito ‘incarnato,’ uno spirito ‘nel mondo,’ per usare l’espressione di Rahner.”

⁹⁰Fiorenzo Facchini, “L’Emergenza dell’Uomo nell’Evoluzione: Aspetti Biologici e Culturali,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 89: “...appearance of Man in the history of life is an event not easy...and how...topic of interpretations...”

⁹¹Klubertanz, *Philosophy*, v.

Chapter 15: CERTAINLY, THE HUMAN SOUL HAS NOT EVOLVED.

The State of the Question

The Pontifical Gregorian University's faculty of philosophy has always maintained the immediate creation of the human soul by God. The body of man may have evolved, but the soul has not evolved.¹ La Vecchia notes that this creation of the soul is the deciding factor that makes man authentically human.²

The contribution of the parents to the generation of the human child must be considered, since any possible substantial evolution would arise on the part of the body.

Even before an extensive treatment of opinions, it is appropriate to note the difficulty of the thesis, which philosophers have debated for over a thousand years before coming to the conclusion that "Man made in the image and likeness of God cannot have any other origin, at least in his most noble part, if God had not created the soul totally, directly, immediately...This is the only origin that

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 315: "L'anima non è una semplice determinazione della materia; è un ente, una nova sostanza che, in quanto tale, può venire all'essere solo per effetto di una Causa Prima e proporzionata. Soltanto Dio, in quanto Causa Prima e proporzionata dell'esistenza, può creare dal nulla immediatamente l'anima di ciascun individuo, nel momento in cui essa va ad informare un corpo. Dio, tuttavia, facendo esistere un'anima spirituale nei primi uomini, si servì pure di cause naturali ('cause seconde') che entrarono progressivamente in azione, modificando opportunamente quegli organismi. Anche le modificazioni morfologiche Dio le ha volute e causate."

²La Vecchia, *Evoluzione*, 5: "La creazione di un'anima spirituale nei primi uomini deve aver provocato l'emergenza e lo sviluppo delle facoltà intellettive, proprie dello psichismo umano. L'affiorare della coscienza riflessa e del concetto dell'io nelle sepolture con riti, le pratiche magiche o religiose, evidenti anche nella prime manifestazioni artistiche, mostrano che il processo di Ominazione poteva ritenersi definitivamente compiuto e che l'Uomo era divenuto autenticamente Uomo."

corresponds to the spiritual nature of the soul as such which is manifest in its highest operations, especially intellect and will that make man essentially different from brute animals.”³ Plato (427-347 B.C.) thought the soul to pre-exist the body, and with a mixture of poetry and philosophy never resolved the question of the origin of the soul. We note that if the soul pre-existed (a little or eternally), it would be a necessary being by its very nature, and Plato did not say why. Neo-Scholastics hold only God is a necessary being. Pre-existence is found in Origen (d. 254), Leibniz (1646-1716), and Lutoslawski (1863-1954). Tertullian (160- c. 250) held Corporeal Traducianism in his *De Anima* (c. 208-212), so then the soul could be transferred from parent to child with parental seed; the Stoics thought the soul something of the air and so corporeal; also the Bible seems to indicate man was brought to life from the corporeal breath of God (“*ex flatu Dei*”). St. Augustine did not follow Tertullian, and said the theory was perverse (“*quo perversius dici potest*”). However, St. Augustine worried that the Creationists did not protect the doctrine of original sin enough (“*ut hoc necesse iam non sit*”). In A.D. 515, St. Augustine was very uncertain about Spiritual Traducianism in his *Epistle 166* (Migne *Patrologia Latina* 33, col. 731-732). St. Gregory the Great (d. 604) in his *Letter to Secondino* said the question of the origin of the soul was serious (“*gravis*”), insoluble, and does not seem to be understood by men (Gregorius Magnus *Epistola* 53. 7). St. Isidore of Seville (d. 636) was uncertain about the origin of the soul; “*Quod incerta sit animae origo*” (Isidore of Seville *De*

³Umberto Degl’Innocenti, “L’Origine dell’Anima Umana,” *Doctor Communis* 11 (1958): 199: “La storia della Filosofia deve prender atto della marcia vittoriosa dell’opinione creazionista. L’uomo, fatto ad immagine e somiglianza di Dio, non può avere origine, almeno nella sua parte più nobile ed elevata, se non da Dio per produzione totale, diretta e immediata. Questa sola origine corrisponde e si adegua alla natura spirituale dell’anima stessa, quale ce la manifestano le sue operazioni più alte: le operazione dell’intelletto e della volontà, per cui l’uomo si differenzia essenzialmente dagli animali bruti.” Ibid., 186 for Plato; 179 for Tertullian; 181 for St. Augustine; 182 for Isidore of Seville; 182 and 192 for St. Thomas Aquinas; and 188 for Aristotle.

Officiis Ecclesiasticis 2. 23). St. Thomas taught that Corporeal Traducianism was heretical:

“*Hereticum est dicere quod anima intellectiva traducatur cum semine*” (Aquinas *Summa Theologiae* 1. 118. 2). In this he followed all of the elements of Aristotle, who said, “So it remains that (of all the forms) only the intellect comes from the outside, and it alone is of divine origin; in fact there is nothing in common with its action and corporeal action”: “*Relinquitur igitur ut intellectus solus ab extrinseco adveniat, isque solus sit divinus. Nihil enim eius actione communicat corporalis actio*” (Aristotle *De Generatione Animalium* 2. 3. 736 b 27). By using his metaphysics of being, Aquinas overcame the anthropological views of Plato and Aristotle, of Augustine and Averroes, seeming irreconcilable, and united them in a superior perspective in which the Empiricism of Aristotle and Averroes was happily married to the Idealism of Plato and Augustine.⁴ The positive proof only comes from St. Thomas (Aquinas *Summa Theologiae* 1. 90. 2) beginning with the fact that the soul is a subsistent form, or a form that possesses its own proper being which is independent of the body, while the non-subsistent forms, for example the souls of brutes, have a being dependent on the composite of which it is a part.⁵

⁴Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 44: “Con notevole ardire San Tommaso si distaccò dalla linea dell’agostinismo e del platonismo e si schierò apertamente per Aristotele, sicuro della bontà sostanziale del suo pensiero...Così l’Aquinatense riuscì a dimostrare che in tutte le questioni fondamentali della metafisica, della teologia e dell’antropologia Aristotele era meno lontano del cristianesimo di quanto si era soliti pensare.”

⁵Degl’Innocenti, “Origine,” 192: “La prova positiva che ne dà l’Aquinatense (Aquinas *Summa Theologiae* 1. 90. 2) parte del fatto che l’anima è una forma sussistente, ossia una forma che possiede il suo essere in proprio, cioè indipendentemente dal corpo, mentre le forme non sussistenti, ad es. l’anima dei bruti, hanno l’essere dipendentemente dal composto di cui fanno parte.” Petrus Hoenen, *Cosmology*, 5th ed. (Rome: Gregorian University, 1956), 299: “...tales sunt formae, quae ‘per se subsistentes’ sunt, scilicet animae humanae, ut in psychologia probatur ex earum operationibus, quae sunt intrinsece independentes a materia.”

Participants in the Dialogue

Indirectly adverse to the thesis are all the Materialists, who deny the reality and spirituality of the human soul.⁶ Adversaries of the soul in general are those who deny or diminish intellectual activity, or on the other hand those who extol intellectual activity too much.⁷ The first group, who deny or diminish intellectual activity are the Empiricists and the Positivists. Examples of the Empiricist position are found in Locke, who holds the soul is a fiction of the mind (*fictio mentis*); Hume who holds the soul is a collection of perceptions; and Bergson who holds reality is a continuum of becoming (*fieri continuum*) knowable by intuition which perceives the unity of consciousness but does not explain it. Examples of Positivists⁸ are Taine, who holds the soul is the common form of internal events; Ribot and Lehmann who hold the soul is a unity from one organism; and Ebbinghaus who holds the soul is just the sum of phenomenon. The second group of adversaries of the soul are those who extol intellectual activity too much, such as the Subjectivists and the Idealists. An example of the Subjectivist position is Kant, who holds that the soul is just a postulate of practical reason.⁹ The

⁶Fernando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 819: "...Materialistae...realitatem et spiritualitatem animae humanae negantes..."

⁷F.-X. Maquart, *Elementa Philosophica*, 2 vols. (Paris: Andreas Blot, 1937), 2: 495: "Existentia animae intellectivae negant vel minuant Empiristae et Positivistae; nimis extollant Subjectivistae Kantiani et Idealistae."

⁸George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 368: "Positivism - no substances, no causes, no soul, no intellect, 'mind is what the body does'."

⁹Klubertanz, *Philosophy*, 361: "Kant and Post-Kantians teach that all knowledge is like mathematics which constructs its intelligible object."

Idealists hold that nothing exists except to know self (*ipsum cognoscere*).¹⁰

Adversaries to the proposal in this chapter are Emanatism and Generationalism.

Emanatism encompasses many opinions, either openly Pantheistic¹¹ or reductively Pantheistic, which have a manifestly false notion of God.¹² They formerly flourished, and once again in our time propagate their doctrine. The human soul, in their opinion, arises from an emanation or flux from the substance of God Himself, either as a sort of spark of divinity, or as God existing in the just one soul.¹³ Among the Emanatists are numbered the Manichaeans, and the Priscillianists; in modern times the Theosophists and Spiritists. St. Thomas also noted that the Pythagorians and the Stoics had a form of Emanatism due to unwillingness to transcend imagination, so that they said God was a body, and so it follows that the soul would be in the nature of God (Confer: Aquinas *Summa Theologiae* 1. 90. 1).

Generationism is the doctrine of those who hold that human souls arise just like bodies arise, by generation, that is, by means of some seed transmitted by the parents to the children. They are called Traducionists as a metaphor, since they cut off a living part (a cutting), in the same way that

¹⁰Klubertanz, *Philosophy*, 361: “Idealist Monists hold knowledge has as its object the idea or representation in the mind.”

¹¹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 82, note 6: “The Pantheist error...dealt with being as if it were an univocal concept...Being is not a genus but is predicated analogously of different things.” Degli’Innocenti, “Origine,” 192: “Nell’altra forma di panteismo (l’evolutive) l’anima... come un Dio che si evolve...”

¹²Palmes, “Psychologia,” 2: 819: “Ad Emanatismum...plures opiniones aperte Pantheistae vel Pantheismum redolentes...Pythagorici et Stoici...Manichaei et Priscillianistae...Theosophi... etiam Spiritistae...”

¹³Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 376: “Emanatianism, qui ponit animam esse emanationem substantia divina aut per divisionem substantiae divinae, ita ut singulae animae essent particulae eius, aut per simplicem communicationem et informationem, ita ut una esset anima omnium, substantia divina (Semipanteismus).”

vines and some plants are propagated. Materialistic Generationism is attributed to Tertullian.

Spiritualistic Generationism asserts that the spiritual soul is produced by some spiritual seed, and is attributed to St. Augustine among others.¹⁴ In the nineteenth century, Rosmini professed a form of Generationism, condemned by Pope Leo XIII in 1887. Frohschammer (1821-1893) taught that God gives parents, when generating, the creative force.¹⁵

Proponents of the thesis are the Creationists. Creationism holds that the human soul is created by God, that is, produced from nothing, with no previous subject.¹⁶ All the Neo-Scholastics, except Rosmini, belong to this school.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, between excess of Rationalism and

¹⁴Palmes, "Psychologia," 2: 820: "Generationismus est doctrina eorum qui tenuerunt animas humanas oriri, prorsus ut corpora viventia oriuntur; videlicet, generationis, seu ope seminis cuiusdam a parentibus in filios transmissum. Dicitur quoque metaphorice traducionismus, a traduce seu parte a vivente scissa, qua vites et multae aliae plantae propagantur."

¹⁵Gredt, *Philosophiae*, 2: 376: "Generatianismus multiplici sub forma propositus est: ...secundum Frohschammer (1821-1893) parentibus, cum generant, communicatur a Deo vis creativa."

¹⁶Gredt, *Philosophiae*, 2: 376: "Creatianismus, qui docet animam a Deo creari, i.e. produci ex nihilo, nullo praeiacente subiecto."

defectiveness of Empiricism there exists an experiential philosophy of Aristotle and St. Thomas.¹⁷

Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Soul is the ultimate vital principle, at least radically, of vital operations. The soul is the substantial form of a living body, which is composed of matter and form.¹⁸ The substantial form of an organism, or living body, can be a material substantial form if it is intrinsically dependent on material in its essence and operations, or it can be spiritual substantial form if it is only extrinsically dependent on the material subject in its essence and in its operations.¹⁹

The human soul is the substantial principle active and receptive of all the rational operations of man.²⁰ Since there is just one ultimate vital principle in man, and although the soul is entitatively

¹⁷Klubertanz, *Philosophy*, 368: "Between Rationalism and Empiricism is the experiential philosophy of Aristo-Aquinas."

¹⁸Palmes, "Psychologia," 2: 759: "...non nisi sensu theoriae hylemorphicae aristotelico-scholasticae."

¹⁹Palmes, "Psychologia," 2: 812-813: "Nomine animae venit principium vitale ultimum, saltem radicale, operationum vitalium...forma substantialis...materialis seu a materia intrinsice dependens in suo esse atque in suis operationibus; vel spiritualis, si tantum extrinsece a subiecto materiali dependet in suo esse et in suis operationibus." F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 2: 503, correctly notes that the soul is not a complete substance and gives the division of opinions.

²⁰Jacques Maritain, *The Degrees of Knowledge*, trans. Gerald B. Phelan (New York: Charles Scribner's Sons, 1959), 199: "The energetic and the psychic, matter and soul, make but one and the same single being, which exists with all its constitutive determinations and its structures, physico-chemical and vegetative, or sensitive, or intellective, only by reason of the soul." Palmes, "Psychologia," 2: 818: "Nomine animae humanae, venit principium substantiale activum et receptivum omnium operationum rationalium hominis; quod est quoque principium

spiritual, it is also the radical principle of vegetative and sensitive life in man. The soul is really distinct from the body.²¹ Soul and body of man exist in substantial unity, that is, a condition of being that is undivided precisely as being, and so which has one act of being.²² The soul of man is subsistent form by nature not time, first it is created and then united with material.²³

The vital principle (soul) of plants and animals arises only through eduction from the material which they inform, and not creation.²⁴ Proof: Whatever is finite and contingent does not have being

radicale operationum vitae vegetative et sensitivae ipsius.” Klubertanz, *Philosophy*, 320: “The human soul is the ultimate principle by which a man lives and knows, distinct from the body.”

²¹Klubertanz, *Philosophy*, 320, argues that the soul is really distinct from the body because human life proper to man (such as the operation of intellect and will) is specifically distinct from the life which man shares in matter. He concludes that the soul is spiritual; spirituality is a condition of being or operating independently of matter. Gredt, *Philosophiae*, 2: 305 and also 364, confirms the spirituality of the soul by arguing from the testimony of our consciousness and the immaterial operations of the soul (*operatio sequitur esse*); from which follows that the soul is simple and indivisible, since the soul is not material and only material things have parts. La Vecchia, *Evoluzione*, 314 argues to the spirituality of the soul of the first men: “Quando l’organismo di due o più individui si trovò al massimo sviluppo potenziale delle facoltà psichiche sensitive, Dio, con un atto della sua libera volontà e per suo intervento speciale, una *particularis creatio*, l’anima spirituale li dove si erano determinate le condizione necessario o sufficienti. L’anima, forma del corpo, rese l’uomo veramente tale, capace di assumere una vita specificamente umana...”

²²Klubertanz, *Philosophy*, 319, argues for the substantial unity of man in two ways. First, we have direct experience that we are one in operation and in being, especially when we say the same “I” understands, senses, desires and wills. Second, the substantial unity of a material being is manifested by the continuity of its parts as a condition and the intrinsic integration of its operations to one goal; which is found in human beings.

²³Petrus Hoenen, *Cosmologia*, 5th ed. (Rome:Gregorian University, 1956), 306: “...haec forma, quia subsistens, (natura non tempore) prius fit i.e. creatur et dein unitur materiae; haec ab extinseco (Graece θύραθεν) introducitur (confer: Aquinas *Summa Theologiae* 1. 90. 2. et ad 2). Klubertanz, *Philosophy*, 320: “The human soul is the subsistent substantial form of man; or the spiritual first principle of being, life, and knowing, which is the act of a body organized humanly.”

²⁴Palmes, “Psychologia,” 2: 818: “Animam plantarum et animalium non nisi per eductionem a materia quam informant oriri.” Ibid, 2: 812: “Animae materiales, sive plantarum sive animalium oriuntur pre eductionem ex materia quam informant, effectum a potentia

from itself, but takes being from another, which makes it. But, whatever is made, either is made independent of its previously made subject (which is the definition of creation, which produces from nothing of self or subject), or is made dependent on its previously made subject (which is production from nothing of self but something of the subject, which is the definition of eduction). Therefore, the soul of plants and animals originate by eduction from the material.²⁵ Second Proof: The material nature of the soul of plants and animals can be deduced from its operations, which are intrinsically dependent on material (Confer: Aquinas *Summa Contra Gentiles* 2. 86).²⁶

Creation is the production of a thing from nothing of one's self, and from nothing from the subject.²⁷ Creation is opposed to eduction, which is production of a thing from nothing of one's self but not production of a thing from nothing of the subject.

generativa viventis vel viventium a quibus novum vivens eiusdem speciei generatur.” Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 144: “Forma educitur de potentia materiae...excepta...anima humana quippe quae creatur.”

²⁵Palmes, “Psychologia,” 2: 815: “Quidquid enim est finitum et contingens non habet esse a seipso, sed ab alio acceptum, quod ipsum fecit...quidquid fit, vel independet a subiecto praesupposito, seu ex nihilo sui et subiecti, et tunc fit per creationem; vel dependet a subiecto, seu ex nihilo quidem sui sed non subiecti, quod idem est ac fieri per educationem.”

²⁶Palmes, “Psychologia,” 2: 816: “Insuper ex operationes animae materialis id ipsum deducitur (Confer: Aquinas *Summa Contra Gentiles* 2. 86). Atqui, omnes operationes animae materialis sunt intrinsece dependentes a corpore. Ergo anima materialis nequit produci nisi dependenter a corpore seu educatione.”

²⁷Palmes, “Psychologia,” 2: 818: Creation is “productio rei ex nihilo sui et subiecti, et opponitur educationi, quae est productio rei ex nihilo sui sed non subiecti.” Ibid, 2: 813: “Eductio, iuxta Suarez, est productio formae pendens essentialiter a subiecto praesupposito (id est producto per aliam actionem) et aliquatenus incompleto, a quo et formam productam actualiter pendere et sustentare facit.” Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994, originally 1937), 121: “It is important to note that in statements of this sort the prepositions ‘out of’ and ‘from’ in no way imply a material cause. They simply denote an order.” Ibid., 121: “To create from nothing does not mean to create from something.”

Generation of a living individual is its production or constitution from the previously constituted subject.²⁸ Generation is properly predicated of beings composed of matter and form. The same is predicated of education, with respect to the form of the composit which is produced in generation from the material already constituted by another act.

Parents are two living individuals of the human species, of distinct sex, from whom a new living human individual arises, who is called their child.²⁹

Spirituality is a condition of being and operating independent of matter.³⁰ Intrinsic independence indicates not caused by another. Extrinsic independence means not conditioned or limited by another.

Question Needing A Reply

Is the human soul (vital principle) produced by eduction from material, or only produced by creation from God?³¹ If the human soul is not produced by eduction, but only by creation, does this prevent any human individuals, from whose material a new individual certainly proceeds, from being

²⁸Palmes, "Psychologia," 2: 818: "Generatio individui viventis est eius productio seu effectio ex praesupposito subjecto."

²⁹Palmes, "Psychologia," 2: 818: "Parentes sunt duo individua viventia speciei humanae, distincti sexus, ex quibus novum individuum vivens humanum oritur, quod filius ipsorum dicitur."

³⁰Klubertanz, *Philosophy*, 319: "Spirituality...independently from matter...not caused..."

³¹Degl'Innocenti, "Origine," 178-179: "...ma solo dell'origine della sua parte più nobile, l'anima ragionevole..." Ibid., "E neppure facciamo questione dell'origine dell'anima del primo uomoe della prima donna...Mentre per la produzione delle altre cose Dio si contenta di dire una parola dfficace, quando si tratta dell'uomo interviene più direttamente e se ne occupa con una cura tutta speciale; e se il corpo è materia (viene dal fango della terra), il principio della vita (cioè L'anima) viene nientemeno che dalla bocca stessa di Dio."

the true parents of their children?

The Thomistic Foundations

Does St. Thomas explain why it is not necessary for God to create the soul of plants and animals (except man)? St. Thomas writes: “First, since the being of natural and corporeal forms only exist in union with matter; then it appears that the agent that transforms the material is the same agent which produces them. Second, since a form of this kind does not exceed the power, order, and faculty of the agent principles in nature, there is no necessity to ascribe their origin to a higher principle (than matter)” (Aquinas *De Potentia Dei* 3. 11).³²

Does St. Thomas explain that the soul of plants and animals (except man) is material, and arises from education? St. Thomas writes: “Whose operations are not able to exist without the body, nor are these operations able to begin without the body, thus the thing has being according to its operation, since each thing operates according to its being” (Aquinas *Summa Contra Gentiles* 2. 86).³³ Therefore, the material soul is not able to be produced unless dependent on the material body, that is by education. Does this touch the importance of material in the evolutionary process? Yes, it describes material causality (except for man) as St. Thomas explains: “Every form that is educed into being by transmutation of the material is a form educed from the potency of the material; this is the material to

³²Palmes, “Psychologia,” 2: 815: “*Primo* quidem ex hoc quod, cum esse formarum naturalium et corporalium non consistat nisi in unione ad materiam: eiusdem agentis esse videtur eas producere cuius est materiam transformare. *Secundo* cum huiusmodi formae non excedant virtutem, et ordinem et facultatem principiorum agentium in natura, nulla videtur necessitas, earum originem in principia reducere altiora” (Aquinas *De Potentia Dei* 3. 11).

³³Palmes, “Psychologia,” 2: 816: “Quorumcumque enim operationes non possunt esse sine corpore, nec eorum initium sine corpore esse potest; sic enim res habet esse sicut operatur, cum unumquodque operetur in quantum est ens” (Aquinas *Summa Contra Gentiles* 2. 86).

be transmuted, to be reduced from potency to act. The intellective soul is not able to be educed from the potency of the material” (Aquinas *Summa Contra Gentiles* 2. 86).³⁴

Does St. Thomas hold the spirituality, that something is not material nor intrinsically dependent on material, of the human soul? Yes, he does; however, the spirituality of the soul is not evident, but has to be demonstrated. Begin with an examination about the operations of the soul, in fact, St. Thomas notes “the mode of operation of a thing corresponds to its mode of being” (Aquinas *Summa Theologiae* 1. 87. 1).³⁵ To prove the spirituality (incorporeity) of the human soul, St. Thomas alludes not only to the immaterial intellect and will, and also to autotranscendence, which is the tension toward the infinite of all human acting taken globally. St. Thomas notes that “The rational soul possesses a certain infinity, either from the part of the agent intellect, with which it can make everything, or on the part of the possible intellect which can become everything...and this is the evident argument for the immateriality of the soul, because all material forms are finite” (Aquinas *Scriptum in Liber Sententiarum* 2. 8. 2. ad 2).³⁶ St. Thomas knew that the intellectual knowledge of the soul has a link with the material, but not an essential link to compromise the spirituality of the soul. St. Thomas comments on Aristotle that the operations of the soul “need the body not as an instrument, but only as an object. In fact, to understand is not actuated by means of a corporeal organ, but has need of a

³⁴Petrus Hoenen, *De Origine Formae Materialis* (Rome: Gregorian University, 1951), 56: “Omnis formae quae educitur in esse per materiae transmutationem, est forma educta de potentia materiae; hoc enim est materiam transmutari, de potentia ad actum reduci. Anima autem intellectiva non potest educi de potentia materiae” (Aquinas *Summa Contra Gentiles* 2, 86).

³⁵Mondin, *Dizionario*, 44: “...eo modo aliquid operatur quo est” (Aquinas *Summa Theologiae* 1. 87. 1).

³⁶Mondin, *Dizionario*, 44: “...infinitatem...omnia facere...omnia fieri...” (Aquinas *Scriptum in Liber Sententiarum* 2. 8. 2. 2. ad 2).

corporeal object” (Aquinas *In De Anima* 1. 2. 19).³⁷

Does St. Thomas reject Traducianism? Yes, St. Thomas does reject Traducianism, saying: “It is ridiculous to say some intellectual substance either can be divided by the division of a body, or even produced by some corporeal power. For the human soul is an intellectual substance, as shown above in chapter 68. Therefore, it cannot be said that it is divided by the division of seed, nor produced in being by some active power which is in the seed, and so in no way can the origin of the soul occur by the Traducianism of the seed” (Aquinas *Summa Contra Gentiles* 1. 86).³⁸

Does St. Thomas affirm that the human soul can only be produced by creation by God? Yes, he does. St. Thomas says, “The soul is in the genus of intellectual substances, which cannot be otherwise understood to be produced in being except by way of creation. The human soul therefore comes into being by way of creation from God” (Aquinas *Summa Contra Gentiles* 1. 87).³⁹

Does St. Thomas explain how God can immediately create each spiritual soul and still allow parents to be true efficient causes of the composite, the human child? Yes, St. Thomas does explain. St. Thomas says: “God Himself operating in nature also produces the organization of the body, whence there is a quasi-continual action, bringing a reduction into unity, and which is terminated

³⁷Mondin, *Dizionario*,” 44: “...intelligere...”

³⁸Gredt, *Philosophiae*, 2: 378: “Ridiculum est dicere aliquam intellectualem substantiam vel per divisionem corporis dividi vel etiam ab aliqua virtute corporea produci. Sed anima humana est quaedam intellectualis substantia, ut supra (caput 68) ostensum est. Non igitur potest dici quod dividatur per divisionem seminis, neque producat in esse a virtute activa, quae est in semine, et sic nullo modo per seminis traductionem anima incipit esse” (Aquinas *Summa Contra Gentiles* 1. 86).

³⁹ Gredt, *Philosophiae*, 2: 378: “Anima est de genere substantiarum intellectualium, quae non possunt aliter intelligi prodire in esse nisi per viam creationis. Anima igitur humana exit in esse per creationem a Deo” (Aquinas *Summa Contra Gentiles* 1. 87).

toward the ultimate disposition of the subject and also which is terminated toward the form; although nature (parents) cooperates toward the composite (human child), nature (parents) does not cooperate toward the form (spiritual soul)” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5).⁴⁰

Does St. Thomas maintain that all human souls are the same, or does he maintain that every human soul is as individually unique as the body it informs? St. Thomas holds the uniqueness of souls, according to Brother Benignus, who cites Aquinas *Summa Theologiae* 1. 76. 5; Aquinas *Summa Contra Gentiles* 2. 86; Aquinas *Summa Contra Gentiles* 2. 87; Aquinas *De Spiritualibus Creaturis* 2. ad 8. Every human soul is different from every other soul. God creates each soul for a particular person whose body is produced by natural causes which determine its potentiality. Each soul is created to actualize this potentiality in a living person. Therefore, insofar as its organic powers and perfections are concerned, the soul is created precisely as the actuality of this potentiality.⁴¹

Does St. Thomas explain how hard it is to understand the creation of the human soul? Yes, he does. First, Gilson notes that “like the divine *Esse* with which it is identical, the creative act excludes quidditative concepts. It is we who think of creation as a sort of causal relation binding God to the

⁴⁰Palmes, “Psychologia,” 2: 826: “Dicendum quod ratio procedit de diversibus agentibus non ordinatis, scilicet quorum unum non operatur in altero, sed in ipsa operatione naturae operatur Deus. Unde non est inconueniens quod actio eius pertingat ad aliquem terminum in quem non se extendit actio formativa virtutis. Sic enim ipse Deus, in natura operans, etiam organizationem corporis facit: unde est quasi actio continua, reducta in unum agens, et quae terminatur ad ultimam dispositionem subiecti, et quae terminatur ad formam; quamvis quantum ad primum cooperatur sibi natura, et non quantum ad secundum” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5). Cf. Aquinas *Summa Contra Gentiles* 2. 89: “Quod vero tertio...” Cf. Aquinas *Summa Theologiae* 1. 118. 2 ad 3. Cf. Aquinas *De Potentia* 3. 9 ad 21.

⁴¹Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 209: “...and every human soul is therefore as individually unique as the body it informs.” Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethieuleux, 1927), 75: “Anima humana est substantia, non aequalia tamen in cunctis hominibus.”

creature.”⁴² St. Thomas notes, “Creation can be understood actively or passively. If it is taken actively, it so designates the action of God, which is His essence, with relation to creatures, which is not a real relation, but only one of reason” (Aquinas *De Potentia* 3. 3).⁴³ However, Gilson adds that “We shall see on the contrary, that taken passively, as effect or terminus of the creative act, creation is a real relation or, to be more exact, is the creature itself in its dependence upon God from whom it has being.”⁴⁴ Second, accidents are really distinct from the substance, although confusion is possible. So, for example, thinking and willing are distinct from the soul, or the soul would necessarily have these acts; likewise, bodies sometimes act and sometimes do not, but if bodies were identified with essence, then bodies would act always and necessarily. St. Thomas notes, “Whatever is said about the potencies of the soul, no one ever thought, unless he was insane, that the habits and acts of the soul were its essence” (Aquinas *De Spiritualibus Creaturis* 1. ad 1).⁴⁵ Third, St. Thomas notes that “many fall into error about forms” because they treat forms as if these forms were substances, and so believe that forms come into existence the way substances: “Not considering that just as being is not of the

⁴²Gilson, *Christian Philosophy*, 460, note 98: “...the creative act excludes quidditative concepts. It is we who think of it as a sort of causal reation...” Ibid., 122: “No matter how hard we try, we always *imagine* that creation is a kind of change, which renders its notion both contradictory and impossible. But in actual fact it is something quite different, something we are at a loss to put into words, so unfamiliar is it to human experience... It is a question here, therefore, of an act which, beginning from *Esse* terminates directly and immediately with *esse*.”

⁴³Ibid., “Creatio potest sumi active et passive. Si sumatur active, sic designat Dei actionem, quae est eius essentia, cum relatione ad creaturam; quae non est realis relatio, sed secundum rationem tantum” (Aquinas *De Potentia* 3. 3).

⁴⁴Ibid., Gilson, *Christian Philosophy*, 460, note 98: “...creation is a real reation...”

⁴⁵Paolo Dezza, *Metaphysica Generalis* (Rome: Gregorian University, 1945), 318: “Quidquid dicatur de potentiis animae, tamen nullus umquam opiniatur, nisi insanus, quod habitus et actus animae sunt ipsa eius essentia” (Aquinas *De Spiritualibus Creaturis* 1. ad 1).

form, but of the subject through the form; thus neither the becoming which terminates at being, is of the form but of the subject” (Aquinas *De Virtutibus in Communi* 11).⁴⁶ In this way, Bittle can argue “The soul is created at the moment of its union with matter; the soul is the animating principle of human existence, and has its natural existence only in conjunction with matter.”⁴⁷

The Scholastic Solutions

The human soul is created since the soul does not arise by emanation, nor by generation, but by creation.⁴⁸ Consider each of these three parts.⁴⁹

Emanationism is the Pantheist position, also held by Manichaeism and recently Theosophism, which holds that the soul is a flux from the substance of God. This is not possible for three reasons. Since God is simple, there are no parts of God to emanate. Secondly, God is not mutable, which would involve potency; God is all act. Thirdly, the substance of the human soul cannot be said to be

⁴⁶Masi, *Cosmologia*, 122-123: “Ex hoc est quod S. Thomas docet: ‘Multis error accidit circa formas, ex hoc quod de eis iudicant sicut de substantiis iudicatur;...non attendentes quod sicut esse non est formae, sed subiecti per formam; ita nec fieri quod terminatur ad esse, est formae sed subiecti’” (Aquinas *De Virtutibus in Communi* 11).

⁴⁷Clestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce 1945), 594: “...moment of union...natural existence only in conjunction...”

⁴⁸Palmes, “Psychologia,” 2: 821: “Anima humana oritur per creationem a Deo... Maior constat ex sufficiente enumeratione...Consequentia patet.”

⁴⁹Ioannes Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), 2: 180-181, uses the same structure in his argument, namely, eliminate Emanationism and Generationism, which leaves creation of the soul by God as the only alternative, saying: “Ergo anima humana habet originem a Deo per creationem.” Josephus Gredt, *Elementa Philosophica* 2 vols. (Freiberg: Herder, 1921), 1: 376, uses the same structure and argumentation: “Anima humana non oritur neque per emanationem a substantia divina neque per generationem a parentibus, sed a creationem a Deo.”

the actual substance of God Himself because either every soul would be part of the substance of God (impossible for then God would not be simple); or God Himself would be the soul of every human (impossible for the human soul is mutable, limited and imperfect).

Generationism holds the soul arises from the parents, materially according to Tertullian, or spiritually according to St. Augustine and Rosmini. This is not possible in the case of material generation, since the soul is spiritual. This is not possible in the case of spiritual generation since “spiritual seed” is a figment of the imagination, cannot come from the parents since the souls of the parents have no parts, or if the soul of the human child, generated by the parents, came from two parents, then the child would have two souls.

Creation holds that God produces each individual human soul from nothing of Himself or from nothing of the subject. The human soul is created according to two arguments. First, the origin of a thing ought to correspond and be proportioned to its actual nature; but man’s nature is intrinsically independent of matter which the soul informs, so man’s origin is independent of matter. Secondly, whatever is new arises from generation or creation. But the soul is not essentially (*per se*) generated because it would be a composite (but the human soul is simple); nor is the soul accidentally (*per accidens*) generated by education from material because it would be intrinsically dependent on material (it is not intrinsically dependent on material since it is spiritual). Therefore the soul is created. Only God can create *ex nihilo*.

Human parents are true parents, since although God is the true cause of the human person, God is not the total cause. Human parents are also the true cause of the composite of body and soul, in which the child or the human person essentially consists. Generation is an act essentially productive, not of a simple thing, but of a composite of material and form. The child generated is not only a soul,

nor is the child only a body, nor is the child only a body and soul accidentally united, but one single substantial composite, arising from the substantial union between body and soul.⁵⁰ Therefore, the cause of the rational soul is God alone; the parents are the cause of the composite which is the union of the rational soul created by God with the predisposed material provided by the parents preparing, in virtue of the semen and ovum, a body apt for the reception of the soul, which according to the laws endowed by the God of nature, requires itself to be informed with a rational soul.

A posteriori arguments for the existence of the soul also exist. Klubertanz⁵¹ asks whether man has an ultimate principle by which he thinks and lives? He answers that in living and knowing, man immediately, although obscurely, knows that there is an ultimate principle by which he knows and lives. Is that principle distinct from the body? Yes, Klubertanz answers, for when a man dies the body remains as a corpse.

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or

⁵⁰Palmes, "Psychologia," 2: 824: "...filius, non est tantum anima; nec tantum corpus; nec corpus et anima accidentaliter tantum unita; sed compositum substantiale unum, ex unione substantiali animam inter et corpus resultans...Parentes ergo sunt vere causa hominis geniti... Causa quidem animae rationalis solus Deus est; causa vero compositi, seu unionis animae rationalis a Deo creatae, cum materia praedisposita, sunt parentes, virtute seminis corpus aptum ad susceptionem animae rationalis parantes; quod iuxta leges a Deo naturae inditas, anima rationalis informari requirit."

⁵¹Klubertanz, *Philosophy*, 302: "Does a man have an ultimate principle by which he lives and knows?...immediately evident...At this level of the question there is no difficulty and no disagreement."

disagreement) given to one part of a contradiction with fear of the opposite.⁵² Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁵³ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁵⁴ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to

⁵²Leovigildo Salcedo, "Introductio in Philosophiam, Logica, Critica," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: "Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius."

⁵³Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁵⁴Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁵⁵

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁵⁶ However, some restricted observation of evolution is possible within species.⁵⁷ Nogar correctly states, “The theory of evolution, taken in its strict sense, cannot explain the origin of man as a whole, since it does not account fully for his spiritual and intellectual capacities, his history, nor his destiny.”⁵⁸ Marcozzi and Benignus note that operations follow from the nature of the thing (*operatio sequitur esse*).⁵⁹ The conscious operations in my thinking have causes higher than purely physical causes. The philosopher seeks an adequate cause, while the scientist studies the

⁵⁵Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁵⁶Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁵⁷Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

⁵⁸Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 301: “...not account fully...”

⁵⁹Vittorio Marcozzi, “Differenza fra l’Anima Umana e l’Anima delle Bestie,” *Doctor Communis* 11: 2-3 (May-December 1958), 124, notes that *operatio sequitur esse* is an *a posteriori* method founded on the *per se* evident principle “Every being cannot manifest what it does not possess” So there is the possibility of knowing the agent, at least in part, from its operations.

process.⁶⁰ Nogar notes that “Scientists of today prefer to be neutral about the ultimate creative intelligent faculty for adaptation in man.”⁶¹

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics: Di Napoli,⁶² Benignus,⁶³ Palmes,⁶⁴ and Klubertanz.⁶⁵

Certitude could arise if the argumentation was based on some philosophical principles. Bittle explicitly notes that “Man’s soul is not the product of evolution; since it is a spiritual entity, the principle of causality precludes the possibility that it could have evolved out of the material body or the

⁶⁰Benignus, *Nature*, 204-205: “...operatio sequitur esse...philosopher seeks an adequate cause...”

⁶¹Nogar, *Wisdom*, 131: “...neutral...”

⁶²Di Napoli, *Manuale*, 2: 180-181, argues that there can be no emanation from God, since God has no parts; there can be no emanation on the part of the soul since emanation demands the same nature (both soul and God); there can be no material generation of the soul from the parents since the soul is intrinsically independent of matter; and there can be no spiritual generation of the soul by the parents since the souls of the parents have no parts, and in addition the child would end with two souls. Therefore, the human soul is created by God.

⁶³Benignus, *Nature*, 209: “The soul cannot have originated from matter since it is spiritual, not material and not dependent on matter. So it differs from every other substantial form in the world.”

⁶⁴Palmes, “Psychologia,” 2: 821: “Anima humana oritur per creationem a Deo... Maior constat ex sufficiente enumeratione...Consequentia patet.” Ibid., 2: 823: “Ergo anima humana fit vel facta est intrinsece independenter a materia, quod idem est ac creari.” Ibid., 2: 824: “...filius, non est tantum anima; nec tantum corpus; nec corpus et anima accidentaliter tantum unita; sed compositum substantiale unum, ex unione substantiali animam inter et corpus resultans...Parentes ergo sunt vere causa hominis...”

⁶⁵Klubertanz, *Philosophy*, 302: “Does a man have an ultimate principle by which he lives and knows?...immediately evident...At this level of the question there is no difficulty and no disagreement.”

material soul of animals or plants.”⁶⁶ The principle of causality provides that whatever makes something (*operatio sequitur esse*) or is made does so according to its essence or nature in order to be actual (*omne agens agit sibi simile*), but the spiritual soul is by nature intrinsically independent of matter. To be intrinsically independent of matter is to be intrinsically independent of the material subject which the soul informs, so that the origin of the soul is intrinsically independent of matter, which is the same as to be created.⁶⁷ Secondly, the principle of sufficient reason provides that the soul is generated or created. But since the soul is not generated, because it is independent of its subject, the soul is created.⁶⁸

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Palmes argues that by eliminating Emanationism and Generationism, only Creationism is a sufficient reason for the production of the human soul.⁶⁹ Di Napoli argues in the same way.⁷⁰

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas says: “God Himself operating in nature also produces the organization of the body, whence there is a quasi-continual action, bringing a reduction into unity, and

⁶⁶Clestin N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce 1945), 594: “...not a product of evolution...principle of causality...”

⁶⁷Palmes, “Psychologia,” 2: 823: “Ergo anima humana fit vel facta est intrinsece independenter a materia, quod idem est ac creari.”

⁶⁸Palmes, “Psychologia,” 2: 823: “Quidquid de novo fit, aut generatur vel creatur...non generatur...independenter ...creatione.”

⁶⁹Palmes, “Psychologia,” 2: 821: “Anima humana oritur per creationem a Deo... Maior constat ex sufficiente enumeratione...Consequentia patet.”

⁷⁰Ioannes Di Napoli, *Manuale Philosophiae*, 4 vols. (Turin: Marietti, 1955-1958), 2: 180-181, uses the same structure in his argument, namely, eliminate Emanationism and Generationism saying, “Atqui duae priores doctrinae reiciendae sunt,” which leaves Creation of the soul by God as the only alternative.

which is terminated toward the ultimate disposition of the subject and also which is terminated toward the form; although nature (parents) cooperates toward the composite (human child), nature (parents) does not cooperate toward the form (spiritual soul)” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5).⁷¹

Certitude could arise if Neo-Scholastics agree on the possibility of the creation of the human soul, such as: Di Napoli,⁷² Gredt,⁷³ Palmes,⁷⁴ Mondin,⁷⁵ Masi,⁷⁶ Degl’Innocenti noting “today all

⁷¹Palmes, “Psychologia,” 2: 826: “Dicendum quod ratio procedit de diversibus agentibus non ordinatis, scilicet quorum unum non operatur in altero, sed in ipsa operatione naturae operatur Deus. Unde non est inconveniens quod actio eius pertingat ad aliquem terminum in quem non se extendit actio formativa virtutis. Sic enim ipse Deus, in natura operans, etiam organizationem corporis facit: unde est quasi actio continua, reducta in unum agens, et quae terminatur ad ultimam dispositionem subiecti, et quae terminatur ad formam; quamvis quantum ad primum cooperatur sibi natura, et non quantum ad secundum” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5). Cf. Aquinas *Summa Contra Gentiles* 2. 89: “Quod vero tertio...” Cf. Aquinas *Summa Theologiae* 1. 118. 2 ad 3. Cf. Aquinas *De Potentia* 3. 9 ad 21.

⁷²Di Napoli, *Manuale*, 2: 181: “Anima humana habet originem per creationem a Deo.”

⁷³Gredt, *Philosophica*, 1: 376: “Anima humana non oritur neque per emanationem a substantia divina neque per generationem a parentibus, sed a creationem a Deo.”

⁷⁴Palmes, “Psychologia,” 2: 821: “...haec est sententia quam ut philosophice certam... Anima humana oritur per creationem a Deo.” Ibid., 2: 821 and 824: “Secunda pars theseos ut certa ab omnibus qui creationismum tenent...Quod anima humana a Deo creetur non obstat quominus filii a parentibus vere generari dicantur.”

⁷⁵Mondin, *Dizionario*, 47: “Ai tempi di San Tommaso la questione era stata definitivamente risolta a favore della creazione diretta di ogni singola anima da parte di Dio.”

⁷⁶Robertus Masi, *Cosmologia* (Rome: Desclée, 1961), 123: “Sic revera aliqua adest forma substantialis, quae est spiritualis, haec creatur quidem a Deo ex nihilo, haec habet spirituales operationes, intelligere, et velle, haec existit etiam post destructionem corporis. Et haec est anima humana...”

agree,”⁷⁷ and Calcagno.⁷⁸

Certitude could not arise due to recent scientific confirmation, as expected, since “the human soul, or the spiritual principle of man’s distinctive activities is not a subject for anthropological research, and the origin, nature, and properties of the soul do not enter into scientific account,” notes Raymond Nogar.⁷⁹ Nogar also notes that “primitive pre-history works with concepts of evolving populations, not individuals.”⁸⁰

Certitude about the creation of the human soul could arise if the opposite opinion is not tenable. Donat (in 1915) rejects Anthropological Evolution that the body and soul of man have evolved by arguing, among other things, that there exists an essential difference between man and beast.⁸¹ Calcagno notes that Anthropological Evolution is even more rejected because in so far as the human soul, its brute animal origin is most absurd because the human soul is a spiritual substance which can come into existence only by true creation.⁸² Bittle argues that the theory of pre-existence of human souls must be rejected because, first, we have no memory of a previous existence, and second,

⁷⁷Degl’Innocenti, “Origine,” 193: “Dunque l’anima...creata. In questa conclusione convengono oggi tutti I filosofi cristiani, compreso il Rosmini...”

⁷⁸Calcagno, *Philosophia*, 2: 51: “...anima est substantia spiritualis, quae nonnisi per creationem veri nominis potest ad existentiam venire.”

⁷⁹Nogar, *Wisdom*, 163: “The human soul...not a subject... and the origin...do not enter into scientific account.”

⁸⁰Nogar, *Wisdom*, 305: “...populations, not individuals...”

⁸¹Donat, *Cosmologia*, 282: “...argumento psychologico, quia anima humana a belluina essentialiter differt totoque ordine altior est ideoque a belluina evolutione oriri non potest.”

⁸²Calcagno, *Philosophia*, 2: 51: “A fortiori repugnat transformationismus anthropologicus, tum radicalis...Prior tenet primos homines, non solum quoad corpus, sed etiam quoad animam, a bruto originem duxisse: sed hoc est absurdissimum: anima enim est substantia spiritualis, quae nonnisi per creationem veri nominis potest ad existentiam venire.”

the theory is a gratuitous assumption.⁸³

Certitude could arise if the objections of adversaries are able to be answered.

OBJECTION: The human soul is the substantial form of the human body giving the body at least vegetative and sensitive being; but such substantial forms are educed from the potency of the material, and not created by God. Therefore, the human soul is not created by God. REPLY: We distinguish how the human soul is the substantial form of the human body: as substantial form in its material entity (like a vegetative soul), we deny; as substantial form in its spiritual entity (although virtually and radically also the vegetative and sensitive form), we concede.⁸⁴ Thus the human soul is entitatively spiritual, and virtually vegetative and sensitive. We note that there are not several substantial forms.

OBJECTION: If the soul is not generated by the parents, but only by God, the parents would not generate the human child. The soul is the principle part of the man, by which man differs essentially from the animals. Therefore parents do not generate the human child. REPLY: We deny the major, that parents need to generate the soul to be parents. We concede the importance of the soul as the principle part of man. We distinguish the principle part: parents do not generate the composite if they do not generate the principle part, we deny;⁸⁵ parents do generate the composite as efficient causes if they generate a non-principle part of the composite, which naturally, according to the laws of nature established by God, determines the production of the principle part.

⁸³Bittle, *Psychology*, 594: "...no memory...gratuitous assumption..."

⁸⁴Palmes, "Psychologia," 2: 825: "Anima humana est forma substantialis corporis humani ipsi tribuens saltem esse vegetativum et sensitivum, sed est forma in sua entitate spiritualis, quamvis virtute et radicaliter sit etiam forma vegetativa et sensitiva, concedo..."

⁸⁵Palmes, "Psychologia," 2: 825: "...si causa efficiens partis non praecipuae compositi, huius partis productione, naturaliter seu vi legis naturae a Deo statute, determinat productionem partis praecipuae..."

OBJECTION: The actions of God and parents each have their own terminus distinct from each other, soul or body, but neither have termination in the composite, that is man. Therefore human unity is impossible. REPLY: St. Thomas says: “God Himself operating in nature also produces the organization of the body, whence there is a quasi-continual action, bringing a reduction into unity, and which is terminated toward the ultimate disposition of the subject and also which is terminated toward the form; although nature cooperates toward the composite, it does not cooperate toward the form” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5).⁸⁶

OBJECTION: Without a doubt the soul of man during its union with the body evolves and is perfected, at least in as far as those perfections which are spiritual habits, such as science or art; and in the moral order, virtue or vice, merit or demerit, which are in the spiritual soul as in a subject, and by which at least the soul of man continually progresses or regresses in its spiritual perfection. REPLY: Perfections in the soul of man are distinguished: accidental perfections, we concede; substantial perfections, we deny.⁸⁷ Accidental perfections do not change the substance of the soul.

Certitude can be had from the possibility of Neo-Scholastic philosophers and theologians admitting this mode of origin of the soul without damage to their other beliefs. Neo-Scholastic

⁸⁶Palmes, “Psychologia,” 2: 826: “Dicendum quod ratio procedit de diversibus agentibus non ordinatis, scilicet quorum unum non operatur in altero, sed in ipsa operatione naturae operatur Deus. Unde non est inconueniens quod actio eius pertingat ad aliquem terminum in quem non se extendit actio formativa virtutis. Sic enim ipse Deus, in natura operans, etiam organizationem corporis facit: unde est quasi actio continua, reducta in unum agens, et quae terminatur ad ultimam dispositionem subiecti, et quae terminatur ad formam; quamvis quantum ad primum cooperatur sibi natura, et non quantum ad secundum” (Aquinas *Scriptum in Liber Sententiarum* 2. 18. 2. 1 ad 5). Cf. Aquinas *Summa Contra Gentiles* 2. 89: “Quod vero tertio...” Cf. Aquinas *Summa Theologiae* 1. 118. 2 ad 3. Cf. Aquinas *De Potentia* 3. 9 ad 21.

⁸⁷Palmes, “Psychologia,” 2: 826: “Abs dubio etiam anima, saltem hominis, in ordine perfectionis accidentalis durante sua unione cum corpore, in sua vita individuali evolvitur et perficitur...ut scientia et ars...virtus et vitium...”

theologians commonly hold that the souls of each individual human are *de facto* created only by God; they hold this position to be a truth whose denial would imply a denial of a dogma of faith (*proxima fidei*) since the human generation of the soul makes the soul non-subsistent and corruptible.⁸⁸ St. Thomas calls Materialistic Generationism heretical (Aquinas *Summa Theologiae* 1. 118. 2).⁸⁹ Spiritualistic Generationism is commonly held by Neo-Scholastic theologians as not Catholic and proximate to heresy, in so far as it denies souls are created by God.⁹⁰ Pope Pius XII in the Encyclical Letter *Humani Generis* teaches that “the Catholic faith commands us to hold that souls... are immediately created by God ” (*Acta Apostolica Sedis* 42 [1950]). Even Rosmini, who said that only the sensitive soul of man was produced by the generation of parents, had his opinion condemned by Pope Leo XIII in 1887.

The level of certitude for “Certainly, the human soul has not evolved” is at the level of the metaphysically certain. The proof is the principle of causality, since the spiritual soul has spiritual operations. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Palmes⁹¹ and Bittle.⁹²

⁸⁸Palmes, “Psychologica,” 2: 821: “A theologis communiter dicitur, animas singulorum hominum de facto a solo Deo creari, esse veritatem proximam fidei.”

⁸⁹Palmes, “Psychologica,” 2: 821: “Hanc censuram theologicam (hereticum) dat Sanctus Thomas (Aquinas *Summa Theologiae* 1. 118. 2) de generationismo materialistico.”

⁹⁰Palmes, “Psychologica,” 2: 821: “Generationismus enim spiritualisticus a theologis communiter ut acatholicus et heresi proximus habetur...Pius Papa XII in Encyclica *Humani generis* (AAS 42 [1950]) docet quod ‘animas...a Deo immediate creari catholica fides nos retinere iubet.’ Ibid., 2: 820: “...Rosmini, quae ad aliquam formam generationismi reduci posse videtur; et a Leone XIII, anno 1887 damnata fuit.”

⁹¹Palmes, “Psychologia,” 2: 821: “...haec est sententia quam ut philosophice certam... Anima humana oritur per creationem a Deo.” Ibid., 2: 821 and 824: “Secunda pars theseos ut certa ab omnibus qui creationismum tenent...Quod anima humana a Deo creetur non obstat

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility, because the question is a difficult one. The philosophy of nature does not disregard the objects observed and perceived by sense.⁹³ This is the method of Aristotle and St. Thomas.⁹⁴ It is true that “material souls, plant or animal, arise by eduction from the material they inform, effected by the generative force of the living thing from which is generated the living thing of the same species.”⁹⁵ However, the spiritual soul of man is not to be confused with the material soul of other animals, even though man is partially animal, an *animal rationale*. Both types of vital principle (material or non-material soul) are judged by the same principle or method of Aristotle and St. Thomas, that the perceived operation reveals the essence (*operatio sequitur esse*).⁹⁶ The material soul is not capable of purely spiritual activity, such as geometry, future planning, religious or aesthetic appreciation. Secondly, progress in understanding that the human soul was created took

quominus filii a parentibus vere generari dicantur.”

⁹²Clestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce 1945), 594: “...not a product of evolution...principle of causality...”

⁹³Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

⁹⁴Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

⁹⁵Palmes, “Psychologia,” 2: 812: “Animae materiales, sive plantarum sive animalium, oriuntur per eductionem ex materia quam informant, effectum a potentia generativa viventis vel viventium a quibus novum vivens eiusdem speciei generatur.”

⁹⁶Palmes, “Psychologia,” 2: 816: “Insuper ex operationes animae materialis id ipsum deducitur (Confer: Aquinas *Summa Contra Gentiles* 2. 86). Atqui, omnes operationes animae materialis sunt intrinsece dependentes a corpore. Ergo anima materialis nequit produci nisi dependenter a corpore seu eductione.”

about a thousand years, a development of dogma..⁹⁷ Thirdly, because the human soul is created by God, the outstanding dignity and nobility of the human person is evident.⁹⁸ Fourthly, the question is a difficult one because creation excludes anything we might imagine, and is contrary to the ordinary habits of thought even of philosophers, who ordinarily hold that nothing comes from nothing (*ex nihilo, nihil fit*).⁹⁹

⁹⁷Degl’Innocenti, “L’Origine,” 181: “S. Agostino stesso però non sa dicidersi tra creazionismo e il generazionismo o traducianismo spirituale...” Ibid., 182: “Tale incertezza perdura anche dopo i tempi di S. Agostino...” Ibid., 183: “Ma la cosa cade quando S. Tommaso ... ‘Haereticum est dicere quod anima intellectiva traducatur cum semine’ ” (Aquinas *Summa Theologiae* 1. 118. 2).

⁹⁸Palmes, “Psychologia,” 2: 826: “Inde patet quam praeclara sit personae humanae dignitas et nobilitas.”

⁹⁹Gilson, *Christian Philosophy*, 122: “No matter how hard we try, we always *imagine* that creation is a kind of change, which renders its notion both contradictory and impossible. But in actual fact it is something quite different, something we are at a loss to put into words, so unfamiliar is it to human experience... It is a question here, therefore, of an act which, beginning from *Esse* terminates directly and immediately with *esse*.” Ibid., 121: “This conception of the creative act almost invites objections from philosophers because it is so contrary to their ordinary habits of thought.”

Chapter 16: FUTURE BIOLOGICAL EVOLUTION OF MAN IS UNLIKELY, AND EQUIVOCAL.

The State of the Question

The Pontifical Gregorian University's philosophy department maintains that man is the culmination of the evolutionary process.¹ Should there be continued evolution, this would be cultural evolution.² Other Neo-Scholastics, such as Nogar, agree that the study of primate ancestors or of animal behavior cannot give a full account of the origin of, the nature of, or the future of psycho-social novelty in man.³

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 114: "A differenza degli animali inferiori, l'Uomo non solo sa, ma sa di sapere: la sua conoscenza è sensibile, ma soprattutto astratta e universale. Può quindi ripiegarsi sulle operazioni della sua psiche per analizzarle ed eventualmente correggerle. Gli è possibile inoltre congoscere la natura e le leggi che la regolano, utilizzandole a proprio vantaggio. Mentre tutti gli organismi a lui inferiori hanno la possibilità di adattarsi alle esigenze della natura, l'Uomo è in grado di modificarla, sottomettendola a sé. Egli è dunque essenzialmente più elevato e più perfetto di ogni altro organismo."

²La Vecchia, *Evoluzione*, 5: "La creazione di un'anima spirituale nei primi uomini deve aver provocato l'emergenza e lo sviluppo delle facoltà intellettive, proprie dello psichismo umano. L'affiorare della coscienza riflessa e del concetto dell'io nelle sepolture con riti, le pratiche magiche o religiose, evidenti anche nella prime manifestazioni artistiche, mostrano che il processo di Ominazione poteva ritenersi definitivamente compiuto e che l'Uomo era divenuto autenticamente Uomo." Cf. La Vecchia, *Evoluzione*, 314: "Se pure con l'*Homo sapiens sapiens* si è verificata un'evoluzione della psiche, questa potrebbe ritenersi puramente accidentale. All'evoluzione della psiche segue un progresso 'culturale,' in cui si affinano e si perfezionano tecniche di lavorazione già presenti nelle età anteriori." Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 131: "Anthropology must study cultural factors; they will dominate biological factors in the future of man."

³Nogar, *Wisdom*, 131: "...cannot give a full account of the origin of, nature of, or future of psycho-social novelty in man."

Donat notes that for Darwinism, species can undergo limitless variation.⁴ Hugon also notes that “Not a few philosophers and scientists rely on that (evolutionary) perfection by indefinite progress through which nature is always elevated higher, that what is material in the beginning through successive evolutions attains life, from lower life to ape, and from ape to man, and in man continuous and perpetual perfection.”⁵ This opens the question of continued variation of the human species.

The Meaning of Equivocal

Our reason for considering the meaning of equivocal terms is that the term “evolution” is used about many things with many different meanings among themselves. There is perfect unity in vocabulary, the word “evolution.” But there is no unity in concepts, sometimes biological, anthropological, cosmological, sociological, or irreligious.⁶ It is useful to point out that the “proofs” about biological evolution do not immediately transfer to applications of the word “evolution” to other fields, where the meaning of the term evolution differs even as the field itself is different. Nogar is careful to begin his book, *The Wisdom of Evolution*, by stating, “This book marks off the limits of

⁴Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 89: “...absque interno principio dirigente illimitata variabilitate varientur, individua et species variatione...”

⁵Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 304: “Non pauci autem philosophi et scientifici perfectionem illam reponunt in progressu quodam indefinito quo natura semper altius evehitur, ut quae in principio erat sub statu materiae, per successivas evolutiones, vitam attigerit; de infimo vitae gradu ad simium, de simio ad hominem pervenerit, et in ipso homine continuo et jugiter ist profectura.”

⁶Michael Maher, *Psychology: Empirical and Rational*, 9th ed. (London: Longmans, Green, 1940), 578: “The modern doctrine of evolution ramifies into a large number of sciences and its satisfactory discussion involves a multitude of questions pertaining to biology, geology, physical astronomy, rational theology, and scriptural theology.” Ibid., 394: “Ethics, natural theology, ontology, and cosmology all must meet...all these sciences are compelled to harmonize their conclusions.”

evolution by logical analysis, manifesting what generalizations flow from the scientific facts and what generalizations do not.”⁷

Univocal term is one that is predicated of many things according to the same signification entirely. For example, “man” is predicated of Peter, Paul and John.

Equivocal term is one that is predicated of many things according to an entirely diverse signification.⁸ For example, “dog” is predicated about a four-legged animal, or the dogfish, or the dog star. Equivocal terms can be predicated by chance or by design. Equivocal by chance is a predication without any reason. Equivocal by design can be without a foundation in the thing itself, or with a foundation in the thing itself. An example of equivocal by design without foundation in the thing itself would be naming a child John with the hope that the child would imitate the virtues of St. John. An example of equivocal by design with foundation in the thing itself (also called “analogy”) is the predication of the term “healthy” of a person, of food, of medicine, or of healthy face color.

Analogical term is one that is predicated by design with a foundation in the thing. Analogy of proportion (or attribution) is predicated by order, the first thing primarily and the rest secondarily, so health is predicated first about man, and then all the things that lead to human health such as medicine. Analogy of proportionality (or proportion) arises from mathematics (the proportionality of 10:5 as 8:4), but in analogy of proportionality what is applicable to one is different in the other, such as the

⁷Nogar, *Wisdom*, preface: “...limits...”

⁸Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 21: “Aequivocus est qui pluribus tribuitur secundum significationem omnino diversam.” Joannes B. Lotz, *Ontologia* (Barcelona: Herder, 1963), 177: “Aequivocum (Germanice: *mehrdeutig*): idem vocabulum, cui plures significationes prorsus ab invicem diversae subsunt.”

foot of a man and the foot of a column.

The general meaning of the term “evolution” is tied to biological transformation of species by mutation and natural selection. Philosophical Evolutionism may attempt to extend that meaning.⁹ Herbert Spencer and some others wish to extend the term “evolution” to the level of a universal law that pertains to all transformation in the universe. Those followers of Darwin, notably Huxley and Spencer in England and Hackel in Germany, made unwarranted extensions of the theory into fields of philosophy and ethics. So evolution, only a modest scientific theory, itself became a philosophy, almost a creed.¹⁰

Evolution in popular usage can mean simply “change.” There are many writers that argue if a person admits change, then that person is actually admitting the scientific theory of evolution. Such an argument is “loose thinking.”¹¹

The Neo-Scholastic Raymond Nogar promotes the use of the term as a fruitful principle to understand natural science beyond biology. However, Nogar notes that there is no universal “Law of Evolution.”¹²

⁹La Vecchia, *Evoluzione*, 317: “In questo scritto abbiamo dapprima considerato il problema dell’evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo.”

¹⁰Patrick H. Yancey, “American Catholics and Science,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 508-509, “...itself became a philosophy, almost a creed.” See also: L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: Witherby, 1939), 164.

¹¹Geroge P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 414.

¹²Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 355: “The rules of evolutionary process are contingent, non-reversable, unpredictable and bear the stamp of restriction based upon natural laws of neo-science. Strictly speaking, there is no

Participants in the Dialogue

First, adversaries to the proposal in this chapter are those who hold the continued biological evolution of man. These are the Darwinists.¹³ Machiavelli (1469-1527) endorsed biological progress for increased physical force of the individual and society. Eudaimonism conceives man as a being with no finality besides earthly happiness, no law besides pleasure or utility, and does not acknowledge a moral personality in man.¹⁴

Second, other adversaries maintain that culture is not likely to take the place of the evolution of man. These are Huxley and Spencer in England and Hackel in Germany, made unwarranted extensions of the evolutionary theory into fields of philosophy and ethics. Krause and Ahrens held that the ultimate internal goal of human beings is the complete evolution of human faculties.¹⁵ Schleiermacher, Wundt, and Ziegler held the ultimate goal of mankind is the evolution of humanity, not just the individual.¹⁶ The Evolutionists assign the object of beatitude to the civil progress of

universal law of evolution, there is only historical (prehistorical) process. The laws of nature are universalized, laws of permanence, typical and verifiable by repetition and reversibility.”

¹³Donat, *Cosmologia*, 89: “...absque interno principio dirigente illimitata variabilitate varientur, individua et species variatione...” Ibid., 312: “...vaiabilitatem indeterminatam...”

¹⁴Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 431: “Eudaimonism reduces morality to a kind of pragmatic temporal happiness either of the individual or society.”

¹⁵Gonzalez, “Ethica,” 3: 368: “...reponunt finem ultimum intrinsecum hominis in completa evolutione facultatum humanum...”

¹⁶Gonzalez, “Ethica,” 3: 369: “...eo quod reponant etiam ultimum finem hominis in quadam progressive evolutione; ab illis vere differunt in eo quod evolutionem considerant non individui in se, sed humanitatis.”

humanity.¹⁷ Sir Julian Huxley argued that human culture was detrimental to biological evolution.¹⁸

Third, other adversaries maintain that man has no future goals, except for the random development of biological evolution. The Materialists, Positivists, and Empiricists all reject the immortality of the soul.¹⁹ Emmanuel Levinas only admits immortality through the conception of children.²⁰ Gabriel Marcel only admits immortality by current human acts of love which reveal the metaphysical and spiritual transcendence of man, which is immortality. For Karl Marx, everything is in the state of flux, which is the first principle of dialectical materialism, and “since there is nothing absolute, eternal and immutable according to the assertion of evolutionism, the process of becoming (evolution) had to explain everything, including the society, the morals, the laws, the philosophies, and the religions of man.”²¹ Goethe, Schiller, Schlege, and E. Hartmann endorse only aesthetic progress as the norm of morality instead of the rational nature of man.²²

Proponents of the thesis that future biological evolution of man is unlikely, and equivocal, are

¹⁷Gonzalez, “Ethica,” 3: 373: “Evolutionistae: ut beatitudinis obiectum assignant progressum civilem genereis humani.”

¹⁸Sir Julian Huxley, “The Future of Man – Evolutionary Aspects,” in *Man and His Future*, ed. Gordon Wolstenholme (Boston: Little, Brown, 1963), 17: “The improvement of human genetic quality by eugenic methods would take a great load of suffering and frustration off the shoulders of evolving humanity and would much increase both enjoyment and efficiency... How to influence a eugenic policy in practice is another matter...Eugenics will eventually have to have recourse to methods like multiple artificial insemination by preferred donors of high genetic quality...Such a policy will not be easy to execute...”

¹⁹F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 2: 512.

²⁰Joseph Gevaert, *Il Problema dell’Uomo: Introduzione all’Antropologia Filosofica* (Turin: Elledici, 1992), 248.

²¹Nogar, *Wisdom*, 210: “For Marx...dialectic materialism had to carry the Materialistic and Atheistic stamp...nothing absolute...evolution had to explain the origin of everything...”

²²Gonzalez, “Ethica,” 3: 422: “...Perfectionismus...”

the Neo-Scholastics in general. The Neo-Scholastics maintain that cultural and religious growth of mankind is so important that they are dedicated to the academic and practical education of man. The Neo-Scholastics hold man has a destiny beyond this world.²³

The related question of rational inhabitants of different planets has been adequately treated by Donat in 1915. Donat defends as probable the existence of generally corporeal beings endowed with a rational soul.²⁴ Donat would not defend the existence on other planets of the same species of man as inhabits earth. Donat argues from analogy, for just as there are many species of animals, there can be an even greater variety of rational beings responding to local conditions of their respective planets. If there is a multiverse, no signals from one pocket universe could ever reach another, which means there is no way to know extra-terrestrial life. In spite of this cosmic barrier, there may be ways to tell something about the multiverse just by looking at our own little pocket of reality.²⁵

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue.

Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, the Materialists do argue for

²³Gonzalez, "Ethica," 3: 372: "Deus est obiectum beatitudinis humanae necessarium et per se sufficiens." Ibid., 3: 374: "...ut certum, defendimus..."

²⁴Donat, *Cosmologia*, 210: "Probabile est, non tantum nostram hominibus incolis, sed etiam in aliis stellis incolas rationales habitare vel aliquando habitaturos esse."

²⁵Adam Frank, "Seeing the Dawn of Time," *Cosmos: Before There Was Light*, ed., David J. Eicher (Waukesha, WI: Astronomy: Collectors' Edition, 2006), 11: "No signals...no way to study...just by looking at our own little pocket of reality."

ecological concern and for the future happiness of the human race.²⁶ Further, consideration of the future involves finality, but although nature is unquestionably endowed with finality, it is not always easy to identify the specific end of each thing and each activity in nature.²⁷ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Evolution means biological change or biological development.²⁸

The soul of man has several causes. The soul is a subsistent form. The material cause of the human soul is not “from which”, but “in which”, it is created, namely, the human body. The efficient cause of the human soul is God, its creator. The final cause is the most important for our purposes here, for it relates to the future of man. The will of man is the appetite of man as a whole, as a rational being; and the object of the of the will is ultimately the supreme good and its possession, which is

²⁶Gordon Wolstenholme, ed., *Man and His Future* (Boston: Little, Brown and Company, 1963), v: “The CIBA Foundation arranges many small international conferences...Now, biological research is in ferment, creating and promising methods of interference with ‘natural processes’ which could destroy or transform nearly every aspect of human life which we value...first use of the new conference room at the Foundation’s house in Portland Place, London. We are very grateful to the 27 distinguished contributors...”

²⁷H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2 *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 79-80: “To sum up, nature is unquestionably endowed with finality...not to say that one can always identify the specific end of each thing and each activity in nature.”

²⁸Klubertanz, *Philosophy*, 378: “...biological...”

happiness.²⁹

The soul of man is essentially and personally united to the body as its substantial form.³⁰ The essential unity makes the species complete, so that man is a rational animal. The union is personal because all actions are attributed to the same person. Proof of the unity is from the unity of operation (*operatio sequitur esse*). Proof of the essential unity is the mutual influence of the body and soul on each other. Hugon notes that “in respect to the form which the matter had and lost it, matter retains a certain desire, for there always remains a certain proportion between matter itself and its forms; but this is a useless desire because there is no potency to the past; nor is there some natural agent who is able to reproduce the same form in number. The formal reason by which material desires all forms is the substantial being (*esse*) generated and corrupted, in which all material forms share. This is the common doctrine of the Thomists. Note that this appetite is merely passive, nor can material evolve except by the action of an agent.”³¹ This touches evolution (“*evolvi materiam*”).

The human soul after death, separated from the body, is not properly in a natural state, nor in a

²⁹Klubertanz, *Philosophy*, 316: “The final cause of the soul...rational being...ultimately the supreme good and its possession which is happiness.”

³⁰Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 131-132: “Anima intellectiva unitur corpori essentialiter et personaliter tamquam forma substantialis.” Joseph De Finance, *Essai sur L’Agir Humain* (Rome: Gregorian University, 1962), 116, notes the union is substantial, not like the artist and his tools.

³¹Hugon, *Philosophia*, 135: “Respectu demum formarum quas habuit materia et amisit, retinet desiderium quoddam, nam remanet semper proportio inter ipsam materiam et illas formas; sed desiderium inefficax, quia non datur potentia ad praeteritum, nec est aliquod agens naturale quod possit eandem numero formam reproducere. Ratio autem formalis sub qua materia appetit omnes formas est esse substantiale generabile et corruptibile, in quo conveniunt omnes formae materiales. Ita Thomistae communiter. Notetur tamen appetitum illum esse mere passivum, nec evolvi materiam nisi per actionem agentis.”

violent state, but in a state somewhat (*secundum quid*) natural.³² The separated soul is not properly in a natural state because the human soul is the form of the body, and it is natural for every form to be united with its matter. However, the separated soul is not in a violent state, because the human soul is by its very nature independent of material in being (*esse*) and operation (*operari*), and therefore can be separate from the body. The state of separation of the human soul from the body is not according to the nature of the soul as the form of the body, and so can be called praeternatural (“aside” from nature, rather than just natural or unnatural); and since the soul naturally is something that participates in the dignity and operation of separated substances, that state can be called “somewhat (*secundum quid*) natural.”

What do Neo-Scholastics hold about the goal of man? The goal of man is beatitude, which is the perfect happiness of a rational being.³³

How is immortality defined? Immortality is unceasing permanence of being and life.³⁴

How is resurrection defined? Resurrection is the repeat union of the soul with the same body which it possessed before death.³⁵

³²Hugon, *Philosophia*, 138: “Anima separata statum habet non proprie violentum, nec naturalem, sed praeter naturam.”

³³Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 365: “Beatitudo: perfecta felicitas entis rationalis.” Ibid., 390: Beatitudo: “Secretis malis omnibus, cumulata bonorum possessio” (Cicero *Tuscul.* 5. 10). Ibid., 390: “Beatitudo: “Perfectum bonum et sufficiens, ad hominem desiderium satiandum” (Aquinas *Summa Theologiae* 1-2. 2. 1).

³⁴Klubertanz, *Philosophy*, 320: “Immortality...unceasing...life.” Umberto Degl’Innocenti, “L’Origine dell’Anima Umana,” *Doctor Communis* 11 (1958): 187, where Aristotle gives explicit affirmation of the immortality of the soul: Aristotle *De Anima* 3. 5. 430 a 17.

³⁵Gonzalez, “Ethica,” 375-376: “Resurrectio est iterata animae cum eodem corpore, quod antea habuit, coniunctio.”

Question Needing A Reply

First, is the future biological evolution of man likely? Secondly, is cultural evolution likely to take the place of biological evolution in man? Thirdly, do the Neo-Scholastics have a more extensive answer to the nature of the final cause, the goal, of the human soul and of man? Fourthly, is the term evolution, applied to man, used as equivocal?

The Thomistic Foundations

Does St. Thomas hold that man is the apex of creation and the goal of the world? Yes, he does, and this would imply that biological evolution is man has attained its goal. St. Thomas teaches that man is the goal of creation: “It was necessary for the perfection of the universe that some intellectual natures exist” (Aquinas *Summa Contra Gentiles* 2. 46).³⁶ Both Mondin and Benignus note the teaching of St. Thomas: “...and finally the life of man. After this no later and more noble form is to be found in things that are generated and corrupted. Therefore (the appetite whereby matter seeks a form must tend to the last and most perfect act to which matter can attain as to the ultimate end of generation), the last end of all generation is the human soul and to this does matter tend as its ultimate form. Man therefore is the goal of all generation” (Aquinas *Summa Contra Gentiles* 3. 22).³⁷ Only

³⁶Joseph De Finance, *Être et Agir: dans le Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 319: “Oportuit ad perfectionem universi, esse aliquas naturas intellectuales” (Aquinas *Summa Contra Gentiles* 2. 46).

³⁷Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 223, cites St. Thomas in the *Summa Contra Gentiles*, book 3, chapter 22; and Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 501, gives the same citation. “Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vols. (Madrid: BAC, 1967), 2: 133-134: “Cum

human beings are persons, and Aquinas teaches that the present existing man is already the most perfect (*perfectissimum*) in all of nature, so there appears to be no room for a more perfect man: “Person signifies what is the most perfect in all of nature” (Aquinas *Summa Theologiae* 1. 29. 3; confer Aquinas *Summa Theologiae* 1. 30. 4).³⁸ St. Thomas does not use the term “Anthropic Principle” but these citations affirm it, since the Anthropic Principle affirms that the creation of the universe has man as its goal. This principle attributes to man a particular weight in understanding the structure and the evolution of the universe. Mondin is explicit that the Anthropic Principle involves evolution.³⁹

Does St. Thomas hold that man is responsible for the world? Yes, he does, and this would

vero ut dictum est, quaelibet res mota, in quantum movetur, tendat in divinam similitudinem ut sit in se perfecta; perfectum autem sit unumquodque in quantum fit actu: oportet quod intentio cuiuslibet in potentia existentis sit ut per motum tendat in actum. Quanto igitur aliquis actum est posterior et magis perfectus, tanto principalius in ipsum appetitus materiae fertur. Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur. Nam materia prima est in potentia primo ad formam elementi. Sub forma vero elementi existens est in potentia ad formam mixti: propter quod elementa sunt materia mixti. Sub forma autem mixti considerata, est in potentia ad animam vegetabilem: nam talis corporis anima actus est. Itemque anima vegetalis est in potentia ad sensitivam; sensitiva vero ad intellectivam. Quod processus generationis ostendit: primo enim in generatione est fetus vivens vita plantae, postmodum vero vita animalis, demum vero vita hominis. Post hanc autem formam non invenitur in generabilibus et corruptibilibus posteriora forma et dignior. Ultimus igitur finis generationis totius et anima humana, et in hanc tendit materia sicut in ultimam formam. Sunt ergo elementa propter corpora mixta; haec vero propter viventia; in quibus plantae sunt propter animalia; animalia vero propter hominem. Homo igitur est finis totius generationis” (Aquinas *Summa Contra Gentiles* 3.22).

³⁸Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 757: “Persona significat id quod est perfectissimum in tota natura” (Aquinas *Summa Theologiae* 1. 29. 3; confer Aquinas *Summa Theologiae* 1. 30. 4).

³⁹Mondin, *Manuale*, 261: “Il principio antropico afferma che la creazione dell’universo è finalizzata all’uomo. Ciò significa attribuire all’esistenza dell’uomo un peso particolare nella comprensione della struttura e dell’evoluzione dell’universo.”

imply that man has some control for responsibility over the world. In other words, cultural evolution directed by rational man has taken the place of biological evolution in man. St. Thomas teaches about all creatures: “Every creature functions according to its proper action and its own perfection. Secondly, less noble creatures are in the service of the more noble, as creatures lower than men are in service of man. Further, every creature is in service of the perfection of the universe. Finally, the totality of the universe with all its parts is ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).⁴⁰ Thus, man is in service of the perfection of the universe, but rational man has obligations. St. Thomas gives the foundation of human reason for men to cooperate in building up the perfection of the universe: “It is necessary to conclude absolutely speaking that every will discordant from reason, either right or wrong, is always evil” (Aquinas *Summa Theologiae* 1-2. 19. 5).⁴¹ Man can overvalue self, with a personal egoism, the tendency to allow the personal “Ego” to supercede every other person or thing. St. Thomas does not condemn egoism absolutely, but notes that the cause of all sin “is the disordered love of one’s own self,” but there is a due and legitimate love of self (Aquinas *Summa Theologiae* 1-2. 77. 4. ad 1).⁴² Mondin correctly comments that the anthropology of St.

⁴⁰Mondin, *Dizionario*, 406: “Ogni creatura è in funzione del proprio atto e della propria perfezione. Secondo: le creature meno nobili sono in funzione delle più nobili, come le creature inferiori all’uomo sono per l’uomo. Inoltre, ciascuna creatura è in funzione della perfezione dell’universo. Infine, la totalità dell’universo con tutte le sue parti è ordinata a Dio come a suo fine” (Aquinas *Summa Theologiae* 1-2. 19. 5).

⁴¹Mondin, *Dizionario*, 417: “Dicendum est simpliciter quod omnis voluntas discordans, sive recta sive errante, semper est mala” (Aquinas *Summa Theologiae* 1-2. 19. 5).

⁴²Mondin, *Dizionario*, 210: “...è l’amore disordinato di se stessi” (Aquinas *Summa Theologiae* 1-2. 77. 4. ad 1).

Thomas is not perfect because he says too little about the cultural and historical dimension of man.⁴³ It is precisely this cultural dimension that is discussed here.

Does St. Thomas teach a human destiny greater than happiness in this world alone? Yes, he does, and this would imply that man's responsibility for the world and man's morality lead to a goal beyond this world. St. Thomas teaches "that the ultimate happiness of man is not in this world" (Aquinas *Summa Contra Gentiles* 3. 48).⁴⁴ Mondin comments that the anthropology of St. Thomas is an optimistic humanism with faith in the destiny of man.⁴⁵ St. Thomas notes that even if man fails in his obligations, man still has the possibility of a destiny beyond this world: "Man, then with the power of God, is able to be restored to goodness, and so with the help of grace can obtain remission of sins" (Aquinas *Summa Contra Gentiles* 3. 156).⁴⁶ St. Thomas teaches that the ultimate human destiny is to see God: "And because the soul is immediately made by God, therefore it is not able to be happy unless it immediately would see God" (Aquinas *Quaestiones Quodlibetales* 10. 17; confer Aquinas *Summa Theologiae* 1-2. 3. 8).⁴⁷ This is a natural tendency of every human intellect: "...every intellect

⁴³Mondin, *Dizionario*, 636: "Ovviamente neppure l'antropologia del Dottore Angelico è perfetta...dimensione culturale..."

⁴⁴Gonzalez, "Ethica," 3: 390: "Quod ultima hominis felicitas non sit in hac vita" (Aquinas *Summa Contra Gentiles* 3. 48).

⁴⁵Mondin, *Dizionario*, 636: "Ed è inoltre un umanesimo ottimistico, che ha fiducia nel destino dell'uomo."

⁴⁶Mondin, *Dizionario*, 636-637: "L'uomo, dunque, con la potenza di Dio, può essere riportato al bene e, così, con l'aiuto della grazia può ottenere la remissione dei peccati" (Aquinas *Summa Contra Gentiles* 3. 156).

⁴⁷De Finance, *Philosophie*, 346: "Et quia anima immediate facta est a Deo, ideo beata esse non poterit nisi immediate videat Deum" (Aquinas *Quaestiones Quodlibetales* 10. 17; confer Aquinas *Summa Theologiae* 1-2. 3. 8).

naturally desires the vision of the Divine Substance” (Aquinas *Summa Contra Gentiles* 3. 57).⁴⁸

Accordingly, St. Thomas teaches that God is the principle and goal of every thing” (Aquinas *De Veritate* 20. 4).⁴⁹

Does St. Thomas hold that the human soul is immortal? Yes, he does, and this would imply that man can personally enjoy life even after bodily death. St. Thomas followed Aristotle, who acknowledged the intellective soul to be intrinsically independent of matter, and so acknowledged its subsistence and immortality (Aristotle *De Gener. Animal.* 2. 3. 736 b 28).⁵⁰ St. Thomas uses all the classic and Patristic arguments for the immortality of the soul.⁵¹ St. Thomas argues that the natural desire for beatitude would be vain without immortality, in Aquinas *Summa Contra Gentiles* 2. 79. St. Thomas argues from the spiritual activity of the soul that it is immaterial without parts, in Aquinas *Summa Contra Gentiles* 2. 79. and also Aquinas *Scriptum in Liber Sententiarum* 2. 19. 1. 1. ad 3. St. Thomas argues from the intellective nature of the soul, noting that every intellectual substance is incorruptible, in Aquinas *Summa Contra Gentiles* 2.79. St. Thomas argues from the knowledge of truth, that definitions are known abstractly, in Aquinas *Scriptum in Liber Sententiarum* 1. 19. 5. 3. ad 3. St. Thomas argues from the proportion between act and essence: “Nihil potest per se operari, nisi

⁴⁸De Finance, *Philosophie*, 352: “...quod omnis intellectus naturaliter desiderant divinae substantiae visionem” (Aquinas *Summa Contra Gentiles* 3. 57).

⁴⁹Mondin, *Dizionario*, 153: “Dio è principio e fine d’ogni cosa...” (Aquinas *De Veritate* 20. 4).

⁵⁰Hoenen, *Cosmologia*, 299: “Aristoteles quoque iam agnoscebat animam intellectivam hominis (Graece νοῦν) esse in operationibus suis propriis intrinsece independentem a materia; consequenter agnoscit eius subsistentiam et immortalitatem...”

⁵¹Mondin, *Dizionario*, 316: “...San Tomasso può recuperare anche tutti i tradizionali argomenti che la filosofia classica e patristica aveva accumulato a sostegno della immortalità dell’anima.”

quod per se subsistit” (Aquinas *Summa Theologiae* 1. 75. 2). Thus, without a doubt, St. Thomas teaches the immortality of the soul of man.

Does St. Thomas hold the resurrection of the body? Yes, he does, and this would imply the dignity of the body and the possibility of the body to share immortality. Mondin notes that the resurrection of the body is a theological belief, the last article of the Nicean Creed, an article of faith.⁵² However, in the anthropology of St. Thomas it is a truth profoundly conformed to the witness of the human heart. St. Thomas teaches: “We saw that the souls of men are immortal; and they remain separate from the body after death. But we know that the soul has a natural tendency to remain with the body because of itself it is the form of the body, so to remain divided is against its nature. Now nothing contrary to nature is able to endure perpetually: so the soul will not always remain divided from the body. It is in fact immortal, and through this prerogative it must one day be rejoined to the body. This is nothing else but the resurrection (of the body). If it is demonstrated that man, by natural desire, tends to felicity, then that is the ultimate perfection of man. But whoever is deprived of something pertaining to his perfection, does not yet have perfect felicity, because his desire is not completely fulfilled. In fact, every imperfect being tends naturally to acquire the lacking perfection. But the soul separated from the body is in a certain way imperfect, as every part outside its whole is imperfect and the soul is naturally part of human nature. So man cannot attain ultimate happiness if the soul is not rejoined to the body; even more than we have demonstrated how man cannot in this life be joined with the ultimate felicity” (Aquinas *Summa Contra Gentiles* 4. 79).⁵³

⁵²Mondin, *Dizionario*, 144: “La risurrezione della carne...l’ultimo articolo del *Credo*...un articolo di fede.”

⁵³Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vols. (Madrid: BAC, 1967), 2: 942: “Ostensum est animas immortales esse...quod anima corpori naturaliter unitur...est

The Scholastic Solutions

First, in answer to the likelihood of the future biological evolution of man, Neo-Scholastics answer that in the negative. Man himself is the goal of the world, the end of evolution, according to Renard, Hugon, and Benignus. Consider each in turn.

Renard views man as the terminal goal of evolution.⁵⁴ Renard argues that man is a rational (soul) animal (body). The true definition of man postulates this composite nature of soul and body. No efficient cause, not even God, could produce a creature possessing the nature of man which would not be composed of body and soul. Thus a man who is not rational, or a man who is not an animal, would not be a man. Man would be a non-man, which is opposed to the principle of contradiction. Hugon argues against the future biological evolution of man.⁵⁵ The proximate goal of the world is the

igitur contra naturam animae absque corpore esse...naturale hominis desiderium ad felicitatem tendere...cuicumque igitur deest aliquid ad perfectionem, nondum habet felicitatem...omne enim imperfectum perfectionem consequi naturaliter cupit...Non igitur potest homo ultimam felicitatem consequi nisi anima iterato corpori coniungitur quod in hac vita homo non potest ad felicitatem ultimam pervenire” (Aquinas *Summa Contra Gentiles* 4. 79).

⁵⁴Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 33: “Moreover, so absolute is our certitude that such a composition is required for the nature of man, that we are able to affirm without any doubt that no efficient cause of any kind, not even an infinitely powerful God, could produce a creature possessing the nature of man, which would not be a rational animal, and which would not be composed of body and soul. We see, at once, that such a nature – the nature *man* that would not be a rational animal – is not nature at all. It is non-being, and hence nothing. It states that man is not-man. It is a denial of the principle of contradiction...our intellect knows the truth and sees the utter impossibility of such a being.” Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 627: “L’adesione alla teoria ilemorfistica di Aristotele...a Tommaso...”

⁵⁵Hugon, *Philosophia*, 304: “Cum mundi finis proximus sit perfectio creaturae, praesertim rationalis, scite admittitur quidam progressus, vi cuius natura magis ac magis sese evolvat, et homo iterum atque iterum in scientiis et artibus proficiat. Quia tamen omnis creatura

perfection of creatures, especially rational creatures, so progress is admitted which more and more evolves as man becomes more and more proficient in the arts and sciences. But because every creature has its determined mode of being and operation, none can progress without some end, or the species would disappear and the creature perish.

Benignus argues that matter can evolve into an infinite number of things but they will all be material. Matter cannot evolve itself into the immaterial.⁵⁶

Second, in answer to the question about whether cultural evolution will take the place of biological evolution for the human species, several Neo-Scholastics answer in the affirmative. Nogar believes culture will predominate.⁵⁷

Cultural evolution has already taken the place of biological evolution in the Humanist Movement. The title of humanist is not exclusive to the lay philosopher, but can be applied to Pope John Paul II, who affirmed human dignity and the importance of human reason in moral and ethical questions.⁵⁸ In his message to the Pontifical Academy of Sciences in 1996, Pope John Paul II also explained why the Magisterium is interested in theories of evolution, precisely because of the impact

determinatum modum habet, non potest in infinitum progredi nisi species solvatur et creatura ipsa perimatur.”

⁵⁶Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 209: “Matter cannot evolve itself into the immaterial.”

⁵⁷Nogar, *Wisdom*, 131: “Anthropology must study cultural factors; they will dominate biological factors in the future of man.”

⁵⁸Battista Mondin, *Dizionario Enciclopedico del Pensiero de San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 626: “...particolarmente, l’affermazione della dignità delle natura umana...alla ragione umana...(Giovanni Paolo II).”

on the vision concerning the human person, who is created in the image and likeness of God.⁵⁹

Accordingly, the seeming change of emphasis from the abstract study of Neo-Scholasticism to the papal teaching on the practical issues of social justice and option for the poor is more of an application of doctrine to practice than a lack of consideration for Neo-Scholasticism. Equally, in those Neo-Scholastics who became Liberation Theologians, we see the application of philosophy to the ever more urgent needs of the times.

Cultural evolution has already taken the place of biological evolution if man is responsible for the care of the world. De Finance notes that the development of man makes man an agent of history, so that we should not just think of biology but of social and spiritual values, for the world would not be what it is without man.⁶⁰ Mondin notes that the world has a need to be integrated by man, and without man the universe lacks a subject to understand it.⁶¹

Third, in answer to the question about the final goal of man, Mondin and Hellin argue to the

⁵⁹Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 328: "...Magisterium is interested in theories of evolution, precisely because of the impact on the vision concerning the human person, who is created in the image and likeness of God."

⁶⁰Joseph De Finance, *Essai sur l'Agir Humain* (Rome: Gregorian University, 1962), "Nous ne sortons pas de déroulement de virtualités inscrites dans la 'forme' naturelle et le nouveau qui arrive au monde par l'évolution reste toujours du même ordre que l'ancien. Il ne révèle aucune référence à des finalités non biologiques...Ce devenir dont l'homme est ainsi l'agent constitue l'*histoire*. L'histoire humaine...Et il ne faut pas penser ici seulement aux transformations de milieu physique, plus encore à celles de milieu social et spirituel."

⁶¹Mondin, *Manuale*, 263: "Il mondo ha bisogno di essere integrato dall'uomo, mancando il quale sarebbe privo di una piena ed evidente ragione capace di giustificarlo." Ibid., 264: "Perciò a un universo-puro-oggetto sarebbe mancato un soggetto capace di capirlo."

final goal of creation, especially the special goal of man.⁶² Gonzalez notes that the goal of man cannot be in this world. Gonzalez then argues that the only sufficient goal that will satisfy man is the possession of God. Klubertanz notes the intrinsic independence of the soul.⁶³ Bittle considers the restoration of man in resurrection, from a philosophical point of view.⁶⁴ Consider Modin, Hellin, Gonzalez, Klubertanz and Bittle.

Mondin argues that there is a goal of the universe is admitted by almost all philosophers from Anaxagoras up to Kant. Mondin notes that the teleological argument has been a recurring issue in philosophy and considered by Plato, Aristotle, Cicero, Plotinus, Origin, Augustin, Avicenna, Anselm,

⁶²La Vecchia, *Evoluzione*, 114: “Egli è dunque essenzialmente più elevato e più perfetto di ogni altro organismo.” Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 757: “Persona significat id quod est perfectissimum in tota natura” (Aquinas *Summa Theologiae* 1. 29. 3).

⁶³Klubertanz, *Philosophy*, 320: “The human soul is immortal. The soul is intrinsically indestructible because it has no parts. The soul is extrinsically indestructible because it does not intrinsically depend on anything destructible.” Ibid., 312-315, where Klubertanz gives an *a priori* proof for the immortality of the human soul: at death the component parts of the body break down, but the soul has no parts; the soul does not perish with the body because it does not intrinsically depend on the body; God would not annihilate (the reverse of creation) the human soul, because God is not arbitrary; therefore because the human soul is by nature a spiritual form, its immortality is natural. Ibid., Klubertanz also gives an *a posteriori* proof for the immortality of the human soul: the universal natural repugnance of completely ceasing to exist is a natural tendency of human nature, not to be in vain; man has the experience of obligation from the rational moral order. Gredt, *Philosophiae*, 378, also argues for the immortality of the soul of man for a number of reasons: the soul is incorruptible *per se* because it is simple and has no parts; the soul is incorruptible *per accidens* because it is spiritual and immaterial; the human soul is immortal and operates virtually, since it is spiritual and does not need the body (*operatio sequitur esse*); without the immortality of the soul there would be no real moral sanction; man is immortal from the common consent of all; the desire of man for eternal felicity would be frustrated without immortality. Bittle, *Psychology*, 626: “Man must die, but his soul is created for immortality.” Hugon, *Philosophia*, 100 and 108: “Anima est immortalis ab intrinseco et ab extrinseco”; where Hugon argues for extrinsic immortality because the soul has no tendency to (*non esse*) not exist.

⁶⁴Bittle, *Psychology*, 623: “Should not the whole man (body and soul, matter and form) be the bearer of immortal life in the world to come?”

Albertus Magnus, Bonaventure, Nicholas of Cusa, Descartes, Leibniz and Kant. For Neo-Scholastics there is a double goal of the universe. God created the universe primarily for the good of God. God also created the universe for the good of creatures.⁶⁵

Hellin argues *a priori* that God has a special providential care of man.⁶⁶ God has established a most special goal for man, which demands very special means. But if God wills the goal, God must also will the means, because of His Divine Wisdom. Therefore, God does provide man with most special means in proportion to man's most special goal. The minor proposition is evident. The major proposition is proved two ways: first, God imposed on man the role of glorifying God and following reason, which is not imposed on irrational creatures; second, since the goal is intrinsically supernatural then the means provided man must also be most specially supernatural. From this it is easy to conclude that man is the apex of creation. Benignus agrees that "Man has a glorious destiny; God did not make man to live a few years and then doom him to death and destruction."⁶⁷

Gonzalez provides a number of arguments that man is destined to perfect beatitude.⁶⁸ Man is

⁶⁵Mondin, *Manuale*, 259: "...è facile vedere che Dio ha voluto l'universo per due ragioni: il bene di Dio; il bene delle sue creature."

⁶⁶Josepho Hellin, "Theodicea," in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 337: "Deus...et peculiarem providentiam habet de homine."

⁶⁷Benignus, *Nature*, 625: "Man has a glorious destiny. God did not make man to live a few years and the doom him to death and destruction."

⁶⁸Irenaeo Gonzalez, "Ethica," in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 369-370: "Homo destinatur ad beatitudinem perfectam...ex appetitu innato beatitudinis...ex natura voluntatis seu ex appetitu boni...Nam ille appetitus elicitus necessarius quoad specificationem et quoad exercitium ita constans et universalis, postulat causam sufficientem et proportionatam, et nulla alia assignari potest, valida pro omnibus..."

destined to perfect beatitude from man's own innate appetite for beatitude; from the nature of the human will, which has the desire for good; from the constant and universal desire for full satisfaction in the attainment of good; and no one opposes a desire to do good. Perfect beatitude is man's ultimate internal goal from the very nature of ultimate internal goal.⁶⁹

Gonzalez and Donat argue that perfect happiness cannot be obtained in this life.⁷⁰ He argues from the concept of perfect beatitude, which excludes anything bad and includes the fulfillment of all desires. In this life there are many bad things, and all our desires are not able to be obtained here. So perfect happiness cannot be obtained in this life.

Gonzalez argues that God is the necessary and sufficient object of human beatitude. God is the necessary object of human beatitude, because the properties of beatitude, that the object has to have perfect truth and goodness, are found only in God.⁷¹ God is also the sufficient object of human beatitude.⁷²

Bittle considers the restoration of man in the resurrection after death. He notes the argument

⁶⁹Gonzalez, "Ethica," 3: 370: "Finis ultimus internus alicuius rei ille est ad quem res ultimatim natura sua tendit, ita ut illum agens actibus vitalibus assequatur."

⁷⁰Gonzalez, "Ethica," 3: 390: "Probatur...ex conceptu beatitudinis perfectae et ex eperientia...Beatitudo perfecta est status in quo omne malum excluditur, atque omne desiderium impletur...Atqui in hac vita neque omne malum excludere, neque omne desiderium implere possibile est." Donat, *Cosmologia*, 257: "...apparet porro, quam triste solacium illi praebeant, qui Deum et immortalitatem repudiantes finem ultimum hominis eiusque summum bonum in rebus huius terrae, maxime in profectu culturae generis humani collocant."

⁷¹Gonzalez, "Ethica," 3: 374: "Illud obiectum ad beatitudinem necessario requiritur in quo summum et perfectum verum et bonum inveniatur...Atqui...solum invenitur in Deo."

⁷²Gonzalez, "Ethica," 3: 375: "Facultates rationales, intellectus et voluntas plene satiantur sola possessione Dei, nam Deus est simpliciter infinitus, continet in se omne verum et omne bonum, quae sunt obiecta formalia harum facultatum."

that the condition of man as a truncated being would entail an incomplete happiness.⁷³ But man is destined for full happiness in the next life. Secondly, the body was the bridge of communication between the spirit of man and the physical world, and soul and body formed one nature. Third, an argument *per impossibilem* would be that the soul, the form of the body in this life, and the soul, subsistent and immortal in the next life, would have two natural forms of existence, which is not rationally satisfying. Finally, Bittle argues that man is by nature an organism of which the body is an integral substantial part. These arguments do not provide absolute proof of the resurrection of the body, but are an *argumentum suavisum* that incline us to believe at least the possibility of the full restoration of man even after death.⁷⁴

Fourth, the concept of evolution applied to the future of man is equivocal. Equivocal indicates predication where the verbal term is identical, but the concepts have no connection in the mind.⁷⁵ Nogar says, “These papers (at the Darwin Centennial Celebration at the University of Chicago in 1959 composed of fifty international experts on evolution reporting) on cultural anthropology, archaeology,

⁷³Bittle, *Psychology*, 623-624: “...incomplete happiness...bridge of communication...if this is the correct view, the soul would have two forms of natural existence...an organism of which the body is an integral substantial part.”

⁷⁴Gonzalez, “Ethica,” 3: 376: “Nostra sententia: Negamus resurrectionem corporis esse aliquid naturaliter necessarium ut anima perfecte satiari possit. Concedimus utique illam esse luce naturali consentaneam, atque rationibus congruentis suaderi; minime vero exigi ab anima.”

⁷⁵Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 93-94: “Equivocal...the verbal term is identical...concepts have no connection in the mind. An ‘equivocation’ is the use of an ambiguous word; it is a play on words. It indicates the use of a word which has quite different meanings, so that although the oral or written term is identical, the concept, to be true, must change completely.” Gardeil, *Cosmology*, 183, quotes St. Thomas: “On the other hand, a thing is predicated equivocally when it is attributed to several by the same name but with (*secundum diversam rationem*) a wholly different meaning” (Aquinas *De Principiis Naturae* 46).

psychology and language not only show this radical change in the concept of evolution as it is applied to man, but they even show a strong tendency to ignore the concept of man's prehistory and concentrate upon man as he is now known to be fashioner of his own future."⁷⁶ Darwin does not impose evolution on a grand scheme of biological, or cosmic, history but the origin of the species.⁷⁷ The general meaning of the term "evolution" is tied to biological transformation of species by mutation and natural selection. Philosophical Evolutionism may attempt to extend that meaning.⁷⁸ Herbert Spencer and some others wish to extend the term "evolution" to the level of a universal law that pertains to all transformation in the universe. Those followers of Darwin, notably Huxley and Spencer in England and Haeckel in Germany, made unwarranted extensions of the theory into fields of philosophy and ethics. The extension of "evolution" is not univocal, as explained by Nogard.⁷⁹ The extension of "evolution" is not analogous, as explained by Renard.⁸⁰ The extension of "evolution" is

⁷⁶Nogard, "Evolution," 350: "...not only show this radical change...fashioner of his own future."

⁷⁷Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 204: "Darwin does not impose evolution on a grand scheme..." Klubertanz, *Philosophy*, 378: "Evolution means development or biological change."

⁷⁸La Vecchia, *Evoluzione*, 317: "In questo scritto abbiamo dapprima considerato il problema dell'evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo."

⁷⁹Nogard, *Wisdom*, 191-192: "Theoretically, the concept of evolution should be regarded not as a single valued law but as a name for a series of models, all having a historical context. There are historical trends various sciences have determined...but the trends are specific, local, limited in sphere, and limited in time. None of these trends can be generalized to the degree needed for universal univocal extension."

⁸⁰Renard, *Philosophy*, 97: "In a composite concept, a change can be made by dropping notes, e.g. man as rational animal, irrational animal, animal. These concepts can be predicated intrinsically of various individuals. Yet they also differ — are they analogous? No. In each the concept of "animal" remains the same; it is a universal idea. There is no analogy of attribution, but only univocity of genus. There is no analogy of proportionality, not in the order of reality."

equivocal, as explained by Nogar.⁸¹

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁸² Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁸³ Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also

⁸¹Nogar, *Wisdom*, 185: “The term ‘evolution’ signifies something quite different in the organic and inorganic world. What is retained is the space-time concept of continual, natural change and development. Beyond this generic meaning, the term changes its definition and becomes equivocal.”

⁸²Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

⁸³Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: “Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

suppose the internal motive.⁸⁴ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁸⁵

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.⁸⁶ However, some restricted observation of evolution is possible within species.⁸⁷ Nogar notes, “The theory of evolution, taken in its strict sense, cannot explain the origin of

⁸⁴Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

⁸⁵Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁸⁶Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁸⁷Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc

man as a whole, since it does not account fully for his spiritual and intellectual capacities, his history, nor his destiny.”⁸⁸ Benignus agrees, and argues from the limitations of material.⁸⁹

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics: Reynard,⁹⁰ Benignus,⁹¹ and Hugon.⁹²

Certitude could arise if the argumentation was based on some philosophical principles. Renard bases his argument on the principle of contradiction, the primary principle of all.⁹³ Further, the argument of Renard is *a priori*.

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason.

sane videntur demonstrare...”

⁸⁸Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 301: “...not account fully...nor his destiny.”

⁸⁹Benignus, *Nature*, 209: “Matter cannot evolve itself into the immaterial.”

⁹⁰Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 33: “Moreover, so absolute is our certitude that such a composition is required for the nature of man, that we are able to affirm without any doubt that no efficient cause of any kind, not even an infinitely powerful God, could produce a creature possessing the nature of man, which would not be a rational animal, and which would not be composed of body and soul. We see, at once, that such a nature – the nature *man* that would not be a rational animal – is not nature at all. It is non-being, and hence nothing.”

⁹¹Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 209: “Matter cannot evolve itself into the immaterial.”

⁹²Hugon, *Philosophia*, 304: “Cum mundi finis proximus sit perfectio creaturae, praesertim rationalis, scite admittitur quidam progressus, vi cuius natura magis ac magis sese evolvat, et homo iterum atque iterum in scientiis et artibus proficiat. Quia tamen omnis creatura determinatum modum habet, non potest in infinitum progredi nisi species solvatur et creatura ipsa perimatur.”

⁹³Renard, *Philosophy*, 33: “Moreover, so absolute is our certitude... We see, at once, that such a nature – the nature *man* that would not be a rational animal – is not nature at all. It is non-being, and hence nothing. It states that man is not-man. It is a denial of the principle of contradiction...our intellect knows the truth and sees the utter impossibility of such a being.”

Both Renard, arguing from the nature of man, and Benignus, arguing from the limits of matter, have given sufficient reasons.

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas holds that man is the apex of creation and the goal of the world. This would imply that biological evolution in man has attained its goal. St. Thomas teaches that man is the goal of creation: “It was necessary for the perfection of the universe that some intellectual natures exist” (Aquinas *Summa Contra Gentiles* 2. 46).⁹⁴ Both Mondin and Benignus note the teaching of St. Thomas: “...and finally the life of man. After this no later and more noble form is to be found in things that are generated and corrupted. Therefore (the appetite whereby matter seeks a form must tend to the last and most perfect act to which matter can attain as to the ultimate end of generation), the last end of all generation is the human soul and to this does matter tend as its ultimate form. Man therefore is the goal of all generation” (Aquinas *Summa Contra Gentiles* 3. 22).⁹⁵

⁹⁴Joseph De Finance, *Être et Agir: dans le Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 319: “Oportuit ad perfectionem universi, esse aliquas naturas intellectuales” (Aquinas *Summa Contra Gentiles* 2. 46).

⁹⁵Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 223, cites St. Thomas in the *Summa Contra Gentiles*, book 3, chapter 22; and Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 501, gives the same citation. “Santo Tomas de Aquino, *Suma Contra los Gentiles*, bilingual ed., 2 vols. (Madrid: BAC, 1967), 2: 133-134: “Cum vero ut dictum est, quaelibet res mota, inquantum movetur, tendat in divinam similitudinem ut sit in se perfecta; perfectum autem sit unumquodque inquantum fit actu: oportet quod intentio cuiuslibet in potentia existentis sit ut per motum tendat in actum. Quanto igitur aliquis actum est posterior et magis perfectus, tanto principalius in ipsum appetitus materiae fertur. Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur. Nam materia prima est in potentia primo ad formam elementi. Sub forma vero elementi existens est in potentia ad formam mixti: propter quod elementa sunt materia mixti. Sub forma autem mixti considerata, est in potentia ad animam vegetabilem: nam talis corporis anima actus est. Itemque anima vegetalis est in potentia ad sensitivam; sensitiva vero ad

Certitude could arise if Neo-Scholastics agree that man is the culmination of evolution and that present and future evolution will be cultural. Nogar holds that cultural factors will dominate biological factors in the future of man.⁹⁶ Hellin views man as the most special beneficiary of Divine Providence.⁹⁷

Certitude could arise due to recent scientific confirmation by convergent scientific arguments showing the limits of biological evolution. Villagrasa notes that recent attempts at numerical simulation only confirms micro-evolution of species, so that evolution seems possible only internal to the species.⁹⁸

Certitude could arise if the opposite opinion, that man could substantially change so as to not be a human animal or have a human soul is not tenable, according to Renard.⁹⁹ Klubertanz notes that “Psychological determinism rests on an equivocation in the term ‘the greater good’.”¹⁰⁰

intellectivam. Quod processus generationis ostendit: primo enim in generatione est fetus vivens vita plantae, postmodum vero vita animalis, demum vero vita hominis. Post hanc autem formam non invenitur in generabilibus et corruptibilibus posteria forma et dignior. Ultimus igitur finis generationis totius et anima humana, et in hanc tendit materia sicut in ultimam formam. Sunt ergo elementa propter corpora mixta; haec vero propter viventia; in quibus plantae sunt propter animalia; animalia vero propter hominem. Homo igitur est finis totius generationis” (Aquinas *Summa Contra Gentiles* 3.22).

⁹⁶Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 131: “Anthropology must study cultural factors; they will dominate biological factors in the future of man.”

⁹⁷Hellin, “Theodicea,” 3: 337: “Deus...et peculiarem providentiam habet de homine.

⁹⁸Jesús Villagrasa, “Evoluzione, Interdisciplinarietà e Metadisciplinarietà,” in *Evoluzione*, ed Rafael Pascual (Rome: Studium, 2005), 8: “Ha scoperto, contro il darwinismo, che non c’è continuità nell’evoluzione fra le specie; quest’evoluzione è possibile solo all’interno della specie.”

⁹⁹Renard, *Philosophy*, 33: “...such a nature – the nature man that would not be a rational animal – is not nature at all. It is non-being, and hence nothing.”

¹⁰⁰Klubertanz, *Philosophy*, 381: “Psychological determinism rests on an equivocation in the term ‘the greater good’.”

Certitude could arise if the objections of adversaries are able to be answered. Renard argues from the principle of contradiction: Renard views man as the terminal goal of evolution and so not open to substantial change.¹⁰¹ Renard argues that man is a rational (soul) animal (body). The true definition of man postulates this composite nature of soul and body. No efficient cause, not even God, could produce a creature possessing the nature of man which would not be composed of body and soul. Thus a man who is not rational, or a man who is not an animal, would not be a man. Man would be a non-man, which is opposed to the principle of contradiction. Any other change in man, even if due to biological evolution, would be an accidental (*per accidens*) change, and not result in a substantial (*per se*) change for new species of “man.”

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Nogar notes that the theory of evolution taken in the strict sense does not fully account for man’s spiritual and intellectual capacities, his history, nor his destiny.¹⁰² Evolutionists assign the object of happiness for man to be the civil progress of the human

¹⁰¹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 33: “Moreover, so absolute is our certitude that such a composition is required for the nature of man, that we are able to affirm without any doubt that no efficient cause of any kind, not even an infinitely powerful God, could produce a creature possessing the nature of man, which would not be a rational animal, and which would not be composed of body and soul. We see, at once, that such a nature – the nature *man* that would not be a rational animal – is not nature at all. It is non-being, and hence nothing. It states that man is not-man. It is a denial of the principle of contradiction...our intellect knows the truth and sees the utter impossibility of such a being.” Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 627: “L’adesione alla teoria ilemorfistica di Aristotele...a Tommaso...”

¹⁰²Nogar, *Wisdom*, 301: “The theory of evolution...does not fully account...nor his destiny.”

race.¹⁰³

Certitude can be had from the fact little or no future biological evolution of man is the best answer now.¹⁰⁴ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).¹⁰⁵ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, the continued biological evolution of man is not likely, even though no one knows the future, because the proofs given are *a priori* from the nature of man as rational animal (Renard) and the limitations of matter (Benignus).

The level of certitude for “future biological evolution of man is unlikely, and equivocal” is at minimum at the level of the metaphysically certain. The proof is the principle of contradiction, says

¹⁰³Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 373: “Evolutionistae: ut beatitudinis objectum assignant progressum civilem generis humani.”

¹⁰⁴John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

¹⁰⁵Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *dici de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

Renard.¹⁰⁶ Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Renard.¹⁰⁷ Nogar agrees that the use of evolution about the future of man is a radical change in the concept of evolution, and so equivocal.¹⁰⁸ Gonzalez holds as certain that God is a necessary object of happiness.¹⁰⁹

Having come to the correct conclusion on the philosophical level of certitude about the unlikely continuation of biological evolution in man, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.¹¹⁰ This is the method of Aristotle and St. Thomas.¹¹¹ Even though the resurrection of the body is not something naturally necessary for the soul to be perfectly satisfied, the resurrection of the body is

¹⁰⁶Renard, *Philosophy*, 33: “Moreover, so absolute is our certitude that such a composition is required for the nature of man, that we are able to affirm without any doubt that no efficient cause of any kind, not even an infinitely powerful God, could produce a creature possessing the nature of man, which would not be a rational animal, and which would not be composed of body and soul. We see, at once, that such a nature – the nature man that would not be a rational animal – is not nature at all. It is non-being, and hence nothing. It states that man is not-man. It is a denial of the principle of contradiction...our intellect knows the truth and sees the utter impossibility of such a being.”

¹⁰⁷Renard, *Philosophy*, 33: “Moreover, so absolute is our certitude...”

¹⁰⁸Nogar, “Evolution,” 350: “...not only show this radical change...fashioner of his own future.”

¹⁰⁹Gonzalez, “Ethica,” 3: 372: “Deus est obiectum beatitudinis humanae necessarium et per se sufficiens.” Ibid., 3: 374: “...ut certum, defendimus...”

¹¹⁰Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹¹¹Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, materia sensibilis, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

naturally perceived by natural understanding and by persuasive rational arguments.¹¹² Thus the body continues to play a role in the future of man. Small evolutionary changes that might occur in the human body in the future are not easy to determine, for although the ordination of the whole universe to man is found in the order of essences, divine action respects the activity of nature to the extent that it suppresses neither contingency, nor liberty, nor chance.¹¹³

¹¹²Gonzalez, “Ethica,” 3: 376: “Nostra sententia: Negamus resurrectionem corporis esse aliquid naturaliter necessarium ut anima perfecte satiari possit. Concedimus utique illam esse luce naturali consentaneam, atque rationibus congruentis suaderi; minime vero exigi ab anima.”

¹¹³Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 325, where De Finance cites: Aquinas *Summa Contra Gentiles* 3. 72; Aquinas *Summa Contra Gentiles* 3. 73; and Aquinas *Summa Contra Gentiles* 3. 74.

Chapter 17: EVOLUTIONARY ABIOGENESIS IS PROBABLE, BUT EQUIVOCAL.

The State of the Question

The Pontifical Gregorian University's philosophical faculty notes the distinction between total evolution and various forms of partial evolution.¹ Abiogenesis falls under total evolution, in which life arises from inanimate matter. This question was treated earlier in the twentieth century by Scholastics at the Gregorian University. Currently, the student textbook by La Vecchia briefly and succinctly presents the philosophy of evolution as concerns its history, concepts, proof attempts, and purpose, while the major and most detailed part of the presentation concerns human evolution, involving man's body, intelligence, and soul.² In short, the more immediate evolution of man (partial evolution) overshadows the wider treatment of the origin of life itself (total evolution).

Note that the present question is about the origin of life, not just the origin of species.³ This thesis then touches the ultimate origin of man.⁴ The major presentation of the question here concerns

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 6: "Si distingue un'evoluzione totale e varie forme di evoluzione parziale. L'*evoluzione totale* andrebbe dalla materia inanimata, attraverso organismi più semplici, quali sono gli unicellulari, a organismi più complessi, fino all'Uomo; la varie forme di *evoluzione parziale* si svolgerebbero invece all'interno di gruppi più o meno ampi di organismi."

²La Vecchia, *Evoluzione*, 89-320.

³La Vecchia, *Evoluzione*, 4: "L'origine dei viventi è infatti un problema che, da secoli, ha subito i contraccolpi delle lotte e delle controversie tra scienze e religione. Non è quindi raro trovare tra coloro che si occupano di questo argomento una grande disomogeneità de informazioni."

⁴Celestine N. Bittle, *The Whole Man: Psychology* (Milwaukee: Bruce, 1945), 592: "...ultimate origin of man's body and soul."

life on earth.⁵

Francis Crick, who won the Nobel Prize for medicine, notes that today the question of life is more open than ever. The Neo-Scholastic Mondin, writing in 1999, noted four solutions to the problem of the origin of life.⁶ First, life could be directly created by God, as held by Jean Servier. Second, life could be part of an evolutionary plan established by God, as held by Mondin. Third, life could arise by spontaneous generation, as held by Descartes, Newton, and John Tumberville Needham, S.J. Fourth, life could arise by generation or evolution by pure chance, as held by Jacques Monod in 1970.

Participants in the Dialogue

Adversaries to the proposal in this chapter are the Neo-Scholastics of the first part of the twentieth century, such as Palmes.⁷ Bittle believes that the proposal has been definite disproved by science.⁸ Immanuel Kant held that life springing from what was void of life seems contrary to fact,

⁵Fernando M. Palmes, "Psychologia," in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 778: "...quae terram incolunt..."

⁶Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 214: "Francis Crick...la vera difficoltà...è possibile ricondurre a quattro tipi fondamentali..."

⁷Palmes, "Psychologia," 2: 776: "Generatio abiogenetica seu spontanea non modo nunc de facto non datur, sed etiam impossibilis naturaliter est, nec umquam possibilis fuit; quamobrem primorum individuorum viventium organicorum in terra apparatio, non nisi speciali interventui auctoris naturae tribuenda est."

⁸Bittle, *Psychology*, 592: "A common opinion (abiogenesis) formerly, it has been definitely disproved by science."

absurd and unreasonable.⁹

Creationists such as Jean Servier hold that life is never able to be born of matter, even in the laboratory.¹⁰ Man has animality through matter, but life gives matter a new state. Servier argues against evolution in general.

Materialists are adversaries in thinking matter alone is the total explanation of life. Spenser (not Darwin) viewed evolution as organisms gradually developing from non living matter, and this taking place through purely natural causes.¹¹ Some Catholic scientists and even theologians maintain that life was able to begin in the world only through the powers of non-living nature alone, so that no intervention of a superior cause would be required.¹²

Proponents of abiogenesis are found among the early Greek philosophers, such as Anaximander, Empedocles, Democritus and Aristotle.¹³ The argument of Aristotle was that “Nature proceeds little by little from things lifeless to animal life.”¹⁴ St. Augustine embraced the theory

⁹Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 205: “Kant...contrary to fact...”

¹⁰Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 221: “Mai, alle stato attuale delle cose – insiste Servier – la vita ha potuto nascere della materia, in laboratorio...”

¹¹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 378: “Evolution...from non living matter (not Darwin, but Spencer), and that this has taken place through merely natural causes.”

¹²Joseph Hellin, “Theodicea,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 92: “Ergo non requiritur interventus causae superioris specialis...”

¹³Palmes, “Psychologia,” 2: 779: “Olim etiam plures existere philosophi qui aliquomodo...Aristoteles...”

¹⁴Adler, *Lexicon*, 202: “...nature proceeds little by little from things lifeless to animal life.”

(Augustine *De Trinitate* 3, 8).¹⁵ Also, almost all the Scholastic philosophers almost up to the eighteenth century.¹⁶ Tyndall, Spencer and Huxley held that abiogenesis was a past fact.¹⁷ Darwin and Forel thought that life could be produced from matter by science in the future. Buffon (1707-1788), Pouchet (1800-1872), Joly, Basteau, Burche, Leduc, and Carrel tried to produce scientific proof for abiogenesis.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue. Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, the a prior argument is from the principle of causality, that a lesser cause cannot produce a greater effect.¹⁸ It is important that the

¹⁵Palmes, "Psychologia," 2: 780: "...Sancto Augustino, ut putabant, ortum viventium quae ex sola materia oriri videbantur tribuebant seminibus latentibus a Deo in creatione in materia sparsis, ex quibus suo tempore et in propitiis adiunctis constitutis corpora viventia orirentur..." Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 435, notes St. Augustin held that God created all simultaneously, but in the beginning life did not actually exist (*nondum actu*) but potentially (*secundum rationes seminales*). Thus God endowed unorganized matter with a certain seminal force, by which in the passing of time diverse species of living things evolved from inorganic matter. Gredt notes that this is not Panpsychism, which holds that life is a property of common matter, since St. Augustine teaches a special force has to be superadded. Ibid., 2: 435, the reason St. Augustine taught that God created everything at the same time was the text of Ecclesiasticus 18: 1: "Who lives in eternity, *creavit omnia simul*." But according to the Greek version, "*simul*" (Greek κοινῇ) signifies the same as "equally," or "without exception."

¹⁶Palmes, "Psychologia," 2: 779: "...et generatim omnes philosophi scholastici fere usque ad saeculum XVIII."

¹⁷F.-X. Maquart, *Elementa Philosophiae* (Paris: Andreas Blot, 1937), 2: 513: "De hac re adversantur...illum continue dari et scientificè probari...Carrel."

¹⁸Bittle, *Psychology*, 592: "The principle of causality precludes the possibility of a vital principle or soul originating from matter through material forces alone, because the effect would

principle of causality be preserved. Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Generation signifies the origin or the procession of some being, called the generated, from another being which is generating.¹⁹ Generation is the opposite of creation. Generation in its special and most proper mode is the production or natural result of a new living organic individual.

Supposit is defined as a complete substance subsisting independently (*incommunicabiliter*).²⁰

Biogenetic generation is the production of a new living supposit from some other living supposit or suppositis, but not from non-living material.²¹

Abiogenetic generation is the production of a new living thing generated by a body or brute material lacking all life. Abiogenetic generation is also called “spontaneous generation” because the

be greater than the cause.” Palmes, “Psychologia,” 2: 780: “Ens substantiale inferioris naturae et virtutis, causa adaequata esse nequit entis substantialis perfectionis naturae et virtutis.”

¹⁹Palmes, “Psychologia,” 2: 776: “Generatio vox est qua significatur origo aliqua vel processio alicuius entis, quod generatum vel generari dicitur, ab alio ente quod generans vel genitor appellatur.” Ibid., 2: 777: “Generatio creationi opponitur.” Ibid., 2: 777: “Generatio autem speciali et propriissimo modo dicitur productio sive effectio naturalis novi individui viventis organici.”

²⁰Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 747: “Suppositum ergo definiri potest substantia completa incommunicabiliter subsistens.” Ibid., 1: 747: “Optima est etiam formula S. Thomae: ‘subsistens distinctum’ (Aquinas *Scriptum in Liber Sententiarum* 2. 5. 1. 1; confer Aquinas *De Potentia* 9. 4).

²¹Palmes, “Psychologia,” 2: 777: “Biogenetica (generatio) erit, si novum suppositum vivens, non a materia non vivente, sed ab aliquo alio supposito vivente, vel a duobus suppositis viventibus perficitur.”

new living organic supposit, by its own nature, or without any causal influence of something living, is generated from non living material.²²

Special intervention of God, in this case, signifies that God produced the substantial form, or the soul of the first organic living thing, dependent on some antecedent material, and soul was created by educative action (man being a case aside) dependent on the merely passive potency of the material, and in no way dependent on some active or exigitive potency of the material.²³ This Divine Intervention does not mean a miracle, nor creation, nor general governance.

Question Needing A Reply

Is abiogenesis probable? Is the use of the term “evolution” in the phrase evolutionary abiogenesis an equivocal use?

The Thomistic Foundations

The problem of the origin of life has given rise in the last centuries to a debate between the

²²Bittle, *Psychology*, 592: “Abiogenesis, or spontaneous generation, is the origination of living beings from non-living matter through forces which are indigenous to matter itself.”
Palmes, “Psychologia,” 2: 777-778: “Prorsus alia esset generatio abiogenetica, iuxta quam novum suppositum vita praeditum generaretur a corpore vel a materia bruta seu omnis vitae experte; nullumque suppositum seu individuum vivum praesupponeret, a quo novum individuum vivens generaretur.” Ibid., 2: 778: “...generatio spontanea...”

²³Palmes, “Psychologia,” 2: 778: “Specialis, igitur, interventus Dei significat hei, Deum primum vivens vel prima viventia organica condidisse ex materia iam prius existente ab ipso antecederet creata. Aliis verbis, dicimus Deum produxisse formam substantialem seu animam primi viventis organici, dependenter a materia aliqua praeeexistente et ab Eo iam creata, per actionem educivam, si agitur de viventibus ab homine distinctis, dependentem a potentia mere passivae materiae; nullatenus vero a potentia aliqua activa vel exigitiva materiae.” Ibid., 2: 778: “Non...miraculosa...neque...creatio...neque...concursus generalis...”

Mechanicists and the Vitalists. Although the problem was not confronted directly and explicitly by St. Thomas, he would have chosen the alternative of creation by God, instead of merely chance, says Mondin.²⁴ Therefore, St. Thomas would incline to say that God is involved in the origin of life.

Although St. Thomas affirms the absolute primacy of God as the principle cause of everything produced by nature, does St. Thomas affirm that God works through secondary causes too? In his argument against St. Augustine and Avicenna,²⁵ St. Thomas asserts that not just God and spirits are efficient causes, but there are secondary causes in nature. St. Thomas affirms there are secondary causes in nature.²⁶ As proof of secondary causes, St. Thomas has three arguments (Aquinas *Summa Theologiae* 1. 105. 5).²⁷ First, without secondary causes there would be no connection for creatures between their causation and the effect; creatures would be impotent and their powers in vain. Second, every being exists through its operations, so that without secondary causality, creatures existence would be imperiled. Third, less perfect things are ordered to more perfect: matter is ordered to form as the first act, and matter is ordered to operation as the second act, in such a way that operation is the

²⁴Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 659: "...polemiche tra i meccanicisti e i vitalisti, non viene mai affrontato direttamente ed esplicitamente da San Tommaso...tra le due spiegazioni alternative: Dio o il caso, egli non avrebbe potuto optare che per la prima tesi."

²⁵Greth, *Philosophiae*, 435: "Avicenna posuit omnia animalia posse generari ex aliqua elementorum commixtione absque semine etiam per viam naturae. Sed hoc videtur inconueniens, quia natura determinatis mediis procedit ad suos effectus..." (Aquinas *Summa Theologiae* 1. 71. ad 1).

²⁶Nogar, *Wisdom*, 323, cites a number of texts where St. Thomas treats secondary causes: Aquinas *Summa Theologiae* 1. 22. 3; Aquinas *Summa Theologiae* 1. 103. 6; Aquinas *Summa Contra Gentiles* 3. 76; Aquinas *Summa Contra Gentiles* 3. 77; Aquinas *Summa Contra Gentiles* 3. 83; and Aquinas *Summa Contra Gentiles* 3. 94.

²⁷Mondin, *Dizionario*, 410, cites Aquinas *Summa Theologiae* 1. 105. 5.

goal of created things. Therefore, St. Thomas confers upon secondary causes the full share of being and efficacy to which they are due. In the real world, the nature of the effect is similar to the nature of the cause, so that warmth does not chill, and humans generate humans. So the existence of natural laws suppose that God created beings endowed with causality.²⁸ How can the same effect be produced by two different causes (God and the natural agent) at the same time? These causes are at the same time, but not under the same relation, e.g., a workman uses an axe to cut wood, and both are causes. The analogy applies to God, but God's influence on the secondary cause penetrates more deeply, so that when God grants existence, God grants form, movement, and efficacy.²⁹ Thus the existence of secondary causes points to no lack of power in God, but to the immensity of God's goodness (confer: Aquinas *Summa Contra Gentiles* 1. 13).³⁰ Philosophically, secondary causality in creatures is an affirmation of the principle of causality which is fundamental to classical metaphysics

²⁸Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 181: "Detrahare actiones proprias rebus est divinae bonitate derogare" (Aquinas *Compendium Theologiae* 1. 5-41: Aquinas *Summa Contra Gentiles* 1: 13). Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 316, notes that "Suarez pointed out that 'God does not interfere directly with the natural order, where secondary causes suffice to produce the intended effect'" (Francisco Suarez, *De Opere Sex Dierum*, 2. 10. 13)

²⁹Gilson, *Philosophy*, 182: "Analogous with God: God's influence on second causes penetrates more deeply...the immensity of His goodness."

³⁰Gilson, *Philosophy*, 183: "Love is the unfathomable source of all causality...a God whose principle attribute is not power, but goodness. In a universe stripped of second causes, the most obvious proofs of the existence of God would be impossible..." Accordingly, should religious Fundamentalism deny secondary causes in favor of God, the proofs for God's existence would be more difficult. Donat, *Cosmologia*, 255, also argues not only from divine goodness, but divine wisdom and power; he adds an argument from divine eternity in that God shares the vestige of His eternity in the longest ages it takes to evolve the world ("ita aeternitatis vestigia cernuntur, cum per longissimas aetates mundum se evolvere facit." Confer: Aquinas *Summa Contra Gentiles* 3. 77.

and especially to Thomistic metaphysics. The principle of causality regulates the relationship between cause and effect according to the definition of Aristotle, which St. Thomas made his own, declaring, “Everything that is moved is moved by another,” or in another way, “Everything that happens presupposes a principle that produces it.”³¹

Does St. Thomas teach that lower creatures, “from the lifeless” as Aristotle says, are in service of higher creatures? Yes, he does, and so reprises Aristotle who taught that “nature proceeds little by little from things lifeless to animal life” and “there is observed in plants a continuous scale of ascent toward the animal.”³² This observation of natural ascent is helpful to understand the evolutionary progress from lifeless to life.³³ St. Thomas notes, “...less noble creatures are in the service of the more noble...Further, every creature is in the service of the perfection of the universe...Finally, the totality of the universe with all its parts is ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).³⁴

³¹Mondin, *Dizionario*, 108, cites the first formula, “Quidquid movetur ab alio movetur” (Aquinas *Summa Theologiae* 1. 2. 3), and the second formula, “Omne contingens habet causam.”

³²Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 202, cites Aristotle.

³³Nogar, *Wisdom*, 323: “Thomas Aquinas...repeatedly argued that...a good governor shows his wisdom and power not by doing everything himself but by deputing his well-disposed ministers to assist him. So also God manifests His perfection of government and providence by working through His creation and its natural laws to produce effects that would otherwise have to come by way of a miraculous intrusion upon nature. Confer: Aquinas *Summa Theologiae* 1. 22. 3; Aquinas *Summa Theologiae* 1. 103. 6; Aquinas *Summa Contra Gentiles* 3. 76; Aquinas *Summa Contra Gentiles* 3. 77; Aquinas *Summa Contra Gentiles* 3. 83; Aquinas *Summa Contra Gentiles* 3. 94; and other parallel passages.”

³⁴Mondin, *Dizionario*, 406: “Tutte le creature compongono il tutto universale come una totalità integrata dalle sue parti. Se vogliamo assegnare il fine di un tutto e delle sue parti, troviamo in primo luogo che le singole parti sono in funzione dei loro atti propri, come l’occhio è per vedere; in secondo luogo, la parte meno nobile è in funzione delle parte più nobile, come il senso è per intellecto e il pulmone per il cuore; in terzo luogo, tutte le parti sono in funzione della totalità... Inoltre tutto l’uomo si orienta a un fine estrinseco, qual è il godimento di Dio” (Aquinas

On the hypothesis that living things originally evolved from non-living matter, the “urge to live” must be located in matter itself. St. Thomas called this “urge to live” matter’s appetite for the most perfect actuality attainable. Mondin and Benignus cite the classic text of St. Thomas in the *Summa Contra Gentiles* to establish this point.³⁵

The Scholastic Solutions

Klubertanz argues in favor of evolution in general. He uses the concepts of equivocal causality, chance, and Providence, to explain the possible origin of living things.³⁶ Klubertanz notes, “The same explanation can perhaps be used for the origin of life itself. It is again possible that the right chance occurrence of a whole group of particular lines of causality, unified in the Divine plan, should result in the formation of a single living cell.”³⁷

Could abiogenesis be verified scientifically? The effort of scientists to produce a living cell in the laboratory would work along the same lines of equivocal causality, chance, and Providence. For

Summa Theologiae 1. 65. 2). Ibid., “Se estendiamo questo modello al cosmo, risulta che ‘Inoltre, ciascuna creatura è un funzione della perfezione dell’universo. Infine, la totalità dell’universo con tutte le sue parti è ordinata a Dio come a suo fine’ (Aquinas *Summa Theologiae* 1. 65. 2).

³⁵Mondin, *Manuale*, 223, cites St. Thomas: “Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur” (Aquinas *Summa Contra Gentiles* 3. 22). Benignus, *Nature*, 500-501, gives the citation in English.

³⁶George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: “...through equivocal causality, chance and Providence, is a possibility...”

³⁷Klubertanz, *Philosophy*, 424: “...perhaps be used for the origin of life itself...possible...”

these scientists use the natural, necessary, predetermined activities of various natural compounds, and, acting as intelligently unifying sources, try to find the right combination of interfering causalities which would produce the material dispositions for life.³⁸

At least one philosophical theory of how abiogenesis is possible in operation should be examined in depth. Klubertanz appears to give the most extensive presentation, and does explain in considerable philosophical depth. When Klubertanz is examined here, reference will be made to the parallel presentation in St. Thomas. Klubertanz does not cite St. Thomas often. It is not the intention here to show that Klubertanz is a Thomist, but to show the continued influence of the philosophy of St. Thomas. There is a strict correlation between the presentation of the philosophy of St. Thomas and the major parts of the presentation of Klubertanz.

Klubertanz's essential argument is that accidents of the agent (form) and patient (matter) are instruments of substance, so a new substance can be made by them.³⁹ This is the philosophical basis of abiogenesis.⁴⁰ Further, this is very close to St. Thomas saying, "The emanation of proper accidents from the subject is not by way of transmutation, but by a certain natural result" (Aquinas *Summa Theologiae* 1. 77. 6 ad 3).

Klubertanz inquires, "Does substantial change exist, and how does it take place?"⁴¹ Substantial change caused by created agents always takes place through accidental change, through material

³⁸Klubertanz, *Philosophy*, 424: "...same lines...intelligently unifying causes...right combination of interfering causalities...material dispositions for life."

³⁹Klubertanz, *Philosophy*, 405.

⁴⁰Klubertanz, *Philosophy*, 424: "The same explanation can be used for the origin of life."

⁴¹Klubertanz, *Philosophy*, 402, "Substantial change caused by created agents always takes place through accidental change, through material dispositions."

dispositions. Proof of this is that creation is power over being itself, which indicates a sufficient reason for the own being of the creator (confer: Aquinas *Summa Contra Gentiles* 2. 16). But power over being itself is not found in creatures, so creatures need pre-existing matter to act. God acts through secondary causes (Aquinas *Summa Theologiae* 1. 105. 5).⁴² St. Thomas also holds secondary agents of substantial change (Aquinas *De Principiis Naturae* 6) and a certain unity of substance and accident (Aquinas *Summa Theologiae* 1. 11. 1 *corpus*). Examples of this substantial change are assimilation of food, production of synthetic rubber, heat making molecules move faster (physics), or instability of living molecules under high heat (chemistry). Klubertanz adds that the accidental change involve material dispositions. Squeezing a metal ring turns a circle into an ellipse, and the cause is the person (efficient cause) and the matter. Water temperature rising from 30° to 80° in the test tube is caused by the scientist (efficient cause) and the proximate dispositions of the matter.⁴³ The material plays a part in the change by placing limits on the efficient cause, because you cannot get a hammer out of beeswax, nor water from chlorine and oxygen. These views are similar to St. Thomas (Aquinas *Summa Theologiae* 3. 76. 6 ad 1). Klubertanz notes that synthesis of compounds takes place in successive stages, not leaps, in the laboratory. Scientists have found by experience that synthesis and destruction of very complex compounds does not take place in a single leap, but in successive stages. This is noted by St. Thomas that God in the beginning creates all species together not in actual form but “in power and almost as in a seed” (“*in virtute et quasi in semine*,” Aquinas *Summa Theologiae* 1. 66. 4).

⁴²Klubertanz, *Philosophy*, 413: “God usually works, in the natural order, through the secondary causes He has made.”

⁴³Klubertanz, *Philosophy*, 28-29, for examples of the ring in ellipse and water temperature. Ibid., 29, for the successive and slow synthesis of compounds.

Klubertanz continues to elaborate his theory of evolution not just with regard to tranformation, but with the possible application to abiogenesis.⁴⁴ Due to finality in creation, Klubertanz holds essential evolution from non living things to living things up to and including the human body (the whole man with his spiritual soul excluded).⁴⁵ His treatment of finality involves the added concepts of equivocal causality, chance, and God's Providence as the possible explanation of living things. Klubertanz endorses essential Evolutionism as a possible explanation of the origin of living things.

Klubertanz asks how chance enters into abiogenesis. Klubertanz still can suppose the interference of various causes at the origin of life, and this interference is a chance occurrence with each and every proximate cause, but Klubertanz does not neglect Divine Providence and the direct action of God on creatures. So the supposition that Klubertanz is dealing with is the origin of life by equivocal generation and the direct intervention of God. "This explanation differs from the so-called 'origin of life by direct creation,' because direct creation supposes a *miraculous* intervention of God (that is, an immediate production without regard to the pre-existing dispositions of matter), while the present hypothesis (of Klubertanz) supposes an intervention of God according to the ordinary laws of generation from previously disposed matter... In such an intervention, the secondary causes would be instruments of God, " says Klubertanz.⁴⁶

Dezza, professor at the Gregorian University in Rome, teaches that abiogenesis is not

⁴⁴Klubertanz, *Philosophy*, 425: "Essential evolution...is a possible explanation of living things."

⁴⁵Klubertanz, *Philosophy*, 423: "What is chance in regard to creatures is planned by God."

⁴⁶Klubertanz, *Philosophy*, 424, note 13: "... 'direct creation'... supposes a *miraculous* intervention of God...while the present hypothesis supposes an intervention...ordinary laws...In such intervention, the secondary causes would be instruments of God."

impossible due to immanent virtuality.⁴⁷ Dezza first notes that he believes it impossible to obtain life with only physico-chemical forces. However, he next raises the philosophical question of whether it is philosophically impossible that physico-chemical material give origin to something living, not by virtue of their proper essence, which being of a lower order is not able to be the principle cause of life, but by an immanent virtuality placed by the Creator in its very nature, explaining how in determinate circumstances it would vivify either spontaneously in nature or artificially in the laboratory.

Dezza's theory of "immanent virtuality" leads him to believe that the hypothesis of abiogenesis is not philosophically impossible.⁴⁸ The reason is that the physico-chemical agents would be only the instrumental cause of the living thing, and there is no difficulty that an instrument of lower perfection produces an effect of higher perfection, not by its own proper force (*virtù*) but by force of the principle cause. The principle cause of the new living being would be God, also if it would happen in a laboratory, where the scientist could only make what external conditions that would be needed for the production of a living thing.

Adler notes that spontaneous generation remains a possibility. In fact, Adler seems to indicate that this abiogenesis could have happened more than once, since he writes: "A new species of

⁴⁷Paolo J. Dezza, *Filosofia: Sintesi Scholastica*, 5th ed. (Rome: Gregorian University, 1960), 132: "Abbiamo affermato e dimostrato l'impossibilità di ottenere la vita *con le sole forze fisico-chimiche*. Si può domandare se filosoficamente ripugni che la materia fisico-chimica dia origine ad un vivente, non per la virtù della propria essenza, che essendo di origine inferiore non può essere causa principale della vita, ma *per una virtualità immanente* posta del Creatore nella sua stessa natura, esplicatesi in circostanze determinate che si verificano o spontaneamente nella natura o artificialmente in un laboratorio."

⁴⁸Dezza, *Filosofia*, 132-133: "Filosoficamente l'ipotesi non ripugna poichè in tale caso gli agenti fisico-chimici sarebbero solo causa strumentale del vivente...La causa principale del novo vivente sarebbe Dio..."

organism might come into existence without being generated by other living organisms.”⁴⁹ Adler notes that such a form of life seems to lie outside the operation of natural causes and seems to imply the intervention of supernatural power.

Benignus invokes the principle of finality and the principle of sufficient reason.⁵⁰ Inorganic substances and forces are directed to the production and maintenance of life on earth. Therefore, “mechanical forces that in fact led to the emergence of life on earth are made intelligible only if we consider them as intended for that very end.” The use of the words “in fact led ... to life” and “intended” are not fully explained, but since the book is called *Nature, Knowledge and God*, it can reasonably be expected that Benignus views God as “intending” that very end, which is life. Benignus adds what seems to be a negative comment, namely, that “The probability of accidental birth of life is infinitesimally small.” This of course, given the complexity of life, would be expected. His comment is softened with another appeal to the principle of finality, “Even with imperfect and deficient forms, nature is directed toward life.”

De Finance, professor at the Gregorian University, endorses the “appetite of matter.” He says the matter has desire for form, by noting that matter, under privation, desires the form, “as a female desires a male, or the ugly the beautiful.”⁵¹ Thus matter is not metaphysically inert.

⁴⁹Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 205: “Spontaneous generation...possibility...A new species of organism might come to be without being generated by other living organisms.”

⁵⁰Benignus, *Nature*, 497: “Inorganic substances are directed...life on earth...Probability...small...we consider them as intended for that very end...nature is directed toward life.” Ibid., 96, is a quotation from Professor Lawrence J. Henderson: “The inorganic realm is related to the living realm as a means to an end.”

⁵¹Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 6: “La matière sous la privation, désire la forme, ‘comme une

Mondin endorses “programmed evolution.”⁵² He maintains that evolution takes place according to a pre-established program from God, and God has established that from the forces which He initially gave to material the development of life at a certain time. This answer to the question of abiogenesis is philosophically correct, according to Mondin, because every effect has a proportionate cause. God is the proportionate cause of life whether the action is mediate or immediate. As further confirmation of this position, Mondin quotes Jacques Maritain’s commentary on the text of St. Thomas about lower nature in service of the higher (Aquinas *Summa Contra Gentiles* 3. 22).⁵³

Palmes endorses “divine intervention,” but notes that “this is not creation properly speaking.”⁵⁴ The production of the first living organism must be attributed to divine intervention, but it is sufficient that God will produce the first living thing by eduction from the passive potency of the material the vital principle of the first living organism. Thus Palmes is not a Creationist with regard to the origin of life, but argues from the principle of sufficient reason, that God and nature are involved together.

femelle désire un mâle et le laid le beau’.” This quote from Aristotle (Aristotle *Phys.* 1. 9. 192 a 22-25) is even a stronger example if we accept the reading of Pacius, “as a female desires *to be male*.”

⁵²Mondin, *Manuale*, 222: “Origine della vita per evoluzione programmata...e Dio ha stabilito che delle forze di cui ha dotato inizialmente la materia a un certo momento si sviluppi la vita.”

⁵³Mondin, *Manuale*, 223: “In sede filosofica, J. Maritain ha tentato di far quadrare la teoria della evoluzione programmata con la dottrina di S. Tommaso sull’origine delle vita dalla materia.”

⁵⁴Palmes, “Psychologia,” 2: 783: “Ergo remanet...quod primum vel prima entia organica viventia sunt speciali interventu Dei producta. Non quidem creatione proprie dicta. Quia licet Deus potuerit integrum ens vivum organicum primum creatione producere, et non nisi creatione ipsa materia primigenia produci potuit; at posita huius materiae creatione, sufficit ut Deus primum vivens produxerit per *eductionem* e potentia passiva materiae, principium vitale primi organismi vel primorum organismorum viventium.”

Palmer explores the complex question of abiogenesis relative to the generation of viruses.⁵⁵

Viruses are scarcely different in structure from non-living material, but viruses reproduce other viruses similar to themselves by generation. Therefore, viruses seem to be alive. However, microbiology has two opinions about the reproduction of viruses. First, if reproduction is simply chemical (non-living), then abiogenesis does not occur (non-living to non-living). Second, if reproduction of viruses is an living activity, the abiogenesis may occur (non-living to living). But even in this second case, there are varied opinions about the origin of the purely chemical nature of the virus, for some scientists say the virus might be the product of reverse evolution, like parasites.

Nogar endorses “biopoesis,” which is the natural chemical evolution of life out of the inorganic world; what Nogar calls biopoesis is called abiogenesis in this dissertation. Nogar concludes that, even though there is no experimental demonstration of life arising from non-life at this time, “the hypothesis of biopoesis enjoys the respect of all because it is reasonable and a fruitful guide to research.”⁵⁶ Nogar rules out the spontaneous generation of bacteria and flies, experimentally ruled out by Francesco Redi (1626-1698) and by Louis Pasteur (1822-1895); and he rules out the Cosmozoic Theory of life from other planets as improbable;⁵⁷ and he rules out the Virus Theory, that all life comes from viruses,

⁵⁵Palmer, “Psychologia,” 2: 785: “In statu enim actuali microbiologicae duplex est opinio probabilis circa vitam et reproductionem harum entitatarum. Altera...chimicae. Si vero... vitam...non inde sequitur...derivatas ab organismis cellularibus.”

⁵⁶Nogar, *Wisdom*, 179: “...the hypothesis of biopoesis enjoys the respect of all because it is a reasonable and fruitful guide to research.”

⁵⁷David Van Biema, “God vs. Science,” *Time Magazine*, 13 November 2006, 50: “Something called the Multiverse Hypothesis in cosmology speculates that ours may be but one in a cascade of universes, suddenly bettering the odds that life could have cropped up here accidentally, without divine intervention.” Donat, *Cosmologia*, 272: “Ita opinatur Helmholtz, W. Thomson, Bunge.” Ibid., 272: “Panspermia quam Arrhenius cogitavit. Supponit, vitam esse aeternam et continuo minima germina minimorum organismorum per spatia mundi volare,

saying that this theory does not push the problem back far enough.

Finally, the concept of evolution applied to abiogenesis is equivocal. Equivocal indicates predication where the verbal term is identical, but the concepts have no connection in the mind.⁵⁸

Nogar says, “These papers (at the Darwin Centennial Celebration at the University of Chicago in 1959 composed of fifty international experts on evolution reporting) on cultural anthropology, archaeology, psychology and language... show this radical change in the concept of evolution...”⁵⁹ Darwin does not impose evolution on a grand scheme of biological, or cosmic, history but the origin of the species.⁶⁰

The general meaning of the term “evolution” is tied to biological transformation of species by mutation and natural selection. Philosophical Evolutionism may attempt to extend that meaning.⁶¹ Herbert Spencer and some others wish to extend the term “evolution” to the level of a universal law that pertains to all transformation in the universe. Those followers of Darwin, notably Huxley and Spencer in England and Haeckel in Germany, made unwarranted extensions of the theory into fields of

nonnumquam in aliquem planetam eadere ibique tunc vitam producere.”

⁵⁸Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 93-94: “Equivocal...the verbal term is identical...concepts have no connection in the mind. An ‘equivocation’ is the use of an ambiguous word; it is a play on words. It indicates the use of a word which has quite different meanings, so that although the oral or written term is identical, the concept, to be true, must change completely.”

⁵⁹Nogar, “Evolution,” 350: “...not only show this radical change...fashioner of his own future.”

⁶⁰Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 204: “Darwin does not impose evolution on a grand scheme...” Klubertanz, *Philosophy*, 378: “Evolution means development or biological change.”

⁶¹La Vecchia, *Evoluzione*, 317: “In questo scritto abbiamo dapprima considerato il problema dell’evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo.”

philosophy and ethics. The extension of “evolution” is not univocal, as explained by Nogar.⁶² The extension of “evolution” is not analogous, as explained by Renard.⁶³ The extension of “evolution” is equivocal, as explained by Nogar.⁶⁴

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁶⁵ Possibility is defined as the capacity for existence for a concrete possible thing: internally, that its constituent characteristics

⁶²Nogar, *Wisdom*, 191-192: “Theoretically, the concept of evolution should be regarded not as a single valued law but as a name for a series of models, all having a historical context. There are historical trends various sciences have determined...but the trends are specific, local, limited in sphere, and limited in time. None of these trends can be generalized to the degree needed for universal univocal extension.”

⁶³Renard, *Philosophy*, 97: “In a composite concept, a change can be made by dropping notes, e.g. man as rational animal, irrational animal, animal. These concepts can be predicated intrinsically of various individuals. Yet they also differ – are the analogous? No. In each the concept of “animal” remains the same; it is a universal idea. There is no analogy of attribution, but only univocity of genus. There is no analogy of proportionality, not in the order of reality.”

⁶⁴Nogar, *Wisdom*, 185: “The term ‘evolution’ signifies something quite different in the organic and inorganic world. What is retained is the space-time concept of continual, natural change and development. Beyond this generic meaning, the term changes its definition and becomes equivocal.” Ibid., 184: “In the evolution of life, biopoesis, evolution is not univocally extended to this process, it is *equivocal*. That is to say the word evolution has a different value and meaning.”

⁶⁵Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

are not impossible, and additionally externally possible, if there is power to produce the thing.⁶⁶

Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁶⁷ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁶⁸

⁶⁶Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa)."

⁶⁷Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt."

⁶⁸Salcedo, *Philosophiam*, 1: 362: "Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis."

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution or abiogenesis.⁶⁹ However, some restricted observation of evolution is possible within species.⁷⁰ Klubertanz uses the concepts of equivocal causality, chance, and Providence, to explain the possible origin of living things.⁷¹ The effects of equivocal causality and chance can be seen in human efforts to improve breeds of plants and animals. Providence, or the effects of final causality in the universe, can be viewed as bringing order into the cosmos, rather than undirected chaos.⁷²

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics, especially Klubertanz in equivocal generation, Dezza in immanent virtuality, Palmes in divine intervention, and Modin in programmed evolution.

Certitude could arise if the argumentation was based on some philosophical principles. The origin of life by abiogenesis is philosophically based on the principle of finality.⁷³

⁶⁹Possenti, "Vita," 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, "From the Fact of Evolution to the Philosophy of Evolutionism," in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: "So there is no single experiment to prove evolution."

⁷⁰Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: "Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare..."

⁷¹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 425: "...through equivocal causality, chance and Providence, is a possibility..."

⁷²Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 325: "... the world is not a chaos but a cosmos, that is to say, that there exists order and natural laws..." (Pope John Paul II, 31 October 1992, Discourse to the Pontifical Academy of Sciences).

⁷³Klubertanz, *Philosophy*, 423: "What is chance in regard to creatures is planned by God."

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Klubertanz gives a sufficient reason for abiogenesis when he explains, “The same explanation can perhaps be used for the origin of life itself. It is again possible that the right chance occurrence of a whole group of particular lines of causality, unified in the divine plan, should result in the formation of a single living cell.”⁷⁴

Certitude could arise if the explanation of abiogenesis was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas reprises Aristotle who taught that “nature proceeds little by little from things lifeless to animal life” and “there is observed in plants a continuous scale of ascent toward the animal.”⁷⁵ This observation of natural ascent is helpful to understand the evolutionary progress from lifeless to life.⁷⁶

Certitude could arise if Neo-Scholastics agree on the possibility of abiogenesis. In 1909, Joseph Gredt argued against abiogenesis, but only if it excluded the prime cause of nature.⁷⁷ Modern Neo-Scholastics do not exclude God, but are much more open, not only due to the advances in

⁷⁴Klubertanz, *Philosophy*, 424: “...chance...causality...unified in divine plan...”

⁷⁵Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 202, cites Aristotle.

⁷⁶Nogar, *Wisdom*, 323: “Thomas Aquinas...repeatedly argued that...a good governor shows his wisdom and power not by doing everything himself but by deputing his well-disposed ministers to assist him. So also God manifests His perfection of government and providence by working through His creation and its natural laws to produce effects that would otherwise have to come by way of a miraculous intrusion upon nature. Confer: Aquinas *Summa Theologiae* 1. 22. 3; Aquinas *Summa Theologiae* 1. 103. 6; Aquinas *Summa Contra Gentiles* 3. 76; Aquinas *Summa Contra Gentiles* 3. 77; Aquinas *Summa Contra Gentiles* 3. 83; Aquinas *Summa Contra Gentiles* 3. 94; and other parallel passages.”

⁷⁷Gredt, *Philosophiae*, 434: “Ergo primus ortus vitae non potest explicari nisi interventu causae primae.”

science, but also due to more mature reflection in the philosophy of nature, as exemplified by Klubertanz,⁷⁸ Dezza,⁷⁹ Adler,⁸⁰ and Mondin.⁸¹

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. A scientific problem exists because no one was present at the origin of life in the past, and life has not yet been produced in the modern laboratory.⁸² In 1953 and 1954, the chemists Stanley Miller and Harold Urey exposed a mixture of hydrogen, methane, ammonia and water to the continuing action of an electrical discharge in a sealed vessel, duplicating in the laboratory what is thought to be the conditions of the primitive earth. The significant thing about the Miller-Urey experiment is that it resulted in the presence of some organic compounds, including amino acids, the building blocks of proteins. Nevertheless, life was not produced in the laboratory yet.⁸³ Klubertanz notes that these

⁷⁸Klubertanz, *Philosophy*, 425: “The possibility of this mode of origin can be admitted by both philosopher and theologian.”

⁷⁹Paolo J. Dezza, *Filosofia: Sintesi Scholastica*, 5th ed. (Rome: Gregorian University, 1960), 132: “Si può domandare se filosoficamente ripugni che la materia fisico-chimica dia origine ad un vivente, non per la virtù della propria essenza, che essendo di origine inferiore non può essere causa principale della vita, ma *per una virtualità immanente* posta del Creatore nella sua stessa natura, esplicatesi in circostanze determinate che si verifichino o spontaneamente nella natura o artificialmente in un laboratorio.”

⁸⁰Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 205: “Spontaneous generation...possibility...A new species of organism might come to be without being generated by other living organisms.”

⁸¹Mondin, *Manuale*, 222: “Origine della vita per evoluzione programmata.”

⁸²Klubertanz, *Philosophy*, 413: “Modern biologists maintain that life comes only from life – at least at the present time.” Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D’Auria, 1952), 27: “Obtentae sunt substantiae organizatae, seu organismi qui exercent opera vitalia, Nego.”

⁸³Nogar, *Wisdom*, 183: “The significant thing about the Miller-Urey experiments is that what resulted was the presence of organic compounds....”

scientists use the natural, necessary, predetermined activities of various natural compounds, and acting intelligently as unifying causes try to find the right combination of interfering causalities which would produce the material dispositions requisite for the production of life. If they succeed, the living result of their efforts will be produced by equivocal causality under the formal unification of the secondary, dependent providence of the mind of the scientist, so that the material elements and compounds would be the instruments of the human cause, which will be relative to the material the principal cause.⁸⁴

Other replies to the current lack of success in the production of life are three. First, life needs a sufficient reason for its existence, and the simple and natural explanation for life would be through secondary causality. Secondly, science looks for order in the universe.⁸⁵ Abiogenesis planned by the creator would be closer to a slowly developing pattern of order, rather than some explanation of the origin of life by alternative intervention. Finally, Klubertanz notes that synthesis of compounds takes place in successive stages, not leaps, in the laboratory. Scientists have found by experience that synthesis and destruction of very complex compounds does not take place in a single leap, but in successive stages.⁸⁶ By analogy, these same natural processes would slowly move from the inanimate to the animate.

⁸⁴Klubertanz, *Philosophy*, 424: “These scientists...right combination of interfering causalities...results will be produced by equivocal causality under the formal unification of the secondary, dependent providence of the scientist’s mind...compounds would be instruments of the human cause...principal cause.”

⁸⁵Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 325: “Those who engage in scientific and technological research admit, as the premise of its progress that the world is not a chaos but a cosmos, that is to say, that there exists order and natural laws which can be grasped and examined” (Pope John Paul II, 31 October 1992, Discourse to the Pontifical Academy of Sciences).

⁸⁶Klubertanz, *Philosophy*, 29, for the successive and slow synthesis of compounds.

Certitude could arise if the opposite opinion is not tenable. While it is possible that the origin of life is by immediate creation, this does not seem to be necessary, since there is a material soul of plants⁸⁷ and animals.⁸⁸ God usually works, in the natural order, through secondary causes He has made.⁸⁹

Certitude could arise if the objections of adversaries are able to be answered. The two philosophical objections to abiogenesis are, first, there is nothing in an effect which was not in some way in the cause, and second, that every agent acts according to its nature (*omne agens agit sibi simile*).⁹⁰ The reply to both is substantially the same: while the objection assumes one line of causality, the real world often brings multiple lines of causality to bear on one effect. Therefore, in the first case, while a single effect may have something that a single cause may lack, many causes can bring about an aggregate greater effect. In the second case, every agent (material) acts according to its nature (inorganic), but should multiple lines of causality intersect, an non-similar and different (organic) effect could arise.

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Dezza, the philosopher at the Gregorian University,

⁸⁷Palmes, “Psychologia,” 486: “Principium vitale ultimum vitae vegetative est forma substantialis materialis corporis vita vegetativa praediti quod vere et proprie anima dicitur.”

⁸⁸Palmes, “Psychologia,” 509: “Operationes vitae sensitivae, quamvis superioris ordinis sunt quam operationes vitae vegetativae corporum non sentientium, in semetipsis consideratae sunt materiales.”

⁸⁹Klubertanz, *Philosophy*, 413: “God usually works, in the natural order, through secondary causes He has made.”

⁹⁰Klubertanz, *Philosophy*, 412: “And philosophers say, ‘There can be nothing in an effect which was not some way in the cause’; and ‘Every agent produces an effect like to itself’.” Confer: Maquart, *Philosophiae*, 2: 514.

notes, “There is no prohibition on continued research or multiplying experiments in the laboratory.”⁹¹ Although cautious, in fact, Pope John Paul II does not exclude abiogenesis.⁹² Further, Mondin notes that God is the proportionate cause of life whether the origin of life is immediate or mediate.⁹³ Mondin states that this should satisfy philosophy, since “proportionate cause” is both an application of the principle of causality and if “proportionate” even in the case of abiogenesis, this would satisfy the principle of sufficient reason.

Certitude can be had from the fact that evolutionary abiogenesis is the best answer now for the origin of life.⁹⁴ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).⁹⁵ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right

⁹¹Dezza, *Filosofia*, 133: “...ma nulla vieta di continuare le ricerche, di moltiplicare gli esperimenti nei laboratori.”

⁹²Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 329: “From ancient times until the eighteenth century, it was assumed that sub-human life could not come into being from inorganic matter, without the intervention of another living being. This theory, known as spontaneous generation, was discarded as a result of the research of Louis Pasteur and other scientists in the nineteenth century. Up to now, science and technology have not been able to produce life *in vitro* from inanimate material. The principle, *omne vivum ex vivo* seems to hold, namely that living beings can only evolve from other living beings.” Note that although the principle “seems to hold,” there is no direct attempt to exclude abiogenesis.

⁹³Mondin, *Manuale*, 222: “In sede filosofica questa ipotesi sembra accettabile, in quanto rispetta il principio che ogni effecto abbia una causa proporzionata: e indubbiamente Dio è una causa proporzionata sia che intervenga con azione immediata o mediata.”

⁹⁴John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook

⁹⁵Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *didi de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, evolutionary abiogenesis based on secondary causality⁹⁶ is the best answer to the origin of life, and is the best answer we have now.⁹⁷

The level of certitude for “evolutionary abiogenesis is probable, but equivocal” is at minimum at the level of the metaphysically possible and even probable. The proof is the principle of finality, from lower elements to be in service of higher, and also from the principle of sufficient reason, by which the creator uses secondary causes when available. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason together with God’s use of secondary causality. This agrees with the opinion of Klubertanz about the possibility of abiogenesis.⁹⁸

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects

⁹⁶Klubertanz, *Philosophy*, 413: “God usually works, in the natural order, through secondary causes He has made.”

⁹⁷Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it effects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution performs these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently with sufficient scientific justification for a scientific theory.”

⁹⁸Klubertanz, *Philosophy*, 424: “...perhaps be used for the origin of life itself...possible...”

observed and perceived by sense.⁹⁹ This is the method of Aristotle and St. Thomas.¹⁰⁰ Klubertanz notes that the factual (not philosophical) occurrence of such evolution as the origin of life “is a question of fact whose establishment *by any direct means* is extremely difficult if not impossible.”¹⁰¹

⁹⁹Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹⁰⁰Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

¹⁰¹Klubertanz, *Philosophy*, 425: “...question of fact...establishment by any direct means is extremely difficult, if not impossible.”

Chapter 18: COSMIC EVOLUTION IS POSSIBLE, BUT EQUIVOCAL.

The State of the Question

Regarding creation, the Pontifical Gregorian University in Rome currently concentrates on the creation of man's soul, rather than the creation of the cosmos. Very little of the student textbook by La Vecchia is involved in the creation of the universe, the creation of life from non-life, or the creation of body of man, but rather on the psychic evolution of man.¹ La Vecchia does not want to seek evolution by looking back toward man's relation to the animals, but rather by looking forward to hominisation in the evolutionary line of man himself.² Instead of evolutionary indications such as the use of fire and tools, she would rather pay more attention to burial rites and art to indicate a progressive growth of humanity. La Vecchia traces this process of hominisation from *Australopithecus* to *Homo habilis*, then to *Homo erectus*, and ultimately to both *Homo sapiens neanderthalis* and *Homo sapiens sapiens*. She does affirm the immediate creation of the human soul by

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 3: "Capitolo Sesto: L'Evoluzione Della Psiche"; also 317: "...l'evidente ascesa biologica...che culmina nell'essere umano. Ma abbiamo anche cercato di mettere in evidenza come nell'Uomo l'evoluzione riguardi la morfologia e la fisiologia, ma sia soprattutto psichica. E all'evoluzione biologica abbiamo accostato un'evoluzione della psiche, maggiormente fondata e meno controversa di quella."

²La Vecchia, *Evoluzione*, 260: "...psiche razionale, specificamente umana...potrebbe essere cercato con più frutto in altera direzione, nella linea evolutiva che ha condotto all'Uomo. Durante il processo di Ominazione, i Preominidi e gli Ominidi, pur appartenendo al commune phylum evolutivi dei Primati, ma differenziandosi nettamente dagli attuali Antropoidi, hanno anticipato e predisposto l'organismo umano, mentre si andavano diversificando in modo sempre più netto dai predecessori animali."

God.³

Regarding the anthropic principle, the Pontifical Gregorian University in Rome currently does not explicitly treat the universe working in favor of man. Implicitly, however, in the academic course on evolution La Vecchia provides an opening when she notes that the process of hominisation is now completed and that man has come to the apex of the development of his potentialities.⁴

Regarding the laws of the cosmos, the Pontifical Gregorian University in Rome currently concentrates more on the evolution of man, than the evolution of the cosmos. However, the argument that La Vecchia uses to explain, illustrate, and prove evolution philosophically is the process of hominisation.⁵ The order and predictability of the development of man that La Vecchia traces from *Australopithecus* to *Homo habilis*, then to *Homo erectus*, and ultimately to both *Homo sapiens neanderthalis* and *Homo sapiens sapiens*, is a prime illustration of the laws of the cosmos. Man can also know the laws of the cosmos and use them to his advantage.⁶

³La Vecchia, *Evoluzione*, 314: “Come si è potuto verificare nei primi uomini l’apparire dell’anima spirituale con la facoltà tipicamente razionali (astrazione propriamente detta, libera volontà, coscienza riflessa, linguaggio simbolico)? ...Quando l’organismo di due o più individui si trovò al massimo sviluppo potenziale della facoltà psichiche sensitive, Dio, con un atto della sua libera volontà e per suo intervento speciale, una *peculiaris creatio*, creò l’anima spirituale lì dove si erano determinate le condizioni necessarie o sufficienti.”

⁴La Vecchia, *Evoluzione*, 319: “Ciò evidenzia che nel processo di Ominazione, ormai definitiva compiuto, l’Uomo divenuto tale, aveva raggiunto l’apice dello sviluppo delle sue potenzialità.”

⁵La Vecchia, *Evoluzione*, 315: “Dio, tuttavia, facendo esistere un’anima spirituale nei primi uomini, si servì pure di cause naturali (‘cause seconde’) che entrarono progressivamente in azione, modificando opportunamente quegli organismi. Anche le modificazioni morfologiche Dio le ha volute e causate.”

⁶La Vecchia, *Evoluzione*, 114: “Gli è possibile inoltre conoscere la natura e le leggi che la regolano, utilizzandole a proprio vantaggio. Mentre tutti gli organismi a lui inferiori hanno la possibilità di adattarsi alle esigenze della natura, l’Uomo è in grado di modificarla,

Participants in the Dialogue

Adversaries deny the creation of the world. Among this category are Materialist Monism, Pantheistic Monism, Positivists, Agnostics, Atheists and Aristotle.⁷

Adversaries deny cosmic evolution which involves some orderly and predictable development based on some higher intelligence.⁸ Some favor Materialistic Causality such as Democritus, Leucippus, Epicurus, Lucretius, (and the 18th century Materialists) Helvetius, Diderot, and Toland. Some are Material Fatalists who maintain only matter and its forces which cause inviolable laws: Moleschot, Vogt, Buchner, Strauss, and Feuerbach. Some are Metaphysical Fatalists who identify God with the cosmos: Schopenhauer and E. Hartmann. The Subjectivists, like Kant, who admits finality but only subjectively, would deny cosmic evolution. Descartes and Francis Bacon, who admit finality but maintain it must not be investigated, reject true cosmic evolution.

Adversaries deny the termination, or the end, of the universe. Among these are those who hold the eternal duration of the universe which was the teaching of Hesiod, Plato, and many other ancients.⁹ Eternal duration of the world is held by the Pantheists who profess the world evolving from God, and

sottomettendola a sé. Egli è dunque essenzialmente più elevato e più perfetto di ogni altro organismo.”

⁷Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck, Rauch, 1915), 217. Ibid., 234: “Reicienda est doctrina, quam monismus sive materialisticus sive pantheisticus de mundi origine statuit.”

⁸Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 238, for various types of opinions.

⁹Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 85: “...Hesodium, Platonem, et multos alios ex antiquis.

especially those who see God evolving from the world.¹⁰ Also, an eternal world fits the system of Active Evolution where matter is eternal, as professed by Strauss, Buchner, and Haeckel.¹¹ The eternal world is held by Hylozoism, professing one soul for the whole world, with fixed and evolving rules, and lasting eternally.¹²

Adversaries who reject the possibility of cosmic evolution make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue. Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, cosmic evolution is observable in the order of the universe where parts are hierarchically arraigned¹³; cosmic evolution does not deny God who acts through secondary causes;¹⁴ and cosmic evolution benefits man (the Anthropic Principle).¹⁵ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

¹⁰Hugon, *Philosophia*, 23, for Pantheism. Donat, *Cosmologia*, 234.

¹¹Hugon, *Philosophia*, 20-21, for Active Evolutionism.

¹²Hugon, *Philosophia*, 21, for Hylozoism.

¹³Donat, *Cosmologia*, 201, for observation and order in the universe.

¹⁴Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 410, for secondary causes.

¹⁵Hellin, "Cosmologia," 2: 237: "Nos loquimur de fine proximo extrinseco...sed qui ex cooperatione corporum et est bonum seu utilitas ad vitam." Confer: Battista Mondin, *Manuale di Filosofia Sistemica; Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 261, confirming that the Anthropic Principle affirms the creation of the universe and has man as its goal. The weak version of the Anthropic Principle stresses the connection between man and the cosmos as revealed in physics. The strong version of the Anthropic Principle stresses the effective state of the universe, with all its peculiarities, as a "consequence" of human existence.

Definitions and Distinctions

Universe, or world, is defined as everything, as distinct from God as the unique, necessary being.¹⁶ World can be used equivocally.¹⁷ The world, metaphysically, is not absolutely infinite, since it lacks many perfections. The world, as material, does not have infinite extension, first because there is no good argument for the infinity of the universe, and second because infinite extension is philosophically repugnant in its very concept. The world, psycho-socially, is neither the best nor the worst. Leibniz, Cicero, the Stoics and the Pantheists are Optimists, but the world could always be better. Schopenhauer (d. 1860), and Edward Von Hartman (d. 1906) are Pessimists, but their amount of evil is exaggerated.

Material is defined as the world which was created. After creation, material is the world which cosmic evolution and an influx of secondary causes develops and forms.

Creation is the production of something from nothing of self and nothing of the subject. Creation is the production of a thing according to its total substance and entity. This is not like education, which presupposes a subject. Creation is the production of a thing or being in so far as it is a contingent being.¹⁸

Cosmic evolution is the orderly development of the universe, after creation. Dougherty remarks, "The Creator Who, without any created agent, originally produced mobile being can, without

¹⁶Josepho Hellin, "Theodicea," in *Philosophia Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 286, for most of the definitions.

¹⁷Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck, Rauch, 1915), 204.

¹⁸Petrus Hoenen, *Cosmologia*, 5th ed. (Rome: Gregorian University, 1956), 298-299: "Creatio est facere aliquid ex nihilo sui et subiecti."

employing any such agent, impede the action of agents of the corporeal universe, heighten or lessen their power, or direct them to other than their connatural objects. All this God can do without undoing the nature of mobile being. It is to be noted that properties flow from the nature of a thing, but they do not constitute its nature or its essence. Consequently, God can suspend actions proper to a being without destroying its essence.”¹⁹ Klubertanz highlights the equivocal use of “evolution” when he correctly limits his definition evolution to biological change.²⁰

Order is a property of a corporeal substance. St. Thomas sees order in the cosmos as a harmonious union of parts with the whole.²¹ Order is of prime importance in any philosophy of nature. Order is a datum of fact, real and objective. Precise laws regulate the universe, and give a “rationality” to nature. Order is the principle of unity in the world. Order can be noted by observation from the unity and constancy of things in the universe.

Question Needing A Reply

Does evolution account for the origin of the universe? Is the universe evolving now? Will the evolution of the universe come to an end? Is the use of the term “evolution” in the phrase cosmic evolution and equivocal use?

¹⁹Kenneth Dougherty, *Cosmology: An Introduction to the Thomistic Philosophy of Nature* (Peekskill, NY: Greymoor, 1965), 166.

²⁰George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 378.

²¹Battista Mondin, *Manuale di Filosofia Sistemica; Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 230.

The Thomistic Foundations

What does St. Thomas hold about the beginning, the operation, and the end of the universe?

First, concerning the origin of the universe, St. Thomas speaks about the possibility of an eternal world. He says, “That the world did not always exist is a doctrine held only by faith, and is not able to be proved by demonstration” (Aquinas *Summa Theologiae* 1. 46. 2; confer: Aquinas *Summa Contra Gentiles* 2. 38; Aquinas *Scriptum in Liber Sententiarum* 2. 1. 1. 5).

How did Aquinas get involved in this dispute about the eternity of the world? Aquinas had two sources, Augustine and Aristotle. St. Augustine, and the Bible, held the creation of the world, saying, “The Creator is the only one who could produce things as the first cause” (Augustine *De Trinitate* 1. 3. 9. 18).²² On the other hand, Aristotle held the doctrine of the eternity of the world.²³ Aristotle and the other early philosophers had the “common opinion” only of a “natural agent” and “motion,” and not a “supernatural agent” who could act without “mutation” (“mutationis...non oportet”) as Aquinas had proved elsewhere; St. Thomas explains Aristotle, noting, “From nothing, nothing comes, as the Philosopher (Aristotle) said was the common opinion of the naturalists, because the natural agent considered by them does not act except through motion, whence it is necessary for that there exist the same subject of motion or change, which is not necessary in a supernatural agent,

²²Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 150: “Creatore è solo colui che produce le cose come causa prima” (Augustine *De Trinitate* 1. 3. 9. 18).

²³Modin, *Dizionario*, 150: “San Tommaso riprende tutti temi della speculazione agostiniana, e li approfondisce alla luce di due importanti eventi culturali: la scoperta di Aristotele, delle sue categorie metafisiche di atto e potenza, materia e forma, sostanza e accidenti, e della dottrina relativa all'eternità del mondo...”

as already proved.”²⁴ Some philosophers today, such as Heidegger and Sartre, make a similar mistake.²⁵

Donat says the “possibility” of an eternal world is not settled today.²⁶ But our inquiry about the origin of the universe, does not concern the “possibility” of an eternal world, rather the “necessity” of an eternal world.²⁷ The non-necessary world has a beginning (creation) and an end (destruction). St. Bonaventure, in Paris in 1270, taught in his famous *Collationes* that “eternal time” was absurd.²⁸ Today, the Big Bang (even if not admitted by all) means that the world had a beginning, and also was finite.²⁹ There are also signs in the universe that it is not auto-sufficient, signs of composition, being finite, being contingent, having action, and having order.³⁰

Concerning origins, some hold that the universe had its origin by chance, but St. Thomas holds

²⁴Hoenen, *Cosmologia*, 299: “Ex nihilo nihil fieri, philosophus dicit esse communem animi conceptionem vel opinionem naturalium, quia agens naturale, quod est ab eis consideratur, non agit nisi per motum; unde oportet esse aliquid subiectum motus vel mutationis, quod in agente supernaturale non oportet, ut dictum est” (Aquinas *De Potentia Dei* 3. 1).

²⁵Mondin, *Manuale*, 250: “Noi siamo tentati di entificare il nulla (come hanno fatto Heidegger e Sartre) facendo di esso di polo contrario all’essere.”

²⁶Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 266: “Disputatur, sitne possibilis mundus aeternus.”

²⁷Donat, *Cosmologia*, 256: “Secundum leges naturae mundus aliquando finem habebit, quatenus status, qui nunc est naturaliter in statum perpetui rigoris et mortis desinet.”

²⁸Mondin, *Manuale*, 279: “Contro Aristotle si schierò apertamente e decisamente S. Bonaventura...nelle sue famose *Collationes*... a Parigi verso il 1270...”

²⁹Mondin, *Manuale*, 281: “Infatti secondo la teoria del *big bang* – ormai largamente condivisa dagli scienziati – l’universo ha un’*origine*...”

³⁰Mondin, *Manuale*, 258: “...segni che mostrano che l’universo non è autosufficiente ma è stato creato. Sono i segni della composizione, finitezza, contingenza, azione, e ordine.”

that nothing happens in the universe by mere chance alone without Divine Providence.³¹ All is the fruit of the power and wise actions of God (Aquinas *Summa Contra Gentiles* 3. 75). Chance and Divine Providence operate together in the universe. St. Thomas teaches that nothing happens in the universe by pure chance alone; all is the fruit of the power and wise action of God.

Creation is defined and confirmed by St. Thomas. He says, “Creation is the production of something in its entire substance without any part of this presupposed created or uncreated” (Aquinas *Summa Theologiae* 1. 63. 3).³² St. Thomas says, “God is the original font and primary font of all causality, especially of the existence of things” (Aquinas *De Substantiis Separatis* 14).³³ St. Thomas also says, “God is the principle and goal of every creature, and consequently has a double relation with creatures: that according to which all creatures arrive at existence because of God, and that according to which all creatures are directed to God as their ultimate goal” (Aquinas *De Veritate* 20. 4).³⁴

Second, concerning the present evolution of the universe, St. Thomas confirms: “Every

³¹Mondin, *Dizionario*, 659: “...caso, come ipotesi esplicativa dell’origine del cosmo. Secondo l’Angelico nulla di quanto succede nell’universo avviene per caso...” But here Mondin treats chance as “opposed” to Divine Providence. St. Thomas also teaches that “Divine Providence is not opposed to contingent things subject to chance, or fortune, or human will,” for which the original reads: “Providentia autem non repugnat contingentia, et casus et fortuna...” (Aquinas *Summa Contra Gentiles* 3. 75).

³²Mondin, *Dizionario*, 150: “La creazione è la produzione di qualche cosa in tutta la sua sostanza senza che di questa sia presupposto alcunché sia creato sia increato” (Aquinas *Summa Theologiae* 1. 63. 3).

³³Mondin, *Dizionario*, 108: “Deus est universale et fontale principium omnis esse” (Aquinas *De Substantiis Separatis* 14).

³⁴Mondin, *Dizionario*, 153-154: “Dio è principio e fine d’ogni cosa e, di conseguenza, ha con le creature un duplice rapporto: quello secondo cui tutte le cose arrivano all’essere per causa sua, e quello secondo cui tutte le cose si dirigono a lui come a loro ultimo fine” (Aquinas *De Veritate* 20. 4).

creature is in service of its own perfection. Second, creatures less noble are in service of the more noble, as lower creatures to man are (in service) for man. Further, every creature is in service of the perfection of the universe. Finally, the totality of the universe with all its parts is ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).³⁵ Therefore, St. Thomas portrays a dynamic universe, in which “every creature is in service of the universe.” St. Thomas repeats this dynamic orientation of things to the universe, saying, “Now if we observe that every single being is best disposed by its nature, we must admit that this is more verified in the whole universe” (Aquinas *In Metaph.* 12. 12).³⁶ This dynamic is visible and can be understood as natural laws: “A physical law can be defined as an intrinsic inclination by which natural causes are constantly determined to producing similar effects in similar circumstances” (Aquinas *Summa Theologiae* 1-2. 93. 3).³⁷ Clearly, there is dynamic order in the universe, as St. Thomas notes that “Some (philosophers) take this occasion to err, thinking that no creature had some action for production of natural effects” (Aquinas *Summa Contra Gentiles* 3. 69).³⁸

³⁵Mondin, *Dizionario*, 406: “Ogni creatura è in funzione del proprio atto e della propria perfezione. Secondo: le creature meno nobili sono in funzione delle più nobili, come le creature inferiori all’uomo sono per l’uomo. Inoltre, ciascuna creatura è in funzione delle perfezione dell’universo. Infine, la totalità dell’universo con tutte le sue parti è ordinata a Dio come a suo fine” (Aquinas *Summa Theologiae* 1. 65. 2).

³⁶Mondin, *Dizionario*, 405: “Ora se osserviamo che ogni singolo ente è ottimamente disposto nella sua natura, a maggior ragione dovremo ritenere che ciò si verifichi anche in tutto l’universo” (Aquinas *In Metaph.* 8. 12).

³⁷Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis as Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M D’Auria, 1950), 370: “Lex physica definire potest: Inclination intrinseca, quae causae naturales constanter determinantur ad similes producendos in similibus adiunctis” (Aquinas *Summa Theologiae* 1-2. 93. 3).

³⁸Joseph De Finance, *Être et Agir: dans le Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 315-316: “C’est la forme, l’harmonie particulière de l’univers que détermine, hypothétiquement, la choix de ses constituants. Supposé que Dieu veuille créer tel

Concerning the present evolution of the universe, St. Thomas also teaches that divine efficient causality is the ground for cosmic evolution: “The same divine wisdom is the efficient cause (*effectiva*) of all things, and not only gives to things that existence but also in things existence with order, in so far as things are joined to one another in an order to the ultimate goal. And so God is the cause of the indissolubility of this order, which always remains, in whatever way things change” (Aquinas *De Divinis Nominibus* 8. 4).³⁹ St. Thomas confirms, “The entire irrational world is related to God as an instrument to a principle agent” (Aquinas *Summa Theologiae* 1-2. 1. 2).⁴⁰

Concerning the present evolution of the universe, does St. Thomas think that there is alien life on other worlds? Yes, he seems to endorse alien life, although St. Thomas does not phrase the question in quite the same way. St. Thomas maintains that it is hard to believe that inorganic matter, not reason, dominates the universe: “The order of the universe seems to demand that what is in more noble things should exceed in quantity or number the more ignoble, because the ignoble seem to exist in service of the more noble. Whence it is necessary (*oportet*) that the more noble as if due to their own noble nature would be multiplied in existence as far as possible” (Aquinas *Summa Contra*

univers, il faut qu’il crée le soliel et l’eau en tout ce sans quoi l’univers ne pourrait pas être...mais il est surtout fait de rapports dynamiques.” Ibid., 316: “Ex hoc autem quidam, occasionem errandi sumpserunt, putantes quod nulla creatura habet aliquam actionem in productione effectuum naturalium...” (Aquinas *Summa Contra Gentiles* 3. 69).

³⁹Mondin, *Dizionario*, 108: “La stessa divina sapienza è causa efficiente (*effectiva*) di tutte le cose, in quanto porta all’essere le cose, e non soltanto dà alle cose l’essere, ma anche, nelle cose, l’essere con ordine, in quanto le cose se concatenano l’una all’altra, in ordine al fine ultimo. E, ancora, è causa dell’indissolubilità di questa armonia e di questo ordine, che sempre rimangono, in qualsiasi modo mutino le cose” (Aquinas *De Divinis Nominibus* 8. 4).

⁴⁰H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Ott (St Louis: Herder, 1958), 2: 79: “Tota irrationalis natura comparatur ad Deum sicut instrumentum ad agens principle” (Aquinas *Summa Theologiae* 1-2. 1. 2).

Gentiles 3. 92).⁴¹ What are these “more noble” that St. Thomas believes should be “multiplied in existence as far as possible”? St. Thomas maintains, “That it is necessary for the best (*optimam*) perfection of the universe (*universi*) that there exist some intellectual creatures” (Aquinas *Summa Contra Gentiles* 2. 46).⁴² St. Thomas asserts that these intellectual creatures which are to be “multiplied in existence as far as possible” are not only more noble, but at the apex (*summo rerum vertice*) of creation: “And first we show that from the divine plan in assigning perfection to created things in the best way for each, it followed that there were some intellectual creatures, constituted at the highest level of things” (Aquinas *Summa Contra Gentiles* 2. 46).⁴³ Therefore, St. Thomas seems to hold that the intellectual creatures, the apex of creation, should be multiplied “as necessary for the best perfection of the universe.”

Third, concerning the end or destruction of the universe, the richness of the teaching of St. Thomas needs to be examined in more detail, although he notes that “...the corruption and deterioration of (material) things are natural...” (Aquinas *Summa Theologiae* 1-2. 85. 6).

Concerning the end of the universe, the dispute on the eternity of the world also touches the

⁴¹Donat, *Cosmologia*, 212-213: “Ordo uinversi exigere videtur, ut id, quod est in rebus nobilioribus, excedat quantitate vel numero ignobiliora; ignobiliora enim videntur esse propter nobiliora. Unde oportet, quod nobiliora, quasi propter se existentia, multiplicentur, quantum possibile est” (Aquinas *Summa Contra Gentiles* 3. 92).

⁴²Tomas De Aquino, *Suma Contra los Gentiles*, Latin-Spanish bilingual ed., 2 vols. (Madrid: BAC, 1968), 1: 520: “Oportuit igitur, ad perfectionem optimam universi, esse aliquas creaturas intellectuales” (Aquinas *Summa Contra Gentiles* 2. 46).

⁴³Tomas De Aquino, *Suma Contra los Gentiles*, Latin-Spanish bilingual ed., 2 vols. (Madrid: BAC, 1968), 1: 519: “Et ostendemus primo, quod ex divina dispositione perfectionem rebus creatis secundum suum modum optimam assignante, consequens fuit quod quaedam creaturae intellectuales fierent, in summo rerum vertice constitutae” (Aquinas *Summa Contra Gentiles* 2. 46).

end or the destruction of the world. If the world is eternal, then it will never be destroyed; however, there are some differences between the eternal creation of the world and the necessary (not just possible) eternal existence of the world. The contemporary world could end either by annihilation by God,⁴⁴ or by the corruption due to the finite nature of the world itself. The world will not end by annihilation, says St. Thomas, “In so far as the status in which the world now exists, it lacks the state of perpetual rest and death...whence it must simply be said that absolutely nothing will be annihilated” (Aquinas *Summa Theologiae* 1. 104. 4).⁴⁵ Our observation finds signs in the universe that it is not auto-sufficient, signs of composition, being finite, being contingent, having action, and having order.⁴⁶ While St. Thomas does not explicitly deal with the death of the universe, he does explain the material destruction of one of the material creatures of the universe when he treats the death of man, saying: “From this point of view the corruption and deterioration of (material) things are natural, not already by the inclination of the form, which is the principle of their being and of their perfection; but by the inclination of the material which the universal agent (God) distributes proportionally to each form. And it would be astonishing for every form to perpetuate its own being, since no form of corruptible things is able to attain this perpetuity, except for the rational soul of man...And from this point of view man is naturally corruptible, according to the nature of matter left to itself, but not in a prior way due

⁴⁴Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 92: “...the creature made by the creative act is not changed from one substantial state to another. The term ‘from which’ is lacking...In like manner, annihilation...no ‘term to which’...”

⁴⁵Donat, *Cosmologia*, 256-257: “Quatenus status, qui nunc est, in statum perpetui rigoris et mortis desinet...Unde simpliciter dicendum est, quo nihil omnino in nihilum redigetur” (Aquinas *Summa Theologiae* 1. 104. 4).

⁴⁶Mondin, *Manuale*, 258: “...segni che mostrano che l’universo non è autosufficiente ma è stato creato. Sono i segni della composizione, finitezza, contingenza, azione, e ordine.”

to the nature of the form” (Aquinas *Summa Theologiae* 1-2. 85. 6).⁴⁷ Therefore, if the “corruption and deterioration of (material) things are natural” in the death of man, the same should be true about the natural corruption and deterioration of material things in the universe.

Concerning the end of the universe, St. Thomas teaches that the destiny of the universe has to do with knowing and loving, rather than something material. St. Thomas says, “Something close is joined to God if the thing can touch the very substance of God in some way, which can happen when someone knows the divine substance, which is the attainment of some likeness to God. It follows that the ultimate goal of the universe is God, which only an intellectual nature can receive in itself, by way of knowing and loving” (Aquinas *Summa Contra Gentiles* 3. 25).⁴⁸ This view of St. Thomas explains why he appears rather unconcerned about any physical destruction of the universe, since St. Thomas views the destiny of the universe as man’s joy in knowing and loving God.

Fourth, concerning the equivocal use of the word “evolution” in regard to cosmic evolution, St. Thomas makes no direct comment. However, St. Thomas is very careful about the use of terms in the description of the origin of the cosmos. St. Thomas notes, that even if the world were eternal, it is

⁴⁷Mondin, *Dizionario*, 408: “Da questo lato la corruzione e il deterioramento delle cose (materiali) sono naturali; non già per l’inclinazione della forma, principio del loro essere e della loro perfezione; ma per l’inclinazione della materia, che l’agente universale (Dio) distribuisce proporzionalmente a ciascuna forma. E sebbene ogni forma miri a perpetuare il proprio essere, nessuna forma di cose corruttibili può conseguire questa perpetuità, all’infuori dell’anima razionale...E da questo lato l’uomo è naturalmente corruttibile, secondo la natura della materia lasciata a se stessa, non già secondo la natura della forma” (Aquinas *Summa Theologiae* 1-2. 85. 6).

⁴⁸De Finance, *Philosophie*, 317: “Vicinus autem coniungitur aliquid Deo per hoc quod ipsam substantiam eius aliquo modo pertingit, quod fit dum aliquid quis cognoscit de divina substantia, quam dum consequitur eius aliquam similitudinem...Constet...finem ultimum universi Deum esse quem sola intellectualis natura consequitur in seipso, eum scilicet cognoscendo et amando” (Aquinas *Summa Contra Gentiles* 3. 25).

not univocally the same as the eternity of God.⁴⁹ Boethius teaches that God is the total and simultaneous presence of unending life. On the other hand, the universe includes potential act, contingent, continuously developing in eternal successive duration” (Aquinas *De Aeternitate Mundi* 11).

The Scholastic Solutions

First, does evolution account for the origin of the universe? The Neo-Scholastics answer in the negative, that evolution does not account for the origin of the universe.

Donat holds that the universe was created. His proof is that the material world is not essential, but contingent, which is defined as a state of being dependent on something else.⁵⁰ He gives five reasons. First, if matter would exist by essence, it would not be contingent; but it is changeable and contingent. Second, if matter would exist by its formal (not efficient) essence, you could not think of matter not existing, because existence would be part of its definition; but you can think of matter not existing. Third, if matter would exist by essence, material (like atoms) would exist before anything else; but matter would still need a sufficient reason. Fourth, matter has to exist in time, not eternally, because it needs a cause for transit from non-being (*non esse*) to being (*esse*). Fifth, what exists by essence is absolutely infinite, immutable, and without limitation; but matter is limited. Therefore, the

⁴⁹Mondin, *Dizionario*, 406: “Anche se creato ab aeterno, il mondo non è coeterno a Dio in senso univoco; evidentemente l’eternità del mondo non può essere l’eternità di Dio.” Ibid., 406: “Dio è... ‘totale simultanea presenza di una vita interminabile,’ come dice Boezio.” Ibid, 406: “Il mondo invece è atto potenziale, contingente, in continuo divenire, eterna successiva durata” (Aquinas *De Aeternitate Mundi* 11).

⁵⁰Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck, Rauch, 1915), 218: “Materia mundi non est a se.”

material of the world is created by God, since the cause (God) has to be superior to the effect (universe).

Hellin maintains that the universe is created.⁵¹ First, everything outside God is made.⁵² God produces by truly making all contingent things in the world. But God does not produce contingent things from some pre-existing body, because contingent things demand a first cause for existence, and if there was something pre-existing uncreated, then there would be two Gods. Secondly, Hellin argues from the unicity of God. Uncreated being is absolutely one; so everything else is created from nothing by the unique uncreated being. This argument from the unicity of God is valid whether the universe was created in time or whether the universe was created eternally, because in every hypothesis the uncreated being is essentially one, and therefore everything besides the uncreated one (*unicum*) is made by him, according to their total entity.⁵³

Mondin maintains that the universe is created.⁵⁴ He begins with the interesting parallel. At the time of Aquinas the debate was about “rationes seminales” and the “ab aeterno” world, and the present time when the debate is about the somewhat parallel issues of evolution and creation. Mondin holds the theory of “Programmed Evolution” in biology. In cosmology, philosophy can only say that the

⁵¹Josepho Hellin, “Theodicea,” in *Philosophia Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 286: “Mundus in prima sui molitione productus est per creationem a Deo.”

⁵²Hellin, “Theodicea,” 3: 288: “Ex eo quod omnia extra Deum facta sunt.” Ibid., “Paulo aliter ex unicitate Dei.”

⁵³Hellin, “Theodicea,” 3: 288: “...valet sive dicantur omnia facta esse in tempore...sive...ab aeterno...”

⁵⁴Battista Mondin, *Manuale di Filosofia Sistemica; Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 258: “Anche questo è un universo *creato*.”

universe is created. The argument of Modin is that even in modern scientific studies the universe does not appear to be self sufficient. Mondin sees signs of this in the composition, finiteness, contingency, actions and order. Mondin remarks that these signs are not weakening but are becoming ever more evident.

Calcagno maintains that the universe is created.⁵⁵ Calcagno does distinguish between the actual creation of the universe by God, and the evolution of the cosmos, which he calls the work of formation (*opus formationis*) which gives the universe the form that it has in the present.⁵⁶

Second, is the universe evolving now? The Neo-Scholastics answer in the affirmative, that the universe is evolving now.

Joseph Gredt, professor at St. Anselm in Rome in 1909, argued in favor of cosmic evolution.⁵⁷ He begins his own thesis by assuming that true creation by God has already occurred. Gredt argues from the diverse states of cosmic material and celestial bodies. Astronomy verifies the variety, and also the dynamism. Gredt concludes, "These (different) states are diverse states of evolution of cosmic material."⁵⁸ Gredt also notes the signs of cosmic evolution on earth.⁵⁹ The evolutionary

⁵⁵Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D'Auria, 1952), 443: "Mundus a Deo processit per creationem."

⁵⁶Calcagno, *Philosophia*, 442: "Cum sermo est de prima origine rerum a Deo, duo opera divina distinguenda solent:opus creationis et opus formationis...opus formationis respicit mundum secundum illam formam seu faciem quam habet in praesenti."

⁵⁷Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), !; 260: "Cosmogonia per viam evolutionis..." Ibid., "Nomine Cosmogoniae non intelligimus creationem ex nihilo, sed mundi formationem, supposita prima rerum productione..."

⁵⁸Gredt, *Philosophiae*, 1; 261: "Hi status diversi status evolutionis materiae cosmicae sunt."

⁵⁹Gredt, *Philosophiae*, 1: 261: "Etiam terra nostra in diversis stratis suis vestigia gerit evolutionis..."

formation of the earth is by means of secondary causes.⁶⁰

Donat argues that there is no philosophical reason not to believe that the proximate formation of the world can be attributed to the natural causes of evolution.⁶¹ God the Creator is the cause of ultimate formation of the world, and evolution the proximate formation. Donat argues that evolution of the universe does not exclude creation by God, but the Cosmogonic Hypothesis or the nebular hypothesis of Kant and Laplace, supposes the creation of matter with the necessary material forces for evolution to effectively order the universe. Further, the evolutionary development of the world appears to be very appropriate for God.⁶² Evolution of the world supports the wisdom and power of God, because it is divine to use the most simple means to accomplish the most complicated and remote effects. Evolution of the world supports the goodness of God, as a reason to communicate more fully with creatures. Evolution of the world shows the eternity and immensity of God, since the age and extent of the universe in some way reflect God's qualities. Finally, evolution of the universe shows Divine Providence in an outstanding way. Donat also argues for the proximate evolution of the earth by natural forces.⁶³

Mondin maintains that there is evolution in the present operation of the universe.⁶⁴ In cosmology, he wisely divides the birth of the universe from the evolutionary development of the

⁶⁰Gredt, *Philosophiae*, 1: 261: "...ex conceptu cosmogoniae evolutionisticae ostenditur, quae est formatio mundi mediantibus causis secundis."

⁶¹Donat, *Cosmologia*, 254: "Nulla ratio philosophica obstat, quominus formatio mundi proximo evolutioni per causas naturales tribuatur..."

⁶²Donat, *Cosmologia*, 254: "...immo Deo valde conveniens id apparet."

⁶³Donat, *Cosmologia*, 254: "Terrae autem formatio certe viribus naturalibus proxime effecta est."

⁶⁴Mondin, *Manuale*, 258: "...evoluzione...leggi della espansione e della implosione."

universe. On the one hand, Mondin notes that the ancients had a static and atemporal view of the universe, declaring “Nothing new under the sun.” On the other hand, modern science has a radically new view of the universe as dynamic, so that there is continual expansion and everything is in transformation. In cosmology, philosophy can only say that there is no conflict between a universe in evolution now and the doctrine of creation.⁶⁵ The argument of Mondin favoring evolution is that even in modern scientific studies the universe does not appear to be self sufficient. Mondin sees signs of this in the composition, finiteness, contingency, actions and order. Mondin remarks that these signs are not weakening but are becoming ever more evident. Secondly, Mondin supports evolution in the universe by alluding to St. Thomas’ observations about the dynamic hierarchical order in the universe,⁶⁶ which regulates and subordinates the more elementary parts to the composed which are always more structured and complex.

Hellin maintains that there is evolution in the present operation of the universe, “so that things are able to evolve according to their proper species.”⁶⁷ Order in the universe is seen in the sciences of astronomy, chemistry, biology, and even mineralogy for elements necessary for plant life. This order is most complicated and constant, and its wonderful results are very useful to the evolution of life.⁶⁸

⁶⁵Mondin, *Manuale*, 258: “Così dobbiamo concludere che tra un universo in evoluzione e la dottrina della creazione non c’è nessun conflitto.”

⁶⁶Mondin, *Manuale*, 232: “...S. Tommaso, remane del tutto valida la sua osservazione, secondo cui l’ordine dell’universo è un ordine gerarchico, che regola e subordina...”

⁶⁷Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 239: “...ut est posse evolvi, usque ad typum proprium speciei...”

⁶⁸Hellin, “Cosmologia,” 2: 239: “...sed qui ex cooperatione corporum et est bonum seu utilitas ad vitam.” Without using the phrase, this is the position of the Anthropic Principle.

Hugon maintains that there is evolution in the present operation of the universe, and he endorses a prior creation by God.⁶⁹ He states cosmic evolution is scientifically “most probable” and philosophically “not unproven” and even a “convenient” explanation. He quotes Pesch to say that cosmic evolution is “fitting.” His scientific explanation follows Laplace, and he notes that God created the primeval mass, and endowed it with an impulse and power to evolve.

De Finance considers cosmic evolution without using that terminology. De Finance says, “The universe is not just parts acting and reacting, but actualizing their mutual relations. The being of the universe is finite, and by this finitude is relative to its parts, to its complements, which are a ‘remedy’ for its finitude.”⁷⁰

Klubertanz does not directly treat cosmic evolution. Nevertheless, he gives general agreement to cosmic evolution at the present time by noting that “God usually works, in the natural order, through the secondary causes He has made.”⁷¹ Accordingly, Klubertanz generally endorses creation in the beginning of the universe and evolution by secondary causes afterwards.

⁶⁹Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 80: “Haec cosmogonia, seu modus explicandi mundi formationem, minime est philosophis improbanda. Si admittitur Deum creasse primam massam, eique indidisse impulsum et virtutem qua posset evolvi, nihil implicat; immo in hoc maxime elucet Dei potentia...ad operandum mirabilia...Haec evolutio quasi innumeros exegisset dies et annos, at in hoc nullum deprehenditur incommodum. E contra ‘congruum videtur, ait P. Pesch, reliquisse Deum quasi vestigium quoddam aeternitatis suae longissima temporum spatia, sicut reliquit vestigium immensitatis miras coelorum extensiones.”

⁷⁰Joseph De Finance, *Essai sur l’Agir Humain* (Rome: Gregorian University, 1962), 10-11 “Ainsi, l’*esse* de l’univers comme univers, ce n’est simplement l’ensemble des *esse* de ses éléments, c’est l’ensemble et de ces *esse* et des actions qui les experiment, en actualisant leur mutuelle relativité. (Car tout *esse* fini, de par finitude même, est relatif à un autre, à un complément, à un ‘remède’ de cette finitude).”

⁷¹George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 413: “God usually works, in the natural order, through secondary causes He has made.”

Does cosmic evolution extend beyond the Earth, so that not only our Earth is inhabited by humans, but also rational inhabitants live or will live in other star systems.⁷² Donat, in 1915, argues that it is “probable,” while Hugon has limited reservations. Donat comments that from the time of Copernicus, the Earth has not been conceived as the center of the universe. Donat’s general argument affirms the probability of alien intelligence: since the existence of rational aliens would show the glory, the power and the wisdom of God; since there is nothing contrary in philosophy; since religion teaches nothing about this topic; and since the opinion is upheld by Nicholas Cuso, Galileo, Kepler, Newton, Leibniz, Kant, Laplace, Huyghens; and among the more moderns Herschel, Secchi, Braun, and Pohle. Donat does not defend that the aliens are the same species as humans on Earth, but would be generally corporeal beings endowed with a rational soul. The three special arguments of Donat are from analogy, from the laws of divine wisdom, and from the goal of the world. From analogy, Donat argues: chemical elements found on Earth, where abundant life is found, are found on other planets; it is hard to believe that only Earth could sustain life given the immensity of the universe; millions of living things are found in a drop of water, so why not in the immense universe. From the laws of divine wisdom, Donat argues: God shows great variety in creation on Earth, so this law should apply to the rest of the universe; the perfection of God manifest in the short and defective history of man on Earth deserves to be extended and allowed possible perfection; Aquinas argues that it is hard to believe that inorganic matter should dominate the universe (Aquinas *Summa Contra Gentiles* 2. 92). From the goal of the universe, Donat argues that since the glory of God is the goal of the universe, this praise would not be adequately given unless the universe had many kinds of rational creatures. If there

⁷²Donat, *Cosmologia*, 208: “Probabile est, non tatum terram nostram hominibus incoli, sed etiam in aliis stellis incolas rationales habitare vel aliquando habitaturus esse.”

is alien life, this strengthens the case for cosmic evolution.

Concerning cosmic evolution beyond the Earth, Hugon has reservations. Hugon admits there is no philosophical reason against the existence of rational creatures on other worlds, and he admits that life on some planets, such as Mars, may be “possible.”⁷³ Hugon notes that up to now, 1927, science has found no vestige of life on other planets. Hugon notes that the argumentation alleged for alien life is not convincing for two reasons. First, the glory of God is sufficiently provided by angels and men, and especially by the Incarnation. Second, it would be congruent to reveal the presence of other rational creatures in the universe; God told us about the existence of angels; although no one can demand God reveal everything to humans.

Third, will the evolution of the universe come to an end? The Neo-Scholastics answer in the affirmative, that the evolution of the universe will come to an end.

Hugon maintains that the physical universe will come to an end.⁷⁴ Hugon begins by asserting that God would not annihilate the world, since nothing in the nature of creatures demonstrates the potential for non-being; and since God’s goodness is better shown by conservation than annihilation. Hugon then goes on to demonstrate that the universe has corruptible parts. He gives the example of the cooling of our sun, and the cooling of the stars. With no warmth, all life would be extinguished. In general support of his opinion in 1927, Hugon gives a citation in French from De Lapparent, a scripture quotation from 2 Peter 3: 10, and a Latin quotation from the Roman poet Ovid (Ovid

⁷³Hugon, *Philosophia*, 69: “An sint plures mundi habitati, seu plures sphaerae in quibus vivant incolae? Resp.: In se absolute non repugnat, nulla tamen apparet ratio qua convincamur rem ita est...licet in quibusdam planetis, sicut Marte, possibilis sit vita.”

⁷⁴Hugon, *Philosophia*, 85: “Mundus corporeus non semper in statu quem habet permanebit.”

Metam. 1. 256); and we can regard this as an argument from the general consent of man.

Hugon also argues indirectly to the physical end of the universe from the fact that matter itself cannot be eternal.⁷⁵ He argues: if matter exists eternally, it has to exist eternally in motion or eternally at rest. Matter cannot be in motion and at rest at the same time. Matter or a body at rest cannot give itself motion (Principle of Inertia). Matter or a body in motion cannot alone modify its motion (Principle of Inertia). Therefore matter cannot exist from all eternity. What is not eternal would have a beginning and be open to having an end, to breaking down. Quantity, divisible by definition, opens the possibility for such a break down.⁷⁶

Donat maintains that the physical world will come to an end.⁷⁷ Donat notes that some could lightly assume the world will go on forever, but the natural sciences now have made certain (*certum*) that sometime an end will necessarily (*necessario*) come to the world.⁷⁸ Donat argues that the state of the world, as it now is, has many physical and chemical changes. These are all natural. Donat denies that God will impede the natural evolution of the world.⁷⁹ Further, all admit the law of conservation of energy, although the quantity of energy remains, the quality of energy diminishes (Law of Entropy).⁸⁰

⁷⁵Hugon, *Philosophia*, 16: “Materia infecta ab aeterno existens intrinsece repugnat.”

⁷⁶Hugon, *Philosophia*, 175: “Dicitur autem quantum: Quod est divisible in ea quae insunt, quorum utrumque aut singulum unum aliquid et hoc aliquid natum est esse.”

⁷⁷Donat, *Cosmologia*, 256: “Secundum leges naturae mundus aliquando finem habebit, quatenus status, qui nunc est naturaliter in statum perpetui rigoris et mortis desinet.”

⁷⁸Donat, *Cosmologia*, 256: “Sed scientiae naturales diu iam certum reddiderunt, necessario aliquando finem mundi adventurum esse.”

⁷⁹Donat, *Cosmologia*, 257: “...nisi scilicet Deus evolutionem naturalem impediat...quod minime negamus fieri posse.”

⁸⁰Donat, *Cosmologia*, 258: “...quae non iam ad laborem praestandum adhiberi potest, *entropia* (energia introrsum versa seu efficacia sua privata) vocatur.”

Now it is commonly admitted that entropy in the universe is continually growing. An illustration is the conversion of energy to heat, which is not totally able to be converted to back to useful energy again. Therefore, eventually there will be no change or movement, which will result in the perpetual death of the universe. Secondly, the same general entropy will destroy all the heat and light of the universe. Thirdly, the end of the universe is now commonly admitted by all natural scientists.⁸¹ Donat adds that it is also possible that all material will ultimately dissolve into proto-atoms, which happens in radioactivity.⁸² Donat also notes that the end of the planet earth will take place much earlier.⁸³

Donat also notes that it is not necessary to have an eternal world.⁸⁴ Such a necessity would arise only if the world had no cause, but existed *per se ipsum*, or if God necessarily created the world. But God freely created the world as its cause, and an infinite and necessary God does not need the world. Therefore, it is not necessary for the world to exist eternally. The second proof given by Donat is from the fact of motion. Motion in the world had to have a beginning. It is absurd to say that matter in the world is eternal, but form and order (which we observe) begin only in time. If motion and energy existed from eternity, the Law of Entropy would have ended the movement in the universe already, so motion (*cursus mundi*) began in time, and is not eternal. Therefore, neither is

⁸¹Donat, *Cosmologia*, 259: “Propositio statuta fere communiter iam a rerum naturalium peritis admittitur.”

⁸²Donat, *Cosmologia*, 261: “...omnis materia paulatim in protoatomos dissolvatur. Id ex facto radioactivitatis con ludunt.”

⁸³Donat, *Cosmologia*, 261: “...sola terra spectatur, in qua degimus...scientiae naturales probabile reddunt, eius interitum multo ante mundi finem venturum esse et quidem ita, ut terra incendio consumatur.”

⁸⁴Donat, *Cosmologia*, 264: “Non tantum necessarium non est, mundum ab aeterno esse, sed ratione sufficienter demonstratur, eum in tempore incepisse.”

material, the substratum of motion, eternal.

Fourth, is the term “evolution” used equivocally about the universe? The Neo-Scholastics answer that it is equivocal, that the word evolution is used differently pertaining to the universe than it is used elsewhere. The concept of evolution applied to the cosmos is equivocal. Equivocal indicates predication where the verbal term is identical, but the concepts have no connection in the mind.⁸⁵ Nogar says, “These papers (at the Darwin Centennial Celebration at the University of Chicago in 1959 composed of fifty international experts on evolution reporting) on cultural anthropology, archaeology, psychology and language... show this radical change in the concept of evolution...”⁸⁶ Darwin does not impose evolution on a grand scheme of biological, or cosmic, history but the origin of the species.⁸⁷ The general meaning of the term “evolution” is tied to biological transformation of species by mutation and natural selection. Philosophical Evolutionism may attempt to extend that meaning.⁸⁸ Herbert Spencer and some others wish to extend the term “evolution” to the level of a universal law that pertains to all transformation in the universe.⁸⁹ Those followers of Darwin, notably Huxley and

⁸⁵Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 93-94: “Equivocal...the verbal term is identical...concepts have no connection in the mind. An ‘equivocation’ is the use of an ambiguous word; it is a play on words. It indicates the use of a word which has quite different meanings, so that although the oral or written term is identical, the concept, to be true, must change completely.”

⁸⁶Nogar, “Evolution,” 350: “...not only show this radical change...fashioner of his own future.”

⁸⁷Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 204: “Darwin does not impose evolution on a grand scheme...” Klubertanz, *Philosophy*, 378: “Evolution means development or biological change.”

⁸⁸La Vecchia, *Evoluzione*, 317: “In questo scritto abbiamo dapprima considerato il problema dell’evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo.”

⁸⁹Klubertanz, *Philosophy*, 364: “Modern Materialism insists that it can simultaneously admit irreducible levels of activity (e.g., that physico-chemical, vital, sensory, rational are distinct

Spencer in England and Hackel in Germany, made unwarranted extensions of the theory into fields of philosophy and ethics. The extension of “evolution” is not univocal, as explained by Nogar.⁹⁰ The extension of “evolution” is not analogous, as explained by Renard.⁹¹ The extension of “evolution” is equivocal, as explained by Nogar.⁹²

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.⁹³ Possibility is defined as

types of activity) while at the same time insisting that they are all equally functions of matter. Evolutionsim...”

⁹⁰Nogar, *Wisdom*, 191-192: “Theoretically, the concept of evolution should be regarded not as a single valued law but as a name for a series of models, all having a historical context. There are historical trends various sciences have determined...but the trends are specific, local, limited in sphere, and limited in time. None of these trends can be generalized to the degree needed for universal univocal extension.”

⁹¹Renard, *Philosophy*, 97: “In a composite concept, a change can be made by dropping notes, e.g. man as rational animal, irrational animal, animal. These concepts can be predicated intrinsically of various individuals. Yet they also differ – are the analogous? No. In each the concept of “animal” remains the same; it is a universal idea. There is no analogy of attribution, but only univocity of genus. There is no analogy of proportionality, not in the order of reality.”

⁹²Nogar, *Wisdom*, 185: “The term ‘evolution’ signifies something quite different in the organic and inorganic world. What is retained is the space-time concept of continual, natural change and development. Beyond this generic meaning, the term changes its definition and becomes equivocal.” Ibid., 191: “Evolution is a multivalued term in cosmology.”

⁹³Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.⁹⁴

Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.⁹⁵ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.⁹⁶

⁹⁴Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

⁹⁵Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt."

⁹⁶Salcedo, *Philosophiam*, 1: 362: "Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution of the universe.⁹⁷ However, some restricted observation of evolution is possible by inspection of the earth and from the investigations of astronomy. Such evidence is growing due to modern instrumentation, such as radio telescopes, and by the possibility of placing telescopes in space. Further, as Donat notes from observation, there is no impossibility of “God cooperating with created causes,” and “this we observe everywhere in other things.”⁹⁸ Observation of inanimate objects in the universe, such as the heaven bodies, show them to contribute to the order and good of the whole universe.⁹⁹

Certitude could arise from some philosophical explanation that exists. Explanations were given

...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

⁹⁷Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

⁹⁸Donat, *Cosmologia*, 255: “...quod Deus cooperationem causarum creaturarum...id ipsum enim ubique in aliis rebus observamus.”

⁹⁹Sheilah O’Flynn Brennan, “Physis: The Meaning of Nature in the Aristotelian Philosophy of Nature,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomsit Press, 1961), 257: “...if we look at such things in the general scheme of the universe. Then their observed tendencies to certain acts very often appear as contributing to the order and good of the whole...nature taken as the whole system of interrelated individual natures. This was the case even of the heavenly bodies.”

by several Neo-Scholastics: Gredt,¹⁰⁰ Donat,¹⁰¹ Mondin,¹⁰² Hellin,¹⁰³ Hugon,¹⁰⁴ and Klubertanz.¹⁰⁵

Certitude could arise if the argumentation was based on some philosophical principles. Gredt seeks an explanation of cosmic evolution using the principle of causality (secondary causes) and the principle of sufficient reason.¹⁰⁶ Donat explores secondary causes¹⁰⁷ and the prime cause¹⁰⁸ of cosmic evolution, which together provide a sufficient reason. Sheilah O’Flynn Brennan argues cosmic evolution according to the principle of finality for dynamic order in the universe.¹⁰⁹

¹⁰⁰Gredt, *Philosophiae*, 1: 261: “...ex conceptu cosmogoniae evolutionisticae ostenditur, quae est formatio mundi mediantibus causis secundis.”

¹⁰¹Donat, *Cosmologia*, 254: “Nulla ratio philosophica obstat, quominus formatio mundi proximo evolutioni per causas naturales tribuatur...”

¹⁰²Mondin, *Manuale*, 258: “...evoluzione...leggi della espansione e della implosione.”

¹⁰³Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 239: “...ut est posse evolvi, usque ad typum proprium speciei...”

¹⁰⁴Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 80: “Haec cosmogonia, seu modus explicandi mundi formationem, minime est philosophis improbanda. Si admittitur Deum creasse primam massam, eique indidisse impulsum et virtutem qua posset evolvi, nihil implicat; immo in hoc maxime elucet Dei potentia...ad operandum mirabilia...Haec evolutio...”

¹⁰⁵George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 413: “God usually works, in the natural order, through secondary causes He has made.”

¹⁰⁶Gredt, *Philosophiae*, 1: 261: “...ex conceptu cosmogoniae evolutionisticae ostenditur, quae est formatio mundi mediantibus causis secundis.”

¹⁰⁷Donat, *Cosmologia*, 254: “Nulla ratio philosophica obstat, quominus formatio mundi proximo evolutioni per causas naturales tribuatur...”

¹⁰⁸Donat, *Cosmologia*, 254: “...immo Deo valde conveniens id apparet.”

¹⁰⁹O’Flynn Brennan, “Nature,” 257: “... in the general scheme of the universe. Then their observed tendencies to certain acts very often appear as contributing to the order and good of the

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Hellin considers astronomy, chemistry, biology and mineralogy to verify the sufficiency of his reasons.¹¹⁰

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas portrays a dynamic universe in which “every creature is in service of the perfection of the universe”, when St. Thomas teaches: “Every creature is in service of its own perfection. Second, creatures less noble are in service of the more noble, as lower creatures to man are (in service) for man. Further, every creature is in service of the perfection of the universe. Finally, the totality of the universe with all its parts is ordered to God as its goal” (Aquinas *Summa Theologiae* 1. 65. 2).¹¹¹

Certitude could arise if Neo-Scholastics agree on the possibility of evolution as the proximate cause of the universe, such as: Gredt, Donat, Klubertanz, Mondin, and Hellin.

Certitude could arise due to recent scientific confirmation by convergent scientific arguments. Gredt notes that astronomy shows diverse states of cosmic material and diverse celestial bodies, and

whole...”

¹¹⁰Josepho Hellin, “Cosmologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 239: “...ut est posse evolvi, usque ad typum proprium speciei...”

¹¹¹Mondin, *Dizionario*, 406: “Ogni creatura è in funzione del proprio atto e della propria perfezione. Secondo: le creature meno nobili sono in funzione delle più noilit, come le creature inferiori all’uomo sono per l’uomo. Inoltre, ciascuna creatura è in funzione delle perfezione dell’universo. Infine, la totalità dell’universo con tutte le sue parti è ordinata a Dio come a suo fine” (Aquinas *Summa Theologiae* 1. 65. 2).

this is proof of the continued evolution of the universe.¹¹² Soccorsi states in his conclusions about the current state of astronomy that terrestrial and celestial phenomena, solar nuclear fission, and the formation of stars and galaxies, “demand a special evolution of the universe, whose duration is also able to be estimated in its order of five billion years.”¹¹³ Thus cosmic evolution is scientifically well based.

Certitude could arise if the opposite opinion is not tenable. Donat rejects the opposite opinion to an orderly evolution of the universe, which would be chance.¹¹⁴

Certitude could arise if the objections of adversaries are able to be answered, especially those of the atheists, who assert that cosmogonic evolution would render the Creator superfluous.¹¹⁵ However, Donat finds cosmic evolution very acceptable to God, and notes the cosmic evolution fits with divine perfection in the best way (*optime*) according to St. Thomas.¹¹⁶

Certitude can be had from the possibility of philosophers and theologians admitting this mode

¹¹²Gredt, *Philosophiae*, 1; 261: “Hi status diversi status evolutionis materiae cosmicae sunt.”

¹¹³Philippus Soccorsi, *Questiones Scientificae cum Philosophia Coniunctae: De Geometriis et Spatiis Non Euclideanis* (Rome: Gregorian University, 1960), 250: “Alia quoque phenomena, terrestria et sideralia (elementa radioactiva in rupis; processus nucleares per quos sol et stellae irradiant energiam; quaedam systemata stellarum et formae galaxiarum), postulant peculiarem evolutionem universi, cuius duratio aestimari etiam potest eiusdem ordinis 5,000,000,000 annorum.”

¹¹⁴Donat, *Cosmologia*, 255: “...elementa ad hunc ordinem constituendum aptas idoneasque eorum copias elegerit, praeterea materiae aptam distributionem in spatio, convenientem motum vel alias dispositiones tribuerit. Secus enim evolutio ordinatissima casui tribuenda esset.”

¹¹⁵Donat, *Cosmologia*, 254: “...immerito atheistas asserere, evolutionem cosmogonicam creatorem superfluum reddere.”

¹¹⁶Donat, *Cosmologia*, 255: “Idem Deo valde conveniens apparet. Consonat optime cum perfectionibus divinis” (Confer: Aquinas *Summa Contra Gentiles* 3. 77).

of origin without damage to their other beliefs. Nogar says, “Expressed in the language of the theologian, the laws of nature are the plan of God.”¹¹⁷ Donat notes that the evolutionary cosmos agrees in an outstanding way with divine providence.¹¹⁸ Hugon says that current evolution of the world is “not unproven for philosophers,” notes that there is nothing “inconvenient” in cosmic evolution, quotes Pesch to say cosmic evolution is “fitting” as a vestige of the creator. Admitting cosmic evolution after the universe was created by God does not fall under the censure of the First Vatican Council.¹¹⁹ The current Catholic media are open to cosmic evolution.¹²⁰

Certitude can be had from the fact that cosmic evolution is the best answer now for the present development of the universe.¹²¹ St. Thomas makes a distinction between a “verified” universal (*dici de*

¹¹⁷Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 303: “...language of the theologian, the laws of nature are the plan of God.”

¹¹⁸Donat, *Cosmologia*, 255: “Convenit idem egregie cum modo, quo providentia divina reapse in aliis rebus agere solet...” Confer: Hellin, *Cosmologia*, 2: 234: “Est in mundo ordo formalis.” Ibid., 2: 239: “Thesis haec est certissima in philosophia et de fide in Theologia, quia non est aliud nisi dogma Providentiae divinae.”

¹¹⁹Hugon, *Philosophia*, 70: “Canon I: Si quis unum verum Deum visibilium et invisibilium Creatorem et Dominum negaverit, A. S.” Ibid., “Canon V: Si quis non confiteatur mundum resque omnes quae in eo continentur et spirituales et materiales, secundum totam suam substantiam a Deo ex nihilo esse productas, A. S.”

¹²⁰*Chicago New World*, 4-17 December 2005, 4: “Properly understood, the Bible and evolutionary science are perfectly compatible, said an influential Jesuit magazine, *La Civiltà Cattolica* (19 November 2005). To use religious arguments against evolution shows ignorance of the nature of the Bible. Science cannot pretend to exclude a divine role behind the creation of the world...”

¹²¹John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

omni) and a “provisional” universal (*ut nunc*).¹²² This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, evolution predicated as cosmic evolution of already created matter is the best answer we have now.¹²³

The level of certitude for the “cosmic evolution is possible, but equivocal” is at the level of the metaphysically possible. The proof is the principle of finality.¹²⁴ In addition it can be argued that it fulfills the Principle of Expanding Goodness (*Bonum est diffusivum sui*), which is in the genus of final causality and also in the genus of efficient causality.¹²⁵ Further, the convergence of all of the above

¹²²Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *didi de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

¹²³Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it effects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution preforms these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently with sufficient scientific justification for a scientific theory.”

¹²⁴O’Flynn Brennan, “Nature,” 257: “...if we look at such things in the general scheme of the universe. Then their observed tendencies to certain acts very often appear as contributing to the order and good of the whole...nature taken as the whole system of interrelated individual natures. This was the case even of the heavenly bodies.”

¹²⁵Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: D’Auria, 1950), 1: 321: “Bonum est diffusivum sui.” Hellin, “Cosmologia,” 2: 239: “...sed qui ex cooperatione corporum et est bonum seu utilitas ad vitam.”

arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Gredt who maintains that cosmic evolution now has the highest probability.¹²⁶ Donat says that the cosmic evolution can be seen by observation in the proximate formation of earth, and that this cosmic evolution is “certain.”¹²⁷ Hugon says cosmic evolution is not unproven, is convenient, and quotes Pesch to say cosmic evolution is fitting; Hugon also notes that the scientific hypothesis is most probable (*probabilissima*).¹²⁸

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.¹²⁹ This is the method of Aristotle and St. Thomas.¹³⁰ St. Thomas notes that if “observation” can determine every single entity fits its own natural operation, all the more

¹²⁶Gredt, *Philosophiae*, 1: 260: “Cosmogonia per viam evolutionis summa probabilitate gaudet...”

¹²⁷Donat, *Cosmologia*, 254: “Terrae autem formatio certe viribus naturalibus proxime effecta est.”

¹²⁸Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 80: “Haec cosmogonia, seu modus explicandi mundi formationem, minime est philosophis improbanda. Si admittitur Deum creasse primam massam, eique indidisse impulsum et virtutem qua posset evolvi, nihil implicat; immo in hoc maxime elucet Dei potentia...ad operandum mirabilia...Haec evolutio quasi innumeros exegisset dies et annos, at in hoc nullum deprehenditur incommodum. E contra ‘congruum videtur, ait P. Pesch, reliquisse Deum quasi vestigium quoddam aeternitatis suae longissima temporum spatia, sicut reliquit vestigium immensitatis miras coelorum extensiones.’ Ibid., “Probabilissima tamen est hypothesis quam scientifici, duce Laplace, communiter amplectuntur.”

¹²⁹Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹³⁰Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, materia sensibilis, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

reason to maintain that creatures operate for the good of the universe.¹³¹ However, the science that underlies the theory of cosmic evolution is in the process of development.¹³² Beyond this, the mathematics of science also have a difficult time treating the problem of evolutionary cosmology.¹³³

¹³¹Mondin, *Dizionario*, 405: “Ora se osserviamo che ogni singolo ente è ottimamente disposto nella sua natura, a maggior ragione dovremo ritenere che ciò si verifichi anche in tutto l’universo” (Aquinas *In Metaph.* 8. 12).

¹³²Adam Frank, “Seeing the Dawn of Time,” in *Cosmos: Before There Was Light*, ed. David J. Eicher (Waukesha, WI: Astronomy: Collectors’ Edition, 2006), 7: “In the 30 years since the inflation theory was born, it has gone through its own expansion, opening up newer, more extreme ideas for physicists and astronomers to explore. Far from simply breathing new life into the Big Bang model, inflation has given scientists the confidence to speak of a multiverse — a universe of universes — and even to ask the question of our own place in this vastly enlarged cosmos.”

¹³³Philippus Soccorsi, *Questiones Scientificae cum Philosophia Coniunctae: De Geometriis et Spatiis Non Euclideanis* (Rome: Gregorian University, 1960), 286: “Si de problemate cosmologico agitur, quaestio de forma universi et consequenter de geometria quae illam exprimat adhuc manet aperta.”

Chapter 19: SOCIAL EVOLUTION IS UNLIKELY, BUT EQUIVOCAL.

The State of the Question

Regarding social evolution continuing today, the Pontifical Gregorian University in Rome has a philosophy faculty that currently does not directly consider this issue. Calcagno, in 1952, treated the issue indirectly in a footnote, where he rejected the evolution of civil society (“*societates civiles evolvuntur...strictam et rigorosam... Nego*”).¹ However, all indications are clear that the continuing social evolution of man, strictly speaking, would not be an acceptable point of view for a number of reasons.

First, La Vecchia views the process of hominisation to be “definitively completed” with the infusion of the soul immediately created by God.² Therefore, there will be no more process of hominisation in terms of biological evolution. Future cultural transformation appears to be outside the scope of the book of La Vecchia and it not treated.

¹Franciscus Xav. Calcagno, *Philosophia Scholastica : Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. Auria, 1952), 2: 216: “Historia diversorum populorum praesefert magnam similitudinem et uniformitatem in modo quo societates civiles evolvuntur...Respondeo: Distinguo maiorem: ... uniformitatem strictam et rigorosam, ut in ordine physico, Nego; aliqualem uniformitatem in sensu valde lato, Transeat. Explico: Haec autem uniformitas in modo operandi optime explicatur ex identitate naturae in cunctis hominibus...nam praecise propter libertatem, possunt etiam aliter agere, et plures revera aliter agunt.”

²La Vecchia, *Evoluzione e Finalità*, (Rome:Gregorian University, 1999), 5: “La creazione di un’anima spirituale nei primi uomini deve aver provocato l’emergenza e lo sviluppo delle facoltà intellettive, proprie dello psichismo umano. L’affiorare della coscienza riflessa e del concetto dell’io nelle sepolture con riti, le pratiche magiche o religiose, evidenti anche nella prime manifestazioni artistiche, mostrano che il processo di Ominazione poteva ritenersi definitivamente compiuto e che l’Uomo era divenuto autenticamente Uomo.”

Second, La Vecchia endorses “free will” in her presentation, which would seem to exclude any continuing evolutionary sociology.³ Man is now free to chose his own way, instead of evolving by chance through natural selection. In fact, man is so free that he can not only know his mistakes, but he can correct them.⁴

Third, La Vecchia emphasizes that the complex phenomenon of language is especially significant because language illustrates the undeniable difference between man and all the other animals.⁵ With language man can plan for the future and culturally determine his world, not be determined by his environment.⁶

Social biology, or sociobiology, is the understanding of social behavior, especially human social behavior, from a biological perspective. It is often connected with political philosophy of social Darwinism. Sociobiologists attempt to explain patterns of interaction in group-living organisms ranging from ants to human beings within the categories established by Darwin’s theory of natural

³La Vecchia, *Evoluzione*, 314: “Come si è potuto verificare nei primi uomini l’apparire dell’anima spirituale con la facoltà tipicamente razionali (astrazione propriamente detta, libera volontà, coscienza riflessa, linguaggio simbolico)? ...Quando l’organismo di due o più individui si trovò al massimo sviluppo potenziale della facoltà psichiche sensitive, Dio, con un atto della sua libera volontà e per suo intervento speciale, una *peculiaris creatio*, creò l’anima spirituale lì dove si erano determinate le condizione necessarie o sufficienti.”

⁴La Vecchia, *Evoluzione*, 114: “...l’Uomo non solo sa, ma sa di sapere: la sua conoscenza è sensibile, ma soprattutto astratta e universale. Può quindi ripiegarsi sulle operazioni della sua psiche per analizzarle ed eventualmente correggerle. Gli è possibile inoltre congoscere la natura e le leggi che la regolano, utilizzandole a proprio vantaggio.”

⁵La Vecchia, *Evoluzione*, 318: “Il complesso fenomeno del linguaggio ci è apparso particolarmente significato, perchè sembra che in esso, più facilmente che altrove, sia possibile colmare le innegabili differenze tra l’Uomo e gli animali.”

⁶La Vecchia, *Evoluzione*, 314: “All’evoluzione della psiche segue un progresso ‘culturale,’ in cui si affinano e si perfezionano tecniche di lavorazione già presenti nelle età anteriori.”

selection and the more modern mathematical theory of genetics. The particular object of study includes behavior involved in herding, co-operation, aggression, altruism, and mate selection.⁷

Historically, sociobiology was preceded by Social Darwinism. This was a diverse collection of doctrines in the nineteenth and early twentieth century that interpreted various social phenomena in the light of what was assumed to be Darwinian evolutionary theory. Actually, this doctrine owed more to Herbert Spencer than to Charles Darwin. One very influential form viewed society and the economy as a competitive arena in which the fittest would rise to the top.⁸

Charles Darwin, in *Origin of Species*, had shown the significance of social behavior in organic evolution. Then William Hamilton, an English biologist, in 1964, showed how such behavior could evolve. Hamilton maintained that “kin selection” was an aid to the biological well-being of relatives. Since then, other models of explanation have extended the theory to non-relatives. One theory is the self-describing “reciprocal altruism.” In 1975, Edward O. Wilson published *Sociobiology: A New Synthesis* in which he suggested that Western social systems are biologically innate.⁹ He concluded that in some respects males are stronger, more aggressive, and more naturally promiscuous than

⁷Michael Ruse, “Social Biology,” in *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi (Cambridge: University Press, 1999), 854. See also Richard Dawkins, *The Selfish Gene* (London: 1978).

⁸Peter Railton, “Social Darwinism,” in *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich (Oxford: University Press, 2005), 874

⁹Elliott Sober, “Philosophy of Biology,” in *The Blackwell Companion to Philosophy*, 2nd ed., eds. Nicholas Bunin and E.T.P. Tsui-James (Oxford: Blackwell, 2003), 336-338, treats three schools of Evolutionary Epistemology: the Sociobiology of Wilson, Evolutionary Psychology, and Cultural Group Selection.

females. Subsequently, Wilson was accused of sexism and racism.¹⁰ Evolution began to have implications for the function of the mind itself, in that evolution does not care about truth, but rather success. Karl Popper, following Konrad Lorenz, argues from the biological world to the cultural world that ideas have to struggle for survival.¹¹ H. V. Quine argues that human thought is molded by evolutionary selection, so that causes and prediction have no other justification but survival.

Social Darwinism was concerned that social reform to help the least well-off in society would lessen the effect of natural selection.¹² This would promote the degeneration of the species. This was a concern of Sir Julian Huxley at the CIBC Foundation 1963 International Conference at the house of the Foundation, Portland Place, London. Sir Julian Huxley wrote, “The improvement of human genetic quality by eugenic methods would take a great load of suffering and frustration of the shoulders of evolving humanity, and would much increase both enjoyment and efficiency.”¹³

¹⁰Ruse, *Biology*, 854. See also: E. O. Wilson, *Sociobiology: The New Synthesis* (Cambridge, Mass.: 1975).

¹¹Michael Ruse, “Evolution and Philosophy,” in *The Oxford Companion to Philosophy*, 2nd ed., ed..Ted Honderich (Oxford: University Press, 2005), 275: notes two forms of evolutionary epistemology.

¹²Economist Editors, “The Story of Man,” *The Economist* 377 (24 December 2005): 9: “The new social Darwinists (those who see society itself, rather than the savannah or the jungle, as the ‘natural’ environment in which humanity is evolving and to which natural selection responds) have not abandoned Spencer altogether, of course. But they have put a new face on him. The ranking by wealth of which Spencer approved is but one example of a wider tendency for people to try to outdo each other...competition, whether athletic, artistic or financial, does seem to be about genetic display.”

¹³Sir Julian Huxley, “The Future of Man: Evolutionary Aspects,” in *Man and His Future*, ed. Gordon Wolstenholm (Boston: Little, Brown and Company, 1963), 17. Ruse, “Evolution,” 275-276, notes that Julian Huxley argues that evolution justifies conservation of the earth; Herbert Spencer argues from the evolutionary struggle to *laissez-faire economics*; and Edward O. Wilson promoted sociobiology from evolutionary principles.

Sociobiology is often criticized on the grounds that its explanatory hypotheses are not easily verified, or that these hypotheses contain assumptions that are conventional, unexamined or impossible. For example, some assumptions are just the natural patterns of behavior of human beings.¹⁴

Another criticism of Sociobiology arises from the inclination of social scientists to offer functional explanations of social phenomena. A functional explanation of a social feature is defined as some factor that explains the presence and persistence of the feature in terms of the beneficial consequences the feature has for the ongoing working of the social system as a whole. This type of explanation is one that is based on an analogy between biology and sociology. Biologists explain species traits in terms of reproductive fitness. Social scientists are at times inclined to explain social traits in terms of “social” fitness. However, the analogy is misleading because the biological mechanism is not present at all in the social realm. By natural selection, the species obtains traits that are locally optimal. There is no analogous mechanism at work in the social realm. Many working-class people who might otherwise be social activists go to taverns, but taverns should not be explained in terms of social stability. Therefore, functional explanations of social phenomena must be buttressed by the specific causes behind postulated relationships.¹⁵

Participants in the Dialogue

Fatalism denies free will, and is generally defined as the doctrine maintaining that man is

¹⁴Catherine Wilson, “Sociobiology,” in *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich (Oxford: University Press, 2005), 880.

¹⁵Daniel E. Little, “Philosophy of the Social Sciences,” in *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi (Cambridge: University Press, 1999), 706

subject to certain determining forces which come from a superior power.¹⁶ So human actions arise from an impulse coming from a unique otherworldly cause which is not directed by any law.

Common fatalism denies liberty, and is the fatalism of ancient religions and of Islam, who submit all the events of life to an impersonal, blind and omnipotent force, which nothing can oppose. This irresistible force is sometimes called Fate, or Destiny, or in Greek: ἀνάγκη.

Theological Fatalism, or Theological Determinism, denies liberty, and puts God in the place of impersonal force.¹⁷ The denial of liberty is due to the opinion that human liberty is not compatible with prescience,¹⁸ providence, or other divine attributes. Among those who hold this position are the Manicheans, Waldensians, the Albigensians, and later Calvin (1509-1564)¹⁹ and Jansen. Fatalism appeared again in the seventeenth century with Bayle. The Materialists and the Sensists deny free will because they deny spirituality. The Pantheists, such as Spinoza, deny human personality; they conceive everything in the world as necessarily determined in evolution to the Absolute.

Determinism does not seek a cause outside or above the world which imposes necessity on

¹⁶Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D'Auria, 1952), 2: 199: "Distinguitur duplex fatalismus, vulgaris et theologicus." Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 417: "Libertatem arbitrii negant Deterministae et Fatalistae."

¹⁷Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 418: "Determinismus theologicus docet voluntatem a Deo ad unum determinari." Eduardo Hugon, *Metaphysica* (Paris: Lethielleux, 1935), 164: "Libertatis...negant." F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andres Blot, 1937), 2: 473: "Determinismus theologicus..."

¹⁸George P. Klubertanz, *The Philosophy of Human Nature* (New York: Appleton-Century-Crofts, 1953), 381: "Determinism may be theological, and then it asserts that human freedom is incompatible with God's foreknowledge, or with original sin, or with grace, or with the action of the First Cause in all creatures."

¹⁹Klubertanz, *Philosophy*, 381: "Theological Determinism is especially taught by Calvin."

human actions, but teaches such a cause can be found in the world itself.²⁰ Klubertanz notes that Evolutionism necessarily involves “the denial of freedom, whether or not they explicitly make this denial.”²¹ Natural agents which operate in and near us determine our action in such a way, that it is necessary for man to act. There are many kinds of Determinism: Scientific, Physical, Physiological, and Psychological.

Scientific Determinism denies liberty, because liberty appears opposed to some general principles of science, such as the principle of causality or conservation of energy, or opposed to some particular principles of some determined science, such as statistics. E. O. Wilson relies on genetics, when he says, “No species, ours included, possesses a purpose beyond the imperatives created by its genetic history.”²²

Physical Determinism, or Mechanical Determinism, denies liberty, because it maintains all our volitions are the necessary effect of the physical environment, such as the mechanical, physical and chemical forces which are acting in us.²³ Thus the determined way in which we concretely act has a unique dependence on diverse circumstances, food, temperature, the heavens, and other things of this kind. John B. Watson, founder of the Behaviorist school of psychology, maintained at first that there

²⁰Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D’Auria, 1952), 2: 199: “Determinismus non quaerit extra et supra mundum causam quae imponat necessitatem actionibus humanis, sed docet eam inveniri in ipso mundo...Multiplex datur determinismus.”

²¹Klubertanz, *Philosophy*, 381: “...evolutionism...the denial of freedom, whether or not they explicitly make this denial.”

²²Paul K. Wason, “Living Purpose: A Study of Purpose in the Living World as a Source of New Spiritual Information,” in *Spiritual Information*, ed. Charles L. Harper, Jr. (Philadelphia: Templeton Foundation, 2005), 300: “...imperatives created by its genetic history.”

²³Gredt, *Philosophiae*, 2: 418: “...legibus mechanicis subiectam...”

was no need to consider conscious states of phenomena, and ended by saying that there are no such conscious phenomena such as feeling, sensation, images, thoughts, desires, or volitions. Watson maintained that all human behavior is merely neural, muscular, or glandular movement.

Physiological Determinism denies liberty, because it maintains that the action of man is determined by diverse qualities of temperament and physiological constitution.²⁴ Thus necessarily a choleric temperament impels toward pride and anger; the sanguine toward sensuality, prodigality and vanity; the melancholy toward sorrow, envy and suspicion; and the phlegmatic toward sleep and indolence.²⁵ More recently, contemporary Naturalism, as proposed by Abraham Edel, maintains that the voluntary actions of man are not free.²⁶ The Naturalists hold that there is in nature a real emergence of novelty, a real evolution which produces higher levels of being and novel sets of laws which operate deterministically on these higher levels.

Psychological Determinism denies liberty, because it maintains the will is always determined by the stronger motive.²⁷ The will is necessitated if there is only one motive, or by the stronger of two motives. Many equal motives cause a suspension of volition, and hesitation. This point of view

²⁴Gredt, *Philosophiae*, 2: 418: "...actum voluntatis humanae ut actum reflexum..."
Maquart, *Philosophiae*, 2: 475: "Determinismus physiologicus..."

²⁵Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 206: "Quaedam istarum modificationum normales et ordinariae, aliae vero extraordinariae vel etiam alterationes vitae psychicae abnormes sunt."

²⁶Benignus, *Nature*, 267: "Human voluntary actions are determined, but they are determined by laws which are peculiar to human action...rejection of free will..."

²⁷Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D'Auria, 1952), 2: 200: "Determinismus Psychologicus...a motivo fortiori..."

presupposes Evolutionism.²⁸ Examples of the various types of Psychological Determinism are Leibniz,²⁹ Hartmann, Höffding, and Sigmund Freud.³⁰ However, that driving force of human behavior is modified by various factors, such as sensation, memory, reason, conscience (called “censor” or “super-ego”), and social pressure.³¹ These factors are frequently treated as if each were a separate agent.

Proponents of the thesis are Alfred R. Wallace and also the Neo-Scholastics. Concerning Alfred A. Wallace, he published a book entitled *Darwinism* in 1889 (thirty years after Darwin); although he strengthened the argument for natural selection, Wallace denied that evolution by natural selection could account for the origin of man’s mental, moral and sociological faculties.³² Since at least 1881, the popes in their social encyclicals and their publication of documents from the Second Vatican Council not only endorse liberty and social justice , but encourage education to build a future

²⁸Klubertanz, *Philosophy*, 375: “...presupposes evolution.”

²⁹Klubertanz, *Philosophy*, 381: “Gottfried Wilhelm Leibniz, *Theodicy* (New Haven: Yale University Press, 1952): ‘Freedom is in the spontaneous adherence to the greater good. This is akin to the Jansenist doctrine, expressed in theological terms, that the will follows the ‘victorious (greater) pleasure’.”

³⁰Maquart, *Philosophiae*, 2: 471: “Leibnizius hunc Determinismum Psychologicum profitetur...Similiter Hartmann, Höffding...” Klubertanz, *Philosophy*, 375: “In the psychoanalytic concept of man, sensory appetency, impulse, or desire is a more basic and fundamental reality than sensation (or any form of knowledge). Sensory appetency may be conceived as sense desire, libido, or “sex” (these terms are practically synonymous in Freudian writings). By way of slight modifications, sensory appetency may be considered desire for power, or achievement...”

³¹Klubertanz, *Philosophy*, 375: “...social pressure and control...”

³²Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 129: “He denied the evolution by natural selection could account for...sociological faculties.”

society that is one of justice and peace.³³ The Liberation Theologians are not just theoretical philosophers endorsing free will, but are activists, educators and personal leaders for greater justice and opportunity in society.³⁴ All these Neo-Scholastics hold that society does not grow in a blind evolutionary way, but does need to be educated for social justice and peace on every level. Among the academic Neo-Scholastics, Gonzalez³⁵ notes that whereas the Neo-Scholastics hold “man’s natural inclination, morally leading man, to form civil society.” Detracting from the dignity of man is the theory of evolutionary society or the Organic Theory of Society³⁶ holds that society arises from

³³María Alejandra Stahl de Laviero, ed., *Encíclicas Sociales* (Buenos Aires: Lumen, 1992), 5, lists ten of the major social encyclicals and conciliar documents promulgated by the popes from 1881 to 1991, and then gives the texts of the documents: Pope Leo XIII (15 May 1891) *Rerum Novarum*; Pope Pius XI (15 May 1931) *Quadragesimo Anno*; Pope John XXIII (15 May 1961) *Mater et Magistra*; Pope John XXIII (11 April 1963) *Pacem in Terris*; Pope Paul VI (26 March 1967) *Populorum Progressio*; Pope Paul VI (7 December 1965) *Gaudium et Spes*; Pope Paul VI (14 May 1971) *Octogesima Adveniens*; Pope John Paul II (14 September 1981) *Laborem Exercens*; Pope John Paul II (30 December 1987) *Sollicitudo Rei Socialis*; and Pope John Paul II (1 May 1991) *Centesimus Annus*. Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 619: in his treatment of “*Questio Oeconomica-Socialis*” gives a more detailed bibliography under the headings: papal documents, commentaries, more general Catholic social works, Catholic economic teaching, specialized works, and the history of Catholic economic thought.

³⁴Klubertanz, *Philosophy*, 354: “...the philosophy of human nature, thought it is complete in itself in one way, also points beyond itself to the philosophy of human action: to moral philosophy (ethics) or the philosophy of the goodness of human action and of human nature, both as man is an individual and as he is a member of societies.”

³⁵Irenaeo Gonzalez, “Ethica,” in *Philosophicae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 763: “Inest homini naturalis inclinatio, illum moraliter cogens, ad societatem civilem efformandam.”

³⁶Gonzalez, “Ethica,” 3: 766: “Ita loquuntur evolutionistae omnes cum Spencer, Darwin; positivistae cum Comte; ac pantheistae cum Hegel.” Raymundus Sigmond, *Philosophia Socialis* (Rome: Angelicum, 1959), 32, cites St. Thomas that man is a social animal (Aquinas *De Regimine Principum* 1. 1. 1): “Naturale est homini ut sit animal sociale et politicum in multitudine vivens, magis quam omnia alia animalia: quod quidem naturalis necessitas declarat.” Confer: Aquinas *Summa Contra Gentiles* 3. 85; Aquinas *Summa Theologiae* 1. 96. 4.

absolute necessity according to a force of social instinct of sense nature, transmitted by the law of heredity through generation, and with a necessity determined by evolution; so Organic Theory of Society holds that society is just an organism, produced by means of evolution. This is directly contrary to the doctrine of Jean Jacques Rousseau (1712-1778) on the social contract, which was also endorsed by Thomas Hobbes (1588-1679). These two philosophers differ only because Hobbes thought the primitive state of man was antisocial, while Rousseau thought primitive man extra-social (outside society). Therefore, Rousseau and Hobbes also implicitly deny sociobiology.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue. Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, not every action of man is free, but some actions are “acts of man” and others are limited by sleep, hypnosis, drug use, alcohol, mental illnesses. Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

The human will can be defined as the spiritual appetitive faculty which tends toward the good apprehended by the intellect.³⁷

A free act (also called a “human act”) is an act that proceeds from a deliberate will, an act in

³⁷Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D’Auria, 1952), 2: 191: “Voluntas definiri potest: facultas appetitiva spiritualis, quae tendit in bonum apprehensum per intellectum.”

which man is the master.³⁸ Free means indifferent, and not determined to one choice, and not necessary since the object of the act is good but does not appear entirely good.³⁹ A free act can be perfectly free, if it proceeds from perfect deliberation. A free act can be imperfectly free, if it proceeds from imperfect deliberation, done with imperfect use of reason, without full attention.⁴⁰

An “act of man”, opposed to “human act,” is an act that comes from man but is not free. Examples of an “act of man” are acts done without thinking, such as breathing or digestion; spontaneous acts from instinct or non-deliberate acts; or a necessary act in which the object of the act is good from every aspect, e.g., the vision of God.⁴¹

Liberty is the property of the will by which man is master of his own acts; or by which the will, given everything required for action, is able to act or not act; it is the dominative power of the will

³⁸Franciscus Xav. Calcagno, *Philosophia Scholastica: Ethica*, vol. 3, 3rd ed. (Naples: M. D’Auria, 1958), 3: 7: “Actus liber est actus qui procedit a voluntate deliberata, actus cuius homo est dominus.”

³⁹Philippus Soccorsi, *Quaestiones Scientificae cum Philosophia Coniunctae: De Physica Quantica* (Rome: Gregorian University, 1956), 270: “Thesis philosophica non affirmat actionem determinatam ad unum nisi de agentibus physicis substantialibus, prout instructa sunt omnibus proprietatibus et auxiliis necessariis et sufficientibus ad agendum.”

⁴⁰Calcagno, *Philosophia*, 3: 8: “...imperfecte liber si procedit ex deliberatione imperfecta, fit per imperfecto usu rationis, sine plena advertentia, v.g. in motibus imperfecte deliberatis.

⁴¹Calcagno, *Philosophia*, 3: 8: “...liber...actus humanus; ...non libere dicitur actus hominis...”

over its own act.⁴² There are three kinds of liberty.⁴³ Most important, “liberty of exercise” (also called liberty of contradiction) consists in this, that the cause, when everything requisite for action is ready, may be indifferent to two contradictories, which are to act or not to act. Secondly, “liberty of specification” implies an indifference of the will for exercising acts of different species, such as walking, eating, or teaching. Thirdly, “liberty of contrariety” is the power of exercising acts not only diverse, but also contrary, such as love and hate of the same thing. Note that the second and third modes of liberty are really the multiplication of liberty of exercise.

Note that even though the Neo-Scholastics endorse human liberty, some acts distinguished by the Neo-Scholastics are either limited in liberty, or not free. The free act can be “imperfectly free,” as noted above. The “act of man” is not called free, as noted above.

Question Needing A Reply

Given free will and liberty, is social evolution likely? Do the principle modifications of rational psychic life include social evolution? Is social evolution an equivocal predication of the term “evolution”?

⁴²Calcagno, *Philosophia*, 3: 7: “Libertas est proprietas voluntatis qua homo est dominus suorum actuum; vel qua voluntas, positis omnibus requisitis ad agendum, potest agere vel non agere; est potestas dominativa voluntatis super suum actuum.” Greder, *Philosophiae*, 2: 417: “Libertas igitur arbitrii definitur: activa indifferentia ab intrinseco, vi cuius voluntas potestatem dominativam super actum suum habet.”

⁴³Calcagno, *Philosophia*, 2: 198: “Triplex modus libertatis...libertas exercitii vel contradictionis...libertas specificationis....libertas contrarietatis...”

The Thomistic Foundations

Does St. Thomas teach free will and human liberty? Yes, he does. St. Thomas says, “Of the actions done by man, only those are called human which are properly of man in so far as human. Man differs from irrational creatures in this that man is the master of his own acts. Whence these actions are called properly human, of which man is the master. It is man who is the master of his actions by reason and will; whence free will is called a faculty of the will and reason. Therefore, those actions are called properly human which proceed from a deliberate will. Any other acts that arise from man are able to be called ‘acts of man’ but not properly human acts, since they are not from man in so far as he is human” (Aquinas *Summa Theologiae* 1-2. 1. 1).⁴⁴ Therefore, it appears that personal freedom is more important for St. Thomas than social evolution, which, if it exists, would have to arise from “acts of man” and not properly human acts.

Does St. Thomas treat the human will in any extensive way? Yes, he does, because St. Thomas views the will as important, for through it man’s actions, as just seen, are “properly human.” St. Thomas views the will as the faculty (power) by which man perceives his own goals and seeks to realize them.⁴⁵ Some principle places St. Thomas treats the will are in the *Summa Theologiae*

⁴⁴Calcagno, *Philosophia*, 3: 7: “Actionum quae ab homine aguntur illae solae proprie dicuntur humanae, quae sunt propriae hominis in quantum est homo. Differt autem homo ab aliis irrationalibus creaturis in hoc quod est suorum actuum dominus. Unde illae actiones vocantur proprie humanae, quorum homo est dominus. Est autem homo dominus suorum actuum per rationem et voluntatem; unde et liberum arbitrium esse dicitur facultas voluntatis et rationis. Illae ergo actiones propriae humanae dicuntur, quae ex voluntate procedunt. Si quae autem aliae actiones homini convenient, possunt dici hominis actiones, sed non proprie humanae, cum non sint hominis in quantum est homo” (Aquinas *Summa Theologiae* 1-2. 1. 1).

⁴⁵Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Dominicano, 1991), 666: “Voluntà è la facoltà (potere) con cui l’uomo persegue i propri fini e cerca di realizzarli.” Ibid., “...*Summa Theologiae*...De Malo...De Veritate...” Ibid., “...le questioni principali ...il suo oggetto, le sue qualità, il suo rapporto con

(Aquinas *Summa Theologiae* 1. 80; Aquinas *Summa Theologiae* 1. 82; Aquinas *Summa Theologiae* 1. 83); in his work *De Malo* (Aquinas *De Malo* 3; Aquinas *De Malo* 6); and in his work *De Veritate* (Aquinas *De Veritate* 22). The types of issues St. Thomas proposes in order to investigate the will are: the object of the will, the freedom of the will, the rapport of the will and the intellect, and the rapport of the will and the passions. Assuming the possibility of social evolution, the treatment of St. Thomas implicitly touches the issue of social evolution in a number of ways. Is social evolution involved as essentially determining in the object of the will? Would the will be essentially free despite social evolution? Is the will essentially determined by the higher powers of humans like the intellect, so that if social evolution could influence those higher powers, it would be a human act? Does social evolution significantly determine the passions or any powers of man below the intellect? St. Thomas implicitly answers in the negative to all these questions. As will be seen from the texts below, social evolution is unlikely in the view of St. Thomas.

Does St. Thomas treat the object of the human will? Yes, he does, and it appears that social evolution could not be essentially determining the will. St. Thomas maintains, “The will is the faculty by which man tends to good, and the ‘definitely universal good,’ because this good alone is fully satisfying” (Aquinas *Summa Theologiae* 1. 82. 1).⁴⁶ So the “definitely universal good” determines the will, but in the concrete, social evolution is not clearly the definitely universal good that man must choose. So man is free to choose the particular goods, as St. Thomas notes, “The will does nothing

l’intelletto e il suo rapporto con le passioni.”

⁴⁶Mondin, *Dizionario*, 46: “La volontà è la facoltà con cui l’uomo tende al bene, e in definitiva al bene universale, perché solo questo bene la può appagare pienamente” (Aquinas *Summa Theologiae* 1. 82. 1).

unless it is moved by its object which is the desirable good” (Aquinas *De Veritate* 14. 2).⁴⁷

Does St. Thomas treat freedom of the will? Yes, he does, and it appears that social evolution does not essentially limit freedom of the will. St. Thomas maintains, “Reason in all particular goods can observe the aspect of good or the deficiency of good, which presents itself as evil; and basically from this (observation) one can apprehend each of these goods as worthy of choice or flight” (Aquinas *Summa Theologiae* 1-2. 13. 6).⁴⁸ In the concrete, the intellect presents various goods to the will, and unless social evolution is the “definitely universal good,” man is free to choose social evolution or not. This freedom is clear as St. Thomas teaches, “The will remains free before any object of choice even if it is naturally determined to desire happiness, but it is not determined by this or that object in particular” (Aquinas *Scriptum in Liber Sententiarum* 2. 25. 1. 2).⁴⁹ In fact, St. Thomas (Aquinas *De Veritate* 22. 6) assigns a triple liberty to the will: of exercise to act or not, of specification to do this or that, and of contrariety to chose the good or the evil.⁵⁰

Does St. Thomas treat the essential rapport of the will to the intellect? Yes, he does, and it appears that social evolution does not essentially determine the higher powers of man, thus making

⁴⁷Mondin, *Dizionario*, 668: “Voluntas nihil facit nisi secundum quod est mota per suum obiectum quod est bonum appetibile” (Aquinas *De Veritate* 14. 2).

⁴⁸Mondin, *Dizionario*, 46: “La ragione in tutti i beni particolari può osservare l’aspetto buono oppure le sue dificienze di bene, che si presentano come un male; e in base a ciò può apprendere ciascuno di tali beni come degno di elezione o di fuga” (Aquinas *Summa Theologiae* 1-2. 13. 6).

⁴⁹Mondin, *Dizionario*, 667: “In omnibus quae sub electione cadunt, voluntas libera manet, in hoc solum determinationem habens quod felicitatem naturaliter appetit et non determinate in hoc vel illo” (Aquinas *Scriptum in Liber Sententiarum* 2. 25. 1. 2).

⁵⁰Mondin, *Dizionario*, 667: “San Tommaso (Aquinas *De Veritate* 22. 6) assegna alla volontà una triplice libertà: di esercizio (agire o non agire); specificazione (fare questo o quello); e contrarietà (compiere il bene oppure il male)”

social evolution a human act. The sovereignty of the will is so extensive that it extends beyond its own acts even to the acts of other faculties: a person studies if he wishes to study, or a person goes for a walk if he wants to go for a walk. St. Thomas says, “The will has supremacy (*principalitatem*) over all human acts, given that as far as it is most free it inclines all the other potencies toward their acts... and in fact the intellect can consider or not (*considerare et non considerare*), according to how it may be endowed, or not, by the will; and as much can be said about the other appetites and even the very external acts of movement, such as to speak or be silent, to walk around or be seated” (Aquinas *Scriptum in Liber Sententiarum* 2. 35. 1. 4).⁵¹

Does St. Thomas treat the non-essential rapport of the will to the passions? Yes, he does, and it appears that social evolution does not significantly determine the passions or powers below the intellect of man. Of all the human faculties, only the will has the privilege of being free, and St. Thomas (Aquinas *Scriptum in Liber Sententiarum* 2. 39. 1. 1. ad 3) describes this freedom with the word *liberrima*, “most free.”⁵² The only exception for the will is the necessary choice of the “universal good.” The senses, imagination, memory, and intellect are necessarily determined by their object. However, for choice in the concrete, any good that determines the passions or other faculty has to be submitted to the will. The passions and other faculties do not determine the will, as St. Thomas notes, “The movement of the will has no place for the exclusive domination of the passions; even if there is a

⁵¹Mondin, *Dizionario*, 667: “La volontà ha la supremazia (*principalitatem*) su tutti gli atti umani, dato che in quanto liberissima inclina tutte le potenze verso i loro atti...Infatti l’intelletto può studiare o non studiare (*considerare et non considerare*), a seconda che vi sia indotto o no dalla volontà; altrettanto dicasi per l’appetito concupiscibile; lo stesso vale per gli stessi atti esterni del movimento, come parlare e non parlare, camminare e non camminare ecc.” (Aquinas *Scriptum in Liber Sententiarum* 2. 35. 1. 4).

⁵²Mondin, *Dizionario*, 667: “Quia voluntas liberrima est...” (Aquinas *Scriptum in Liber Sententiarum* 2. 39. 1. 1. ad 3).

movement of the will and then it does not have to follow the impulse of the passions” (Aquinas *Summa Theologiae* 1-2. 10. 3).⁵³

Concerning the necessity of social evolution, if it exists, the texts of St. Thomas can be examined in the light of two more questions. Does man as an individual need social evolution? Does society need social evolution? If the natural necessity is not present for the individual or society, then social evolution is unlikely. St. Thomas appears to incline to that opinion, that there is no necessity for any social evolution.

Does St. Thomas teach that man, the apex of creation, need social evolution individually? No, he does not, when St. Thomas maintains, “The person (of man) is what is most perfect in all of nature” (Aquinas *Summa Theologiae* 1. 29. 3).⁵⁴ St. Thomas also states, “After this (the life of man) no later and more noble for is to be found in things that are generated and corrupted” (Aquinas *Summa Contra Gentiles* 3. 22).⁵⁵ Then, there does not seem to be a natural necessity of social evolution for man, the individual, either continuing (“not later”) or better (“no...more noble”).⁵⁶

⁵³Mondin, *Dizionario*, 668: “Il movimento della volontà non ha luogo e domina esclusivamente la passione; oppure si dà il movimento della volontà e allora essa non segue necessariamente l’impulso della passione” (Aquinas *Summa Theologiae* 1-2. 10. 3).

⁵⁴Jesu Iturroz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 757: “Persona significat id quod est perfectissimum in tota natura” (Aquinas *Summa Theologiae* 1. 29. 3). Confer: Aquinas *Summa Theologiae* 1. 30. 4.

⁵⁵Brother Benignus, *Nature, Knowledge and God: An Introduction to Thomistic Philosophy* (Milwaukee: Bruce, 1947), 501: “After this (life of man) no later and more noble form is to be found in things generated and corrupted” (Aquinas *Summa Contra Gentiles* 3. 22).

⁵⁶La Vecchia, *Evoluzione*, 319: “Ciò evidenzia che nel processo di Ominazione, ormai definitive compiuto, l’uomo divenuto tale, aveva raggiunto l’apice dello sviluppo delle sue potenzialità.”

Does St. Thomas teach that society is in need of some determinants in the form of social evolution? No, he does not. St. Thomas teaches that society is a group of men joined for some common action” (Aquinas *Contra Impugnantes Dei Cultum et Religionem* 3).⁵⁷ There is a debate about the rapport between the individual and society. Some solve the problem individualistically, and the result is Liberalism or Individualism. Some solve the problem collectivistically, and the result is Communism or Totalitarianism. St. Thomas adopts an intermediate solution by distinguishing on the one hand what belongs to the ultimate goal of the person (including the supernatural goal of eternal life) and on the other hand what contributes to the realization of the common good of society.⁵⁸ In both cases, man’s goals and the common good, it seems that the use of reason is the determinant of social good rather than blind evolutionary social determination. Therefore, there does not seem to be a natural necessity for the social evolution of man in society. There may be an added reason given by Aquinas, who notes, “Whatever comes to some thing, after it has been constituted, is in that thing as an addition (*accidentaliter*, rather than substantially)” (Aquinas *De Potentia* 7. 1. obj. 9).⁵⁹ Therefore, if social evolution should exist, it would be an addition to the free will determinants already in society to determine personal good and the common good.

⁵⁷Raymundus Sigmond, *Philosophia Socialis* (Rome: Angelicum, 1959), 45: “Societas nihil aliud videtur quam adunation hominum ad aliquid communiter agendum” (Aquinas *Contra Impugnantes Dei Cultum et Religionem* 3).

⁵⁸Mondin, *Dizionario*, 570: “...il Liberalismo...il Comunismo, il Totalitarismo...San Tommaso adotta una soluzione intermedia...”

⁵⁹Sigmond, *Philosophia*, 45: “Quidquid autem adveniti alicui rei post esse constitutum, inest in ei accidentaliter” (Aquinas *De Potentia* 7. 1. obj. 9).

The Scholastic Solutions

First, given free will and liberty, is social evolution likely? It appears that the Neo-Scholastics opt strongly for free will and liberty, so that significant social evolution is not likely.

Benignus endorses free will and liberty.⁶⁰ One agent, man, moves himself to judge and to choose according to this judgment. Choice is the act by which a rational agent voluntarily determines its own action by means of a free judgement. Will and intellect, together in a single act, give each other the ultimate determination required for actual choice. The intellect is the formal cause. The will is the efficient cause. The will has an absolute priority, since as efficient cause and first moving power in man, it moves itself, the intellect, and all other powers over which man has control. Since the will has absolute priority, intellectual determinism is avoided. The sufficient reason for choice is a particular good. By being sufficient, it enables the will to act. By being only sufficient, not necessitating, it leaves the will free to act or not to act, to do this or that.

Calcagno endorses free will and liberty with arguments *a priori*.⁶¹ His first argument, which he takes from St. Thomas (Aquinas *De Malo* 6. ad 7), is from the way in which rational nature moves toward something good. Calcagno argues:⁶² The tendency of the will to the good as such must be

⁶⁰Benignus, *Nature*, 283: “Choice is the act by which a rational agent voluntarily determines its own action by means of a free judgment...Choice, though free, has a sufficient reason...not a necessitating reason...”

⁶¹Calcagno, *Philosophia*, 2: 203: “Existencia libertatis demonstratur a priori...Ex ipsa propria indole naturae rationalis libertas arbitrii necessario consequitur.”

⁶²Calcagno, *Philosophia*, 2: 204: “Tendentia in bonum absolute spectatum, qualis est tendentia voluntatis, non necessatur nisi ab obiecto in quo ratio boni, ut sic, plenarie et perfecte absolvitur, tum secundum rei veritatem, tum secundum modum quo apprehenditur. Atqui, plurima dantur bona in quibus hae conditiones desirantur, ea scilicet, quae vel imperfecta sunt, vel saltem non sunt perfecte cognita. Ergo plurima dantur bona quae voluntatem non movent necessario, quaeque proinde salvum in ea relinquunt dominium suorum actuum, hoc est liberum

fully and perfectly completed, both according to the truth of the thing and also according to the way by which it is apprehended. But there are many good things in which these conditions are not verified, that is, the thing is imperfect or at least the thing is not perfectly known. Therefore, there are many good things that do not necessitate the will, and so leave man the master of his own acts, which is free will. The second argument of Calcagno, which he takes from St. Thomas (Aquinas *Summa Theologiae* 1-2. 13. 6), is from the way in which the intellect presents good to the will. Calcagno argues:⁶³ The will does not move forward unless toward a good apprehended by the intellect; so the will moves toward the good proposed by the intellect. But there are many things proposed by the intellect that are good and desirable under one aspect, and at the same time that are bad and undesirable under another aspect; this can happen in all imperfect goods or in a good imperfectly known. Therefore, the will must be related to this good, either that it is able to follow the intellect in desiring the good proposed, or it is able not to follow what is proposed by the intellect and flee the thing proposed. But again, this is the definition of free will. Therefore, liberty of choice must be admitted in the will. Liberty is the answer that Calcagno gives to deny that civil societies evolve.⁶⁴

arbitrium.”

⁶³Calcagno, *Philosophia*, 2: 204: “Voluntas non fertur nisi in bonum per intellectum apprehensum; unde in bonum fertur, prout ab intellectu proponitur. Atqui, intellectus, ut plurimum, in iis quae voluntati appetenda proponit, simul iudicat propter unam rationem bonum esse appetere, seu rem esse appetibilem, et propter aliam rationem bonum esse non appetere, seu rem esse fugibilem; quia in omnibus bonis imperfectis, vel imperfecte cognitis, potest considerare rationem boni alicuius, et defectum alicuius boni, qui habet rationem mali. Ergo, voluntas sic se habere debet circa ista bona, ut possit ea prosequi volendo, et possit non prosequi aut etiam aversari. Atqui rursus in hoc consistit libertas arbitrii. Ergo libertas arbitrii admittenda est in voluntate.”

⁶⁴Calcagno, *Philosophia*, 2: 216: “Historia diversorum populorum praesefert magnam similitudinem et uniformitatem in modo quo societates civiles evolvuntur...Respondeo: Distinguo Maiorem: ... uniformitatem strictam et rigorosam, ut in ordine physico, Nego; aliqualem

Calcagno endorses free will and liberty with arguments *a posteriori*.⁶⁵ His first argument is from the testimony of consciousness. Prior to the argument, it must be said that liberty is not an immediate data of consciousness, but is deduced from the operations. The same is true about “sensible things *per accidens*” such as “life,” since no one perceives life directly, but easily knows a thing is alive by its immanent activity. Calcagno argues:⁶⁶ Before action, humans deliberate, seek motives, and ask for advice. During the action itself, humans know that the action is the same thing in the same circumstances as what was chosen, or not chosen; and this is perceived by our senses as we smell a flower or walk with a friend. After the action, humans impute to themselves the good or bad choice. Therefore the experience of deliberation, mastery of action, and imputability all lead to the easy judgment of human free will in many human activities. The second *a posteriori* argument is from the testimony of common sense. Calcagno argues:⁶⁷ An opinion ought to be held as true, if the opinion is constantly and universally admitted by the whole human race; if the opinion does not originate from some erroneous cause; and above all if the opinion is consonant with the principles of reason. But

uniformitatem in sensu valde lato, Transeat. Explico: Haec autem uniformitas in modo operandi optime explicatur ex identitate naturae in cunctis hominibus...nam praecise propter libertatem, possunt etiam aliter agere, et plures revera aliter agunt.”

⁶⁵Calcagno, *Philosophia*, 2: 200: “Existentia liberi arbitrii demonstratur a posteriori...Ex conscientiae testimonio, et ex communi naturae sensu, manifeste ostenditur hominem in suis actibus libertate arbitrii gaudere.”

⁶⁶Calcagno, *Philosophia*, 2: 201: “Antequam...deliberamus...In ipsa actione, sentimus nos eamdem rem in iisdem adiunctis modo velle, modo respuere...Post actionem, saepe imputamus...Ergo ex conscientiae testimonio omnino constat nos in multis actibus libertate gaudere.”

⁶⁷Calcagno, *Philosophia*, 2: 202: “Tenenda est tamquam vera sententia: quae constanter et universaliter admittitur a toto genere humano; quae oriri non potuit a causa aliqua erroris; quae apprimè concordat cum principiis rationis. Atqui, talis est sententia tenens hominem esse liberum in suis actibus.”

free will is such an opinion, and even the Determinists, who speculatively deny liberty, practically act in a way that exhibits belief in free will, such as acquiring material goods, striving for rewards, and speaking of virtue and vice. Therefore, free will in many human activities is proved by the testimony of common sense.

De Finance endorses human liberty.⁶⁸ He notes that the ordination of the universe to man is found in the order of essences. However, because divine action respects the activity of natures, it suppresses neither contingency, nor liberty. De Finance bases his views on St. Thomas (Aquinas *Summa Contra Gentiles* 3. 72; Aquinas *Summa Contra Gentiles* 3. 73; Aquinas *Summa Contra Gentiles* 3. 74).

Gredt endorses human liberty.⁶⁹ Gredt offers three arguments for liberty. First, an argument *a posteriori*, the testimony of consciousness confirms free will, so that I can change my will or the object of my desire. Second, an indirect argument, the denial of free will would destroy morality. Third, an argument *a priori*, that an elicited appetite, following a practical cognition which is indifferent about the goodness of a thing, is endowed with liberty. But the will is such an elicited appetite, which follows a practical cognition which is indifferent about the goodness of a thing; this is because the practical cognition is about a limited good, or is inadequately proposed.

⁶⁸Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome:Gregorian University, 1960), 325: “L’ordination de l’univers à l’homme serait donc à chercher dans l’ordre des essences. Mais parce que l’action divine respecte les natures en les mouvant, elle ne supprime ni la contingence, ni la liberté...”

⁶⁹Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 417: “Voluntas humana praedita est libertas arbitrii.”

Hugon endorses human liberty.⁷⁰ Hugon argues to the free will in three ways. First, the existence of free will has always and universally been maintained by all people, which is limited by human laws, rewarded by prizes and praise, and linked with the universal notion of morality. Second, humans are conscious that some of their acts are free and other acts are necessary, but this distinction would not be necessary if all acts were necessary. The third, and fundamental, proof is that the will follows the good proposed by the intellect, and although happiness is the necessary goal, the particular goals may be proposed by the intellect as indifferent; and that indifference is liberty. Therefore, a rational substance enjoys liberty.

Iturrioz endorses human liberty. In his metaphysical treatment of the definition of person, he begins by noting that a person is a rational supposit or an intellectual supposit. He adds, “Rational nature is conscious of itself also through reflection, and so it can intentionally possess itself; it is also free, and therefore a person has and exercises control of itself and its own acts.”⁷¹ Iturrioz also argues *a posteriori* by noting the reduction of human dignity and human participation: in favor of the “state” in Hegel’s totalitarian idealism; in favor of the “nation” in Nazism and racism; and in favor of proletarian collectivity in Marxist Communism.⁷²

⁷⁰Hugon, *Metaphysica*, 164-169: “Prima libertatis demonstratio: testimonium sensus communis...Secunda demonstratio: testimonium conscientiae...Fundamentalis probatio: naturae substantiae rationalis...”

⁷¹Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 756: “...persona...natura enim rationalis est *consciens* sui etiam per reflectionem, et se se etiam intentionaliter possidet; est etiam *libera*, ideoque dominium sui et suorum actuum habet et exercet.”

⁷²Iturrioz, “Metaphysica,” 1: 760: “...persona humana in partem socialem reducitur...”

Klubertanz endorses human liberty.⁷³ Evolutionism necessarily involves the denial of freedom. Klubertanz gives a critique of this denial. Psychological determinism rests on an equivocation in the term “the greater good.” The greater good could mean greater from my point of view; or greater because it is just better than the other good; or greater simply because this is the one I want.

Maquart endorses human liberty.⁷⁴ He notes that liberty exists from the testimony of intellectual consciousness. Liberty is manifest when someone says, “I judge,” or “He judges.” The argument for liberty is that humans do deliberate before various acts. In regard to free will, we are conscious that we can choose “the other thing”; we are conscious that we are not forced; we are conscious that “we” personally have a choice.

Nogar rejects Marxist social determinism.⁷⁵ Nogar says, for Karl Marx (1818-1883) “...since there is nothing absolute, eternal and immutable according to the assertion of Evolutionism, the process of becoming (evolution) had to explain the origin of everything, including the society, the

⁷³Klubertanz, *Philosophy*, 381: “Evolutionism...necessarily denies freedom...psychological determinism rests on an equivocation in the term ‘the greater good’.”

⁷⁴F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andres Blot, 1937), 2: 471: “Hominem libertate praeditum esse testatur conscientia intellectiva.”

⁷⁵Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 208: “Karl Marx...ideology of communism, officially known as dialectical materialism.” Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994), 228: “Marx and Engels (1820-1895) ‘own Materialism was a development of the limited Materialism of Feuerbach...all material or rooted in...could now be extended from the mechanical interactions of matter to biological problems and even to social life, including philosophy.’” Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 60: “Harum tendentiarum fructus est hodiernus Communismus, qui minimum utique habet valorem philosophicum, cum sese ad rem et vitam practicam convertens veritatis inquisitionem philosophicam contemnat.”

morals, the laws, the philosophies, and the religions of man.”⁷⁶ Marx completed his *Communist Manifesto* in November 1847. From G. W. G. Hegel (1770-1831), Marx took the idea that all is becoming. From Feuerbach, Marx changed Hegel’s Idealism to Materialism. From Darwin, Marx got the scientific basis for his theory of class struggle.⁷⁷ From the French Socialist P. Proudhon, Marx had the insight that the dialectic worked in society. From the Liberal English Economists, Marx took his main economic theses.⁷⁸

Palmer endorses human liberty.⁷⁹ He defines liberty as immunity and exemption from necessity in the physical and psychic order. This means freedom from coercion, or applied extrinsic force, and also freedom from the intrinsic necessity of an active potency. Palmer argues that the reality of free will is demonstrated by four different arguments: first, from human consent based on the practical persuasion of its reality; second, from facts of experience; third, by a deduction from the very rational nature of man; and fourth, from the metaphysical connection of free will with the reality of the moral order.

Secondly, do the principle modifications of rational psychic life include social evolution? The

⁷⁶Nogar, *Wisdom*, 210: “...including the society...”

⁷⁷Nogar, *Wisdom*, 208: “By Marx’s own admission, Darwin’s theory gave him the basis for his theory of class struggle. Marx wanted to dedicate *Das Kapital* to Darwin, but the story is that Darwin declined.”

⁷⁸Gonzalez, “Ethica,” 3: 637: “...denique ab oeconomistis liberalibus anglicis praecipuas theses oeconomicas.”

⁷⁹Ferdinando M. Palmer, “Psychologia,” in *Philosophiae Scholasticae Summa*, vol. 2, eds. Professores Societatis Iesu (Madrid: BAC, 1959), 2: 694: “Realitas liberi arbitrii humani philosophice demonstratur: Ex humani generis consensu in persuasione practica de eius realitate; Ex factis experientiae; Deductione ex ipsa natura rationali hominis; et Ex connectione metaphysica liberi arbitrii cum realitate ordinis moralis.”

Neo-Scholastics reject determinism and do not include social evolution as a significant modification of man's psychic life. Nevertheless, the Neo-Scholastics do admit that there are passive modifications of the rational psychic life, which can be detected by consciousness.

Benignus rejects Physical Determinism, or Behaviorism, as proposed by John B. Watson, a purely *a priori* theory based on the assumption that nothing but matter is real, and that all human actions are automatic.⁸⁰ According to Benignus, there is no evidence, even incomplete or inconclusive evidence, for Behaviorism. Reflex action is a reality, but is not a sufficient reason to assume that all voluntary actions are automatic, and only differ from reflex action by virtue of the greater complexity of the voluntary actions. Behaviorism identifies the mind with the body, or better to say that Behaviorism denies the mind and the mental. John B. Watson, founder of the Behaviorist school of psychology, maintained at first that there was no need to consider conscious states of phenomena, and ended by saying that there are no such conscious phenomena such as feeling, sensation, images, thoughts, desires, or volitions. Watson maintained that all human behavior is merely neural, muscular, or glandular movement.

Benignus rejects Physiological Determinism, such as contemporary Naturalism, as proposed by Abraham Edel, which maintains that the voluntary actions of man are not free.⁸¹ The Naturalists hold that there is in nature a real emergence of novelty, a real evolution which produces higher levels of being and novel sets of laws which operate deterministically on these higher levels. This would

⁸⁰Benignus, *Nature*, 261: "There is no evidence for Behaviorism...Every movement of conscious awareness is sufficient evidence to disprove Behaviorism absolutely."

⁸¹Benignus, *Nature*, 267: "Human voluntary actions are determined, but they are determined by laws which are peculiar to human action...rejection of free will...Hence metaphysical freedom of will must be rejected...It would destroy the conception of responsibility for our voluntary behavior."

prevent control of man's own action, since man could not control the causes and conditions that determine action. With such uncontrollable conditions, man could not be morally responsible for actions that simply spring into his being spontaneously. Man would have no hope of consciously bettering society. Naturalists are not free from the dogma of Materialism.⁸² Regarding Psychological Determinism, Hugon also notes that physiological conditions, passions, and inclinations can disturb reason and remove liberty in some cases, but these things cannot destroy free will.⁸³ Hugon maintains that the physical conditions for liberty may be lacking in these cases, but the potency for liberty is not destroyed.

Benignus rejects Psychoanalytic Theory, or Psychological Determinism, proposed by Sigmund Freud, which holds that certain inner drives, "unconscious" or "subconscious," of which we are not consciously aware and influence our voluntary actions.⁸⁴ This theory makes our hidden desires and fears the *determinants* of our "voluntary" actions. Actually, there are "bodily dispositions" resulting from heredity, illness, as well as all our past experiences, many of which have been forgotten. However, none of these phenomena are evidence against free will. Calcagno answers all the objections of Leibniz, by maintaining freedom of choice, unless the motive is perfect and perfectly

⁸²Benignus, *Nature*, 275: "Naturalists...not yet free from the dogma of Materialism..."

⁸³Hugon, *Metaphysica*, 176-177: "Conditiones physiologicae, passioness, inclinationess morales necessitatem imponunt...Deficiunt ego physiologicae conditioness libertatis, non ipsa libertatis potentia..."

⁸⁴Benignus, *Nature*, 276: "...Psychoanalytic Theory, which makes our hidden desires and fears the determinants of our voluntary actions..." Ibid., 277: "...no evidence against the fact of free will..."

known.⁸⁵ Hugon also rejects Psychological Determinism.⁸⁶ Palmes argues that all the rational operations of the soul are elicited by it from the intellect and the will whose operations cannot be unconscious either “in an active sense” or “in the passive sense.” Actively, the will chooses the good object presented it by the intellect and cannot rationally choose something either not presented or not known as good; so in the active sense (*in sensu activo*) there cannot be unconscious rational operations. Passively, man cannot be moved by unconscious rational operations in the passive sense (*in sensu passivo*), as in by his organs of sensation, since to be unconscious passively is to be unknown or ignorant of some higher cognositive principle in the same human being; but in humans there is no higher principle than intellect and will.⁸⁷

Hugon rejects Scientific Determinism. In reply to the objection that free will would cause variations and mutations in the energy forces in the universe, and consequently violate the Law of Conservation of Energy, Hugon replies, “The operation of the will does not produce any material or mechanical energy.”⁸⁸

Donat admits modifications of rational life due to temperament, sex and age.⁸⁹ Temperament had to do with the diverse characters of ordinary appetite founded in the native disposition of the

⁸⁵Calcagno, *Philosophia*, 2: 220: “Responsio ad tres hypotheses Leibnitzianas.”

⁸⁶Hugon, *Metaphysica*, 175: “Refellitur determinismus psychologicus.”

⁸⁷Palmes, “Psychologia,” 2: 733: “Quod impossibles sint operationes inconsciae in psychismo rationali...”

⁸⁸Hugon, *Metaphysica*, 171: “Determinatio enim libertatis est actus facultatis penitus spiritualis...Consequenter operatio huiusmodi non est productio alicuius energiae materialis et mechanicae.”

⁸⁹Joseph Donat, *Psychologia*, 3rd ed. (Innsbruck: Rauch, 1914), 206: “Quaedam istarum modificationum normales et ordinariae, aliae vero extraordinariae vel etiam alterationes vitae psychicae abnormales sunt.”

body. Sexual diversity also has an effect of diverse psychic properties. Age also causes psychic modifications. Donat notes that although these modify rational life, they can be considered “normal” modifications.⁹⁰

Donat admits modifications of rational psychic life due to background or nationality.⁹¹ This can happen due to diverse social conditions, or diverse way of life. These kinds of diversity do affect rational thought, but are normal.

Palmes admits modifications of rational psychic life due to lack of attention.⁹² Palmes defines attention as the application of the mind to some object. Formally, attention is an act of applying cognition to something. Attention considers the cause of attention, which could be principle or secondary, immediate or remote, absolutely necessary or sentimental. Palmes notes that the force of attention is due in large part to the free will of man.⁹³ Attention can and does influence the rational psychic life of man.

Palmes admits modifications of rational psychic life due to dreams and hypnosis.⁹⁴ Dreams in

⁹⁰Donat, *Psychologia*, 206: “De modificationibus normalis.”

⁹¹Donat, *Psychologia*, 206: “Stirpes, nationes pariter...varie inter se spectata indole psychia differr conspiciuntur.”

⁹²Palmes, “*Psychologia*,” 2: 717: “Confundunt, illi qui sic loquuntur, attentionem formalem, de qua agimus, cum effectum attentionis. Effectum cognitum, intensius quidem, clarius et distinctius ope attentionis percipitur quam sine attentione; non autem inde sequitur quod attentio identificetur cum claritate.” Ibid., 720: “Nulla igitur facultas specialis attentionis est admittenda realiter distincta a facultate cognoscitiva.”

⁹³Palmes, “*Psychologia*,” 2: 720: “...maxime agendo de homine, *libera eius voluntas*, quae pro libitu attentionem promovere potest.”

⁹⁴Palmes, “*Psychologia*,” 2: 732: “Somnia...operationes valde complexae...non nisi psychismo sensitivo...” Ibid., “Hypnosis...sub imperio suggestionis factae...”

normal sleep and even sleep walking occur directed, not by man's rational powers, but by man's sensitive powers (*nisi psychismo sensitivo*).⁹⁵ Hypnosis could also modify rational psychic life due to power of suggestion which operates automatically and independent of the power of reason.⁹⁶

Hugon admits modifications of rational psychic life due to the passions. He argues that this is a very important question because passions are able to be imputed to humans. He concludes that the sense appetite in man obeys the intellect and will, so that the superior part of man is not dominated by the passions despotically, but rather politically.⁹⁷ Hugon concludes that the passions are subject to the intellect, arguing that appetites in brutes are moved by the estimative force and reason is the comparable faculty in man, and noting this is confirmed by experience.

Palmes admits modifications of rational psychic life due to habits.⁹⁸ A habit is a permanent quality, stable in itself, helping a power operate beyond those things which the power naturally needs in order to act. Habits help to strengthen powers, make action easier and faster, and incline the person

⁹⁵Donat, *Psychologia*, 208: "Inter alterationes psychicas somnus una ex parte notissima est, alia ex parte...haud difficile etiam illarum natura comprehendatur...cotidiana amentia vocatur." Ibid., 209: "...ortus potissimum ex alteratione cerebri." Ibid., 213: "Somnambulismus...coniunctum cum partiali solutione vitae psychicae, ex aliqua abnormi nervorum alteratione exorta." Confer: Hugon, *Psychologia*, 314-319.

⁹⁶Donat, *Psychologia*, 214: "Hypnotismi nomine designatur status quidam somno similis cum effectibus peculiaribus coniunctis, quorum praecipuus hic est, quod subiectum hypnotizatum suggestionibus hypnotizantis subiacet." Ibid., "...schola Parisiensis (Charcot)...statum pathologicum esse tent eumque potissimum mediis physiologicis producit; schola autem Nanciensis (Liébeault, Bernheim) hypnotismum rectius ad leges psychicas alioquin notas reducit..." Confer: Hugon, *Psychologia*, 320-324.

⁹⁷Hugon, *Philosophia*, 301: "Utrum passiones et appetitus subordinentur parti intellectionis...Appetitus sensitivus in homine obedit parti superiori...pars superior non dominetur principatu despotico, sed tantum politico et regali."

⁹⁸Palmes, "Psychologia," 2: 720: "Psychologice...aliquid potentiae superadditum, quo perficitur ad suam operationem."

to be happy to perform the action.⁹⁹ Accordingly, habits affect rational psychic life.

Donat admits modifications of rational psychic life due to partial illness by alteration of perception in appetite and fantasy. Appetite problems and super-sensibility affect rational perception and become visible health problems. Donat also describes manic-depressive cases and alcoholism.¹⁰⁰ Donat describes and notes the very frequent connection between mental illness and hallucinations and illusions.¹⁰¹ Hugon also treats hallucination and illusion as an aberration of faculties.¹⁰²

Donat admits modifications of rational psychic life due to partial illness by alteration of intellect and will in moral derangement.¹⁰³ This “moral dementia” happens when a subject uses good intelligence in other things, but lacks all judgment and feeling in moral matters. There is a debate as to whether this condition is actually part of some larger mental illness.

Palmer admits modifications of rational psychic life psychic abnormalities and pathologies.¹⁰⁴

⁹⁹Palmer, “Psychologia,” 2: 723: “...potest habitum...roborare...faciliorem...maior rapiditas...libertinus...”

¹⁰⁰Donat, *Psychologia*, 230: “...ut in mania laborantibus vel in ebriis (initio) hilaritas...fere insuperabilem ad alcoholica bibenda (dipsomania).” Confer: Hugon, *Psychologia* 327: “De Ebrietate.”

¹⁰¹Donat, *Psychologia*, 230-231: “Alterationes phantasiae: Notissimae sunt hallucinationes et illusiones, quae in plerisque statibus amentiae...”

¹⁰²Hugon, *Psychologia*, 325: “Prout...vero afficit imaginationem, est hallucinatio vel illusio.”

¹⁰³Donat, *Psychologia*, 233: “Etiam sermo fit de quadam ‘dementia morali’ (moral insanity), quae dicitur esse morbus peculiaris in eo positus, quod subiectum, dum in aliis rebus integra utatur intellegentia, tantum in rebus moralis careat omni iudicio et affectu.” Ibid., “‘Non credo’ inquit Ascheffenburg, haec aegrotationem existere...similiter Lammasch...”

¹⁰⁴Palmer, “Psychologia,” 2: 731: “Ex psychopathologia...numquam ea claritate et uniformitate...tamen in psychismum conscium influentibus...” Donat, *Psychologia*, 234-235, lists neurasthenia (apparently neurosis), degeneration (apparently inherited mood problems), hysteria, epilepsy, and insanity involving depression, mania, paranoia, schizophrenia.

Psychic illnesses and complexes are admitted both commonly and by psychologists. Regarding the definition of various psychic illnesses clarity and uniformity are hard to obtain. It is very clear in these cases that there is a serious, often severe, influence of these maladies on rational conscious life.

Hugon notes insanity that is general and permanent may cause the use of reason not to be under the control and power of free will.¹⁰⁵

Palmer admits modifications of rational psychic life due to “subconscious” (which is defined as imperfectly conscious) states.¹⁰⁶ In the rational psychic process of humans, not everything is apprehended with the same clarity and distinction, nor can the mind avoid all distractions. So it happens that many things, even if not outside the limits of consciousness, would be certainly obscure or would certainly be on the margin of consciousness. Therefore, these things can be called subconscious (that is, imperfectly conscious), and can occur very frequently.¹⁰⁷

Third and finally, is the concept of evolution applied to the human society equivocal?¹⁰⁸ Equivocal indicates predication where the verbal term is identical, but the concepts have no connection

¹⁰⁵Hugon, *Psychologia*, 325: “Amentia generalis et permanens...usus ratiocinii non est in liberi arbitrii potestate et dominio.”

¹⁰⁶Palmer, “Psychologia,” 2: 733-734: “Attemen psychismo superiori hominis non omnia eadem claritate et distinctione apprehenduntur, nec versus omnia acies mentis ope attentionis ferri potest; quo fit, ut multa non extra limites conscientiae intellectualis, sed certe vel obscure vel in margine ipsius maneant, quae ideo subconscia seu imperfecte conscia dici possunt.”

¹⁰⁷Palmer, “Psychologia,” 2: 733: “In psychismo rationali, non nisi operationes psychicae subconsciae, et quidem frequentissime, dantur.”

¹⁰⁸Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 184: “There is no known single-valued evolutionary process running through the world of living things and non-living things, any more than there is any known single-valued evolutionary process extending from animal and plant life to human psychological and social behavior. In each area the term remains the same, but the value and meaning of the term change. The importance of this equivocal extension of the term ‘evolution’ will become clear in the next chapter.”

in the mind.¹⁰⁹ Nogar says, “These papers (at the Darwin Centennial Celebration at the University of Chicago in 1959 composed of fifty international experts on evolution reporting) on cultural anthropology, archaeology, psychology and language not only show this radical change in the concept of evolution as it is applied to man, but they even show a strong tendency to ignore the concept of man’s prehistory and concentrate upon man as he is now known to be fashioner of his own future.”¹¹⁰ Darwin does not impose evolution on a grand scheme of biological, or cosmic, history but the origin of the species.¹¹¹ The general meaning of the term “evolution” is tied to biological transformation of species by mutation and natural selection, as Mondin clearly states: “Life is a biological phenomenon in the strict sense...Here we don’t consider life: spiritual, moral, social...”¹¹² Philosophical Evolutionism may attempt to extend that meaning.¹¹³ Herbert Spencer and some others wish to extend the term “evolution” to the level of a universal law that pertains to all transformation in the universe. Those followers of Darwin, notably Huxley and Spencer in England and Hackel in Germany, made

¹⁰⁹Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 93-94: “Equivocal...the verbal term is identical...concepts have no connection in the mind. An ‘equivocation’ is the use of an ambiguous word; it is a play on words. It indicates the use of a word which has quite different meanings, so that although the oral or written term is identical, the concept, to be true, must change completely.”

¹¹⁰Nogar, “Evolution,” 350: “...not only show this radical change...fashioner of his own future.”

¹¹¹Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 204: “Darwin does not impose evolution on a grand scheme...” Klubertanz, *Philosophy*, 378: “Evolution means development or biological change.”

¹¹²Mondin, *Manuale*, 199: “Qui vale la pena notare che la vita di cui si discute in queste pagine ...è la vita biologica in senso stretto...e non la vita spirituale, la vita morale, sociale, religiosa, ecc.” Confer: Klubertanz, *Philosophy*, 378: “Evolution means development or biological change...also a philosophy...”

¹¹³La Vecchia, *Evoluzione*, 317: “In questo scritto abbiamo dapprima considerato il problema dell’evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo.”

unwarranted extensions of the theory into fields of philosophy and ethics. The extension of “evolution” is not univocal, as explained by Nogar.¹¹⁴ The extension of “evolution” is not analogous, as explained by Renard.¹¹⁵ The extension of “evolution” is equivocal, as explained by Nogar.¹¹⁶

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.¹¹⁷ Possibility is defined as

¹¹⁴Nogar, *Wisdom*, 191-192: “Theoretically, the concept of evolution should be regarded not as a single valued law but as a name for a series of models, all having a historical context. There are historical trends various sciences have determined...but the trends are specific, local, limited in sphere, and limited in time. None of these trends can be generalized to the degree needed for universal univocal extension.”

¹¹⁵Renard, *Philosophy*, 97: “In a composite concept, a change can be made by dropping notes, e.g. man as rational animal, irrational animal, animal. These concepts can be predicated intrinsically of various individuals. Yet they also differ – are the analogous? No. In each the concept of “animal” remains the same; it is a universal idea. There is no analogy of attribution, but only univocity of genus. There is no analogy of proportionality, not in the order of reality.”

¹¹⁶Nogar, *Wisdom*, 185: “The term ‘evolution’ signifies something quite different in the organic and inorganic world. What is retained is the space-time concept of continual, natural change and development. Beyond this generic meaning, the term changes its definition and becomes equivocal.” Ibid., 178: “As long as the purely biological origins were studied the definition of evolution was common descent with modification. However, the definition had to be altered before it could be applied to cultural studies. Cultural evolution is the spacial and temporal development of human culture in the context of its biological basis. It is not univocal; it is equivocal.”

¹¹⁷Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine alterius.”

the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.¹¹⁸

Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.¹¹⁹ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own existence.¹²⁰

¹¹⁸Jesu Iturrioz, "Metaphysica Generalis," in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: "Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

¹¹⁹Salcedo, *Philosophiam*, 1: 353-354: "Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

¹²⁰Salcedo, *Philosophiam*, 1: 362: "Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis

Certitude could arise from some observable fact or experiment. However, there is no experiment to prove evolution.¹²¹ However, some restricted observation of evolution is possible within species.¹²² Social evolution is unlikely due to the observation of general freedom and liberty of action in society; Calcagno argues:¹²³ An opinion ought to be held as true, if the opinion is constantly and universally admitted by the whole human race; if the opinion does not originate from some erroneous cause; and above all if the opinion is consonant with the principles of reason. But free will is such an opinion, and even the Determinists, who speculatively deny liberty, practically act in a way that exhibits belief in free will, such acquiring material goods, striving for rewards, and speaking of virtue and vice. Therefore, free will in many human activities is proved by the testimony of common sense.

Certitude could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics: Benignus, Calcagno, Gredt, and others.

Certitude could arise if the argumentation was based on some philosophical principles.

...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

¹²¹Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

¹²²Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

¹²³Calcagno, *Philosophia*, 2: 202: “Tenenda est tamquam vera sententia: quae constanter et universaliter admittitur a toto genere humano; quae oriri non potuit a causa aliqua erroris; quae apprimè concordat cum principiis rationis. Atqui, talis est sententia tenens hominem esse liberum in suis actibus.”

The principle of causality needs to be invoked, in so far as the effect is proportionate to the cause,¹²⁴ when it is argued *a priori* that “from the proper character of rational nature itself, free will necessarily follows.”¹²⁵ Further, the character of the rational nature itself is the actual sufficient reason, if “free will necessarily follows”; thus the principle of sufficient reason is also involved in this *a priori* argument.

Certitude could arise if the explanation is sufficient, due to the principle of sufficient reason. Calcagno gives a sufficient reason when he argues, *a priori*, that free will “necessarily” follows from the very character of rational nature.¹²⁶ Calcagno in addition argues *a posteriori* from the testimony of consciousness and from the testimony of common sense.¹²⁷ This double argument supplies sufficient theoretical reasons, and a sufficient argument from observation of self and the world.

Certitude could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas teaches free will and human liberty, saying, “Of the actions done by man, only those are called human which are properly of man in so far as human. Man differs from irrational creatures in this that man is the master of his own acts. Whence these actions are called properly human, of which man is the master. It is man who is the master of his actions by reason and

¹²⁴Gredt, *Philosophiae*, 2: 418: “...effectus enim participat naturam causae seu principii sui...”

¹²⁵Calcagno, *Philosophia*, 2: 203: “Existentia libertatis demonstratur a priori...Ex ipsa propria indole naturae rationalis libertas arbitrii necessario consequitur.”

¹²⁶Calcagno, *Philosophia*, 2: 203: “Ex ipsa propria indole naturae rationalis libertas arbitrii necessario consequitur.”

¹²⁷Calcagno, *Philosophia*, 2: 200: “Existentia liberi arbitrii demonstratur a posteriori...Ex conscientiae testimonio, et ex communi naturae sensu, manifeste ostenditur hominem in suis actibus libertate arbitrii gaudere.”

will; whence free will is called a faculty of the will and reason. Therefore, those actions are called properly human which proceed from a deliberate will. Any other acts that arise from man are able to be called ‘acts of man’ but not properly human acts, since they are not from man in so far as he is human” (Aquinas *Summa Theologiae* 1-2. 1. 1).¹²⁸

Certitude could arise if Neo-Scholastics agree that social evolution is unlikely. Klubertanz notes that “Psychological determinism rests on an equivocation in the term ‘the greater good’.”¹²⁹

Certitude could arise due to recent scientific confirmation by convergent scientific arguments from the fields of biology and sociology itself which seem to indicate that social evolution is unlikely. Sociobiology is often criticized on the grounds that its explanatory hypotheses are not easily verified, or that these hypotheses contain assumptions that are conventional, unexamined or impossible. For example, some assumptions are just the natural patterns of behavior of human beings.¹³⁰ Another criticism of Sociobiology arises from the inclination of social scientists to offer functional explanations of social phenomena.¹³¹ A functional explanation of a social feature is defined as some factor that

¹²⁸Calcagno, *Philosophia*, 3: 7: “Actionum quae ab homine aguntur illae solae proprie dicuntur humanae, quae sunt propriae hominis in quantum est homo. Differt autem homo ab aliis irrationalibus creaturis in hoc quod est suorum actuum dominus. Unde illae actiones vocantur proprie humanae, quorum homo est dominus. Est autem homo dominus suorum actuum per rationem et voluntatem; unde et liberum arbitrium esse dicitur facultas voluntatis et rationis. Illae ergo actiones propriae humanae dicuntur, quae ex voluntate procedunt. Si quae autem aliae actiones homini convenient, possunt dici hominis actiones, sed non proprie humanae, cum non sint hominis in quantum est homo” (Aquinas *Summa Theologiae* 1-2. 1. 1).

¹²⁹Klubertanz, *Philosophy*, 381: “...equivocation...”

¹³⁰Catherine Wilson, “Sociobiology,” in *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich (Oxford: University Press, 2005), 880.

¹³¹Daniel E. Little, “Philosophy of the Social Sciences,” in *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi (Cambridge: University Press, 1999), 706

explains the presence and persistence of the feature in terms of the beneficial consequences the feature has for the ongoing working of the social system as a whole. This type of explanation is one that is based on an analogy between biology and sociology. Biologists explain species traits in terms of reproductive fitness. Social scientists are at times inclined to explain social traits in terms of “social” fitness. However, the analogy is misleading because the biological mechanism is not present at all in the social realm. By natural selection, the species obtains traits that are locally optimal. There is no analogous mechanism at work in the social realm. Finally, Nogar notes that the hypothesis of Sociobiology is arbitrary and has no scientific claim to validity.¹³²

Certitude could arise if the opposite opinion is not tenable. But the opposite opinion is not tenable, since even the Determinists, who speculatively deny liberty, practically act in a way that exhibits belief in free will, such acquiring material goods, striving for rewards, and speaking of virtue and vice.¹³³ Further, St. Thomas asserts that the opinion of the Determinists is untenable, an extravagant opinion (Aquinas *De Malo* 6).¹³⁴ Benignus and Hugon argued against Metaphysical Determinism. Hugon argued against Scientific Determinism. Benignus argued against Physical Determinism, especially John B. Watson. Benignus and Hugon argued against Physiological

¹³²Nogar, “Evolution,” 206: “The historicist hypothesis...places man’s customs, morals, laws, religion, philosophy, indeed, all of his activities within the single orbit of universal evolution. This assumption is arbitrary and has no scientific claim to validity.”

¹³³Calcagno, *Philosophia*, 2: 202: “Ipsi Deterministae, qui speculative libertatem negant, practice se gerunt sicut illi que sunt persuasi de liberi arbitrii existentia. Nam et ipsi de bonis actionibus gloriantur, et praemium expectant, loquuntur de legibus moralibus, de virtute et vitio...”

¹³⁴Calcagno, *Philosophia*, 2: 203: “Interim licebit cum Doctore Angelico asserere opinionem Deterministarum esse positionem extraneam (Italice: *stravagnate*)” (Aquinas *De Malo* 6).

Determinism, especially the contemporary Naturalists. Benignus, Hugon and Palmes argued against Psychological Determinism, especially Sigmund Freud and the “unconscious.”

Certitude could arise if the objections of adversaries are able to be answered.¹³⁵

OBJECTION: If a falling rock were conscious, it would think itself free to fall. REPLY: The similarity is denied, since inorganic things are not free.

OBJECTION: Liberty arises from ignorance of our motive. REPLY: The less we know the motive of our actions, the greater the persuasion of liberty.

OBJECTION: Drunkards feel free. REPLY: Liberty is not a feeling alone, but a judgement.

OBJECTION: In hypnosis, freedom can be suggested. REPLY: Persons in hypnosis are not free.

OBJECTION: The argument for common agreement assumes liberty. REPLY: The common agreement argument arises from the “experience” of the fact of liberty, not the assumption.

OBJECTION: Criminals are guilty without liberty. REPLY: Real guilt demands moral freedom.

OBJECTION: Laws destroy liberty. REPLY: Laws can be freely followed to integrate society.

OBJECTION: The intellect is necessitated by imperfect truth. REPLY: The will is different.

OBJECTION: Intellectual presentation negates liberty. REPLY: Only for the highest good.

OBJECTION: God predestines everything. REPLY: God leaves man free.

OBJECTION: Science knows the future. REPLY: The inorganic world is not free.

OBJECTION: Statistics show uniformity. REPLY: But “necessity” is not shown by statistics.

OBJECTION: Temperament limits freedom. REPLY: It limits but does not destroy.

OBJECTION: Motive destroys liberty. REPLY: Motives are partial, multiple, even impossible.

¹³⁵Calcagno, *Philosophia*, 2: 207-220, has an excellent list of objections against freedom and gives very extensive answers, many of which are summarized here.

OBJECTION: Civil societies evolve uniformly.¹³⁶ REPLY: There is no strict uniformity in the evolution of civil society, since there are in fact very many differences among various peoples.

However, some uniformity not only must be accepted, but must be expected, since all men are of the same species and therefore seek the same goods as desirable. Do not infer from some similarities that there is a necessity in the mode of operation of societies. The uniformity in the mode of operation is explained from the identity of nature in all humanity, so that there is a propensity for some actions, which should not then be labeled as necessitated.

OBJECTION: Social evolution is unconscious.¹³⁷ REPLY: The assertion is gratuitous.

OBJECTION: Society is determined by DNA.¹³⁸ REPLY: Rational operations have only extrinsic dependence on the senses. Further, actively, the will needs some good presented to it by the intellect in order to choose; and passively, there is no other rational principle besides the intellect and will, both of which are detected by introspection, while no other principle is detected.

Certitude can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Neo-Scholastic philosophers agree with the second argument of Calcagno, which he takes from St. Thomas (Aquinas *Summa Theologiae* 1-2. 13. 6), from the way in which the intellect presents good to the will. This same argument is used by Pope Leo XIII

¹³⁶Calcagno, *Philosophia*, 2: 216-217, has more direct answers to evolutionary socio-biology. Ibid., 216: “Non datur stricta uniformitas in evolutione civilis societatis; sunt enim plurimae differentiae apud varios populos.”

¹³⁷Palmes, “Psychologia,” 2: 734: “Operationes psychicae inconsciae gratis asseruntur.”

¹³⁸Palmes, “Psychologia,” 2: 735: “Omnes enim operationes rationali, in statu coniunctionis animae cum materia, naturaliter dependent, dependentia quidem tantum extrinseca, ab operationibus vitae sensitivae.”

in the Encyclical Letter *Libertas*, as noted in the journal *La Civiltà Cattolica*.¹³⁹ Hugon notes that the Catholic Church always strongly safeguarded the doctrine of human liberty.¹⁴⁰

Certitude can be had from the fact that “social evolution is unlikely, but equivocal” is the best answer now for social analysis.¹⁴¹ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).¹⁴² This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, social evolution not predicated as the common property of every society.¹⁴³

¹³⁹Calcagno, *Philosophia*, 2: 205: “*La Civiltà Cattolica*, series 13, vol. 11, pages 131-132.”

¹⁴⁰Hugon, *Metaphysica*, 164: “*Ecclesia vero Catholica libertatem humanam dogma strenue semper tutata est.*”

¹⁴¹John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

¹⁴²Oesterle, *Universal*, 27, cites St. Thomas: “*Hoc autem contingit vel ut nunc, et sic utitur quandoque dici de omni dialecticus; vel simpliciter et secundum omne tempus, et sic solum utitur eo demonstrator,*”(Aquinas *In Post. Anal.* 9. 4).

¹⁴³Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it affects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution performs these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and

The level of certitude for “social evolution is unlikely” is at minimum at the level of the metaphysically certain. The proof is the principle of sufficient reason in the arguments in favor of free will and freedom. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Palmes who states that the existence of free will is “entirely certain” (*omnino certam*).¹⁴⁴ Further the opinion of the Determinists was specifically rejected, including Scientific, Physical, Physiological, and Psychological Determinists. Social evolution is unlikely if its root, Determinism, is rejected. Nogar argues that the hypothesis of Sociobiology is an arbitrary assumption.¹⁴⁵

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.¹⁴⁶ This is the method of Aristotle and St. Thomas.¹⁴⁷ Observation can discern some limits on free will and liberty, which does not contradict the general view that endorses personal and social freedom of development.¹⁴⁸ The soul in its rational and voluntary life is

biological theory, apparently with sufficient scientific justification for a scientific theory.”

¹⁴⁴Palmes, “Psychologia,” 2: 701: “Thesim defendimus ut omnino certum...Liberi arbitrii existentia demonstratur...”

¹⁴⁵Nogar, “Evolution,” 206: “The historicist hypothesis...places man’s customs, morals, laws, religion, philosophy, indeed, all of his activities within the single orbit of universal evolution. This assumption is arbitrary and has no scientific claim to validity.”

¹⁴⁶Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹⁴⁷Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

¹⁴⁸Calcagno, *Philosophia*, 2: 200: “...sensus thesis (pro libertate) non esse exclusivum, sed affirmativum. Scilicet minime asserimus voluntatem esse liberam in omnibus suis actibus, ita ut in ea non detur actus necessarii, sed id solum affirmamus eam in multis actibus vera libertate

affected by feelings egoistic, altruistic, intellectual, aesthetic, and ethical, and also by pathology.¹⁴⁹

arbitrii gaudere.”

¹⁴⁹Maquart, *Philosophiae*, 2: 465: “Hodierni psychologi consueverunt colligere affectiones superiores in diversas classes secundum diversitatem objectorum materialium; haec proinde classification est accidentalis. En exemplum....egoisticae...altruisticae.. .intellectuales...aestheticae...ethicae... Pathologia affectuum ostendit extremos status.

Chapter 20: ATHEISTIC EVOLUTION IS IMPOSSIBLE, AND EQUIVOCAL.

The State of the Question

The Pontifical Gregorian University in Rome has a contemporary academic course on evolution that does not deal directly with creation or the proof of the existence of a creator. This, in itself is not surprising in general, since Scholastic philosophers often treat the existence of God in the section of philosophy called natural theology. Nor is the minimal treatment of God surprising in the book of La Vecchia, since she emphasizes the goal of the process of hominisation in which God creates the spiritual soul finally making the human being as such. La Vecchia is innovative in that she attempts to make an original case for the evolution of the body of man, but she does not directly treat the creation of species other than man. Nevertheless, an attentive reading of the book of La Vecchia can offer us a number of insights concerning the role of God in the evolutionary process.

First, the evolutionary process has to have some efficient cause.¹ Evolution is transformation to a goal, which in this case is man at the apex of the development of his powers.

Second, the evolutionary process has to have a sufficient cause.² The argument for sufficiency is the superiority of man over the rest of the animals due to man's spiritual soul, which can only be

¹Maria Teresa La Vecchia, *Evoluzione e Finalità* (Rome: Gregorian University, 1999), 39: "Si rende evidentemente necessario affermare che le cause efficienti che hanno determinato l'evoluzione manifestano un orientamento che denota uno specifico senso." Cf. La Vecchia, *Evoluzione*, 319: "Ciò evidenzia che nel processo di Ominazione, ormai definitive compiuto, l'Uomo diventò tale, aveva raggiunto l'apice dello sviluppo delle sue potenzialità."

²La Vecchia, *Evoluzione*, 318: "Ma tra il sensitivo ed il razionale, tra materia e lo spirito, non esiste alcun punto in comune, nessuna continuità. Solo una causa proporzionata e della stessa natura avrebbe potuto far esistere lo spirito. Si è dedotto necessariamente che, al punto di massimo perfezionamento delle facoltà psichiche sensitive, Dio abbia creato un'anima spirituale in un o più individui."

given to man by a proportionate cause. Such a spiritual sufficient cause is God.

Third, La Vecchia denies that organic evolution of the sensitive faculties alone would be able to bring about the spiritual soul of man with all the typically rational faculties, such as abstraction properly speaking, free will, reflex consciousness, and symbolic language. Such a transformation would demand the free special intervention of God in “particular creation.”³

Fourth, La Vecchia regards final causality as so important that she includes it in the title of her book, *Evoluzione e Finalità*. Theistic views of evolution recognize the finality of nature.⁴

Vittorio Marcozzi, more concretely, gives the phases of evolution in which the intervention of God is necessary. He says that there are at least three events demanding divine intervention. First, the appearance of life and living organisms demand some divine intervention. Second, the evolutionary possibilities with which God imbues these organisms demand special divine intervention. Finally, the advent of man, who has spiritual qualities, demands the special intervention of the Creator.⁵

³La Vecchia, *Evoluzione*, 314: “Forse per una evoluzione organica delle facultà psichiche sensitive?...Quando l’organismo di due o più indivisui si trovò al massimo sviluppo potenziale delle facultà psichiche sensitive, Dio, con un atto della libera volontà e per suo intervento speciale, una *particularis creatio*, creò l’anima spirituale lì dove si erano determinate le condizioni necessarie o sufficienti.”

⁴La Vecchia, *Evoluzione*, 111: “Da ciò consegue che la posizione materialistica o antifinalistica risulta non credibile e smentita dai fatti. L’evoluzione teistico o spiritualistico riconosce invece la finalità della natura...”

⁵Paul Haffner, “Evolution and the Magisterium of the Church,” in *Evoluzione*, ed. Rafael Pascual. (Rome: Studium, 2005): 330 and note 44.

Participants in the Dialogue

Atheists are the adversaries of the thesis.⁶ Among the Atheistic Materialists are Ernst Haeckel (1834-1919), who was the first major advocate of Darwin in Germany, and Karl Marx (1817-1883),⁷ the father of Soviet Communism who admitted nothing except material. The Atheistic Positivists teach that there is no extra-experimental reality, and in fact they deny the existence of God; among these Positivists are: A. Comte, Littré, and Taine in France, Stuart Mill and Bain in England, and Wundt in Germany. Huxley in England is an Absolute Agnostic. Thomas Hobbes (1588-1679), although he admitted some kind of God, did not permit that God to interfere in any human events. Friedrich Nietzsche (1844-1900) called himself the “killer of God,” and only admitted the Superman as the supreme value. Jean-Paul Sartre (1905-1980) called himself an Absolute Nihilist; he denied essence, substance, and also denied God.

Among atheists in the twenty first century, Richard Dawkins is the foremost polemicist for the opposition of science to religion. Richard Dawkins, a staunch Darwinian, denies the value of the philosophical proofs that St. Thomas Aquinas gives for the existence of God, and compares the belief

⁶Josepho Hellin, “Theodicea,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 33: “Inter atheos nominandi sunt...” Franciscus Xav. Calcagno, *Philosophia Scholastica: Psychologia, Theologia Naturalis*, vol. 2, 3rd ed. (Naples: M. D’Auria, 1952), 2: 359: “En breve schema atheismi: practici vel theoretici; theoretici negativi vel positivi. Athei theoretici positivi esse possunt dogmatici quorum aliqui sunt Materialisto et aliqui sunt Pantheistico. Athei theoretici positivi esse possunt sceptici vel agnostici.”

⁷Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 210: “For Marx the ideology (everything is in the state of flux...this is the first principle of dialectical materialism) had to carry the materialistic and atheistic stamp.”

in the supernatural to a vestigial organ that has outlived its evolutionary purpose.⁸ Dawkins calls himself a “de facto” atheist, since he lacks evidence to disprove God’s existence but places the probability of a divine being at “less than zero.” Dawkins published *The God Delusion* (New York: Houghton Mifflin, 2006), a 416 page book that was on the *New York Times* best seller list for five weeks.⁹ The book depends heavily on Darwinian theory while it attacks faith philosophically, historically, and scientifically. Dawkins is an explicator of evolutionary psychology so lucid that he occupies the Charles Simonyi professorship for the public understanding of science at Oxford University. Dawkins is not alone in literary atheism, but is riding the crest of an atheist literary wave.¹⁰ In 2004, Sam Harris, a graduate student in neuroscience, wrote *The End of Faith*, which sold over 400,000 copies. Harris then wrote a 96 page follow-up entitled *Letter to a Christian Nation*, which was number fourteen on the *New York Times* best seller list in November 2006. In February 2005, Tufts University philosopher Daniel Dennett published *Breaking the Spell: Religion as a Natural Phenomenon*, promoting atheism. In September 2006, the Harvard University biologist Marc Hauser published a work on the non-divine origins of our sense of right and wrong. In January 2007, biologist

⁸Alexandra Alter, “Book Review: *Delusion* Sees Religion as No Longer a Necessity,” *Chicago Tribune*, 24 November 2006, sec. 5, p. 4: “A staunch Darwinian, (Richard) Dawkins compares belief in the supernatural to a vestigial organ that has outlived its evolutionary purpose...Dawkins takes on philosophical arguments for God’s existence, beginning with proofs by Thomas Aquinas, arguments Dawkins calls fatuous...” Ibid., “Dawkins calls himself a ‘de facto’ atheist...places the probability of God at ‘less than zero’.”

⁹David Van Biema, “God vs. Science,” *Time Magazine*, 13 November 2006, 52: “Richard Dawkins, foremost polemicist for Science vs. God has published recently *The God Delusion*...It leans heavily on Darwinian theory, which was Dawkins expertise as a young scientist...occupies the Charles Simonsi professorship...at Oxford University.”

¹⁰Van Biema, “God,” 50: “Dawkins is riding an atheist literary wave...Sam Harris...Daniel Dennett...Marc Hauser...Lewis Wolpert...Victor Stenger...Ann Druyan...Carl Sagan...”

Lewis Wolpert wrote *Six Impossible Things Before Breakfast*, one of which is religion; Wolpert describes himself as an “atheist-reductionist-materialist.” Victor Stenger, physicist and astronomer, wrote *God: The Failed Hypothesis*. In addition, Ann Druyan, the widow of the arch-skeptical astrophysicist, Carl Sagan, has edited Sagan’s unpublished lectures on God and God’s absence, and published a book, *The Varieties of Scientific Experience* (November 2006).

Other adversaries to the proposal in this chapter are Emergent Evolution¹¹ (or Creative Evolution), and secondly, what Benignus calls “Naturalistic Evolution.”¹² Emergent Evolution theories teach an ascending evolutionary process which begins from the many, such as matter or space-time, and rises through successively more perfect forms of being and culminates, or will culminate, in God. Such a system can be described as the reverse of Emanationism, the classical system of descending evolution from the one (God) to the many. Emergent Evolution has God as the end of evolution in the sense that God is what the whole evolutionary process is producing. However, from the point of view of metaphysics the theories of Emergent Evolution are indistinguishable from Materialism and Atheism. Emergent Evolution gives no explanation of the world’s origin other than matter and time, and admits no God who now actually exists. In the book *Space, Time and Deity* (1920), S. Alexander maintains such a system, and professes no final moment is ever reached when God actually exists. Secondly, Naturalistic Evolution held by many contemporary philosophers of various evolutionary schools deny that God as transcendent cause directs and moves nature toward its

¹¹Brother Benignus, *Nature, Knowledge and God* (Milwaukee: Bruce, 1947), 560: “...emergent or creative evolution...emanationism in reverse...indistinguishable from Materialism and Atheism.” Ibid., “Cf. S. Alexander, *Space, Time, and Deity*, 1920.

¹²Benignus, *Nature*, 99: “Many contemporary philosophers of various evolutionary schools of thought recognize only immanent finality in nature and deny transcendent finality...for example God.”

goals, but maintains that nature and natural beings tend by some immanent power, urge, force, or *élan* to certain ends or to some goal. Therefore, both Emergent Evolution and Naturalistic Evolution hold only immanent finality, and deny extrinsic finality. Intrinsic finality arises from the power of matter. The denial of extrinsic finality is the denial of God as final cause, which results in both theories being atheistic.¹³

Donat notes “Many hold Darwinism as a solution for their atheism.”¹⁴ On the other hand, care must be taken not to fall into Fundamentalism, as Klubertanz states, “As far as I know, no Christian thinker held that the distinct species of living things were separately created in this strict sense of creation, production from nothing of self and subject (*productio ex nihilo sui et subiecti*).¹⁵

Proponents of the thesis are all the Neo-Scholastics.¹⁶ Adversaries of atheism in the ancient world were Plato (Plato *Laws* 10) and Philo (Philo *De Praemiis* 7).¹⁷ The Transcendental Thomist,

¹³Benignus, *Nature*, 99: “...all of which admit finality, but claim that the total cause (efficient and final, material and formal) is entirely in nature itself, without any external (transcendent) cause.

¹⁴Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 90: “Nonnulli propterea potissimum placitis drawinismi inhaerere pergunt, quod hac ratione teleologiae problema sine Deo interventu solvi posse sperant.” Van Biema, “God,” 50: “...the anti-religion position is being promoted with increasing insistence by scientists, angered by (the theory of) intelligent design; or excited, perhaps intoxicated, by their disciplines’ increasing ability to map, quantify and change the nature of human experience.”

¹⁵Klubertanz, *Philosophy*, 413, note 2: “...no Christian thinker held...distinct species... separately created in this strict sense of creation, *productio ex nihilo sui et subiecti*.”

¹⁶Hellin, “Theodicea,” 3: 34: “Nostra sententia docet intellectum suis naturalibus viribus posse demonstrare Dei existentiam a posteriori, tamquam causam per effectus, independenter ab omni auxilio supernaturali et ab omni vocatione interna Dei. Est communis catholicorum et certissima in philosophia.”

¹⁷Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 69: “...tanto che sia Platone (cfr. *Le Leggi* 10) sia Filone (*De Praemiis* 7)...”

Maréchal, certainly affirms the existence of God against atheism, but by a different method.¹⁸ Claude Tresmontant asserts, “Atheism is incompatible with the reality of cosmic, physical, and biological evolution.”¹⁹ Francis Collins, Director of the National Human Genome Research Institute since 1993, headed a multi-national 2,400 scientist team that co-mapped the three billion biochemical letters of man’s genetic blueprint, and recently published a best-selling book: *The Language of God: A Scientist Presents Evidence for Belief* (Free Press, 2006).²⁰ In the United States of America, the Fundamentalists opposed atheistic evolution to the teaching of the Book of Genesis that the world was created by God.²¹ In the United States of America, Intelligent Design is a movement that attempts to scientifically show that the blanks in the theory of evolution are more meaningful than its total presentation; the purpose of Intelligent Design is to have Creationism taught in American public Schools, even if this teaching is along with Evolutionism.²² The Intelligent Design Movement

¹⁸Hellin, “Theodicea,” 3: 27: “Pater Maréchal quaesivit methodum qua solveretur problema criticum de veritate nostrarum cognitionum, et invenit solutionem huius problematis consistere in affirmatione existentiae Dei sine ullo medio cognito.”

¹⁹Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 245: “...Claude Tresmontant quando sostiene che ‘l’ateismo è rigorosamente impensabile se si tien conto dei dati sperimentali oggettivi che oggi ci sono noti grazie alle scienze sperimentali.’ Infatti, ‘l’ateismo è incompatibile con la realtà della evoluzione cosmica, fisica e biologica.’ Confer: Claude Tresmontant, “L’Ateismo dal Punto di Vista Scientifico e Razionale” in *L’Ateismo: Natura e Cause* (Milan: Massimo, 1981), 81.

²⁰Van Biema, “God,” 51: “Francis Collins is also a forthright Christian who converted from atheism at age 27...summer 2006 best-seller, *The Language of God: A Scientist Presents Evidence for Belief* (Free Press).

²¹Van Biema, “God,” 51-52, notes that Dawkins agrees that the doctrine of evolution opposes the content of the Book of Genesis on creation by God. Alter, “Review,” 4: “In such moments, Dawkins oversteps, distorting evidence in a way that resembles the methods of the religious fundamentalists he criticizes.”

²²Van Biema, “God,” 49: “Intelligent Design is a scientifically worded attempt to show that the blanks in the evolutionary narrative are more meaningful than its very convincing

continues to argue before local school boards and in the courts; in December 2005, Intelligent Design was dismissed by a federal judge as a pseudo-science unsuitable for teaching in Pennsylvania schools.

Adversaries who reject the proposal make it clear that the thesis proposed is a serious subject for discussion. The thesis proposed and defended as true presents an objective problem worthy of dialogue. Adversaries who seriously contradict the proposal in this chapter deserve respect. These adversaries have reasons for their position. In every false position there is some truth. In dialogue, every attempt should be made to clarify that truth. In this case, the existence of God has to be demonstrated.²³ Accordingly, even if our proposal and its proofs demonstrate the adversaries wrong, their reasoning can be understood and respected.

Definitions and Distinctions

Atheism is the denial of the existence of God.²⁴

Creation is the production of something from nothing of self and nothing of the subject.²⁵ God is the First efficient cause, so that all other beings derive existence from God (Aquinas *Summa Theologiae* 1. 44. 1; Aquinas *Summa Theologiae* 1. 65. 1). God is the exemplary cause of creation, since all things exist in the Divine Wisdom as the divine ideas or exemplars (Aquinas *Summa*

totality...In December 2005, it was dismissed by a federal judge as a pseudo-science unsuitable for teaching in Pennsylvania schools.”

²³Hellin, “Theodicea,” 3: 19: “Licet propositio ‘Deus est’ sit per se nota quoad se, non est tamen per se nota quoad nos, et sine demonstratione admitti nequit.”

²⁴Calcagno, *Philosophia*, 2: 358: “Athei generatim dicuntur homines *sine Deo*, hoc est, homines qui Deum non agnoscunt. Haec autem contingere potest vel practice, vel theoretice.

²⁵Benignus, *Nature*, 567: “The Thomistic Doctrine of Creation.”

Theologiae 1. 44. 3). God is the final cause, and the end is His own Divine Goodness (Aquinas *Summa Theologiae* 1. 44. 4). Finally, in His perfect freedom and omnipotence, God can will to produce any combination, or order, of possible imitations of Himself. The order He chooses is produce the universe as we find it existing (Aquinas *Summa Theologiae* 1. 47. 1; Aquinas *Summa Contra Gentiles* 2. 45; Aquinas *De Potentia* 3. 15; Aquinas *De Potentia* 3. 16).

Transcendental causality in creation is different from the causality of creatures. Only God can create.²⁶ The creative power of God reverses that of creatures in exploring the material, formal, efficient, and final causes. God begins by being the final cause of all, then the agent cause as God gives existence to the creature's form (formal cause) in (not "from") the material (material cause). "So it follows that God operates intimately with all the causes" (Aquinas *Summa Theologiae* 1. 105. 5).²⁷

Programmed Evolution: Pope John Paul II notes that Evolutionsim may be envisioned as a kind of programmed creation, in which God has written into creation the laws for its evolution.²⁸ St. Thomas appears to endorse the dynamic order similar to a programmed evolution in Aquinas *Summa Contra Gentiles* 3. 22.: "Hence the more final and the more perfect an act is, the more is the appetite of matter inclined to it. Therefore the appetite whereby matter seeks a form must tend toward the last and most perfect act to which matter can attain, as to the ultimate end of generation. Now certain

²⁶Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino* (Bologna: Studio Domenicano, 1991), 150: "Creatore è solo colui che produce le cose come causa prima" (Augustine *De Trinitate* 1. 3. 9. 18).

²⁷Mondin, *Dizionario*, 107-108: "...est proprie causa ipsius esse universalis in rebus omnibus, quod inter omnia est magis initium rebus" (Aquinas *Summa Theologiae* 1. 105. 5).

²⁸Paul Haffner, "Evolution and the Magisterium of the Church," in *Evoluzione*, ed. Rafael Pascual (Rome: Studium, 2005), 325.

grades are to be found in the acts of forms.”²⁹

Providence is the Divine Reason ordering all creatures to the end to which they have been created.³⁰ St. Thomas follows Boethius in defining Providence as “divine reason, residing in the supreme ruler of everything, which disposes all things” (Aquinas *Summa Theologiae* 1. 22. 1; Aquinas *Summa Contra Gentiles* 3. 64).³¹ An analogous example is the general and his army preparing for victory. Creation brings “existence” to all things deprived of it; providence intervenes to bring “order” to creation to preserve it; so Divine Providence arises with creation and in a certain sense completes it. Since Providence is the Divine Intellect and Will, considered as governing realities, Providence is eternal. However, the execution of this order in creatures takes place in time. This execution is Divine Government.

Divine Conservation in being: directly is the dependence of the creature on the conserver so that the creature cannot exist without it; indirectly is the removal of the causes of corruption. Divine Conservation is “direct” dependence for existence.³² Proof of Divine Conservation is that every effect depends on its cause precisely in that respect in which the latter is its cause; but God is the cause of being so that if the cause of being ceases, then the effect of being will instantly cease. Since God is the

²⁹Battista Mondin, *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia*, (Bologna: Studio Domenicano, 1999), 223, cites St. Thomas: “Unde oportet quod in ultimum et perfectissimum actum quem materia consequi potest, tendat appetitus materiae quo appetit formam, sicut in ultimum finem generationis. In actibus autem formarum gradus quidam inveniuntur” (Aquinas *Summa Contra Gentiles* 3. 22).

³⁰Benignus, *Nature*, 503: “Providence...Divine Government.”

³¹Mondin, *Dizionario*, 502: “Ratio ordinandorum in finem proprie providentia est” (Aquinas *Summa Theologiae* 1. 22. 1).

³²Benignus, *Nature*, 580: “Conservation...”

cause of everything that exists, God must conserve everything in being by acting in it at every moment of its existence (Aquinas *Summa Theologiae* 1. 104. 1; Aquinas *Summa Contra Gentiles* 3. 65; Aquinas *De Potentia* 5. 1). Divine Conservation is not a new act distinct from the creative act, but creation and conservation are one (Aquinas *De Potentia* 5. 2; Aquinas *Summa Theologiae* 1. 104. 1. ad 2). It is a continuation of the action of giving being. “Continuation” does not mean “for a long time,” because the action is without motion and without time (Aquinas *Summa Theologiae* 1. 104. 1. ad 4).

Divine Concourse is the activity with which God as principle cause underpins the causality of creatures, free or not, in their actions. St. Thomas notes, “Thus the rational creature, beyond the government (*supra gubernationem*) with which he directs himself in so far as master of himself, need to be governed by God” (Aquinas *Summa Theologiae* 1. 103. 5. ad 3).³³

Truth can be known either empirically or rationally.³⁴ Empirical truth is immediately known by observation or experiment. Rational (or analytic) truth is known if the predicate has a necessary connection with the subject. Rational truth by terminology alone (*secundum se tantum*) is most perfectly knowable but in fact is not immediately known, e. g. the immateriality of the human soul. Rational truth for man (*quoad nos*) is most perfectly knowable and also perfectly known, e.g. the whole is greater than the part. These distinctions are of some importance, because the existence of God is essentially known *secundum se*, but not immediately known *quoad nos*, which is why

³³Mondin, *Dizionario*, 124: “Perciò la creatura ragionevole, oltre il governo (*supra gubernationem*) col quale dirige se stessa in quanto padrona de se stessa, ha bisogno di essere governata da Dio” (Aquinas *Summa Theologiae* 1. 103. 5. a 3).

³⁴Calcagno, *Philosophia*, 317-318: “Veritates immediatae possunt esse vel empiricae, vel rationales...”

demonstration is necessary.³⁵

Question Needing A Reply

Does evolution eliminate the necessity of the existence and action of God? Is evolutionary atheism an equivocal predication of “evolution”?

The Thomistic Foundations

Does St. Thomas treat atheism explicitly? No, there is no explicit treatment of atheism in St. Thomas works, not even the use of the word.³⁶ A possible reason for this is that religious belief became civil law both in Christian and Moslem countries.

Did St. Thomas treat atheism implicitly? Yes, St. Thomas attacked the three great arguments that atheists used to refute the existence of God.³⁷ Those arguments are: the argument from science, which made the hypothesis of God useless; the argument from evil, which compromises the reality of God as creator and provident; and the argument from liberty, which appears to be incompatible with

³⁵Calcagno, *Philosophia*, 2: 317: “Deum esse est quidem per se notum secundum se, non vero quoad nos; ac propterea cognosci a nobis non potest sine demonstratione.”

³⁶Mondin, *Dizionario*, 69: “San Tommaso non si occupa mai esplicitamente dell’ateismo, de cui ignora il termine.” Ibid., “Nel medioevo, allorché nel mondo cristiano e mussulmano il credo religioso divenne anche legge civile...”

³⁷Mondin, *Dizionario*, 69: “L’Aquinatense conosce molto bene i tre grandi argomenti a cui l’uomo può appellarsi per rifiutare Dio...scienza...male...libertà...” Alexandra Alter, “Book Review: *Delusion* Sees Religion as No Longer a Necessity,” *Chicago Tribune*, 24 November 2006, sec. 5, p. 4: “A staunch Darwinian, (Richard) Dawkins compares belief in the supernatural to a vestigial organ that has outlived its evolutionary purpose...Dawkins takes on philosophical arguments for God’s existence, beginning with proofs by Thomas Aquinas, arguments Dawkins calls fatuous...”

an omniscient and omnipotent God. Evolutionary Atheism asserts science eliminates God,³⁸ but St. Thomas answers: “Certainly nature has its operations, which science can investigate and discover, but because they move toward a determined goal under the direction of a superior agent, it is also necessary they are attributed to God as their prime cause” (Aquinas *Summa Theologiae* 1. 2. 3. ad 1).³⁹ Evolutionary Atheism asserts that evil in the world eliminates God,⁴⁰ but St. Thomas answers: “As St. Augustine says: ‘God being the summit of goodness would never permit His works to be evil if there was not such power and such good from which He knows how to draw good even from evil.’ Thus it pertains to the infinite goodness of God to allow evil in order to turn it to good” (Aquinas *Summa Theologiae* 1. 2. 3. ad 2).⁴¹ Evolutionary Atheism denies liberty,⁴² or alleges mutability leads

³⁸Alter, “Review,” 4: “Religion, Dawkins argues, probably gave tribes and ethnic groups competitive advantage for survival by offering useful folklore about the natural world and providing a collective identity.” David Van Biema, “God vs. Science,” *Time Magazine*, 13 November 2006, 52: “Dawkins could not believe God would ‘wait’ for evolving life.” Von Biema, “God,” 52: “Collins...so chance alone is unlikely...Dawkins...multiverse – one or another will have life by chance.”

³⁹Mondin, *Dizionario*, 69: “Certo, la natura ha le sue operazioni – che la scienza può investigare e scoprire – ma siccome le compie per un fine determinato sotto la direzione di un agente superiore, è necessario che siano attribuite anche a Dio, come a loro prima causa” (Aquinas *Summa Theologiae* 1. 2. 3. ad1).

⁴⁰Alter, “Review,” 4: “Many, perhaps rightly, have charged Dawkins with intolerance. He dismisses religion in general as ‘nonsense,’ describes the Old Testament God as a jealous psychopath and blames organized religion for wars, genocide and homophobia. In one of his hyperbolic fits, he likens religious education to child abuse. In such moments, Dawkins oversteps, distorting evidence in a way that resembles the methods of the religious fundamentalists he criticizes.” Van Biema, “God,” 54, concerning the moral sense as a proof (“signpost”) of the existence of God, Dawkins replies: “I don’t believe in good and evil – good things happen...bad things happen.”

⁴¹Mondin, *Dizionario*, 69: “Come dice S. Agostino: ‘Dio, essendo sommamente buono non permetterebbe in nessun modo che nelle sue opere ci fosse del male, se non fosse tanto potente e tanto buono, da saper trarre il bene anche dal male.’ Sicché appartiene all’infinità bontà di Dio il permettere che vi siano dei mali per trarne dei beni” (Aquinas *Summa Theologiae* 1. 2. 3.

to error,⁴³ and so eliminates God, but St. Thomas answers: “Likewise acts of the free will must be led to a cause higher than the reason and will of man, because these are mutable and full of defects, and everything mutable, and those things that are able to become less, must be reduced to an immutable prime cause which is per se necessary” (Aquinas *Summa Theologiae* 1. 2. 3. ad 2).⁴⁴

Does St. Thomas assert that atheists can know the existence of God? Yes, anyone can know the existence of God by reasoning, arguing, and reflecting on things and man himself; but it is also true that the existence of God is not obvious since man does not have a vision or intuition of God.⁴⁵ The existence of God can be demonstrated easily, spontaneously, accessible to all, even to the uneducated, because there are many indications, traces, and phenomena that reveal God and demand His existence: such as the phenomenon of change, secondary causality, contingency, grades of being, order, participation, and composition of essence and existence.⁴⁶ If reason does not just glance at these

ad 2).

⁴²Van Biema, “God,” 52: “Dawkins...eventual unified theory – all locked in, not independent.”

⁴³Alter, “Review,” 4: “Dawkins’ explanation of religiosity in its various forms – from ‘cargo cults’ among the South Pacific islanders who attach divine significance to the content of cargo ships to evangelical Christians awaiting the Rapture...”

⁴⁴Mondin, *Dizionario*, 69: “Similmente gli atti del libero arbitrio devono essere ricondotti a una causa più alta della ragione e della volontà umana, perché queste sono mutevoli e defettibili, e tutto ciò che è mutevole e tutto ciò che può venir meno, deve essere ricondotto a una causa prima immutabile e di per sé necessaria” (Aquinas *Summa Theologiae* 1. 2. 3. ad 2).

⁴⁵Mondin, *Dizionario*, 69: “...secondo S. Tommaso, che l’esistenza di Dio non è cosa ovvia: l’uomo non dispone di una visione o intuizione di Dio...”

⁴⁶Mondin, *Dizionario*, 69: “L’esistenza di Dio va dimostrata, ma si tratta di una dimostrazione agevole, pressoché spontanea, accessibile a tutti, anche alle menti più semplici, perché sono molteplici gli indizi, le tracce, i fenomeni che rinviano a Dio e ne esigono l’esistenza...”

things but attentively considers them, atheists can recognize God in these things.

Does St. Thomas argue for the existence of God? Yes, he does in five ways.⁴⁷ Several of these ways have particular relevance to evolution.⁴⁸ Evolution involves metaphysical motion, the first argument of St. Thomas. Evolution involves grades of perfection, the fourth argument of St. Thomas. Evolution involves finality, the fifth argument of St. Thomas.

The Five Ways (*Quinque Viae*) are five arguments by which St. Thomas proves the existence of God in his book, the *Summary of Theology* (Aquinas *Summa Theologiae* 1. 2. 3).⁴⁹ The principle upon which these arguments rest is the principle of causality, or immediate deductions from it. The first argument is from motion and concludes to an Unmoved Mover. The second argument is from essentially ordered causes (*ex causis per se ordinatis*) and concludes to a cause which is not subordinate in operation, which is the Prime Cause and Sufficient Being (*ens a se*). The third argument is from contingent (*corruptibilibus*) things and concludes to a Necessary Being (*ens non corruptibile*), which is through itself (*per se*) or from itself (*a se*) non-contingent (*incorruptibile*). The fourth argument is from diverse grades of perfection, and concludes to a Maximum Perfection, which is the cause of all perfection outside of God. The fifth argument is from order in the world, and

⁴⁷Etienne Gilson, *The Christian Philosophy of St. Thomas Aquinas* (Notre Dame: University Press, 1994, orig. 1937), 76: “Each proof is based on the empirical observation of a fact. All make use of causal inference. Except for finality, the effects are arranged in a series of more and more perfect causes: the unmoved mover of motion, explains motion; the First Cause of efficient causality, explains nothing causes itself; the Necessary Being from contingency, distinguishes essence and existence; the Supreme Being from degrees of being, explains that all possess degrees of being; and finally God from the goal and final cause.”

⁴⁸Calcagno, *Philosophia*, 2: 333: “Quomodo classificari possunt quinque viae S. Thomae.”

⁴⁹Joseph Hellin, “Theodicea,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 49: “De Quinque Viis S. Thomae.”

concludes to an Intelligent Designer (*intelligentiam ordinatricem*).

How does St. Thomas demonstrate, in the first way,⁵⁰ the existence of God as the Mover absolutely Unmoved from the fact of motion in the world? It is clear that in the world something is moved, and what is moved is contingent, since a necessary being is not moved.⁵¹ But, what is contingent demands a necessary being, since a contingent being has its sufficient reason in another being outside any series of causes.⁵² This necessary cause is the cause of all motion and itself is absolutely immobile. Therefore, from metaphysical motion is demonstrated the existence of God as the Mover absolutely Unmoved. This proof pertains to Evolutionism, since evolution involves metaphysical motion.

How does St. Thomas demonstrate, in the second way, the existence of God as the First and Independent Cause from the fact of subordinate causes or causes dependent in operation? We see many causes in the world which are dependent on very many conditions and pre-requisites in order to operate, and so are contingent causes in being (*in esse*).⁵³ This is because operation reveals being

⁵⁰Gilson, *Philosophy*, 59: “Proof from motion is the simplest (Aquinas *Summa Theologiae* 1. 2. 3). “The demonstration originally appears in Aristotle (Aristotle *Phys.* 8. 5. 311 a 4; Aristotle *Metaph.* 12. 6. 1071 b 2).

⁵¹Calcagno, *Philosophia*, 2: 334, gives a variant on the argument by arguing change to the more perfect. Such an argument is even closer to the idea of evolution, for “what is perfected is perfected by another.” Calcagno says, “Atqui omne quod perficitur, ab alio perficitur.” Confer: Hellin, “Theodicea,” 3: 52: “Ex effectibus mundanis efficaciter demonstratur Dei existentia ut est causa prima et ens a se.”

⁵²Hellin, “Theodicea,” 3: 59: “Si est contingens, habet rationem sufficientem *in alio*...impossibile est committere circulum in causis, vel admittere processum infinitum contingentium sine ullo ente necessario extra seriem.”

⁵³Calcagno, *Philosophia*, 2: 337, changes the argument to a more general form, arguing from the existence of anything that exists, which did not exist before. Calcagno says, “Ex entibus causatis et factis evidenter demonstratur existentia Dei, sub conceptu Entis infecti.” Confer:

(*operatio sequitur esse*). Further, necessary being does not depend on anything. But, a contingent thing demands a necessary thing and a Prime Cause not dependent on anything. Therefore, from subordinate causes is demonstrated the existence of God as the First and Independent Cause.

How does St. Thomas demonstrate, in the third way, the existence of God as an Absolutely Necessary Being from corruptible beings? We see in the world very many things that are corruptible, and so are contingent, since a necessary being is not corruptible.⁵⁴ But, the contingent being demands a being absolutely necessary. Therefore, from corruptible beings is demonstrated the existence of God as an Absolutely Necessary Being.

How does St. Thomas demonstrate, in the fourth way, the existence of God as a Simply Infinite Being from the grades of perfection? We see in the world that there are perfections of life, substance, and being according to greater or lesser grades, and so the lesser grades are finite, and so contingent, since a necessary being is not able to be finite.⁵⁵ But, a contingent being demands a necessary being, which is simply infinite. Therefore, from the grades of greater or lesser perfection is demonstrated the existence of God as a Simply Infinite Being. This proof pertains to Evolutionism, since evolution involves, at least in some species, progress to greater perfection.

How does St. Thomas demonstrate, in the fifth way, the existence of God as Intelligent

Hellin, "Theodicea," 3: 58: "Ex entibus contingentibus demonstratur Dei existentia ut est ens absolute necessarium."

⁵⁴Calcagno, *Philosophia*, 2: 341: "Existentia entium contingentium manifeste demonstrat existentiam Dei, sub conceptu Entis per se necessari.

⁵⁵Calcagno, *Philosophia*, 2: 343: "Ex diversis gradibus perfectionum, quos in rebus conspicimus, evincitur Deum existere, sub conceptu Entis quod maxime est." Ibid., "...saepe utitur S. Augustinus..."

Designer (*intelligentia ordinatrix*) from order in the world? To anyone who looks around there appears a marvelous order in the world.⁵⁶ But, the work of ordering is the work of intelligence. Therefore, there exists an intelligence ordering the world. And Again: That intelligence is either created or uncreated. If uncreated, that is God. If created, it demands an uncreated cause, which is intelligent, and which is not any less than its intelligent effects. Therefore, from order in the world is demonstrated the existence of God as the Intelligent Designer of the world. This proof pertains to Evolutionism, since evolution involves some finality as one species becomes a new species.⁵⁷

Does St. Thomas explain that it is necessary for man to know God? Yes, St. Thomas says it is necessary (*oportet*).⁵⁸ St. Thomas teaches, “Just as creatures would be imperfect if created by God and would not return to God, so the creation of creatures would be imperfect unless the return to God would balance that creation...Whence it is necessary (*oportet*) that human intellects should know God in order that their knowledge would balance the procession of creatures from God” (Aquinas *De Veritate* 20. 4).

Does St. Thomas hold that God’s Providence must be part of the evolutionary process? Yes,

⁵⁶Calcagno, *Philosophia*, 2: 346: “Tum ex ordine mirabili qui cernitur in toto universo, complesive sumpto, tum ex finalitate quae apparet in singulis rebus naturalibus, rite deducitur Deum existere, sub conceptu superioris cuiusdam Intelligentiae, quae rebus omnibus praeest.”

⁵⁷H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 79, cites St. Thomas: “The entire irrational world is related to God as an instrument to a principle agent” (Aquinas *Summa Theologiae* 1-2. 1. 2). Ibid., “Tota irrationalis natura comparatur ad Deum sicut instrumentum ad agens principale” (Aquinas *Summa Theologiae* 1-2. 1. 2).

⁵⁸Joseph De Finance, *Être et Agir: dans la Philosophie de Saint Thomas*, 2nd ed. (Rome: Gregorian University, 1960), 318: “Sicut autem creaturae imperfectae essent si a Deo procederent et ad Deum non reordinarentur, ita imperfectus esset creaturarum a Deo exitus, nisi reditio in Deum exitum adaequarent...Unde et oportet ut excellentissimi intellectus Deum cognoscant, ut eorum congruitio adaequatur processui creaturarum a Deo” (Aquinas *De Veritate* 20. 4).

implicitly, since St. Thomas holds that nothing happens in the universe by chance alone, much less a phenomenon so important as the origin or development of life. St. Thomas teaches that “Divine Providence is not opposed to contingent things subject to chance, or fortune, or human will” (Aquinas *Summa Contra Gentiles* 3. 75). Everything is the fruit of the power and the wise actions of God.⁵⁹

Does St. Thomas illustrate the Anthropic Principle? Yes, St. Thomas teaches God’s goodness has ordered creation in the service of man.⁶⁰ St. Thomas says: “Creatures themselves tend to divine goodness to be essentially assimilated in that goodness. But because the best way to be assimilated is to become like the thing that is better, every corporal creature tends to be assimilated to an intellectual creature as far as possible, in order to attain divine goodness in a higher way. Because of this, even the human form...is said to be the ultimate goal of lower nature” (Aquinas *Scriptum in Liber Sententiarum* 2. 1. 2. ad 3).

Can St. Thomas give a “sufficient reason” for evolution? Yes, St. Thomas implicitly does by dealing with “Communication,” which is the spontaneous and generous giving of self by subsistent

⁵⁹Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso d’Aquino* (Bologna: Studio Domenicano, 1991), 659: “...caso, come ipotesi esplicativa dell’origine del cosmo. Secondo l’Angelico nulla di quanto succede nell’universo avviene per caso...tutto è il frutto della potente e sapiente azione di Dio” (Aquinas *Summa Contra Gentiles* 3. 75). But here Mondin treats chance as “opposed” to Divine Providence. St. Thomas teaches that “Divine Providence is not opposed to contingent things subject to chance, or fortune, or human will,” for which the original reads: “Providentia autem non repugnat contingentia, et casus et fortuna...” (Aquinas *Summa Contra Gentiles* 3. 75). Chance and Divine Providence operate together in the universe. St. Thomas teaches that nothing happens in the universe by pure chance alone; all is the fruit of the power and wise action of God

⁶⁰De Finance, *Philosophie*, 318: “Ipsae creaturae tendunt in divinam bonitatem sicut in illud cui per se assimilari intendunt. Sed quia optimo assimilatur aliquid per hoc quod simile fit meliori se, ideo omnis creatura corporalis tendit in assimilationem creaturae intellectualis quantum potest, quae altiori modo divinam bonitatem consequitur, et propter hoc etiam forma humana... dicitur esse finis ultimus intentus a natura inferiori” (Aquinas *Scriptum in Liber Sententiarum* 2. 1. 2. ad 3).

Esse.⁶¹ St. Thomas teaches: “Naturally existing things not only generally incline to their own good to seek it when they do not have it, and to repose when they possess it; but also to lavish in other as much as possible for them. So we see every agent, in the measure in which it has actuality and perfection, tends to produce things similar to itself. And thus is found in nature the desire to communicate to others, in the measure possible, the good possessed” (Aquinas *Summa Theologiae* 1. 19. 2).⁶² Since goodness by its very nature is diffusive, beneficial, the Scholastic philosophers number it among the primary principles, teaching: “Goodness spreads itself” (*Bonum est diffusivum sui*).⁶³ This is a prime principle both in the area of final causality and in the area of efficient causality.⁶⁴ In the area of final causality, it means that the end communicates its goodness to the means, e.g. a bitter drink becomes good if it is medicine for health (Aquinas *De Veritate* 21. 1. ad 4). In the area of efficient causality, it means that goodness produces other beings which participate in its goodness

⁶¹Mondin, *Dizionario*, 151: “San Tommaso concepisce la creazione sia come comunicazione sia come partecipazione di essere da parte di Dio. Col termine ‘comunicazione’ egli vuole indicare quel darsi spontaneo e generoso dell’Essere sussistente.”

⁶²Mondin, *Dizionario*, 151: “Le cose esistenti in natura non solo hanno verso il loro bene l’inclinazione generale a cercarlo quando non lo hanno, e a riposarvi quando lo possiedono; ma anche a effonderlo sulle altre per quanto è loro possibile. Per questo vediamo che ogni agente, nella misura in cui ha attualità e perfezione, tende a produrre cose a sé somiglianti. E quindi rientra nella natura della volontà il comunicare agli altri, nella misura del possibile, il bene posseduto” (Aquinas *Summa Theologiae* 1. 19. 2).

⁶³Mondin, *Dizionario*, 152: “...bontà, e questa è in forza della sua stessa natura diffusiva, benefica: “*Bonum est diffusivum sui*.”

⁶⁴Franciscus Xav. Calcagno, *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, vol. 1, 3rd ed. (Naples: M. D’Auria, 1950), 1: 321: “Bonum est diffusivum sui. Haec assertum valet tum in genere causalitatis finalis, tum in genere causae efficientis...causae finalis significat quod finis diffundit seu communicat, suam bonitatem mediis...(Aquinas *De Veritate* 21. 1. ad 4). In genere causae efficientis, bonum producit alia entia quae eius bonitatem participant...(Aquinas *De Potentia* 3. 6; Aquinas *Summa Contra Gentiles* 3. 24).

(Aquinas *De Potentia* 3. 6; Aquinas *Summa Contra Gentiles* 3. 24). As a final cause in evolution, the new and superior species would make its production good even if the old species ceases; and as an efficient cause in evolution the old species would share its goodness with a new species.

The Scholastic Solutions

The first argument is from the Principle of Contradiction. Evolutionism proves atheism necessary, or not. But Evolutionism does not prove atheism necessary. But again evolutionary atheism alleges necessity. Therefore, evolutionary atheism is not necessary.

The major premise in the above argument is the principle of contradiction, since something is necessary or not. The minor premise is proved from philosophy (department of theodicy) that the works of God are more than just creation, and also proved by the existence of theistic evolutionists like Teilhard de Chardin. The second minor premise is not proved by evolution without God verses creation with God, since God operates elsewhere and otherwise in the cosmos, and therefore the second minor premise is just an opinion without proof. Therefore the conclusion follows that atheistic Evolutionism is not necessary.

A second argument that atheistic evolution is impossible arises from the Principle of Sufficient Reason. Everything must have a sufficient reason to establish its certainty. But evolutionary atheism does not have sufficient reason to establish its certainty. Therefore, evolutionary atheism lacks certainty.

The major premise is the principle of sufficient reason. The minor premise is correct for several reasons: first, the logic is wrong to go from evolutionary atheism (a particular) to prove general atheism (an universal); second, the reasons were not sufficient to prevent theistic evolutionists

like Teilhard de Chardin; third, God operates in the cosmos in more ways than in just creation of species, and even there, God would be more likely, according to the Neo-Scholastics, to use secondary causes; and fourth, if the proper form of each body is enough to explain the particular operation of that body, it is not enough to explain different living bodies, different operations, and how all are ordered in a harmonious whole⁶⁵. Therefore, it follows for a number of reasons that evolutionary atheism lacks certainty.

A third argument that atheistic evolution is impossible arises from the Principle of Finality. This argument is especially directed at such popular theories as Emergent Evolution, Creative Evolution, and Naturalistic Evolution, which all deny extrinsic transcendental finality, which is a denial of the Principle of Finality.⁶⁶ First, an emerging universe with no extrinsic cause (God) would be in process for an infinite time, which is a physical impossibility due to entropy. Second, an emerging universe with no extrinsic cause would be moving itself, but to be mover and moved in the same motion violates the Principle of Contradiction. Third, an emerging universe with no extrinsic cause would leave nature completely unexplained, e.g., the river cannot supply itself but is fed by streams watered by rain.

A fourth argument that atheistic evolution is impossible arises from the Principle of Causality. If observable and sensible things were ordered by chance alone, there would be an effect without a

⁶⁵Gilson, *Philosophy*, 75: "If the proper form...to explain the particular...it is not enough to explain...different bodies, different operations, and how all are ordered in a harmonious whole... So, sensible datum looks for sufficient reason, which is God."

⁶⁶Benignus, *Nature*, 100: "Any theory of nature which admits immanent finality alone... excludes both from the energy system which we call nature...It is a mover and moved in the same motion...leaving nature completely unexplained."

cause for the very order of things. So the sensible datum seek a cause, which is God.⁶⁷

In addition to the above *a priori* arguments, there can be an argument *a posteriori* that there is no connection between evolution and atheism is the fact that some Evolutionists are also theists. Teilhard de Chardin, the Dominican priest Leroy, and Dorlodot are theistic promoters of evolution.⁶⁸ Marquart notes that these “promoters of universal evolution are some Animists who hold: first, the necessity of final cause and some formal principle to explain the evolution of the living; second, the soul of man created by God; third, evolution monophylitic or polyphylitic preordained or directed by God (the biosphere of Teilhard de Chardin is an example of monophylitic evolution); fourth, special divine intervention between the origin of plants and the origin of animals so specifically diverse; and fifth, that man’s body may have evolved.” In 2006, the Stanford University biologist Joan Roughgarden published *Evolution and the Christian Faith*, which provides what she calls “a strong Christian defense” of evolutionary biology, illustrating the major points of evolution with biblical passages.⁶⁹

In addition to the *a priori* arguments above from the Principle of Contradiction, the Principle

⁶⁷Gilson, *Philosophy*, 75: “...ordered by chance...an effect without a cause for their very order...”

⁶⁸F.-X. Maquart, *Elementa Philosophica*, 2 vols. (Paris: Andreas Blot, 1937), 2: 522: “Teilhard de Chardin, Leroy O.P., and Dorlodot... qui tenent: necessitatem causarum finalium et alicuius principii formalis viventis ad evolutionem explicandam; animam hominis non oriri per evolutionem sed per immediatam creationem; evolutionem monophyleticam (Biosphera P. Teilhard de Chardin) vel polyphyleticam praeordinari et a Deo dirigi; specialem interventum divinum necessarium esse ad apparitionem vitae vegetativae plantarum et etiam ad apparitionem vitae sensitivae animalium, utpote specificè diversam; et evolutionem ad ipsum corpus humanum forsan se extendere.”

⁶⁹Van Biema, “God,” 50: “Stanford University biologist Joan Roughgarden... ‘a strong Christian defense’ of evolutionary biology, illustrating the discipline’s major concepts with biblical passages.”

of Sufficient Reason, and the Principle of Finality; and also in addition to the above argument *a posteriori*, the opinions of some Neo-Scholastics are helpful to support the thesis.

Calcagno rejects atheism and affirms the existence of God.⁷⁰ He gives a lengthy list of errors about the existence of God, including atheism.⁷¹ He gives a useful classification of atheists, already noted above.⁷² He generally follows the five proofs for the existence of God that are found in St. Thomas.

Carroll rejects atheism and affirms the existence of God.⁷³ An evolving universe is still a created universe. No explanation of evolutionary change challenges the metaphysical account of creation, by which the existence of all things depend on God as their cause. Carroll notes, “When some thinkers deny creation on the basis of theories of evolution, or reject evolution in a defense of creation, they misunderstand creation or evolution, or both” (page 4).

Donat rejects atheism and affirms the existence of God. Atheists without merit assert that the evolution of the universe makes the creator superfluous.⁷⁴ He asserts the intervention of God, saying: “Nor is this (evolutionary) hypothesis able to be commended in this, that the origin of organisms from more natural causes makes a diminution of divine intervention; nonetheless the divine creative act is

⁷⁰Calcagno, *Philosophia*, 2: 314: “Brevis conspectus errorum...Ateismus materialisticus... Atheismus positivisticus...” Ibid., 2: 317: “Deum esse est quidem per se notum secundum se, non vero quoad nos; ac propterea cognosci a nobis non potest sine demonstratione.”

⁷¹Calcagno, *Philosophia*, 2: 316: “Errores circa Dei existentiam...Atheismus...”

⁷²Calcagno, *Philosophia*, 2: 359: “En breve schema atheismi...”

⁷³William E. Carroll. *Creation, Evolution, and Thomas Aquinas*. 27 January 2007
<<http://www.catholiceducation.org/articles/science/sc0035.html>>

⁷⁴Joseph Donat, *Cosmologia*, 3rd ed. (Innsbruck: Rauch, 1915), 254: “...immerito atheistas asserere, evolutionem cosmogonicam creatorem superfluum reddere.

necessary to produce a primitive cell (virtually containing in itself already the perfection of the higher grades of life).⁷⁵

Gardeil follows the proof of St. Thomas for the existence of God, and implicitly rejects atheism. Gardeil cites St. Thomas, noting, “That God exists can be proved in five ways. The first and more evident way is the one taken from motion. It is certain and evident to the senses that some things in this world are in motion.”⁷⁶ Although Aristotle argued from two principles (That whatever is moved is moved by another; It is impossible for a series of moved movers to be infinite), St. Thomas uses more fundamental propositions: “That a being cannot be reduced from potency to act except by something that is in act; Where there is no first term, there can be no ultimate or intermediate term” (Aquinas *Summa Theologiae* 1. 2. 3).⁷⁷ Motion is a wider term than action, and can refer to quantity,

⁷⁵Donat, *Cosmologia*, 311: “Neque talis hypothesis ex eo commendari potest, quod ortum organismorum magis ex causis naturalibus declarat minusque ad interventum divinum recurrit: nihilominus enim actus creativus divinus necessarius est, quo cella primitiva producta est.”

⁷⁶H. D. Gardeil, *Introduction to the Philosophy of St. Thomas Aquinas*, vol. 2, *Cosmology*, trans. John A. Otto (St. Louis: Herder, 1958), 2: 148: “Dicendum quod Deum esse quinque viis probari potest. Prima autem et manifestior via est, quae sumitur ex parte motus. Certum est enim et sensu constat aliqua moveri in hoc mundo” (Aquinas *Summa Theologiae* 1. 2. 3).

⁷⁷Gardeil, *Cosmology*, 2: 145: “De potentia autem non potest aliquid reduci in actum nisi per aliquod ens in actu; Si non fuit primum...non erit ultimum nec medium” (Aquinas *Summa Theologiae* 1. 2. 3).

quality or place.⁷⁸ So the first proof from motion is not just local motion from place to place,⁷⁹ but also includes the movement from one species to another, evolution. Accordingly, the fact of evolution would not be the proof of atheism, but the proof of theism.

Gilson rejects atheism and affirms the existence of God. He notes that unbelievers should not be led to believe that faith is the only reason for the existence of God that a philosopher can have, and cites Moses Maimonides who knew theologians of this kind, Fundamentalists.⁸⁰ Gilson follows the five arguments of St. Thomas for the existence of God, first from the *Summa Theologiae* where the arguments are presented in a succinct and simplified manner, and then from the *Summa Contra Gentiles*, where the philosophical demonstrations are minutely developed.⁸¹ Gilson notes that the most manifest proof for the existence of God is from motion, since no sensible experience is more common

⁷⁸Gardeil, *Cosmology*, 2: 94: “The term ‘motion,’ therefore, as St. Thomas indicates is more abstract and universal than the term ‘action’ or ‘passion.’ Motion, taken abstractly, is not in a particular predicament; reductively, or in the last analysis, it is placed in whatever predicamental genus that terminates it, either in quantity, quality, or place...it is not an abstraction but a concrete reality, and one of the conditions of its production is the causal activity of an agent. From the perspective of this activity motion presents itself with agent and patient, and we may, in consequence, refer it to separate predicaments of action and passion.”

⁷⁹Gardeil, *Cosmology*, 2; 146: “Movere enim nihil aliud est quam educere aliquid de potentia in actum, nisi per aliquod ens in actu; sicut calidum in actu, ut ignis, facit lignum, quod est calidum in potentia, esse actu calidum, et per hoc movet et alterat ipsum” (Aquinas *Summa Theologiae* 1. 2. 3).

⁸⁰Gilson, *Philosophy*, 57: “They are perfect believers who take their faith for evidence... But it is dangerous to lead unbelievers to think that such reasons for the existence of God are the only ones a philosopher can have. Before inadequate arguments, those who have neither faith, nor God, nor demonstrations of His existence, conclude that God does not exist...(or) can only be accepted by an act of faith. Moses Maimonides knew theologians of this kind, as St. Thomas notes (Aquinas *De Veritate* 10. 12).

⁸¹Gilson, *Philosophy*, 59: “The Thomistic proofs for the existence of God...We shall treat of the proofs successively from those two accounts.”

or more striking than motion. Further, the most secret (as opposed to motion most apparent) is the distinction between essence and the act-of-being,⁸² but this distinction is the ultimate metaphysical implication of the five proofs, for the distinction between essence and existence translates the state of second cause, whatever its order of causality, into one and the same formula; it qualifies all the proofs. It is not a sixth way, but the ultimate metaphysical implication of the other five, in the light of the Thomistic interpretation of being. The distinction by the early Aquinas is found in his short treatise *On Being and Essence* (Aquinas *De Ente et Essentia*, 4).

Glenn rejects atheism and affirms the existence of God. Without an explicit rejection of atheism, Glenn states that “Creation is an operation requiring infinite power, and therefore is possible to God alone.”⁸³ He notes that the power of God is ordered in its infinite identity with God’s other perfections, such as His goodness, mercy, wisdom, and justice. He gives the metaphysical principle that underlies the proof from motion for the existence of God, that whatever is moved is moved by something other than itself (*Quidquid movetur ab alio movetur*). Self-movement, strictly understood, is a contradiction in terms and in thought.⁸⁴

Gonzalez rejects evolutionary atheism and its ethical implications. He notes the death of

⁸²Gilson, *Philosophy*, 81: “...it is the distinction between essence and the act-of-being ...translates the state of the second cause, whatever its order of causality, into one and the same formula; it qualifies all the proofs...ultimate metaphysical implication of the other five...in his short treatise *On Being and Essence*.”

⁸³Paul J. Glenn, *Ontology: A Class Manual in Fundamental Metaphysics* (St. Louis: Herder, 1949), 92: “Creation...infinite power, and therefore is possible to God alone...harmony with the ordained power of God, that is, with God’s power as seen in its infinite identity with His other perfections, such as His goodness, mercy, wisdom, and justice.”

⁸⁴Glenn, *Ontology*, 93: “Change is movement and nothing moves itself...Self-movement strictly understood, is a contradiction...”

religion. Man is necessarily subject to mechanical laws. Ethics is not about obligation, but simply predicts what must happen in the future according to the laws of evolution.⁸⁵

Gredt implicitly rejects atheism and affirms the existence of God. He states that God can be known by demonstration *a posteriori*.⁸⁶ Although Gredt lists no adversaries to the thesis (as he normally does) it is clear the atheists would object to the affirmative conclusion. Gredt then continues to prove the existence of God with the thesis: “God, or uncreated being (*ens a se*), exists.”⁸⁷ Gredt then uses the five proofs of St. Thomas under this one heading.

Hellin rejects atheism and affirms the existence of God. He is clear in his opposition not only to atheism in general, but to its various types, including Materialistic, Positivistic, Skeptic, Idealistic, Agnostic, and Pantheistic. Hellin has a specific thesis in which he explicitly rejects atheism and discusses possible personal culpability for it.⁸⁸ Hellin follows the five ways for the proof of the

⁸⁵Irenaeo Gonzalez, “Ethica,” in *Philosophiae Scholasticae Summa*, vol. 3, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 3: 351: “...in hac schola omnia evolutione proveniunt; spiritualitatis inficiuntur; omnia in homine legibus mechanicis, et necessariis subiiciuntur. Ethicae non est statuere quid homines agere debent ut recte procedant, sed praedicere quid cognitus legibus evolutionis, acturi sunt.”

⁸⁶Josephus Gredt, *Elementa Philosophiae*, 2 vols. (Freiberg: Herder, 1921), 2: 157: “Deum esse nobis fit notum demonstratione a posteriori...Demonstratio, qua ex motu probatur primum movens immobile, ex effectu causa prima, ex ente contingente et imperfecto ens necessarium et perfectum, ex ordine rerum primus ordinator, ex voluntate humana ad bonum infinitum ordinata bonum infinitum, est demonstratio a posteriori; atqui ita probatur Deum esse. Ergo.”

⁸⁷Gredt, *Philosophiae*, 2: 160: “Existit Deus seu ens a se.”

⁸⁸Hellin, “Theodicea,” 3: 101: “Atheismus positivus per se semper est culpabilis initio et in perseverantia; per accidens autem potest esse sine culpa actuali in perseverantia; imo per accidens et raro potest esse inculpabilis initio et in perseverantia, etiam diu.”

existence of God proposed by St. Thomas.⁸⁹ Hellin adds additional proofs, such as the proof from entropy and the argument from the origin of life.⁹⁰

Hugon rejects atheism and affirms the existence of God. He rejects the position of Lamarck, who endorsed passive evolution by adaptation to external conditions without Divine Influx.⁹¹ Hugon states, without a footnote, that Darwin admitted some species were established by God. Darwin apparently changed his mind and embraced atheism later in life.⁹² Hugon teaches, “Even is evolution is proved to be factual, this would not exclude Divine intervention, since the effect cannot exceed the cause. However, blind evolution would not give a stronger effect than the ordering of a wise person, therefore even if evolution is proved, it would be caused by an intelligent and wise cause, namely God, the founder of species.”⁹³

Klubertanz rejects atheism and affirms the existence of God. In his book on The Philosophy of

⁸⁹Hellin, “Theodicea,” 3: 49: “De Demonstratione Valida Existentie Dei...De Quinque Viis S. Thomae.”

⁹⁰Hellin, “Theodicea,” 3: 92-93: “Argumentum ex origine vitae et specierum et corporis humani...Argumentum ex entropia...”

⁹¹Eduardo Hugon, *Philosophia Naturalis* (Paris: Lethielleux, 1927), 305: “...sententia est evolutionis passivae absque influxu divinae...Lamarck...”

⁹²Hugon, *Philosophia*, 306: “Admittebat tamen Darwin quasdam species a Deo conditas fuisse.” Gertrude Himmelfarb, *Darwin and the Darwinian Revolution* (New York: Norton Library, 1968), 385: “In an addendum to his autobiography, he (Darwin) spelled out the derivation and implication of a naturalistic ethics: ‘A man who has no assured and no present belief in the existence of a personal God or a future existence with retribution and rewards...’”

⁹³Hugon, *Philosophia*, 309: “Etsi probaretur evolutionis factum, nondum excluderetur interventus divinus. Non datur effectus praestantior suo principio....Ergo, si probaretur factum evolutionis successivae semper admittendus foret interventus causae intelligentis et sapientis, scilicet Dei, specierum conditor.”

Human Nature, he maintains that God is a creator.⁹⁴ Further, God is the final cause of the universe and the human race.⁹⁵ Klubertanz notes that the knowledge of God in this life is “analogous knowledge.”⁹⁶ Nevertheless, Klubertanz notes that even the deaf and the blind can attain knowledge of spiritual things, such as charity, soul, and God. He gives the example of Ludivine Lachance in Canada and of Helen Keller. He notes that the turning point in the life of Keller was the acquiring of language as a medium of attaining knowledge.⁹⁷

Maquart rejects atheism and affirms the existence of God. Maquart notes that a number of Evolutionists are theists, including Cuénot, Davenport, Teilhard de Chardin, Leroy, Dorlodot.⁹⁸ He holds that universal evolution, up to but excluding the human body, does not contradict the demands of reason, as long as it is held, not mechanically, but with divine intervention, not only concurrent to the action of nature, but also by educing the substantial forms of the new species from the potency of

⁹⁴Klubertanz, *Philosophy*, 316: “So far we have discussed three of the causes of the human soul...that its efficient cause is God.”

⁹⁵Klubertanz, *Philosophy*, 325: “Therefore, if there be a created universe, its end must be the ultimate end, or supreme Good, which is God. Consequently, the end of all created things is God...From these considerations it follows that the end of an intellectual substance is God, to be possessed through proper activities of such a substance, that is, through understanding and love. Viewed from the side of the intellectual substance, the possession of the supreme Truth and Goodness is an activity which is happiness (Aquinas *Summa Contra Gentiles* 3. 48).”

⁹⁶Klubertanz, *Philosophy*, 186: “Knowledge of God under present circumstances in this life is a knowledge in terms of sensible material reality, and this is analogous knowledge. God and the angels are pure intelligibles, and not directly intelligible to us.”

⁹⁷Klubertanz, *Philosophy*, 158: “Even deaf and blind can attain knowledge of spiritual things...God...Ludivine Lachance...Helen Keller...”

⁹⁸F.-X. Maquart, *Elementa Philosophiae*, 2 vols. (Paris: Andreas Blot, 1937), 1: 522: “...Cuénot, Davenport...profitentur evolutionem viventium dirigi a Deo...Teilhard de Chardin, Leroy O.P., Dorlodot...a Deo dirigi...Specialem interventum divinum necessarium...”

the material.⁹⁹ He argues that no agent by its own power can produce a superior effect, and so cannot obtain a substantial form superior to its proper form.¹⁰⁰ Therefore, evolution from one species to another is not able to happen without divine intervention educing a new substantial form from the potency of the material. But natural evolution “within” a species up to the highest perfection of that species prepares the eduction of a new form; God operates in that preparation in the genus of dispositive material cause. In the eduction of the new form, God would operate in the genus of formal cause.¹⁰¹ Therefore, evolution without God, for Maquart, would contradict the demands of reason.

Marcozzi rejects atheism and affirms the existence of God. He notes that even primitives today have an idea of God and morality; sometimes very elevated.¹⁰²

La Vecchia implicitly rejects atheism, and affirms the existence of God in the evolutionary process. She argues that when the sense faculties reached the point of maximum perfection in prehomínids, “God would have created a spiritual soul in one or more individuals.”¹⁰³

⁹⁹Maquart, *Philosophiae*, 1: 527: “Evolutio universalis, usque ad corpus humanum exclusive, nullae contradicit exegentiae rationis, dummodo teneatur illam fieri non pure mechanice sed cum intervento divino, non solum ad actionem naturae concurrente sed etiam de potentia materiae educente formas substantiales novarum specierum.”

¹⁰⁰Maquart, *Philosophiae*, 1: 529: “Aliunde nullum agens *ex seipso* potest producere effectum superiorem se...”

¹⁰¹Maquart, *Philosophiae*, 1: 529: “...materiam ita dispositam non informat nisi prius acceperit (in genere causae materialis dispositive) *ab ipso Deo* in ipsa educatione novae formae ultimam dispositionem ad formam (quae hanc dispositionem praecedat in genere causae formalis).”

¹⁰²Vittorio Marcozzi, “Differenza fra l’Anima Umana e l’Anima delle Bestie,” *Doctor Communis* 11: 2-3 (May-December 1958), 127-128: “Piuttosto un accenno riguardo ai ‘primitivi’...I Fuegini...asseriscono che la legge morale viene da Dio, onnipotente, da quale tutto dipende e a cui tutto è sottoposto...Conosce perciò i primi principi: li applica secondo la logica, seguendo ragionamenti esatti ed elevati...”

¹⁰³La Vecchia, *Evoluzione*, 318: “Si è dedotto necessariamente che, al punto di massimo perfezionamento delle facoltà psichiche sensitive, Dio abbia creato un’anima spirituale in uno o

Mondin rejects atheism and affirms the existence of God. Mondin cites Claude Tresmontant to maintain atheism is unthinkable in the age of science.¹⁰⁴ Mondin notes that St. Thomas confronted the problem of atheism when he examined the arguments against the existence of God, but St. Thomas never used the term “atheism.”¹⁰⁵ Mondin argues for the existence of God from the point of view of cosmology, giving an argument from composition of matter and form, an argument from the finite world, an argument from contingency, an argument from motion, and an argument from order.¹⁰⁶ He notes that the motive for creation is God’s goodness.¹⁰⁷ Mondin notes that God is the original font and primary font of all causality: “God is the universal and principle fountain of all being” (Aquinas *De Substantiis Separatis* 14).¹⁰⁸ This means that God not only gives things existence, but existence with order: “The same divine wisdom is the efficient cause (*effectiva*) of all things, and not only gives to things their existence but also in things existence with order, in so far as things are joined to one

più individui.”

¹⁰⁴Battista Mondin, *Manuale di Filosofica Sistemica: Epistemologia e Cosmologia* (Bologna: Studio Domenicano, 1999), 245: “Per questo motivo ha perfettamente ragione il filosofo francese Claude Tresmontant quando sostiene che ‘l’ateismo è rigorosamente impensabile...grazie alle scienze sperimentali.’

¹⁰⁵Battista Mondin, *Dizionario Enciclopedico del Pensiero di San Tommaso D’Aquino* (Bologna: Studio Domenicano, 1991), 69: “San Tommaso non si occupa mai esplicitamente dell’ateismo...Però, egli affronta indirettamente il problema dell’ateismo quando esamina gli argomenti che si possono addurre per contestare l’esistenza di Dio.”

¹⁰⁶Mondin, *Manuale*, 240-244: “La ragione del fondamento trascendente...Argomento della Composizione...Argomento della Finitezza...Argomento della Contingenza...Argomento del Divenire...Argomento dell’Ordine...”

¹⁰⁷Mondin, *Manuale*, 246: “Per capire per quale motivo Dio ha prodotto l’universo è necessario riconoscerli altri due attributi: la volontà e la bontà.”

¹⁰⁸Mondin, *Dizionario*, 108: “Deus est universale et fontale principium omnis esse” (Aquinas *De Substantiis Separatis* 14).

another in an order to the ultimate goal. And so God is the cause of the indissolubility of this harmony and this order, which always remains in whatever way things change” (Aquinas *De Divinis Nominibus* 4. 733).¹⁰⁹

Nogar rejects atheism and affirms the existence of God. He repudiates the Atheistic Existentialists for their denial of morals and religion.¹¹⁰ He notes that every society has recognized God in one way or another.¹¹¹

Renard rejects atheism and affirms the existence of God. The Materialist Evolutionists thought that they had destroyed God. They postulated internal necessity, namely nature itself, as the complete solution to the problem of finality. They spoke of necessity, survival of the fittest, adaptation, evolution, akin to the ancient philosopher Democritus.¹¹² The error of the Materialist Evolutionists is that they did not go far enough. Their argument from the necessity and powers of adaptation in nature

¹⁰⁹Mondin, *Dizionario*, 108: “La stessa divina sapienza è causa efficiente (*effectiva*) di tutte le cose, in quanto porta all’essere le cose, e non soltanto dà alle cose l’essere, ma anche, nelle cose, l’essere con ordine, in quanto le cose si concatenano l’una all’altra, in ordine al fine ultimo. E, ancora, è *causa* dell’indissolubilità di questa armonia e di questo ordine, che sempre rimangono, in qualsiasi modo mutino le cose” (Aquinas *De Divinis Nominibus* 4. 733).

¹¹⁰Raymond J. Nogar, *The Wisdom of Evolution* (New York: Mentor Omega, 1963), 207: “Existentialism repudiates the essential nature of man...All is passing situation...There are no such things as immutable essences, man cannot be regarded as in any way immutable, whether it be in his philosophy, his morals or his religion.”

¹¹¹Nogar, *Wisdom*, 164: “Among man’s psychosocial novelties is a religious sense. The awareness of the spiritual world, man’s supramundane destiny, and God, which every society has recognized in one way or another.”

¹¹²Henri Renard, *The Philosophy of Being*, 2nd ed. (Milwaukee: Bruce, 1957), 152: “Error of Materialist Evolutionists...thought they had destroyed God...thought that all could be solved by speaking of necessity, adaptation, survival of the fittest, as the ultimate reason for order, development and evolution. Fundamentally, this is the old argument of Democritus refurbished to look modern...their argument from necessity is precisely Thomas’ argument from the finality of nature.”

is precisely St. Thomas' argument for the existence of God from finality in nature. The ultimate solution to the problem of finality, that is, the intrinsic determination which is found in things of nature, or in other words, the natural appetite drawing a being to its end, can only be explained ultimately by God, Ipsum Esse, the Author of Nature, the Giver of finality, the End of all beings.¹¹³ Renard notes: "The operation of nature, which is to an end that is determined, presupposes an intellect that established the end of nature, and orders nature to that end. For this reason, every work of nature is called a work of intelligence" (Aquinas *De Veritate* 3. 1).¹¹⁴ And concerning Providence, "That determination by which a natural thing is determined to a particular end does not come from the thing itself but from another. Hence, that very determination to an appropriate effect is proof of providence" (Aquinas *De Veritate* 5. 2. ad 5).¹¹⁵ Therefore, the argument for finality leads directly to the proof of the existence of God; not the supreme "watchmaker" of Fontenelle and Voltaire in the eighteenth century or of Paley¹¹⁶ in the nineteenth century, but a God who is "Subsistent Intellect" and

¹¹³Renard, *Philosophy*, 149: "The natural necessity inherent in those beings which are determined to a particular thing is a kind of impression from God...that which creatures receive from God in their nature..." (Aquinas *Summa Theologiae* 1. 103. 1).

¹¹⁴Renard, *Philosophy*, 151: "Operatio naturae, quae est ad determinatam finem praesupponit intellectum, praestituentem finem naturae et ordinantem ad finem illam naturam, ratione cuius omne opus naturae dicitur esse opus intelligentiae" (Aquinas *De Veritate* 3. 1).

¹¹⁵Renard, *Philosophy*, 151: "Ista determinatio qua res naturalis determinatur ad unum, non est ei ex seipsa sed ex alio, et ideo ipsa determinatio ad effectum convenientem providentiam demonstrat" (Aquinas *De Veritate* 5. 2. ad 5)

¹¹⁶Thomas Mautner, ed., *Dictionary of Philosophy* (London: Penguin, 1997), 406: "William Paley (1743-1805) studied and taught at Cambridge...His *Natural Theology* (1802) was an influential work. It contains a persuasive statement of the Argument from Design...throughout the nineteenth century his writings... were frequently prescribed reading in the English universities."

therefore Pure Act.¹¹⁷

Finally, the concept of evolution as a proof of atheism is equivocal. Equivocal indicates predication where the verbal term is identical, but the concepts have no connection in the mind.¹¹⁸ Nogar says, “These papers (at the Darwin Centennial Celebration at the University of Chicago in 1959 composed of fifty international experts on evolution reporting) on cultural anthropology, archaeology, psychology and language... show this radical change in the concept of evolution...”¹¹⁹ Darwin does not impose evolution on a grand scheme of biological, or cosmic, history but the origin of the species.¹²⁰ The general meaning of the term “evolution” is tied to biological transformation of species by mutation and natural selection. Philosophical Evolutionism may attempt to extend that meaning.¹²¹ Herbert Spencer and some others wish to extend the term “evolution” to the level of a universal law that pertains to all transformation in the universe. Those followers of Darwin, notably Huxley and Spencer in England and Haeckel in Germany, made unwarranted extensions of the theory into fields of

¹¹⁷Renard, *Philosophy*, 150: “The argument for finality leads directly to the proof of the existence of God; not the ‘watchmaker’ of Fontenelle and Voltaire... ‘Subsisting Intellect,’ and therefore, Pure Act.”

¹¹⁸Renard, *Philosophy*, 93-94: “Equivocal...the verbal term is identical...concepts have no connection in the mind. An ‘equivocation’ is the use of an ambiguous word; it is a play on words. It indicates the use of a word which has quite different meanings, so that although the oral or written term is identical, the concept, to be true, must change completely.”

¹¹⁹Nogar, “Evolution,” 350: “...not only show this radical change...fashioner of his own future.”

¹²⁰Mortimer J. Adler, *The Great Ideas: A Lexicon of Western Thought* (New York: Scribner, 1999), 204: “Darwin does not impose evolution on a grand scheme...” Klubertanz, *Philosophy*, 378: “Evolution means development or biological change.”

¹²¹La Vecchia, *Evoluzione*, 317: “In questo scritto abbiamo dapprima considerato il problema dell’evoluzione biologica, distinguendo anzitutto tra evoluzione ed evoluzionismo.”

philosophy and ethics. The extension of “evolution” is not univocal, as explained by Nogar.¹²² The extension of “evolution” is not analogous, as explained by Renard.¹²³ The extension of “evolution” is equivocal, as explained by Nogar.¹²⁴

The Level of Certitude

The purpose of this section of the dissertation is to assess the minimum level of certitude for the thesis proposed, with an additional comment of any suspected higher level of certitude. There are various levels of certitude that can be chosen. Opinion is defined as intellectual assent (or disagreement) given to one part of a contradiction with fear of the opposite.¹²⁵ Possibility is defined as

¹²²Nogar, *Wisdom*, 191-192: “Theoretically, the concept of evolution should be regarded not as a single valued law but as a name for a series of models, all having a historical context. There are historical trends various sciences have determined...but the trends are specific, local, limited in sphere, and limited in time. None of these trends can be generalized to the degree needed for universal univocal extension.”

¹²³Renard, *Philosophy*, 97: “In a composite concept, a change can be made by dropping notes, e.g. man as rational animal, irrational animal, animal. These concepts can be predicated intrinsically of various individuals. Yet they also differ – are the analogous? No. In each the concept of “animal” remains the same; it is a universal idea. There is no analogy of attribution, but only univocity of genus. There is no analogy of proportionality, not in the order of reality.”

¹²⁴Nogar, *Wisdom*, 185: “The term ‘evolution’ signifies something quite different in the organic and inorganic world. What is retained is the space-time concept of continual, natural change and development. Beyond this generic meaning, the term changes its definition and becomes equivocal.” Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 347: “The concept of ‘fact of evolution’ valid in the matter of organic origins and diversity as described above, becomes equivocal as it is applied to the origin of life, chemicals, stars, nebulae, mind, language, culture. Neither ‘fact’ nor ‘evolution’ retain the same meaning, and the evidence and inferences are of another kind, varying from discipline to discipline.”

¹²⁵Leovigildo Salcedo, “Introductio in Philosophiam, Logica, Critica,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 353: “Opinio est assensus vel dissensus praestitus in unam partem contradictionis cum formidine

the capacity for existence for a concrete possible thing: internally, that its constituent characteristics are not impossible, and additionally externally possible, if there is power to produce the thing.¹²⁶

Probability, also called likelihood, is defined as the weight of motives, or the accumulation of serious motives, for prudent assent to some proposition, which is intrinsic probability if the motive arises from the nature of the thing, and can be extrinsic probability if the motive is from authority, which can also suppose the internal motive.¹²⁷ Summary of Probabilities is defined as an accumulation of probable arguments, considered according to their force, which results from a mere juxtaposition. Convergence of Probabilities is defined as an accumulation of probabilities which converge to produce a sufficient reason. Moral certitude is defined as firm assent to one part of a contradiction whose necessity arises from the moral law in the physical (not ethical) sense, e.g., every mother instinctively loves. Physical certitude is defined as firm assent to one part of a contradiction whose necessity arises from the very physical nature of the thing, e.g., the law of gravity. Metaphysical certitude is defined as firm assent to one part of a contradiction whose necessity arises from metaphysical necessity, e.g., my own

alterius.”

¹²⁶Jesu Iturrioz, “Metaphysica Generalis,” in *Philosophiae Scholasticae Summa*, vol. 1, eds. Professores Societatis Iesu (Madrid: BAC, 1957), 1: 653: “Possibilitas est capacitas ad existendum, et est forma qua concretum possibile ut tale constituitur. Possibilitas postest esse: Interna: est ipa non repugnantia in notis constitutivis (absoluta)...Externa est aptitudo ad existendum, proveniens ex eo quod virtus adsit capax rem producendi (relativa).

¹²⁷Salcedo, *Philosophiam*, 1: 353-354: “Probabilitas, quae etiam verisimilitudo dicitur, est pondus motivorum seu complexus motivorum gravium ad assentiendum prudenter alicui enuntiabili. Summa Probabilitatum est cumulus argumentorum probabilium, consideratus secundum eam vim, quae resultat ex mera iuxtapositione eorum. Convergentia Probabilitatum est cumulus probabilitatum qualificatus, nempe consideratus sub principio rationis sufficientis... convergunt.

existence.¹²⁸

Certitude rejecting atheism could arise from some observable fact or experiment. However, there is no experiment to prove evolution.¹²⁹ However, some restricted observation of evolution is possible within species.¹³⁰ Evolution involves movement from one species to another, and the new species is able to be observed; so the existence of God is commonly proved from motion. Evolution involves the production of new observable species, the end result and final goal of its process; so the existence of God is commonly proved from finality. Gilson notes that “each proof (of the *Quinque Viae* of St. Thomas) is based on the empirical observation of a fact.”¹³¹ Concerning the fundamental nature of motion as observable, Gardeil notes that the entire philosophy of nature relates to mobile being, as St. Thomas says: “The philosophy of nature, which is called *Physics*, treats those things which depend on matter, not only for existence but also in definition. And because everything that has matter is mobile, it follows that *mobile being* is the subject of the philosophy of nature” (Aquinas *In Phys.* 1. 1. 3-4).¹³²

¹²⁸Salcedo, *Philosophiam*, 1: 362: “Certitudo est...assensus firmus in aliquam partem contradictionis sine prudente formidine errandi...Dicitur vero metaphysica, physica, vel moralis ...prout assensus determinetur a motivo, quod sit necessitas metaphysicae, physicae vel moralis.”

¹²⁹Possenti, “Vita,” 222, note 22, which indicates that it is epistemology that decides on the decisive experiment, but there does not seem to be a crucial experiment for evolution. Raymond J. Nogar, “From the Fact of Evolution to the Philosophy of Evolutionism,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 360: “So there is no single experiment to prove evolution.”

¹³⁰Carlo Boyer, *Cursus Philosophiae*, 2 vol. (Bruges: Desclée de Brouwer, 1939), 2: 191: “Possibilis est evolutio intra plures inferiores gradus classificationis...II. Ex quibusdam factis...hoc sane videntur demonstrare...”

¹³¹Gilson, *Philosophy*, 76: “Each proof is based on the empirical observation of a fact.”

¹³²Gardeil, *Philosophy*, 2: 10: “De his vero quae dependet a materia non solum secundum esse sed etiam secundum rationem est Naturalis, quae Physica dicitur. Et quia omne quod habet

Certitude rejecting atheism could arise from some philosophical explanation that exists. Explanations were given by several Neo-Scholastics: Benignus, Calcagno, Donat, Gardeil, Gilson, Glenn, Gonzalez, Gredt, Hellin, Hugon, Klubertanz, La Vecchia, Maquart, Marcozzi, Mondin, Nogar, and Renard.

Certitude rejecting atheism could arise if the argumentation was based on some philosophical principles. The necessity of evolutionary atheism is not proved by the principle of contradiction, since the works of God are more than just creation, and also since philosophers such as Teilhard de Chardin are evolutionary theists. Evolutionary atheism is not proved by the principle of sufficient reason, since material powers alone are not sufficient to produce the vital principles for life, new species, and the body of man.¹³³

Certitude rejecting atheism could arise if the explanation is sufficient, due to the principle of sufficient reason. Since the argument from universal human consent at least shows a theistic consensus that is morally universal, constant and unshakable, about this serious matter that affects the future goal of the entire human life.¹³⁴

Certitude rejecting atheism could arise if the explanation was rooted in St. Thomas Aquinas, thereby being faithful to tradition. St. Thomas argues for the existence of God in five ways. Several of these ways have particular relevance to evolution. Evolution involves metaphysical motion, the first

materiam mobile est, consequens est quod *ens mobile* sit subiectum Naturalis Philosophiae” (Aquinas *In Phys.* 1. 1. 3-4).

¹³³Hellin, “Theodicea,” 3: 92: “Argumentum ex origine vitae et speierum et corporis humani.”

¹³⁴Hellin, “Theodicea,” 3: 94-95: “Argumentum ex consensu generis humani...datur circa Dei existentiam consensus moraliter universalis, constans et invincibilis, de re gravissima, qualis est Deus, finis totius humanae vitae...”

argument of St. Thomas. Evolution involves grades of perfection, the fourth argument of St. Thomas. Evolution involves finality, the fifth argument of St. Thomas.

Certitude rejecting atheism could arise if Neo-Scholastics agree on the impossibility of evolutionary atheism, but all the Neo-Scholastics do agree that atheism is impossible. Hellin explicitly notes that this is the “common opinion” of the Neo-Scholastics.¹³⁵

Certitude rejecting atheism could arise due to recent scientific confirmation by convergent scientific arguments, such as the argument from entropy and the argument from life origins.¹³⁶ First, the argument from entropy, alleged by Donat, Eymieu, Hontheim and Boedder, holds that the universe will have an end, since (entropy) the conversion of energy into heat will eventually end all useful mechanical movement in the cosmos. If the cosmos has an end, it is finite, and if it is finite it has a beginning that must have an extra-mundane cause. Secondly, the argument from life origins, alleged by the Franciscan priest Gemelli, L. Roure, Vialleton, Muckermann, and Grasset, holds that the origin of life itself, the origin of species, and the origin of the human body, all need a supra-material cause, which at least remotely is God. Pope Pius XII pointed out the connection between these scientific developments and the existence of God in his presentation to the Pontifical Academy of Social Sciences on 22 November 1951 entitled: “The Proofs for the Existence of God in the Light of Modern Natural Science.”¹³⁷ The pope notes that the arguments from motion and from order that St. Thomas

¹³⁵Hellin, “Theodicea,” 3: 106: “Atheismus dubitativus, in eo qui nondum certo cognovit Deum, per se est possibilis sine ulla culpa; sed cito vertetur in culpabilem, si dubitans non investiget, vel si investigando non invenit. Es sententia communis.”

¹³⁶Hellin, “Theodicea,” 3: 93: “Argumentum ex entropia.” Ibid., 92: “Argumentum ex origine vitae et speierum et corporis humani.”

¹³⁷Pope Pius XII, 22 November 1951, “Le Prove della Esistenza di Dio alla Luce della Scienza Naturale Moderna” *Acta Apostolicae Sedis* 44 (1952): 31-43. Confer: Hellin,

uses for the poor of the existence of God have more force from the new theories of motion and entropy.

Certitude rejecting atheism could arise if the opposite opinion is tenable. However, theism is more tenable than atheism, especially relative to the principle of sufficient reason. The arguments of St. Thomas provided five different cogent reasons. There is also an argument for the existence of God from the universal consent of the human race, and this is a very serious matter involving the ultimate goal of life.¹³⁸ This argument for universal human consent was endorsed by Plato, Cicero, many Fathers of the Church, and among the Scholastics; Chossat, Hontheim, Lennerz, Monaco, Urráburu, and Schiffini. That the argument from universal consent has a persuasive force (*vim suasivum*) leading to more reasoned proofs is held by: Billot, Buonpensier, Garrigou-Lagrange, Sertillanges, Mercier, Van De Meersch, and Descoqs.

Certitude rejecting atheism could arise if the objections of adversaries are able to be answered. Atheistic objections can be answered by the theist Neo-Scholastics.¹³⁹

OBJECTION: Marvelous order in the world is disproved by tidal waves, unjust wars and oppression of the poor. REPLY: Many other things show the Intelligent Design of a most wise designer; SECOND REPLY: Some things fall under secondary providence relative to universal good

“Theodicea,” 88: “In eo sermone ...argumenta ex motu et ex ordine, quae sunt apud S. Thomam multum roboris accepisse ex novis theoriis circa mutabilitatem rerum, quae pervadit usque ad atomos et elementa atomorum, et usque ad ipsam materiam, et circa aetatem et durationem mutationum mundi.”

¹³⁸Hellin, “Theodicea,” 3: 94-95: “Argumentum ex consensu generis humani...datur circa Dei existentiam consensus moraliter universalis, constans et invincibilis, de re gravissima, qualis est Deus, finis totius humanae vitae...”

¹³⁹Hellin, “Theodicea,” 3: 73: “Obiectiones.”

OBJECTION: Chance explains order and life in the world. REPLY: Life is beyond material power.

OBJECTION: There is no finality in the pain of animals. REPLY: It suffices that many other things are explained by Divine Wisdom; SECOND REPLY: Contingent beings are corruptible, but defects in contingent nature are not the defects of the Intelligent Designer.

OBJECTION: Finite world order does not need an Infinite Cause. REPLY: I distinguish the need. Proximate needs could be natural, since God uses secondary causality. Ultimate needs for order in the universe require an Infinite Cause.

Certitude rejecting atheism can be had from the possibility of philosophers and theologians admitting this mode of origin without damage to their other beliefs. Neo-Scholastic philosophers are all theists.¹⁴⁰ In theology, the certain ability “to know” the existence of God from creatures as the cause (God) through the effect (creatures) is an article of faith (*de fide*); and the ability “to demonstrate” the existence of God is reductively an article of faith (*proximum fidei*).¹⁴¹ Ecclesiastical documents containing this affirmation include the First Vatican Council,¹⁴² the Anti-Modernist Oath

¹⁴⁰Hellin, “Theodicea,” 3: 34: “Nostra sententia docet intellectum suis naturalibus viribus posse demonstrare Dei existentiam a posteriori, tamquam causam per effectus, independenter ab omni auxilio supernaturali et ab omni vocatione interna Dei. Est communis catholicorum et certissima in philosophia.”

¹⁴¹Hellin, “Theodicea,” 3: 35: “In Theologia autem est de fide Dei existentiam posse certo *cognosci* ex creaturis tamquam causam per effectus; et est proximum fidei eam *demonstrari* posse.”

¹⁴²Henricus Denzinger, *Enchiridion Symbolorum, Definitionum et Declarationum de Rebus Fidei et Morum*, enlarged 28th ed., ed. Carolus Rahner (Barcelona: Herder, 1952), n. 1806: “Si quis dixerit Deum unum et verum, Creatorem et Dominum nostrum, per ea quae facta sunt, naturali rationis lumine certo cognosci non posse, anathema sit.” Note that the citation of Denzinger is done by item number, which remains the same as new material is added in frequent subsequent editions; so standard is this book, that at the Gregorian University in Rome there was a copy of Denzinger on the desk for every oral examination.

required by Pope Pius X,¹⁴³ the Retraction of Bautain,¹⁴⁴ the Retraction of Bonnetty,¹⁴⁵ and the teaching of Pope Pius XII in the Encyclical Letter *Humani Generis*.¹⁴⁶

Certitude can be had from the fact the theism as part of the providential plan for evolution of species is the best answer now for the origin of the species.¹⁴⁷ St. Thomas makes a distinction between a “verified” universal (*dici de omni*) and a “provisional” universal (*ut nunc*).¹⁴⁸ This provisional universal, within a working hypothesis, is very useful in the investigation of nature. An example of a verified universal (*dici de omni*) is that in a right triangle every right angle has ninety degrees. An example of a provisional universal (*ut nunc*) is “white” predicated as a common property of swans, or evolution predicated as the common property of every origin of species. The example of the right

¹⁴³Denzinger, *Enchiridion*, n. 2145: “Deum rerum omnium principium et finem naturali rationis lumine per ea quae facta sunt, hoc est per visibilia creationis opera, tamquam causam per effectus, certo cognosci, adeoque demonstrari posse, profiteor.”

¹⁴⁴Denzinger, *Enchiridion*, n. 1622: “Ratiocinatio potest cum certitudine probare existentiam Dei...”

¹⁴⁵Denzinger, *Enchiridion*, n. 1650: “Ratiocinatio Dei existentiam...cum certitudine probare potest...contra atheum...”

¹⁴⁶Denzinger, *Enchiridion*, n. 3005: Pope Pius XII, 12 August 1950, Encyclical Letter *Humani Generis*: “Nam licet humana ratio, simpliciter loquendo, veram et certam cognitionem unius Dei personalis, mundum providentia sua tuentis et gubernantis...suis naturalis viribus ac lumine assequi revera possit, nihilominus non pauca obstant, quominus eadem ratio hac sua nativa facultate efficaciter fructuoseque utatur” (*Acta Apostolicae Sedis* 42 [1950] 561).

¹⁴⁷John A. Oesterle, “The Significance of the Universal *ut nunc*,” in *The Dignity of Science*, ed. James A. Weisheipl (Washington, D.C.: Thomist Press, 1961), 27: “...we are apt to overlook this distinction between the verified *dici de omni* and the provisional one called universal *ut nunc*, and we tend to ignore the importance the latter has as a tool particularly for the investigation of nature.”

¹⁴⁸Oesterle, *Universal*, 27, cites St. Thomas: “Hoc autem contingit vel *ut nunc*, et sic utitur quandoque *dici de omni* dialecticus; vel *simpliciter* et secundum omne tempus, et sic solum utitur eo demonstrator,” (Aquinas *In Post. Anal.* 9. 4).

triangle is a property based on certain (*propter quid*) demonstration. The example of the white swans is based on an incomplete (*quo*) induction, since the reporters had never seen a black swan. Thus, the providence of God as part of the evolutionary plan for every origin of species is the best answer we have now.¹⁴⁹

The level of certitude for “evolutionary atheism is impossible ” is at minimum at the level of the metaphysically certain. The proof is from the principle of contradiction. The proof is also from the principle of sufficient reason. The proof is also from the principle of finality. Further, the convergence of all of the above arguments are proof, especially the fulfillment of the principle of sufficient reason. This agrees with the opinion of Hellin, who says his opinion “the common opinion of all Catholics and is most certain in philosophy.”¹⁵⁰

Having come to the correct conclusion on the philosophical level of certitude, the philosopher must still conclude with some humility. The philosophy of nature does not disregard the objects observed and perceived by sense.¹⁵¹ This is the method of Aristotle and St. Thomas.¹⁵² Thus from

¹⁴⁹Klubertanz, *Philosophy*, 425: “...a scientific theory is often ‘proved’ and accepted in the field, when it effects a systematic organization and unification of data, and leads to further investigations, insights and theories. The scientific theory of evolution preforms these functions. That is why scientists almost universally accept it, and from the viewpoint of present evidence and biological theory, apparently with sufficient scientific justification for a scientific theory.”

¹⁵⁰Hellin, “Theodicea,” 3: 34: “Nostra sententia docet intellectum suis naturalibus viribus posse demonstrare Dei existentiam a posteriori, tamquam causam per effectus, independenter ab omni auxilio supernaturali et ab omni vocatione interna Dei. Est communis catholicorum et certissima in philosophia.”

¹⁵¹Gardeil, *Cosmology*, 7: “...the manifestations of nature can be explained on two levels, one philosophical and the other scientific in the modern sense.”

¹⁵²Gardeil, *Cosmology*, 4: “...St. Thomas...but the sensible matter, *materia sensibilis*, is retained...On this methodological foundation, Aristotle erected his remarkable system...”

created things we can have the concept of being, substance, life, wisdom, limitation, excess; and thus we can form a concept of a perfect being without any limit, and with excess over all, which is the concept of God.¹⁵³ However, it must be noted that the proof for the existence of God is not a proof *a priori*. An *a priori* proof would demand the demonstration of causes or reasons *a priori*. However, God does not have any causes or reasons for His existence *a priori*.¹⁵⁴ Further, even from created things (*a posteriori*), God is not essentially known to us (*quoad nos*) but can be demonstrated.¹⁵⁵

¹⁵³Hellin, "Theodicea," 3: 37: "Nam ex rebus creatis habemus conceptum entis, substantiae, vitae, sapientiae, limitationis, excessus; et sic possumus formare conceptum entis perfecti sine ullo limite, et cum excessu super omnia, qui est conceptus Dei."

¹⁵⁴Hellin, "Theodicea," 3: 37: "Non minus facile ostenditur Deum non posse demonstrari *a priori*...Non postest demonstrari *a priori*, quia demonstratio *a priori* petitur ex causis aut rationibus *a priori* rei demonstrandae; atqui Deus non habet ullas causas vel rationes *a priori* suae existentiae..."

¹⁵⁵Hellin, "Theodicea," 3: 19: "Licet propositio 'Deus est' sit per se nota quoad se, non est tamen per se nota quoad nos, et sine demonstratione scientifice admitti nequit." Denzinger, *Enchiridion*, n. 3005: Pope Pius XII, 12 August 1950, Encyclical Letter *Humani Generis*: "Nam licet humana ratio, simpliciter loquendo, veram et certam cognitionem unius Dei personalis, mundum providentia sua tuentis et gubernantis...suis naturalis viribus ac lumine assequi revera possit, nihilominus non pauca obstant, quominus eadem ratio hac sua nativa facultate efficaciter fructuoseque utatur" (*Acta Apostolicae Sedis* 42 [1950] 561).

THE GENERAL CONCLUSION

Goals of this dissertation were to explore the philosophy of evolution in twentieth-century Neo-Scholastic literature, and to produce some theses for an academic class in philosophy. Both goals were fulfilled. The analysis of literature led to a deeper consideration of the nature of the continued debate about evolution. The presentation of the theses for the academic class led to a convenient tripartite division of evolution: first, evolution considered metaphysically, second, evolution in the philosophy of man, and third, evolution as a fruitful concept and universal law.

Method in this dissertation involved analysis, heuristic, and synthesis. The dissertation began with analysis in the consideration of literature produced by 120 Neo-Scholastic philosophers. Then, heuristic, which is the part of analysis concerned with discovery, in order to discover the special problems in treating evolution. The dissertation then moved to synthesis in the form of thirteen academic theses, each with its pertinent proof. The development of the dissertation in this logical manner gave the entire presentation both a comprehensiveness and unity not found elsewhere.

Contributions of this dissertation to the philosophy of evolution involve a number of new items. First, the production of an academic course of the thirteen theses on the philosophy of evolution is significant and useful, since no one else has such a course relating extensively to the Neo-Scholastics. Second, this presentation of the Neo-Scholastic philosophy of evolution covers every major aspect of the metaphysical nature and equivocal application of evolution, with both *a priori* and *a posteriori* arguments. Third, this presentation of the Neo-Scholastic philosophy of evolution was truly philosophical, and always attempted to relate issues to philosophical principles. Fourth, the academic presentation of the Neo-Scholastic philosophy of evolution always attempted to relate each

thesis to some observed facts in order to embrace a moderate realism. Fifth, this presentation attempted to aid the reader by using the thesis system for increased clarity. Sixth, an extensive consideration of the roots of the Neo-Scholastic philosophy of evolution as founded in the principles of St. Thomas Aquinas was developed. Seventh, an extensive consideration of the certitude of each academic thesis was developed. Eighth, a general index was provided for the use of serious researchers. Ninth, a special index concerning the works of St. Thomas Aquinas was also provided, and illustrates the continued great usefulness of his philosophy. Tenth, the dissertation explained how Neo-Scholastics who engaged in activism fit nicely into the treatment of the evolving future of man, and also cultural evolution, areas largely neglected by the traditional Evolutionists.

Having treated the contributions of the dissertation, some conclusions can now be drawn. New acceptance of evolution, identification of the philosophical difficulties of evolution, surprises arising from the survey of literature, the continuing relevance of Aristotle, the foundational value of St. Thomas Aquinas, twentieth-century changes in Neo-Scholasticism, the Gregorian University as a mirror of change illustrated by the treatment of evolution, the importance of the evolutionary philosophy of man, and the importance of humility in drawing conclusions about evolution, all involved significant conclusions.

First, some major conclusions concerning the philosophy of evolution among Neo-Scholastics appeared as a revision of prior positions. The current Neo-Scholastic philosophy of nature can give answers to the objections of the early twentieth-century Neo-Scholastics. Such serious objections involved the principle of causality, which states that agents produce results similar to themselves (*Oportet agens esse simile facto*: Aquinas *Summa Theologiae* 1. 91. 2), and that effects cannot exceed their cause (*Simile fit a suo simili*: Aquinas *Summa Theologiae* 1. 65. 4). Today, Neo-Scholastics can

reply that the principle of causality holds true with a singular cause, but not necessarily with multiple causes. Other principles have been applied by Neo-Scholastics to begin to explain evolution philosophically, such as providence, chance and causality *per accidens*. Most important, secondary causality is a philosophically crucial notion to argue *a priori* to the evolution of life through abiogenesis, to evolution of species, to the evolution of man.

Second, special problems arise in the treatment of the philosophy of evolution. The particular question of underlying problems arises due to the long debate concerning evolution. For 150 years, evolution has been debated and continues to be debated. Other scientific hypotheses have been easily accepted. What is the unusual character of evolution that makes it an object of continued debate? There is a scientific basis of the problem with evolution. The hypothesis of evolution has not actually been proved scientifically. Nevertheless, the philosopher can still continue to examine evolution to determine any philosophical problems or contradictions. The philosopher quickly notes problems with definition, with judgement, with reasoning and with belief. Problems with definition arise due to a lack of definition in some cases, or the use of vague popular definitions, or the use of a technical definition taken from one of the thirty different schools of evolution, or from the equivocal use of the term evolution as an universal law. Problems with judgment that “evolution is true” arise from the thirty different types of evolutionary explanation, each with its own concept of “true” evolution. Problems with reasoning arise because evolution is more in the genus of history, not repeatable, and largely not observable, rather than in the genus of science which argues from observation, repeatable experiments, and mathematics. Problems with belief arise due to the different the methods of science, philosophy, and theology, each of which needs to be respected by the practitioners of another method, such as science explaining religion, and *vice versa*. Modern Neo-Scholastic solutions to these problems

involve personal meetings for public dialogue which has been done by Pascual, and also the reunion of epistemology with the philosophy of nature which has been done by Mondin.

Third, some surprises arose in the treatment of the philosophy of evolution.

Surprisingly, St. Thomas Aquinas (1225-1274) proved extremely useful for the modern problems of philosophy of evolution. Thomistic philosophy provided the principles of almost all the argumentation favoring evolution. One might suppose the Thomism would be contrary to evolution, but this does not seem to be the case. That same Thomistic philosophy provided a needed background for the critique of some of the equivocal applications of evolution as a universal law. The number of useful texts of Aquinas was both impressive and unsuspected in confronting a modern problem only 150 years old.

Surprisingly, also, was the prominence of North American Neo-Scholastics for a philosophical explanation of how evolution actually works. There were a number of different hypothesis, but each was well argued philosophically. Many of these Neo-Scholastics had been trained at the Albertus Magnus Lyceum which successfully promoted the philosophy of nature in opposition to the theory of Jacques Maritain who maintained a division between nature and metaphysics. The North Americans trained there consequently made significant contributions to the philosophy of evolution, more so than any other group.

Surprisingly, the problem of an evolutionary future for man has been largely left open due to the influence of chance in evolution. The Evolutionists, tied to survival of the fittest, were lacking especially in the reasons for moral behavior. Evolutionists also have the problem of the dilution of good genetic material in man by charitable care for the weak, thus eroding the action of the survival of the fittest. However, the Neo-Scholastics had a significant background in area of the future of man,

and did provide extensive explanations both in natural and moral philosophy. Neo-Scholastic philosophers and theologians, and the popes trained in Neo-Scholasticism, were concerned about the cultural evolution of peace and justice during a significant part of the twentieth century, and more intensely concerned as the century progressed.

Fourth, Aristotle proved very useful in the philosophy of evolution. Aristotle has a theory for the reality of chance, one of a number of elements in the explanation of evolution. Aristotle's theory of Hylemorphism is still the most reasonable account of substantial change, which is applicable to evolution.

Fifth, St. Thomas Aquinas was important in providing principles for the philosophy of evolution. Although Aquinas provided many principles, some very critical ones need and explicit mention here. St. Thomas has a view of the order in the universe in which lower creatures are in the service of the higher, and have an appetite for higher things (Aquinas *Summa Contra Gentiles* 3. 22). St. Thomas endorses secondary causality (Aquinas *Summa Theologiae* 1.105. 5). St. Thomas always starts out his philosophy with the observable, which allows for causality *per accidens* (Aquinas *In Phys.* 2. 1. 6; Aquinas *In Phys.* 2. 9. 446) and for chance (Aquinas *Summa Contra Gentiles* 3. 74). St. Thomas endorses the action of the providence of God (Aquinas *Summa Contra Gentiles* 3. 74), thereby offering a final cause for evolution.

Sixth, Neo-Scholasticism itself changed during the twentieth century, especially in the treatment of the philosophy of nature, where evolution is considered.

Neo-Scholasticism changed due to the challenge of new developments in science. These new material developments had not been met by the old Scholasticism, as noted by Jacques Maritain. Neo-Scholastic philosophy had to meet these new challenges by developing new structures and new

insights. Most Neo-Scholastics responded to this general challenge by noting their commitment to challenge new developments in science and philosophy itself. Hoenen brought the theory of relativity and the like into philosophical cosmology. Scientific method was scrutinized by the Neo-Scholastics. The mathematical method of science was not applicable to philosophy. Calcagno at the Gregorian University warned against mere use of statistics in philosophy. However, methodic use of the principle of observation in science does offer a good starting point for reasonable philosophy.

Neo-Scholasticism revised some of its departments for the treatment of philosophy. The problem of the possibility of a philosophy of nature was raised by Maritain, who thought that science and philosophy were incompatible. This was not the view of William Kane at the Aquinas Institute and the Albertus Magnus Lyceum, in River Forest, Illinois, outside of Chicago. Science was welcome in the halls of philosophy. Raymond Nogar taught at the Aquinas Institute and produced his book, *The Wisdom of Evolution* (1963). Later, in Rome, Battista Mondin reunited epistemology with the philosophy of nature in his book, *Manuale di Filosofica Sistemica: Epistemologia, Cosmologia* (1999).

Neo-Scholasticism changed its audience, language, Church approbation, and specific applications. The problem of educating the wider audience involved the communication of the fruits of philosophy. All the Neo-Scholastics were educators. The change to the vernacular slowly followed changes in style at universities. Universities and seminaries, which had previously trained theologians, began to train laity in multiple faculties. Students began to be trained in discovery, rather than academic disputations seeking certitude. There was a movement from certitude among scholars to creativity. Departments of philosophy expanded philosophical programs, especially in elective courses.

Neo-Scholasticism began to consider the practical applications of philosophy. The problem of

activism arose from the dissatisfaction of trained Neo-Scholastics with merely academic philosophy. Poverty in South America caused a number of Neo-Scholastics to develop Liberation Theology and practice. The popes, all trained Neo-Scholastics, indirectly aided such movements by papal writings throughout the twentieth century, with an emphasis on social justice and peace. The Neo-Scholastics in the Liberation movement continued to teach and write a great number of publications. These Neo-Scholastics brought the old Scholastic philosophy of “special ethics” to modern practical applications.

Seventh, the faculty of the Gregorian University in Rome provided an example of the development of the philosophy of evolution and its teaching. The current course at the Gregorian University is restricted in two major ways. It generally restricted the treatment of evolution to the philosophy of man. Further, it generally restricted the treatment of evolution to biological evolution. This restricted presentation gives greater emphasis to the scientific issues of evolution than to the philosophical issues. The course has contemporary characteristics. It is taught in the Italian language, and the student notes are in Italian. The course book no longer sought ecclesiastical approval for publication. The course is open to all students, not just clerical students. Such modern characteristics are far different from the text books and classes during the early twentieth century.

At least eight of these changes deserve fuller treatment. These innovations, involving the concern for the modern, divisions in the philosophy of nature, the promotion of epistemology related to science, and the development of individual courses taught in Italian, can be seen to have slowly developed during the course of the twentieth century. Other innovations at the Gregorian University concerning evolution involved finality, hominization, the Anthropic Principle, and education.

Innovation at the Gregorian University involved the philosophical concern for modern problems, such as evolution. Calcagno, in 1937, treated evolution in ten pages in the tract on plant

life. Boyer, in 1939, treated evolution in seventeen pages as an addition to human intellectual life. Siwek, in 1965, places the treatment of evolution in the beginning of the treatment of life, and spends forty-nine pages on evolution, but still uses the Latin manual style. La Vecchia expands the philosophy of evolution in an Italian textbook of 330 pages, complete in itself.

Innovation at the Gregorian University resulted in the division of the philosophy of nature, which also touches evolution. Calcagno notes that his predecessors included all inorganic bodies and organic bodies in one tract called Cosmology, which was the traditional philosophy of nature. Calcagno (1937) and Boyer (1939) treated inorganic being (Cosmology) and organic being (Metaphysical Psychology) as separate philosophical tracts, but within philosophical manuals that comprehensively treated every department of philosophy. The manuals of Calcagno and Boyer went through numerous editions with only very small changes. Hoenen, in 1956, so extensively treated modern problems in cosmology, such as Einstein's relativity and Heisenberg's quantum mechanics, that the philosophy of inorganic being (Cosmology) began to be treated in a separate book and a totally separate course. Naturally, the philosophy of organic being, involving evolution, began to evolve separately. Siwek, in 1965, treated evolution with the philosophy of organic being (Metaphysical Psychology) in a 554 page volume that stood by itself. In 1999, La Vecchia restricted her new 330 page book to evolution itself, which previously had been only a small part of the philosophy of man (Higher Metaphysical Psychology).

Innovation at the Gregorian University led to a philosophy of science, where epistemology touches evolution. Philosophy of science deals with the principles of biology, while the philosophy of nature studies the material and facts of biology. Selvaggi in his 1953 *Filosofia delle Scienze* gives renewed emphasis to epistemological principles. Selvaggi, in 1962, in his *Cosmologia*, page 401,

gives a positive answer to the placement of the philosophy of nature between physics and metaphysics, favoring Kane at the Aquinas Institute rather than Maritain. Selvaggi uses epistemology in philosophy to make an analysis of the material of science. This practice was shared by Pascual, in 2002, at the International Congress on Evolution in Rome.

Innovation at the Gregorian University continued to develop a number of independent philosophy courses, eventually including an entire course on evolution. Soccorsi, in 1958, did a Latin course on physics. Crochon, in 1958, did a Latin course on the psychology of children and adolescents. Arcidiacono, in 1962, did a Latin course on numeration, and another course on geometries. Dezza, in 1960, for the first time in Italian, did a philosophy course on the scholastic synthesis, including a treatment of evolution. Babolin, in 1997, did an Italian course on the philosophy of esthetics. La Vecchia, in 1999, did the Italian course on the philosophy of evolution.

Innovation at the Gregorian University arose in application of the principle of finality to evolution. Although the principle is traditional among Neo-Scholastics, such as Calcagno (in vol. 1, page 313), its application as a central problem applied to evolution is significant. Marcozzi, in 1976, published a book entitled *Chance and Finality*. La Vecchia, in 1999, made finality part of the title of her class notes for the course in evolution at the Gregorian University.

Innovation at the Gregorian University stressed hominization, more than the study of fossils, to determine evolution. Marcozzi, in 1958, uses this theory of hominization to show that the humanity of the Neanderthals is proved not only by fine stone work, but also funeral rites and religious ideas, as noted in *Doctor Communis* 2/3 (May to December 1958): page 133. La Vecchia, in 1999, expands this useful theory in her book, chapter seven.

Innovation at the Gregorian University also touched the Anthropic Principle. Calcagno (in vol.

2, page 455) in 1952 notes that, although God is the primary goal of creation, man is a secondary goal of creation. This view, which was later called the Anthropic Principle in reference to man as a goal of creation, is an opinion common among the Neo-Scholastics. The phrase “Anthropic Principle” itself was first used by Brandon Carter in Cracow in 1973. The Anthropic Principle was elaborated by Zycinski at the International Congress on Evolution in Rome in 2002, chaired by Pascual, a Gregorian graduate.

Innovation to improve education has been a perennial feature of the Gregorian University. In the 1960s, Lonergan and De Finance promoted learning by the student’s self-appropriation. In addition to classes in Latin, both Lonergan and De Finance published in the vernacular for a wider audience. Educational accommodation is seen in Dezza’s 1960 course touching evolution which was taught in Italian and which was open to laity. La Vecchia, in 1999 and thereafter, uses Italian for her course on evolution. Her course is open to laity, and uses a style that invites student participation and discovery.

Innovation by the use of dialogue is helpful for the promotion of understanding. Dezza in 1960 gives a balanced view of evolution, citing both arguments and objections. His presentation to lay students at the Gregorian University Institute of Higher Religious Culture involved, according to Dezza’s preface, presentation and discussion (“*vengono presentati e discussi*”). Pascual, a doctoral graduate of the Gregorian University, presided over the professional dialogue at the International Congress on Evolution, held in Rome in 2002.

Eighth, the philosophy of man is the most important, the most difficult, and the most critical area of the discussion of evolution. First, the philosophy of man is most important in evolutionary studies because man is the only species that has cultural evolution, with consequences for biological

evolution. The Anthropic Principle and even modern ecological imperatives place man at the center of creation, just when man seemed to be dethroned by the theories of Copernicus, Galileo, Newton and Darwin. Second, the philosophy of man is most difficult because, unlike any other animal, man's substantial form, or soul, in origin is created, in operation is intrinsically independent of material, in appetite is free, and in finality is immortal. Third, the philosophy of man is most critical because man is the custodian of the future. The activism of South American Neo-Scholastics and the social doctrine of the modern popes trained in Neo-Scholastic principles, can be viewed as philosophy in practice. Education for peace and justice today aim to eliminate the destructive national and class warfare that destroys the current fabric of civilization. Democracy and liberty under law allow the major portion of humanity to contribute to the cultural evolution of the world. Religious liberty endorses the dignity of man, which may also involve for Neo-Scholastics a philosophical theory on the restoration of the human body. A serious social critique against the Evolutionists is that any theory of survival of the fittest is not well adapted to future cooperative and free cultural evolution.

Ninth, any conclusions about the philosophy of evolution must be made with some humility. Every thesis has some complexity involving its opposite. There could be a danger of proving too much. Evolution is substantial change, but that kind of change (like death) can rarely be observed to exist; and also it is difficult to tell what qualities are substantial in order to exactly determine a new species. Evolution needs final causality, denied by Spencer, as part of its explanation, but chance exists and is observed, although it is not strictly intelligible. Mechanicism, affirmed by the Positivists, allows for efficient causality, and also for accidental change (man like a machine), but substantial change is hard to detect. Materialism, affirmed by Darwin, does not explain evolution entirely, but material is the source of individuation and species. Hylemorphism explains substantial union, but such

a union is hard to detect directly; even substance is obscured by its accidents, so all the more the transcendental relation of act and potency is difficult to detect. Essential distinction between man and animals exists, but man, a rational animal, is also an animal. The body of man evolved, but direct knowledge of man's substance is blocked by accidents. The soul of man is created by God, but creation is impossible to imagine; further, animals have material souls. The future biological evolution of man may be ended by cultural evolution, but the material body of man has a unique dignity in ethical action and may be destined for the restoration. The interaction of cultural evolution with any biological evolution is hard to detect. The restoration of the body is only a hypothesis in philosophy (although not in theology). Abiogenesis left no evidence in the past, and has been un-producible up to the present, but is consistent with secondary causality. Cosmic evolution begins with creation, but creation is impossible to imagine. Cosmic evolution continues based on order, but entropy is disorder. Social evolution appears to be blocked by free will, but some determinism is evident in habit and disease. Evolutionary atheism is wrong by demonstration, but God is not immediately observable.

Tenth, a well-reasoned philosophy of evolution has a proper place in modern intellectual life. Both scholars and the general public are very interested in evolution. This interest is contemporary, continuing, and intense both in theory and in practical applications, such as the teaching of evolution in the public schools of the United States of America. The philosophy of evolution may be of significant use in these cases. Philosophy is the mediator between science and theology. Aristotle and Aquinas began philosophy with the observation of nature and developed principles of thought. The Neo-Scholastics have not only followed this perennial philosophy but have renewed themselves in the mid-twentieth century. Our fond hope is that the Neo-Scholastic views on the philosophy of evolution may be enlightening to scholars and useful to the general public.

BIBLIOGRAPHY

Books

- Abbagnano, Nicola. *Dizionario di Filosofia*. Turin: UTET, 1971.
- Adler, Mortimer J. *The Great Ideas: A Lexicon of Western Thought*. New York: Scribner, 1999.
- Aquinas, Thomas. "Responsio ad Lectorem Venetum de Articulis 30," and "Responsio ad Eundem de Articulis 36," In *Opuscula Theologica*, ed. R. A. Verardo, O.P. Turin: Marietti, 1954: 193-208.
- _____. *Summa Contra los Gentiles*, bilingual edition, 2 vols. Madrid: BAC, 1968.
- _____. *Summa Contra Gentiles*. Translated by Anton C. Pegis, 2nd ed., 4 vols. Notre Dame: University Press, 1975.
- _____. *Summa Theologica*. Translated by the Fathers of the English Dominican Province, 2nd ed., 5 vols. Allen, TX.: Christian Classics, 1981.
- _____. *Treatise on Man*. Translated by James A. Anderson. Englewood Cliffs, N.J.: Prentice-Hall, 1963.
- Arcidiacono, Vincentius. *Questiones Scientifical ex Mathematica: De Geometriis*. Rome: Gregorian University, 1962.
- _____. *Questiones Scientifical de Mathematica: De Numeris et Mensuris*. Rome: Gregorian University, 1963.
- Aristotle. *The Basic Works of Aristotle*, ed. Richard McKeon. New York: Modern Library, 2001.
- Arrington, Robert L., ed. *A Companion to the Philosophers*. Oxford: Blackwell, 2001.
- Ashley, Benedict M. *Aristotle's Sluggish Earth: The Problematics of "De Caelo"*. River Forest, IL: Albertus Magnus Lyceum, 1958.
- Attenborough, David. *The First Eden: The Mediterranean World and Man*. Boston: Little-Brown, 1987.
- Attwater, David, ed. *A Catholic Dictionary*, 3rd ed. Rockford, IL: TAM, 1997.
- Audi, Robert, ed. *The Cambridge Dictionary of Philosophy*, 2nd ed. Cambridge: University Press, 1999.

- Babolin, Sante. *L'Uomo e il Suo Volto: Lezioni di Estetica*. Rome: Gregorian University, 1997.
- _____. *Piccolo Lessico di Semiotica*. Rome: Gregorian University, 1996.
- _____. *Semiosi e Comunicazione: Lezione di Semiotica*. Rome: Gregorian University, 1997.
- Baggini, Julian and Jeremy Stangroom, eds. *What Philosophers Think*. London: Continuum, 2003.
- Benignus, Brother, F.S.C. *Nature, Knowledge and God: An Introduction to Thomistic Philosophy*. Milwaukee: Bruce, 1947.
- Bittle, Celestine N. *The Whole Man: Psychology*. Milwaukee: Bruce, 1945.
- Bodanis, David. *$E = mc^2$: A Biography of the World's Most Famous Equation*. New York: Berkley Books, 2000.
- Boff, Leonardo. *Ecologia: Grito de la Tierra, Grito de los Pobres*. Madrid: Trotte, 1997.
- Bothamley, Jennifer. *Dictionary of Theories*. Detroit: Visible Ink, 2002.
- Browne, Michael. Preface to *The Dignity of Science: Studies in the Philosophy of Science*, ed. James A. Weisheipl. Washington, D.C.: Thomist Press, 1961.
- Brown, Stuart, Diané Collinson and Robert Wilkinson. *One Hundred Twentieth-Century Philosophers*. London: Routledge, 1998.
- Calcagno, Franciscus Xav. *Philosophia Scholastica: Introductio Generalis ad Philosophiam Scholasticam, Dialectica, Critica, Ontologia, Cosmologia*, 3rd ed., vol. 1. Naples: M. D'Auria, 1950.
- _____. *Philosophia Scholastica: Psychologia, Theologia Naturalis*, 3rd ed., vol. 2. Naples: M. D'Auria, 1952.
- _____. *Philosophia Scholastica: Ethica*, 3rd ed., vol. 3. Naples: M. D'Auria, 1958.
- Campbell, Norman. *What Is Science?* New York: Dover, 1952.
- Carbone, Caesare. *Circulus Philosophicus*, 2 vols. Turin: Marietti, 1935.
- Cassirer, Ernst, Paul Oskar Kristeller and John Herman Randall Jr., eds. *The Renaissance Philosophy of Man*. Chicago: University Press Phoenix Books, 1956.
- Catechism of the Catholic Church*. Dublin: Veritas, 1994.

- Cathrein, Victore. *Philosophia Moralis*, 21st ed., ed. Joannes B. Schuster. Barcelona: Herder, 1959.
- Chenu, M. D. *Toward Understanding St. Thomas*. Translated by Albert M. Landry and Dominic Hughes. Chicago: Henry Regnery, 1964.
- Chesterton, G. K. *St. Thomas Aquinas*. New York: Image, 1956.
- Clifford, William Kingdom. *The Common Sense of the Exact Sciences*, ed. James R. Newman, with a Preface by Bertrand Russell. New York: Dover, 1955.
- Collingwood, R. G. *The Idea of Nature*. New York: Galaxy Books, 1960.
- Collins, James. *Interpreting Modern Philosophy*. Princeton: University Press, 1975.
- Conant, James B. *On Understanding Science*. New York: Mentor, 1958.
- Cornman, James W. and Keith Lehrer. *Philosophical Problems and Arguments: An Introduction*. New York: Macmillan, 1968.
- Corpo Professoriale della Facoltà di Filosofia della Pontificia Università Gregoriana. *Sintesi Filosofica: Schema did Exposizione e Bibliographia per l'Esame di Licenza*. Rome: Gregorian University, 1997.
- Cruchon, Gerogius. *Psychologia Pueri et Adolsecentes*. Rome: Gregorian University, 1958.
- Cunningham, G. Watts. *Problems of Philosophy: An Introductory Survey*. New York: Henry Holt, 1924.
- Danielson, Dennis Richard, ed. *The Book of the Cosmos: Imagining the Universe from Heraclitus to Hawking*. Cambridge, MA.: Perseus, 2000.
- Darwin, Charles. *The Origin of Species*. London: Collier Books, 1962.
- De Finance, Joseph. *Être et Agir: Dans la Philosophie de Saint Thomas*, 2nd ed. Rome: Gregorian University, 1960.
- _____. *Essai sur l'Agir Humain*. Rome: Gregorian University, 1962.
- De George, Richard T. *The Philosopher's Guide: To Sources, Research Tools, Professional Life and Related Fields*. Lawrence, Kansas: Regents, 1980.
- Delfgaauw, Bernard. *Twentieth Century Philosophy*. Translated by N. D. Smith. Dublin: Gill and Macmillan, 1969.

- De Lubac, Henri. *Le Mystère du Surnatural*. Paris: Aubier, 1965.
- _____. *Teilhard de Chardin: The Man and His Meaning*. Translated by René Hague. New York: Mentor-Omega, 1967.
- Dembski, William H. and Michael Ruse. *Debating Design*. Cambridge: University Press, 2004.
- Dennett, Daniel C. *Darwin's Dangerous Idea: Evolution and the Meanings of Life*. New York: Touchstone, 1996.
- Denzinger, Henricus. *Enchiridion Symbolourm, Definitionum et Declarationum de Rebus Fidei et Morum*, bilingual ed., ed. P. Hünermann. Bologna: EDB, 1995.
- De Wulf, Maurice. *The System of Thomas Aquinas*. New York: Dover, 1959.
- Dezza, Paolo. *Filosofia: Sintesi Scholastica*, 5th ed. Rome: Gregorian University, 1960.
- _____. *Metaphysica Generalis: Praelectionum Summa ad Usus Auditorum*. Rome: Gregorian University, 1945.
- Di Napoli, Ioannes. *Manuale Philosophiae: Ad Usus Seminariorum*, 4 vols. Turin: Marietti, 1958.
- Donat, Joseph. *Cosmologia*, 3 ed. Innsbruck: Rauch, 1915.
- _____. *Critica*, 3rd ed. Innsbruck: Rauch, 1915.
- _____. *Ethica Generalis*, 2nd ed. Innsbruck: Rauch, 1920.
- _____. *Ethica Specialis*, 2nd ed. Innsbruck: Rauch, 1921.
- _____. *Ontologia*, 5th ed. Innsbruck: Rauch, 1921.
- _____. *Psychologia*, 3rd ed. Innsbruck: Rauch, 1914.
- _____. *Theodicea*, 2nd ed. Innsbruck: Rauch, 1914.
- Dougherty, Kenneth. *Cosmology: An Introduction to the Thomistic Philosophy of Nature*. Peekskill, N.Y.: Greymoor, 1965.
- Edman, Irwin, ed. *The Works of Plato*. Translated by Jowett, 3rd ed. New York: Modern Library, 1956.
- Eldredge, Niles. *Darwin: Discovering the Tree of Life*. New York: Norton, 2005.

- Engel, Leonard, ed. *New Worlds of Modern Science*. New York: Dell, 1956.
- Ferguson, Marilyn. *The Brain Revolution*. New York: Taplinger, 1973.
- Frank, Phillip. *Philosophy of Science: The Link between Science and Philosophy*. Edgewood Cliffs, N.J.: Prentice-Hall, 1957.
- Gannon, Timothy. *Psychology: The Unity of Human Behavior*, Forward by Thomas Verner Moore. Boston: Ginn, 1954.
- Gardeil, H. D. *Introduction to the Philosophy of St. Thomas Aquinas: Cosmology*. Translated by John A. Otto, vol. 2. St. Louis: Herder, 1958.
- Galli, Giuseppe Mario. *Spazio e Tempo nella Scienza Moderna: La Geometria Non Euclidea*. Florence: Baccini e Chiappi, 1965.
- Gill, Henry V. *Fact and Fiction in Modern Science*. New York: Fordham, 1944.
- Gillespie, Charles Coulston. *Genesis and Geology: A Study in the Relations of Scientific Thought, Natural Theology, and Social Opinion*. New York: Harper and Row, 1959.
- Gevert, Joseph. *Il Problema dell'Uomo: Introduzione all'Antropologia Filosofica*. Turin: Elledici, 1992.
- Gilson, Etienne. *The Christian Philosophy of St. Thomas Aquinas*. Notre Dame: University Press, 1994.
- _____. *The Unity of the Philosophical Experience*. San Francisco: Ignatius Press, 1999.
- Giustiniani, Pasquale. *Antropologia Filosofica*, 4th ed. Monferrato: Piemme, 2000.
- Glenn, Paul J. *Ontology: A Class Manual in Fundamental Metaphysics*. St. Louis: Herder, 1949.
- Globob, Richard and Eric Brus, eds. *The Almanac of Science and Technology: What's New and What's Known*. Boston: Harcourt Brace Javanovich, 1990.
- Gonzalez, Irenaeo. "Ethica." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 3. Madrid: BAC, 1957.
- Gredt, Josephus. *Elementa Philosophiae*, 2 vols. Friburg: Herder, 1921.
- Grene, Marjorie. *The Known and the Unknown*. New York: Basic Books, 1966.
- _____. *A Portrait of Aristotle*. Bristol: Thoemmes Press, 1963.

- Grene, Marjorie and David Depew. *The Philosophy of Biology: An Episodic History*. Cambridge: University Press, 2004.
- Gutiérrez, Gustavo. *Teología de la Liberación: Perspectivas*. Lima: CEP, 1971.
- Gutman, James, ed. *Philosophy A to Z*. New York: Grosset and Dunlap, 1963.
- Harper, Charles L., ed. *Spiritual Information: 100 Perspectives in Science and Religion*. Philadelphia: Templeton Foundation, 2005.
- Hartmann, William K. and Ron Miller. *The History of Earth*. New York: Workman, 1991.
- Hellin, Josepho. "Cosmologia." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 2. Madrid: BAC, 1959.
- _____. "Theodicea." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 3. Madrid: BAC, 1957.
- Hempel, Carl G. *Philosophy of Natural Science*. Englewood Cliffs, N.J.: Prentice-Hall, 1966.
- Himmelfarb, Gertrude. *Darwin and the Darwinian Revolution*. New York: Norton Library, 1968.
- Hoenen, Petrus. *Cosmologia*, 5th ed. Rome: Gregorian University, 1956.
- _____. *De Origine Formae Materialis*. Rome: Gregorian University, 1951.
- _____. *Supplementa ad Cosmologiam: Quaestiones Noeticae de Extentione Corporea*. Rome: Gregorian University, 1955.
- Honderich, Ted, ed. *The Oxford Companion to Philosophy*, 2nd ed. Oxford: University Press, 2005.
- Hugon, Eduardo. *Cursus Philosophiae Thomisticae*, 6 vols. Paris: Lethielleux, 1935.
- _____. *Philosophia Naturalis*. Paris: Lethielleux, 1927.
- Hull, David. *Philosophy of the Biological Sciences*. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
- Illich, Ivan. *Energy and Equity*. London: Calder and Boyars, 1974.
- Insegnamenti di Paolo VI*. Vatican City: Polyglot Press, 1963-1978.
- Isaacs, Alan. *Introducing Science*. Baltimore: Penquin Pelican, 1963.

- Iturrioz, Jesu. "Metaphysica Generalis." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 1. Madrid: BAC, 1957.
- Jancar, Barbara. *The Philosophy of Aristotle*. New York: Monarch, 1966.
- Kane, William H. *Approach to Philosophy: Elements of Thomism*. Washington, D.C.: Thomist Press, 1962.
- Kelly, Kate. *That's Not in My Science Book*. Lanham, MD.: Taylor Trade, 2006.
- King, Thomas M. and Mary Wood Gilbert, eds. *The Letters of Teilhard de Chardin and Lucile Swan*. Scranton: University Press, 2001.
- Klubertanz, Geroge P. *The Philosophy of Human Nature*. New York: Appleton-Century-Crofts, 1953.
- Koren, Henry J., ed. *Readings in the Philosophy of Nature: Selected with an Introduction and Commentary*. Westminster, MD.: Newman, 1961.
- Kovach, Francis J. *Scholastic Challenges: To Some Medieval and Modern Ideas*. Stillwater, OK.: Westren Publications, 1988.
- Koyré, Alexandre. *From the Closed World to the Infinite Universe*. Baltimore: Johns Hopkins University, 1968.
- La Vecchia, Maria Teresa. *Evoluzione e Finalità*. Rome: Gregorian University, 1999.
- Leakey, Richard E. and Roger Lewin. *Origins*. New York: E. P. Dutton, 1977.
- Lonergan, Bernard. "Insight: A Study of Human Understanding." In *Collected Works of Bernard Lonergan*, eds. Frederick E. Crowe and Robert M. Doran, vol. 3. Toronto: University Press, 1992.
- _____. *Method in Theology*. New York: Herder and Herder, 1972.
- Lotz, Ioannes B. *Ontologia*. Barcelona: Herder, 1963.
- Lovejoy, Arthur O. *The Great Chain of Being: A Study of the History of an Idea*. New York: Harper and Row Torchbook, 1960.
- Machamer, Peter and Michael Silberstein, eds. *The Blackwell Guide to the Philosophy of Science*. Malden, MA.: Blackwell, 2002.
- Macrone, Michael. *Eureka! 81 Key Ideas Explained*. New York: Barnes and Noble, 1999.

- Mann, Jesse A. and Gerald F. Kreyche, eds. *Reflections on Man*. New York: Harcourt, Brace and World, 1966.
- Magill, Frank N. and Ian P. McGreal, eds. *Masterpieces of Philosophy in Summary Form*. New York: Harper Brothers, 1961.
- Maher, Michael. *Psychology: Empirical and Rational*, 9th ed. London: Longmans, Green, 1940.
- Mandelbaum, Maurice. *Philosophy, Science and Sense Perception: Historical and Critical Studies*. Baltimore: Johns Hopkins, 1966.
- Maquart, F.-X. *Elementa Philosophiae*, 2 vols. Paris: Andreas Blot, 1937.
- Marcozzi, Vittorio. *Bio-Anthropologiae Questiones cum Philosophia Coniunctae* Rome: Gregorian University, 1964.
- _____. *Caso e Finalità*. Milan: Massimo, 1976.
- _____. *Il Problema di Dio e le Scienze*, 6th ed. Brescia: Morcelliana, 1952.
- _____. *Le Origini dell'Uomo: L'Evoluzione Oggi*, 8th ed. Milan: Massimo, 1983.
- _____. *L'Uomo nello Spazio e Tempo: Antropologia*, 3 ed. Milan: Casa Editrice Ambrosiana, 1969.
- _____. *Alla Ricerca dei Nostri Predecessori: Compendio di Paleoantropologia*. Cinisello Balsamo (MI): Paoline, 1992.
- _____. *Però l'Uomo È Diverso*. Milan: Rusconi, 1981
- Marcozzi, Vittorio et al. *De Hominis Creatione atque Elevatione et De Peccato Originali*. Rome: Gregorian University, 1948.
- Maritain, Jacques. *The Degrees of Knowledge*. Translated by Gerald B. Phelan. New York: Charles Scribner's Sons, 1959.
- _____. *Philosophy of Nature*. New York: Philosophical Library, 1951.
- Martelet, Gustave. *Evolution et Création: Sens ou Non-Sens de l'Homme dans la Nature?* Paris: Cerf, 1998.
- _____. *Evoluzione e Creazione: Dall'Origine del Cosmo all'Origine dell'Uomo*. Milan: Jaca Book, 2003.

- Masi, Robertus. *Cosmologia*. Rome: Desclée, 1961.
- Mautner, Thomas, ed. *Dictionary of Philosophy*. London: Penguin, 1997.
- McDermott, Timothy, ed. and trans. *Thomas Aquinas: Selected Philosophical Writings*. Oxford: University Press, 1993.
- McNicholl, Ambrose J. *Epistemology and Metaphysics*. Rome: Angelicum Press, 1961.
- Modern Library, ed. *Introduction to St. Thomas Aquinas*. New York: Modern Library, 1948.
- Mondin, Battista. *Dizionario Enciclopedico del Pensiero di San Tommaso d'Aquino*. Bologna: Studio Domenicano, 1991.
- _____. *Manuale di Filosofia Sistemica: Epistemologia e Cosmologia*. Bologna: Studio Domenicano, 1999.
- Moore, James K. *The Post Darwinian Controversies: A Study of the Protestant Struggle to Come to Terms with Darwin in Great Britain and America 1870-1900*. Cambridge: University Press, 1979.
- Moore, Thomas Verner. Forward to *Psychology: The Unity of Human Behavior*, by Timothy J. Gannon. Boston: Ginn, 1954.
- Murray, Michael H. *The Thought of Teilhard de Chardin: An Introduction*. New York: Seabury Press, 1966.
- Murray, Raymond W. *Man's Unknown Ancestors: The Story of Prehistoric Man*. Milwaukee: Bruce, 1943.
- Neuner, J. and J. Dupuis, eds. *The Christian Faith in Doctrinal Documents of the Catholic Church*, 6th ed. New York: Alba House, 1996.
- Nogar, Raymond J. *The Lord of the Absurd*. New York: Herder and Herder, 1966.
- _____. *The Wisdom of Evolution*, with a forward by Theodosius Dobzhansky. New York: Mentor Omega, 1963.
- O'Collins, Gerald and Edward G. Farrugia. *Dizionario Sintetico di Teologia*. Vatican: Libreria Editrice Vaticana, 1995.
- Ormerod, Neil. *Introducing Contemporary Theologies: The What and the Who of Theology Today*. Newtown, Australia: E. J. Dwyer, 1990.

- Palmes, Fernando M. "Psychologia." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 2. Madrid: BAC, 1957.
- Parente, Pietro, Antonio Piolanti and Salvatore Garofalo. *Dictionary of Dogmatic Theology*. Translated by Emmanuel Doronzo. Milwaukee: Bruce, 1951.
- Pascual, Rafael, ed. *L'Evoluzione: Crocevia di Scienza, Filosofia e Teologia*. Rome: Studium, 2005.
- Peacocke, Arthur. *Evolution: The Disguised Friend of Faith?* Philadelphia: Templeton Foundation, 2004.
- Peck, M. Scott. *Wisdom from the Road Less Traveled*. Kansas City: Ariel Books, 2001.
- Pegis, Anton C., ed. *Introduction to St. Thomas Aquinas*. New York: Modern Library, 1948.
- Pence, Gregory. *A Dictionary of Philosophical Terms*. New York: McGraw Hill and Primis, 2000.
- Pontifical Academy of Sciences. *Discourses of the Popes from Pius XI to John Paul II to the Pontifical Academy of Sciences: 1936-1986*. Vatican City: Pontifical Academy of Sciences, 1986.
- Pontificio Ateneo S. Anselmo. *1999-2000 Ordo Anni Academici: Facoltà di Filosofia, Teologia, Liturgica*. Rome: S. Anselmo, 1999.
- Pontificio Ateneo della Santa Croce. *1998-1999 Anno Academico*. Rome: Santa Croce, 1998.
- Pontificia Università Gregoriana. *1988-1989 Programma degli Studi: Facoltà di Filosofia*. Rome: University Press, 1988.
- _____. *1995-1996 Programma degli Studi: Facoltà di Filosofia*. Rome: University Press, 1995.
- Pontificia Università Urbaniana. *1999-2000 Programmi: Facoltà di Filosofia*. Rome: University Press, 1999.
- Professores Societatis Iesu. *Philosophiae Scholasticae Summa*, 3 vols. Madrid: Biblioteca de Autores Cristianos, 1964.
- Pun, Pattle P. T. *Evolution: Nature and Scripture in Conflict?* Grand Rapids, Michigan: Zondervan, 1982.
- Rebaté, Jean-Michel. *The Future of Theory*. Oxford: Blackwell, 2002.

- Rahner, Karl and Herbert Vorgrimler. *Dizionario de Teologia*. Translated by G. Ferretti, A. Frioli, e G. Ghiberti. Milan: TEA, 1994.
- Randall, John Herman Jr. *Philosophy After Darwin*, ed. Beth J. Singer. New York: Columbia University, 1977.
- Ratzinger, Joseph. *Creazione e Peccato*. Cinisello Balsamo: Paoline, 1986.
- Renard, Henri. *The Philosophy of Being*, 2nd ed. Milwaukee: Bruce, 1957.
- Rauhut, Nils Ch. *The Big Questions: Philosophy for Everyone*. New York: Pearson Longman, 2006.
- Riaza Morales, Jose Maria. *Ciencia Moderna y Filosofia*, 2nd ed. Madrid: BAC, 1961.
- Rolbiecki, John J. *The Prospects of Philosophy*. New York: Benzinger, 1939.
- Runes, Dagobert D., ed. *Dictionary of Philosophy*. New York: Philosophical Library, 1950.
- Russo, François and Robert J. Roth. *The Meaning of Teilhard de Chardin*. New York: The America Press, 1964.
- Salcedo, Leovigildo. "Introductio in Philosophiam, Logica, Critica." In *Philosophiae Scholasticae Summa*, eds. Professores Societatis Iesu, vol. 1. Madrid: BAC, 1957.
- Sciaccia, Michele Frederico. *Philosophical Trends in the Contemporary World*. Translated by Attilio M. Salerno. Notre Dame: University Press, 1964.
- Selvaggi, Filippo. *Cosmologia*, 2nd ed. Rome: Gregorian University, 1962.
- _____. *Filosofia delle Scienze*. Rome: La Civiltà Cattolica, 1953.
- Sigmond, Raymundus. *Philosophia Socialis*. Rome: Angelicum University Press, 1959.
- Simpson, George Gaylord. *The Meaning of Evolution*. New Haven: Yale University Press, 1949.
- Singh, Jagjit. *Great Ideas and Theories of Modern Cosmology*. New York: Dover, 1961.
- Siwek, Paul. *Psychologica Metaphysica*, 7th ed. Rome: Gregorian University, 1965.
- Smith, Ignatius. Forward to the First (1952) Edition to *Cosmology*, by Kenneth Dougherty. Peekskill, N.Y.: Graymoor, 1965.
- Smith, Vincent Edward. *The General Science of Nature*. Milwaukee: Bruce, 1958.

- Smulders, Pierre. *La Vision de Teilhard de Chardin: Essai de Réflexion Théologique*. Translated by Augustin Kerkwoode and Christian d'Armagnac. Paris: Desclée de Brower, 1964.
- Sober, Elliott. *Philosophy of Biology*, 2nd ed. Boulder, Colorado: Westview Press, 2000.
- Soccorsi, Philippus. *Questiones Scientifical cum Philosophia Coniunctae: De Geometriis et Spatiis Non Euclideanis*. Rome: Gregorian University, 1960.
- _____. *Questiones Scientifical cum Philosophia Coniunctae: De Physica Quantica*. Rome: Gregorian University, 1956.
- _____. *Questiones Scientifical cum Philosophia Coniunctae: De Vi Cognitionis Humanae in Scientia Physica*. Rome: Gregorian University, 1958.
- Stahl de Laviero, María Alejandra, ed. *Encíclicas Sociales*. Buenos Aires: Lumen, 1992.
- Tarnas, Richard. *The Passion of the Western Mind: Understanding Ideas that Have Shaped Our World View*. New York: Ballentine, 1991.
- Teilhard de Chardin, Pierre. *The Making of a Mind: Letters from a Soldier-Priest 1914-1919*. Translated by René Hague. New York: Harper and Row, 1965.
- _____. *Le Milieu Divin: An Essay on the Interior Life*. Translated by Alick Dru, et al., ed. Bernard Wall. London: Collins Fontana Books, 1960.
- _____. *The Phenomenon of Man*. Translated by Bernard Wall, with an introduction by Julian Huxley. New York: Harper Torch Books, 1961.
- Thruelsen, Richard and John Kobler, eds. *Adventures of the Mind*. New York: Vintage, 1960.
- Toulmin, Stephen. *The Philosophy of Science: An Introduction*. New York: Harper Torchbooks, 1960.
- Turabian, Kate L. *A Manual for Writers: of Term Papers, Theses, and Dissertations*, 6th ed. Chicago: University Press, 1996.
- Vattimo, Gianni, Maurizio Ferraris and Diego Marconi, eds. *Enciclopedia Garzanti di Filosofia*. Cernusco: Garzanti, 1998.
- Villee, Claude A., Warren F. Walker Jr. and Frederick E. Smith. *General Zoology*. Philadelphia: W. B. Saunders, 1958.
- Watson, James D. *Darwin: The Incredible Stamp: The Evolution of An Idea*. Philadelphia: Running Press, 2005.

Weisheipl, James A., ed. *The Dignity of Science: Studies in the Philosophy of Science*, with a forward by Michael Browne, O.P. Washington, D.C.: Thomist Press, 1961.

Wilson, Edward O. *From So Simple a Beginning: The Four Great Books of Charles Darwin*. New York: Norton, 2006.

Wolstenholme, Gordon, ed. *Man and His Future*. Boston: Little, Brown, 1963.

Życiński, Józef. *God and Evolution: Fundamental Questions of Christian Evolutionism*. Translated by Kenneth W. Kemp and Zuzanna Maślanka. Washington, D.C.: Catholic University of America, 2006.

BIBLIOGRAPHY

Articles

- Adler, Jerry. "Cavemen, Chimps and Us: What Can We Learn from Neanderthal Genes?" *Newsweek Magazine*, 21 July 2006, 48.
- Alter, Alexandra. "Book Review: *Delusion* Sees Religion as No Longer a Necessity." *Chicago Tribune*, 24 November 2006, sec. 5, p. 4.
- Althusser, Louis. "Ideology and Ideological State Apparatuses." In *Critical Theory Since 1965*, eds. Hazard Adams and Leroy Searle, 238-250. Tallahassee: Florida State University, 1986.
- Ashley, Benedict M. "A Social Science Founded on a Unified Natural Science." In *The Dignity of Science*, ed. James A. Weisheipl, 469-485. Washington, D.C.: Thomist Press, 1961.
- Ayala, Francisco J. "Two Revolutions: Copernicus and Darwin." In *Evoluzione*, ed. Rafael Pascual, 53-70. Rome: Studium, 2005.
- Barrajón, Pedro. "Evoluzione, Problemi Epistemologici e Anthropologici." In *Evoluzione*, ed. Rafael Pascual, 245-272. Rome: Studium, 2005.
- Barrett, Sister M. Olivia. "The Role of Science in Liberal Education." In *The Dignity of Science*, ed. James A. Weisheipl, 486-502. Washington, D.C.: Thomist Press, 1961.
- Basti Gianfranco. "From Information to Spirit: A Sketch for a New Anthropology." In *Spiritual Information*, ed. Charles L. Harper Jr., 265-271. Philadelphia: Templeton Foundation, 2005.
- Beck, William S. "The Riddle of Life." In *Adventures of the Mind*, eds. Richard Thruelsen and John Kobler, 36-51. New York: Vintage, 1960.
- Bermúdez de Castro, José María and Susana Sarmiento. "El Proyecto de Investigación de Atapuerca y su Aportación al Conosimiento de la Evolución Humana en Europa." In *Evoluzione*, ed. Rafael Pascual, 127-148. Rome: Studium, 2005.
- Begun, David R. "Planet of the Apes." *Scientific American* 16, no. 2, special edition (2 November 2006): 4-13.
- Boyer, Charles. "Examen des Difficultés Opposées a la Liberté Scolaire." *Doctor Communis* 15 (1962): 252-258.
- _____. "L'Immortalité de l'Âme à la Lumière de la Raison." *Doctor Communis* 11 (1958): 223-236.

- _____. "Presentazione." *Doctor Communis* 7 (1954): 2-3.
- Boyle, Alison and Ken Grimes. "The Great Neutrino Hunt." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 44-49. Waukesha, WI: Astronomy Magazine Collector's Edition, 2006.
- Brennan, Sheilah O'Flynn. "The Meaning of Nature in Aristotelian Philosophy of Nature." In *The Dignity of Science*, ed. James A. Weisheipl, 247-265. Washington, D.C.: Thomist Press, 1961.
- Bronowski, J. "The Common Sense of Science." In *New Worlds of Modern Science*, ed. Leonard Engel, 26-30. New York: Dell, 1956.
- Burnet, F. Macfarlane. "The Physical Nature of Viruses." In *New Worlds of Modern Science*, ed. Leonard Engel, 163-171. New York: Dell, 1956.
- Calvin, William H. "The Emergence of Intelligence." *Scientific American* 16, no. 2, special edition (2 November 2006): 84-92.
- Cannon, Walter B. "Gains from Serendipity." In *New Worlds of Modern Science*, ed. Leonard Engel, 31-38. New York: Dell, 1956.
- Callus, Daniel A. "The Origins of the Problem of the Unity of Form." In *The Dignity of Science*, ed. James A. Weisheipl, 121-149. Washington, D.C.: Thomist Press, 1961.
- Cann, Rebecca L., Mark Stoneking, and Allan C. Wilson. "Mitochondrial DNA and Human Evolution." *Nature* 125 (January 1987): 31-36.
- Carr, Geoffrey. "The Proper Study of Mankind: Human Evolution." *The Economist* 377 (24 December 2005): 9.
- Casey, Gerald. "Minds and Machines." *American Catholic Philosophical Quarterly* 66 (Winter 1992): 57-80.
- Chisholm, Broch. "Future of the Mind." In *Man and His Future*, ed. Gordon Wolstenholme, 315-321. Boston: Little, Brown, 1963.
- Haldane, J. B. S. "Biological Possibilities for the Human Species in the Next Ten Thousand Years." In *Man and His Future*, ed. Gordon Wolstenholme, 337-361. Boston: Little, Brown, 1963.
- Ciappi, Luigi M. "L'Anima Separata." *Doctor Communis* 11 (1958): 237-256.
- Clottes, Jean. "Shamanic Practices in the Painted Caves of Europe." In *Spiritual Information*, ed. Charles L. Harper Jr., 279-285. Philadelphia: Templeton Foundation, 2005.

- Colapietro, Vincent. "Tradition, Dialectic, and Ideology: Contemporary Conflicts in Historical Perspective." *American Catholic Philosophical Quarterly* 80, no. 2 (Spring 2006): 253-266.
- Coleman, Gerald D. "Evolution and the Catholic Church." *The Priest* 62, no. 2 (February 2006): 16-19.
- Comfort, Alex. "Longevity of Man and His Tissues." In *Man and His Future*, ed. Gordon Wolstenholme, 217-229. Boston: Little, Brown, 1963.
- Coon, Carlton S. "Growth and Development of Social Groups." In *Man and His Future*, ed. Gordon Wolstenholme, 120-131. Boston: Little, Brown, 1963.
- Cronin, Helena. "Evolutionary Psychology." In *What Philosophers Think*, eds. Julian Baggini and Jeremy Stangroom, 32-41. London: Continuum, 2003.
- Cunningham, Miriam Ann. "Certitude and the Philosophy of Science." Ph.D. diss., Catholic University of America, 1960.
- Dambricourt, Anne. "Les Origines Embryonnaires du Processus d'Hominisation, La Conscience Éthique et les Fondements de la Conscience Ontologique: La Révélation Adamique." In *Evoluzione*, ed. Rafael Pascual, 107-126. Rome: Studium, 2005.
- Dawkins, Richard. "Genes and Determinism." In *What Philosophers Think*, eds. Julian Baggini and Jeremy Stangroom, 42-52. London: Continuum, 2003.
- Dearmey, Michael H. "James." In *A Companion to the Philosophers*, ed. Robert L. Arrington, 326-333. Oxford: Blackwell, 2001.
- Degl'Innocenti, Umberto. "L'Origine dell'Anima Umana." *Doctor Communis* 11 (1958): 178-199.
- De Koninck, Charles. "Darwin's Dilemma." In *The Dignity of Science*, ed. James A. Weisheipl, 231-246. Washington, D.C.: Thomist Press, 1961.
- De Waal, Frans B. M. "Bonobo Sex and Society." *Scientific American* 16, no. 2, special edition (2 November 2006): 14-21.
- Di Christina, Mariette. "An Unlikely Ascendancy." *Scientific American* 16, no. 2, special edition (2 November 2006): 1.
- Dobzhansky, Theodosius and João Murça-Pires. "Strangler Trees." In *New Worlds of Modern Science*, ed. Leonard Engel, 180-185. New York: Dell, 1956.
- Dorminey, Bruce. "Darker Than the Night." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 74-79. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.

Drayna, Dennis. "Founder Mutations." *Scientific American* 16, no. 2, special edition (2 November 2006): 58-65.

The Economist, eds. "Crystal Clear." *The Economist* 383 (2 June 2007): 90.

_____. "Obituary: Stanley Miller." *The Economist* 383 (2 June 2007): 95.

_____. "The Story of Man." *The Economist* 377 (24 December 2005): 9.

_____. "Words in Code." *The Economist* 383 (2 June 2007): 88.

Eicher, David J. "The Beginning and the End of It All." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 4. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.

Eiseley, Loren. "An Evolutionist Looks at Modern Man." In *Adventures of the Mind*, ed Richard Thruelsen and John Kobler, 3-18. New York: Vintage, 1960.

_____. "The Fire Apes." In *New Worlds of Modern Science*, ed Leonard Engel, 209-226. New York: Dell, 1956.

Ellis, George F. R. "Progress in Scientific and Spiritual Understanding." In *Spiritual Information*, ed Charles L. Harper Jr., 127-131. Philadelphia: Templeton Foundation, 2005.

Engel, Leonard. "ACTH, Cortisone & Co." In *New Worlds of Modern Science*, ed. Leonard Engel, 245-262. New York: Dell, 1956.

_____. "The World That Science Deals With." In *New Worlds of Modern Science*, ed. Leonard Engel, 17-25. New York: Dell, 1956.

Evans, J. D. G. "Evolutionary Ethics." In *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 276. Oxford: University Press, 2005.

Fabro, Cornelio. "Coscienza e Autoconsapevolezza dell'Anima." *Doctor Communis* 11 (1958): 97-123.

Facchini, Fiorenzo. "L'Emergenza dell'Uomo nell'Evoluzione: Aspetti Biologici e Culturali." In *Evoluzione*, ed. Rafael Pascual, 89-106. Rome: Studium, 2005.

_____. "Evolution and Creation." *L'Osservatore Romano*, English ed. (Vatican), 16 January 2006.

Florio, Lucio. "Trinidad y Evolución: Repercusiones de la Idea Monoteísta y Trinitaria del Dios Cristiano en Relación a la Naturaleza en Evolución." In *Evoluzione*, ed. Rafael Pascual, 273-314. Rome: Studium, 2005.

- Frank, Adam. "Seeing the Dawn of Time." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 6-11. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.
- Gallagher, Kenneth T. "Dawkins, Darwin, and Design." *American Catholic Philosophical Quarterly* 67 (Spring 1993): 233-246.
- Gamow, George. "The Origin and Evolution of the Universe." In *New Worlds of Modern Science*, ed. Leonard Engel, 39-51. New York: Dell, 1956.
- Garey, Sister M. Jocelyn. "Time, the Measure of Movement." " In *The Dignity of Science*, ed. James A. Weisheipl, 295-304. Washington, D.C.: Thomist Press, 1961.
- Gelpi, Donald L. "Two Spiritual Paths: Thematic Grace vs. Transmuting." *Spirituality Today* 35, no.3 (Fall 1983): 241-255.
- Giannini, Giorgio. "L'Unione Sostanziale dell'Anima con il Corpo." *Doctor Communis* 11 (1958): 200-222.
- Giberson, Karl W. "The Goldilocks Universe: Finesse and Firepower." In *Spiritual Information*, ed. Charles L. Harper Jr., 142-146. Philadelphia: Templeton Foundation, 2005.
- Glikson, Artur. "Man's Relationship to His Environment." In *Man and His Future*, ed Gordon Wolstenholme, 132-151. Boston: Little, Brown, 1963.
- Glutz, Melvin. "Order in the Philosophy of Nature." In *The Dignity of Science*, ed. James A. Weisheipl, 266-282. Washington, D.C.: Thomist Press, 1961.
- Goodall, Jane. "Do Chimpanzees Have Souls?: Possible Precursors of Religious Behavior in Animals." In *Spiritual Information*, ed. Charles L. Harper Jr., 275-278. Philadelphia: Templeton Foundation, 2005.
- Goodenough, Ursula. "Naturalistic Spiritual Information." In *Spiritual Information*, ed. Charles L. Harper Jr., 286-290. Philadelphia: Templeton Foundation, 2005.
- Graber, Ann V. "From Homo Sapiens to Homo Noeticus." In *FoundationTheology : Faculty Essays for Ministry Professionals*, ed. Joseph Baunoch, 52-63. South Bend, IN., Graduate Theological Foundation, 2006.
- Griffiths, Paul. "Molecular and Developmental Biology." In *Philosophy of Science*, eds. Peter Machamer and Michael Silberstein, 252-271. Malden, MA.: Blackwell, 2002.
- Gunter, Pete A. Y. "Bergson." In *A Companion to the Philosophers*, ed. Robert L. Arrington, 165-169. Oxford: Blackwell, 2001.

- Haffner, Paul. "Evolution and the Magisterium of the Church." In *Evoluzione*, ed. Rafael Pascual, 315-340. Rome: Studium, 2005.
- Hoagland, Hudson. "Potentialities in the Control of Behavior." In *Man and His Future*, ed. Gordon Wolstenholm, 299-314. Boston: Little, Brown, 1963.
- Holman, Eugene. "Our Inexhaustible Resources." In *New Worlds of Science*, ed. Leonard Engel, 323-332. New York: Dell, 1956.
- Holmes, William. "The Color Changes in Cephalopods." In *New Worlds of Science*, ed. Leonard Engel, 186-191. New York: Dell, 1956.
- Hoskin, Michael A. "*Mining All Within: Clarke's Notes to Rohault's Traité de Physique.*" In *The Dignity of Science*, ed. James A. Weisheipl, 217-230. Washington, D.C.: Thomist Press, 1961.
- Hoyle, Fred. "When Time Began." In *Adventures of the Mind*, eds. Richard Thruelsen and John Kobler, 171-185. New York: Vintage, 1960.
- Hull, David L. "Darwinism." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 204-206. Cambridge: University Press, 1999.
- _____. "Philosophy of Biology." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 668-669. Cambridge: University Press, 1999.
- _____. "Teleology." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 905-906. Cambridge: University Press, 1999.
- Hurlbut, William B. "The Form of Freedom." In *Spiritual Information*, ed. Charles L. Harper Jr., 315-320. Philadelphia: Templeton Foundation, 2005.
- Huxley, Sir Julian. "The Future of Man - Evolutionary Aspects." In *Man and His Future*, ed. Gordon Wolstenholme, 1-22. Boston: Little, Brown, 1963.
- Jaki, Stanley L. "Non Darwinian Darwinism." In *Evoluzione*, ed. Rafael Pascual, 41-52. Rome: Studium, 2005.
- Jayawardhana, Ray. "In Search of the First Stars." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 18-23. Waukesha, WI., Astronomy Magazine Collector's Edition, 2006.
- _____. "Searching for Other Earths." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 80-85. Waukesha, WI., Astronomy Magazine Collector's Edition, 2006.
- Johnson, Mark. "Aquinas Changing Evaluation of Plato on Creation." *American Catholic Philosophical Quarterly* 66 (Winter 1992): 81-88.

- Jordens, R. "Review of *Evolution und Naturphilosophie* by W. Zimmerman." *Revue Philosophique de Louvain* 75 (February 1977): 166.
- Kalb, Claudia. "DNA and the Secrets of Who We Are." *Newsweek Magazine*, 6 February 2006, 47-55.
- Kincaid, Harold. "Social Sciences." In *Philosophy of Science*, eds. Peter Machamer and Michael Silberstein, 290-311. Malden, MA.: Blackwell, 2002.
- Klein, Julia M. "The Mating Game." *Southwest Airlines Spirit* 15, no. 2 (February 2006): 54-60.
- Kocourek, Roman A. "Motionless Motion." In *The Dignity of Science*, ed. James A. Weisheipl, 283-294. Washington, D.C.: Thomist Press, 1961.
- Konkol, Mark J. "Did Neanderthal Tryst Help Human Brains?" *Chicago Sun Times*, 7 November 2006, 6.
- Koperski, Jeffrey. "Intelligent Design and the End of Science." *American Catholic Philosophical Quarterly* 77, no. 4 (2003): 569-590.
- Kuhn, Thomas S. "Objectivity, Value Judgement, and Theory Choice." In *Critical Theory Since 1965*, eds. Hazard Adams and Leroy Searle, 381-393. Tallahassee: Florida State University, 1986.
- Lederberg, Joshua. "Biological Future of Man." In *Man and His Future*, ed. Gordon Wolstenholme, 263-273. Boston: Little, Brown, 1963.
- Lemonick, Michael D. "When Cells Stop Working." *Time Magazine*, 13 November 2006, 58-59.
- Lemonick, Michael D. and Andrea Dorfman. "What Makes Us Different?" *Time Magazine*, 9 October 2006, 44-53.
- Little, Daniel E. "Philosophy of the Social Sciences." In *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 704-706. Cambridge: University Press, 1999.
- Longstaff, Alan. "Quest for the Living Universe." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 92-98. Waukesha, WI., Astronomy Magazine Collector's Edition, 2006.
- Malherbe, Jean-Francois. "La Dimension Éthique de la Critique de Sciences." *Revue Philosophique de Louvain* 71 (August 1973): 574-581.
- Mansion, Suzanne. "Deux Définitions Différentes de la Vie chez Aristote?" *Revue Philosophique de Louvain* 71 (August 1973): 425-450.

- Manwell, Reginald D. "An Insect Pompeii." In *New Worlds of Modern Science*, ed. Leonard Engel, 192-200. New York: Dell, 1956.
- Marcozzi, Vittorio. "Alcune Controversie Evoluzionistiche Attuali in Paleoantropologia." *Archivi per L'Anthropologia e la Etnologia* 123 (1993): 467-481.
- _____. "Australopithecinae: Osservazioni Anthropologiche." *Rivista di Scienza Preistoriche* 7 (1952), 22
- _____. "L'Australopithecus Prometheus e l'Industria 'Osteodontocheratica'." *La Civiltà Cattolica* no.4 (1967): 253-261.
- _____. "Come Si Ricostruisce la Preistoria della Specie Umana." In *Teoria e Metodo delle Scienze*, ed. C. Huber, 98-99. Rome: Gregorian University, 1981.
- _____. "Controversie Evoluzionistiche 'Attuali'." *La Civiltà Cattolica* no. 1 (1989): 31-39.
- _____. "Il Darwinismo Oggi." *La Civiltà Cattolica* no. 1 (1983): 126-127.
- _____. "Differenza fra l'Anima Umana e l'Anima delle Bestie." *Doctor Communis* 11:2-3 (May-December 1958): 124-140.
- _____. "L'Evoluzione della Psyche." *La Civiltà Cattolica* no. 4 (1990): 328-336.
- _____. "Le Origini dell'Uomo: Ipotesi Evoluzionistiche." In *Temi di Anthropologica Teologica*, 883-900. Rome: Teresianum, 1981.
- _____. "Osservazioni sui Denti delle Australopithecine." *Rivista di Scienze Preistoriche* 8 (1953), 1-48.
- _____. "I problemi delle Origini dell'Uomo e la Paleontologia." *Gregorianum* 59 (1978): 175-189.
- _____. "Relazione di un Viaggio nelle Regione degli Australopithecidi: Osservazioni sui più Recenti Rinvenimenti." *Rivista di Anthropologia* 52 (1965), 43-74.
- _____. "I Rinvenimenti Paleoanthropologico negli Ultimi Quindici Anni." *Anthropos* 16 (1984-1985): 1-68.
- _____. "Il Sinanthropus Pekinensis: Osservazioni Anthorpologiche," *Atti del Reale Istituto Veneto di Scienze, Lettere ed Arti* 104 (1944-1945), 449-629.
- _____. "'Sorella Scimmia' e Controversie Evoluzionistiche." *La Civiltà Cattolica* no. 1 (1985): 140-141.

_____. “Teorie Evoluzionistiche Attuali.” *Gregorianum* 62 (1981): 54.

Marcozzi, Vittorio and B. M. Cesare. “Australopithecus e *Homo Habilis*.” *Seminario di Scienze Anthropoligiche* 5 (1983): 91-129.

Martin, Malachi. “The Scientist as Shaman.” *Harper’s Magazine*, March 1972, 54-63.

McDowell, Margaret Ann. “The Rhythmic Universe.” In *The Dignity of Science*, ed. James A. Weisheipl, 366-382. Washington, D.C.: Thomist Press, 1961.

McInerny, Ralph. “Neo Scholasticism.” In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 605-606. Cambridge: University Press, 1999.

McKeon, Richard P. “Medicine and Philosophy in the Eleventh and Twelfth Centuries: The Problem of Elements.” In *The Dignity of Science*, ed. James A. Weisheipl, 75-120. Washington, D.C.: Thomist Press, 1961.

McNicholl, Ambrose. “Contemporary Challenge to the Traditional Idea of Science.” In *The Dignity of Science*, ed. James A. Weisheipl, 447-468. Washington, D.C.: Thomist Press, 1961.

Millstein, Roberta L. “Evolution.” In *Philosophy of Science*, eds. Peter Machdamer and Michael Silberstein, 227-251.

Milton, Katherine. “Diet and Primate Evolution.” *Scientific American* 16, no. 2, special edition (2 November 2006): 22-29.

Moraczewski, Albert S. “Mind, Brain, and Biochemistry.” In *The Dignity of Science*, ed. James A. Weisheipl, 383-407. Washington, D.C.: Thomist Press, 1961.

Moreau, Joseph. “Remarques sur l’Ontologie Aristotélicienne.” *Revue Philosophique de Louvain* 75 (November 1977): 577-611.

Mosseray, Geneviève. “La 25e Anniversaire de la Mort de M. Blondel.” *Revue Philosophique de Louvain* 76 (May 1978): 218-225.

Muller, Hermann J. “Genetic Progress by Voluntarily Conducted Germinal Choice.” In *Man and His Future*, ed. Gordon Wolstenholme, 247-262. Boston: Little, Brown, 1963.

Mumford, Lewis. “How War Began.” In *Adventures of the Mind*, eds. Richard Thruelsen and John Kobler. New York: Vintage, 1960.

Nadis, Steve. “Before There Was Light.” In *Cosmos: Before There Was Light*, ed. David J. Eicher, 12-17. Waukesha, WI: Astronomy Magazine Collector’s Edition, 2006.

- _____. "Gamma-ray Bursts Solved!" In *Cosmos: Before There Was Light*, ed. David J. Eicher, 68-73. Waukesha, WI: Astronomy Magazine Collector's Edition, 2006.
- _____. "New Insights from Ancient Stars." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 56-61. Waukesha, WI: Astronomy Magazine Collector's Edition, 2006.
- _____. "Return of Cosmic Strings." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 38-43. Waukesha, WI: Astronomy Magazine Collector's Edition, 2006.
- _____. "Why You Live in a Multiverse." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 32-37. Waukesha, WI: Astronomy Magazine Collector's Edition, 2006.
- Nichols, Ryan. "Scientific Content, Testability, and the Vacuity of Intelligent Design Theory." *American Catholic Philosophical Quarterly* 77, no. 4 (2003): 591-611.
- Nogar, Raymond J. "From the Fact of Evolution to the Philosophy of Evolutionism." In *The Dignity of Science*, ed. James A. Weisheipl, 327-365. Washington, D.C.: Thomist Press, 1961.
- Nowak, Martin A. And Natalia L. Komarova. "The Evolution of Altruism: From Game Theory to Human Language." In *Spiritual Information*, ed. Charles L. Harper Jr., 308-314. Philadelphia: Templeton Foundation, 2005.
- Oesterle, John A. "The Significance of the Universal *ut nunc*." In *The Dignity of Science*, ed. James A. Weisheipl, 27-38. Washington, D.C.: Thomist Press, 1961.
- O'Flynn Brennan, Sheilah. "*Physis*: The Meaning of Nature in the Aristotelian Philosophy of Nature." In *The Dignity of Science*, ed. James A. Weisheipl, 247-265. Washington, D.C.: Thomist Press, 1961.
- Oparin, A. I. "The Origin of Life." In *New Worlds of Modern Science*, ed. Leonard Engel, 157-162. New York: Dell, 1956.
- Oppenheimer, J. Robert. "The Myster of Matter." In *Adventures of the Mind*, eds. Richard Thruelsen and John Kobler, 63-75. New York: Vintage, 1960.
- Park, Alice. "Grey Matter: The Brains of Mice and Men." *Time Magazine*, 9 October 2006, 53.
- Pascual, Frenando. "Evoluzionismo e Bioetica: I Paradigmi di V. R. Potter, H. T. Engelhardt e P. Singer." In *Evoluzione*, ed. Rafael Pascual, 347-360. Rome: Studium, 2005.
- Pascual, Rafael. "La Teoria dell'Evoluzione: Status Questionis." In *Evoluzione*, ed. Rafael Pascual, 21-40. Rome: Studium, 2005.

- Peattie, Donald Culross. "In Quest of Fern Seed." In *New Worlds of Modern Science*, ed. Leonard Engel, 172-179. New York: Dell, 1956.
- Perrier, Pierre. "Que Nous Apprend l'Analyse Mathématique de la Micro et la Macro Évolution?" In *Evoluzione*, ed. Rafael Pascual, 149-198. Rome: Studium, 2005.
- Petruzzellis, Nicola. "La Spiritualità dell'Anima e i Problemi del Pensiero Contemporaneo." *Doctor Communis* 11 (1958): 141-154.
- Possenti, Vittorio. "Vita, Natura e Teleologia." In *Evoluzione*, ed. Rafael Pascual, 199-228. Rome: Studium, 2005.
- Powell, Corey S. "Night Watchman: Martin Rees." In *Unseen Universe*, ed. Corey S. Powell, 6-10. Boone, IA.: Discover Magazine special edition, 2007.
- Railton, Peter. "Social Darwinism." In *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 874. Oxford: University Press, 2005.
- Ratel, Hervé. "Qui Adhère à la Théorie de l'Évolution?" *Sciences et Avenir*, October 2006, 29.
- Ratner, Herbert. "William Harvey, M.D.: Modern or Ancient Scientist?" In *The Dignity of Science*, ed. James A. Weisheipl, 39-74. Washington, D.C.: Thomist Press, 1961.
- Reddy, Francis. "The Star-Splitting Jets of Supernovae." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 62-67. Waukesha, WI.: Astronomy Magazine collector's edition, 2006.
- Richards, Janet Radcliffe. "Darwin, Nature and Hubris." In *What Philosophers Think*, eds. Julian Baggini and Jeremy Stangroom, 23-31. London: Continuum, 2003.
- Robert, J.-D. "Review of *D'Aristote a Darwin et Retour*, by E. Gilson." *Revue Philosophique de Louvain* 75 (February 1977): 169.
- Ruse, Michael. "Evolutionary Epistemology." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 294-295. Cambridge: University Press, 1999.
- _____. "Evolutionary Epistemology." In *Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 276. Oxford: University Press, 2005.
- _____. "Evolution." In *Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 274-275. Oxford: University Press, 2005.
- _____. "Evolution and Philosophy." In *Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 275-276. Oxford: University Press, 2005.

- _____. "Social Biology." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 853-855. Cambridge: University Press, 1999.
- Sánchez Sorondo, Marcelo. "La Scienza e la Fede." In *Evoluzione*, ed. Rafael Pascual, 341-346. Rome: Studium, 2005.
- Schloss, Jeffrey P. "Hath Darwin Suffered a Prophet's Scorn?" In *Spiritual Information*, ed. Charles L. Harper Jr., 291-299. Philadelphia: Templeton Foundation, 2005.
- Sanford, David H. "Inference." In *Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 425-426. Cambridge: University Press, 1999.
- Shostak, Seth. "Will We Find Other Civilizations?" In *Cosmos: Before There Was Light*, ed. David J. Eicher, 86-91. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.
- Shreeve, James. "Beyond the Brain." *National Geographic* 207 (March 2005):2-31.
- Simmons, Edward D. "Demonstration and Self-Evidence." In *The Dignity of Science*, ed. James A. Weisheipl, 3-26. Washington, D.C.: Thomist Press, 1961.
- Singer, Peter. "Darwin and Ethics." In *What Philosophers Think*, eds. Julian Baggini and Jeremy Stangroom, 13-22. London: Continuum, 2003.
- Smith, Vincent E. "Evolution and Entropy." In *The Dignity of Science*, ed. James A. Weisheipl, 305-326. Washington, D.C.: Thomist Press, 1961.
- Sober, Elliott. "Philosophy of Biology." In *The Blackwell Companion to Philosophy*, 2nd ed., eds. Nicholas Bunin and E. P. Tsui-James, 317-344. Oxford: Blackwell, 2003.
- Staune, Jean. "La Biologie Non-Darwinienne: Essai de Typologie et Analyse des Implications Philosophiques." In *Evoluzione*, ed. Rafael Pascual, 71-88. Rome: Studium, 2005.
- Stock, Michael. "Conscience and Superego." In *The Dignity of Science*, ed. James A. Weisheipl, 408-446. Washington, D.C.: Thomist Press, 1961.
- Tattersall, Ian. "How We Became Human." *Scientific American* 16, no. 2, special edition (2 November 2006): 66-73.
- Toccafondi, Eugenio T. "La Spiritualità dell'Anima e la Coscienza dell'Io." *Doctor Communis* 11 (1958): 155-177.
- Trefil, James. "Relativity's Infinite Beauty." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 24-31. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.

- Turner, Michael S. "Much Ado About Nothing." In *Unseen Universe*, ed. Corey S. Powell, 12-20. Boone, IA.: Discover Magazine special edition, 2007.
- Van Biema, David. "God vs. Science." *Time Magazine*, 13 November 2006, 48-55.
- Van Steenberghen, Fernand. "Le Mythe d'un Monde Éternel." *Revue Philosophique de Louvain* 76 (May 1978): 157-179.
- Villagrasa, Jesus. "Evoluzione, Interdisciplinarietà e Metadisciplinarietà." In *Evoluzione*, ed. Rafael Pascual, 1-20. Roma: Studium, 2005.
- Villard, Ray and Adolf Schaller. "The First Planet." In *Cosmos: Before There Was Light*, ed. David J. Eicher, 50-55. Waukesha, WI.: Astronomy Magazine Collector's Edition, 2006.
- Viotto, Piero. "Antropologia ed Evoluzione in Jacques Maritain." In *Evoluzione*, ed. Rafael Pascual, 361-378. Rome: Studium, 2005.
- Von Schaik, Carel. "Why Are Some Animals So Smart?" *Scientific American* 16, no. 2, special edition (2 November 2006): 30-37.
- Wallace, William A. "Gravitational Motion According to Theodoric of Freiberg." In *The Dignity of Science*, ed. James A. Weisheipl, 191-216. Washington, D.C.: Thomist Press, 1961.
- Wallis, Claudia. "The Evolution Wars." *Time Magazine*, 15 August 2005, 26-37.
- Wason, Paul K. "Living Purpose: A Study of Purpose in the Living World as a Source of New Spiritual Information." In *Spiritual Information*, ed. Charles L. Harper Jr., 300-307. Philadelphia: Templeton Foundation, 2005.
- Weisheipl, James A. "The Celestial Movers in Medieval Physics." In *The Dignity of Science*, ed. James A. Weisheipl, 150-190. Washington, D.C.: Thomist Press, 1961.
- _____. "Introduction: The Dignity of Science." In *The Dignity of Science*, ed. James A. Weisheipl, xviii-xxxiii. Washington, D.C.: Thomist Press, 1961.
- Wilson, Catherine. "Sociobiology." In *The Oxford Companion to Philosophy*, 2nd ed., ed. Ted Honderich, 880. Oxford: University Press, 2005.
- Wipple, John F. "Aquinas." In *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 36-40. Cambridge: University Press, 1999.
- _____. "Thomism." In *The Cambridge Dictionary of Philosophy*, 2nd ed., ed. Robert Audi, 916-917. Cambridge: University Press, 1999.

Wong, Kate. "The Littlest Human." *Scientific American* 16, no. 2, special edition (2 November 2006): 48-57.

_____. "The Morning of the Modern Mind." *Scientific American* 16, no. 2, special edition (2 November 2006): 74-83.

_____. "Stranger in a New Land." *Scientific American* 16, no. 2, special edition (2 November 2006): 38-47.

Yancey, Patrick H. "American Catholics and Science." In *The Dignity of Science*, ed. James A. Weisheipl, 503-520. Washington, D.C.: Thomist Press, 1961.

Zycinski, Józef. "The Weak Anthropic Principle and the Theological Meaning of Evolution." In *Evoluzione*, ed. Rafael Pascual, 229-244. Rome: Studium, 2005.

BIBLIOGRAPHY
Internet References¹

- Akin, Jimmy. *Evolution and the Magisterium*. 3 June 2006
<<http://www.catholic.com/thisrock/2004/o4o1bt.asp>>.
- Ankerberg, John and John Weldon. *What Is the Probability of Evolution Happening Solely by Natural Means?* 10 July 2006
<http://www.ankerbert.com/Articles/_PFDArchives/science/sc2wo104B.pfd>.
- Apologia. *Evolution: The Catholic Church's Official Position*. 3 June 2006
<<http://www.geocities.com/Athens/Atrium/8410/evolution.html?20063>>.
- Apostle (pseud.) *Humani Generis Examined*. 3 June 2006
<<http://www.evcforum.net/egi?action=msg&f=12&f=248&m=1>>.
- Ars Hermeneutica. *Evolution and the Vatican*. 3 June 2006
<http://arshermeneutica.org/besieged/Evolution_and_the_Vatican>.
- Aulie, Richard P. *From Aristotle to Darwin and Back Again: A Journey in Final Causality, Species, and Evolution*. 24 January 2007
<<http://www.asa3.org/ASA/topics/Apologetics/Aulie2001.html>>.
- Barr, Stephen M. *The Design of Evolution*. 3 June 2006
<<http://www.firstthings.com/ftissues/ft0510/opinion/barr.html>>.
- _____. *Retelling the Story of Science*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0053.html>>.
- Behe, Michael J. *Darwin Under the Microscope*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0017.html>>.
- _____. *Dogmatic Darwinism*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0018.html>>.
- _____. *Faith and the Structure of Life*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0039.html>>.

¹Cf. Sparknotes <<http://cgi.sparknotes.com/citing.epi>> for the method followed in this Internet Bibliography: "The standard format for an online citation is: Author's name (last name first). Document *title*. Date of access (day, month, year) <URL>."

- Berg, Kristen. *Thomas M. King, S.J. In The Hoya* (3 October 2000). 24 January 2007
<<http://www.thehoya.com/features/100300/features5.htm>>.
- Bernhoft, Robin. *Examining the Fossil Record*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0042.html>>.
- _____. *Study Guide for the Scopes Trial*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0056.html>>.
- Boff, Leonardo. *Leonardo Boff*. 9 January 2007
<<http://www.leonardoboff.com/>>.
- Brinkman, Susan. *Evolution by Design?* 2 June 2006
<http://www_cst_phl.com/060309/fifth.html>.
- Brumley, Mark. *Evolution and the Pope*. 3 June 2006
<<http://www.catholic.net/RCC/Peridocals/Dossier/0102-97/Article3.html>>.
- Bucaille, Maurice. *What is the Origin of Man?* 21 June 2006
<http://www.witness-pioneer.org/vil/Books/MB_OM/default.htm>
- Callan, Charles J. *Tommaso Maria Zigliara*. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>.
- Carleton, Thomas. *Darwin Explicitly Rejected the Darwinism of Dawkins, Dennet and the 38 Nobel Laureates*. 4 November 2006
<<http://www.ourladywarriors.org/darwin.htm>>.
- Carroll, William E. *Aquinas and the Big Bang*. 25 January 2007
<<http://www.leaderu.com/ftissues/ft9911/opinion/carroll.html>>.
- _____. *Creation, Evolution, and Thomas Aquinas*. 25 January 2007
<<http://www.catholiceducation.org/articles/science/sc0035.html>>.
- Case, Thomas W. *Evolution Confusion*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0024.html>>.
- Catholic Answers. *Adam, Eve, and Evolution*. 3 June 2006
<http://www.catholic.com/library/Adam_Eve_and_Evolution.asp>.
- Celaschi, Nancy, O.S.F. *Blessed Pope John XXIII: An "Ordinary" Holiness*. 19 January 2007
<<http://www.americancatholic.org/Messenger/Sep2000/feature1.asp>>.

- Conte, Ronald L. Jr. *Instruction on Controversial Questions: Evolution*. 3 June 2006
<<http://www.catholicplanet.com/articles/instruction.005.htm>>.
- Corduan, W. Neo-Thomism. 27 December 2006
<<http://mb-soft.com/believe/txo/neothomi.htm>>.
- Creation Social Science and Humanitarian Society. *Teilhard, Evolution and the Catholic Church*. 3 June 2006
<<http://www.creationism.org/csshs/v14n4p22.htm>>.
- Creechan, Henry James. *A Brief Analysis of the Scientific/Natural Laws and Phenomena Undermining Current Theories of Evolution and the Origins of Life*. 3 June 2006
<[http://home.primus.com.au/bonno/evolution TEXT.htm](http://home.primus.com.au/bonno/evolution%20TEXT.htm)>.
- Deem, Michael. *The "Ressourcement" Movement*, 3 parts. 10 January 2007
<http://percaritatem.blogspot.com/2006_10_01_archive.html>.
- Demarco, Donald. *Concerning Philosophers and Moths*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0075.html>>.
- Dembski, William A. Review of: *Nonzero: The Logic of Human Destiny*. 24 January 2007
<http://www.designinference.com/documents/2000.08.wright_review.htm>.
- _____. *Elliott Sober's Independent Evidence Requirement for Design*. 24 January 2007
<http://www.designinference.com/documents/2002.10.23.Sober_indep_evid_req.htm>.
- _____. *Expert Witness Report: The Scientific Status of Intelligent Design*. 24 January 2007
<http://www.designinference.com/documents/2005.09.Expert_Report_Dembski.pfd>.
- _____. Foreword to *Moral Darwinism: How We Became Hedonists*, by Ben Wilker. 24 January 2007
<http://www.designinfluence.com/documents/2002.06.foreword_ben_wilker.htm>.
- _____. *Infinite Universe or Intelligent Design?* 24 January 2007
<http://www.designinference.com/documents/2003.09.ACC_Influniv_or_ID.pfd>.
- _____. *In Defense of Intelligent Design: Contribution to the Forthcoming Oxford Handbook of Religion and Science*. 24 January 2007
<http://www.designinference.com/documents/2005.06.Defense_of_ID.pfd>.
- _____. *Reflections on Human Origins*. 24 January 2007
<http://www.designinference.com/documents/2004.06.Human_Origins.pfd>.

- _____. *Unintelligent Evolution*. 24 January 2007
<http://www.designinference.com/documents/2004.12.Unintelligent_Evolution.htm>.
- De Wulf, Maurice. Neo-Scholasticism. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>.
- Documentazione Interdisciplinare di Scienza e Fede. *Origine ed Evoluzione dell'Uomo*. 2 June 2006
<<http://www.disf.org/VisualizzaBibliografia.asp?IDArea=16>>.
- Dunne, Tad. *Bernard Lonergan: Internet Encyclopedia of Philosophy*. 26 December 2006
<<http://www.iep.utm.edu/l/lonergan.htm>>.
- Facchini, Fiorenzo. *Evolution and Creation*. 21 August 2006
<<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>>.
- Fisher, Christopher L. and David Fergusson. *Karl Rahner and the Extra-Terrestrial Question*. 10 January 2007 <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1468_2265.20...>.
- Fisher, J. H. *Matteo Liberatore*. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>.
- Fleming, Patrick J. *Human Biological and Cultural Origins*. 21 June 2006
<<http://homepages.iol.ie/~flemingp/camb2.htm>>.
- Foley, Jim. *Fossil Hominids*. 21 June 2006
<<http://www.snowcrest.net/goehring/a2/primates/fossils.htm>>.
- Gelpi, Donald L. *Two Spiritual Paths: Thematic Grace and Transmuting Grace*. 27 December 2006
<<http://www.spiritualitytoday.org/spir2day/83353gelpi.html>>.
- Ghedotti, Michael J. *Evolutionary Biology at Regis, a Jesuit Catholic School*. 3 June 2006
<<http://academic.regis.edu/mghedott/evolut.htm>>.
- Glueck, Michael and Robert J. Cihak. *Doctors Doubt Darwinism*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0059.html>>.
- La Gregoriana (Trimester Newsletter, Easter 2005). *Colloquio-Internazionale su Teilhard de Chardin*. 3 February 2007 <<http://www.unigre.it/pug/rivista/GREG22.pfd>>.
- _____. *In Memoriam: Vittorio Marozzi*. 3 February 2007
<<http://www.unigre.it/pug/rivista/GREG22.pfd>>.
- Intellectually Honest Science. *Problems with Biological Science and Evolutionary Theory*. 10 July 2006 <<http://www.intellectuallyhonestscience.com/bio-bias.htm>>.

- Johnson, Phillip E. Review of *Climbing Mount Improbable and Darwin's Black Box*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0014.html>>.
- Johnston, George Sim. *Apes "R" Not Us: Catholics and the Debate Over Evolution*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0038.html>>.
- _____. Review of *Darwin's Black Box: The Biochemical Challenge to Evolution*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0002.html>>.
- _____. *An Evening with Darwin in New York*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0082.html>>.
- Keane, Gerry. *Is Evolution an Open Question for Catholics?* 3 June 2006
<<http://www.theotokos.org.uk/pages/creation/gikeane/openques.html>>.
- Kenney, John Peter. Review of *Contending with Modernity: Catholic Higher Education in the Twentieth Century* by Philip Gleason. 20 August 2006
<<http://print.firstthings.com/ftissues/ft9611/reviews/kenney.html>>.
- Lowe, Herbert E. *Homanisation by Karl Rahner*. 10 January 2007
<<http://www.religion-online.org/showook.asp?title=3367>>.
- Magister, Sandro. *Creation or Evolution? Here Is the Vicar of the Church of Rome*. 21 August 2006
<<http://www.chiesa.espressoline.it/printDettaglio.jsp?id=77264&eng=y>>.
- Marra, William A. *Von Hildebrand on Love, Happiness, and Sex*. 31 January 2007
<<http://www.catholiceducation.org/articles/sexuality/se0039.html>>.
- Mansueto, Anthony. *Dialectic, Systems and Organization: The Philosophical Implications of the New Science*. 3 June 2006
<http://pespmc1.vub.ac.be/Einmag_Abstr/AMansueto.html>.
- McCarthy, John F. *Evolution and the Truth about Man*. 3 June 2006
<<http://www.rtforum.org/lt/lt72.html>>.
- Monczunski, John. *Ahead of His Time: A Notre Dame Priest/Scientist Embraced Evolution*. 3 June 2006
<<http://www.nd.edu/~ndmag/w0506/darwside.html>>.
- _____. *Questions That Won't Go Away: Darwin and Intelligent Design*. 3 June 2006
<<http://www.nd.edu/~ndmag/w0506/darwin.html>>.
- Murray, John Courtney. *Arguments for the Human Right to Religious Freedom*. 11 January 2007
<<http://www.georgetown.edu/users/jlh3/Murray/1968.htm>>.

- Nugent, Robert. *Yves Congar: Apostle of Patience*. 10 January 2007
<http://dlibrary.acu.edu.au/research/theology/ejournal/aejt_4/nugent.htm>.
- Oakes, Edward. *Evolution in the Eyes of the Church*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0062.html>>.
- _____. *The Witness of Balthasar*. 11 January 2007
<<http://www.Americamagazine.org/gettext.cfm?textID=42928articleTypeID=1&issueID=538>> .
- Pope Pius XII. *Humani Generis*. 3 June 2006
<http://www.beliefnet.com/story/13/story_1354.html>.
- Pope John Paul II. *Pacem in Terris*. 19 January 2007
<http://www.vatican.va/holy_father_/john_paul_ii/messages/peace>.
- _____. *Message to the Pontifical Academy of Sciences: On Evolution*. 3 June 2006
<<http://www.ewtn.com/library/PAPALDOC/JP961022.htm>>.
- _____. *Truth Cannot Contradict Truth*. 3 June 2006
<http://www.newadvent.org/library/docs_jp02tc.htm>.
- Reference.com/Encyclopedia. *Leonardo Boff*. 9 January 2007
<http://www.reference.com/browse/wiki/Leonardo_Boff>.
- Scheifler, Michael. *Pope John Paul II Declares Evolution to be Fact!* 3 June 2006
<<http://www.aloha.net/~mikesch/darwin.htm>>.
- Schonborn, Christoph. *Finding Design in Nature*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0060.html>>.
- Schroeder, Gerald L. *Material Guy*. 3 June 2006
<<http://www.catholiceducation.org/articles/science/sc0010.html>>.
- Senut, Brigitte. *First Hominid from the Miocene (Lukeino Formation, Kenya)*. 21 June 2006
<<http://www.esi-topics.com/fbp/comments/december-01-Brigitte-Senut.html>>.
- Sonleitner, Frank J. *The Fossil Record*. 21 June 2006
<http://www.ncseweb.org/resources/articles/1422_55_sonleitner_what39s_wr_11_24_2004.asp>.
- Tillar, Elizabeth K. *The Influence of Social Critical Theory on Edward Schillebeeckx's Theory of Suffering for Others*. 11 January 2007
<http://www.blackwell_synergy.com/doi/abs/10.1111/1468-2265.00167>.

Tolson, Jay. *Religion: Parsing a Cardinal: Are Roman Catholics to Give Up on Evolution?* 3 June 2006 <<http://www.usnews.com/usnews/culture/articles/050712/12religion.htm>>.

Toohey, John J. *Josef Wilhelm Karl Kleutgen*. 20 August 2006
<http://www.history-of-philosophy.com/neo_scholasticism_m.htm>.

Whitten, Russ and Charlene Whitten. *What About Evolution?* 6 June 2006
<<http://www.ramsforchrist.net/library/abplogetics/oi.pdf>>.

Wiker, Benjamin D. *Does Science Point to God? The Intelligent Design Revolution*, two parts. 3 June 2006 <<http://catholiceducation.org/articles/science/sc0052.html>>.

_____. *Looking Inside Darwin's Black Box*. 3 June 2006
<<http://catholiceducation.org/articles/science/sc0029.html>>.

Wikipedia, The Free Encyclopedia. *Anne Dambricourt Malassé*. 22 December 2006
<http://fr.wikipedia.org/wiki/Anne_Dambricourt-Malassé>.

_____. *Bernard Lonergan*. 26 December 2006
<http://en.wikipedia.org/wiki/Bernard_Lonergan>.

_____. *Christoph Cardinal Schönborn*. 31 January 2007
<http://en.wikipedia.org/wiki/Christoph_Sch%C3%B6nborn>.

_____. *Cornelio Fabro*. 29 December 2006
<http://en.wikipedia.org/wiki/Cornelio_Fabro>.

_____. *Dialectical Materialism*. 17 January 2007
<http://en.wikipedia.org/wiki/Dialectical_Materialism>.

_____. *Dietrich Von Hildebrand*. 31 January 2007
<http://en.wikipedia.org/wiki/Dietrich_Von_Hildebrand>.

_____. *Edith Stein*. 31 January 2007
<http://en.wikipedia.org/wiki/Edith_Stein>.

_____. *Edward Schillebeeckx*. 11 January 2007
<http://en.wikipedia.org/wiki/Edward_Schillebeeckx>.

_____. *Evolution and the Roman Catholic Church*. 11 January 2007
<http://en.wikipedia.org/wiki/Evolution_and_the_Roman_Catholic_Church>.

- _____. *Evolutionism*. 20 June 2006
<<http://en.wikipedia.org/wiki/Evolutionism>>.
- _____. *Gustavo Gutiérrez*. 9 January 2007
<http://en.wikipedia.org/wiki/Gustavo_Guti%C3%A9rrez>.
- _____. *Hans Urs von Balthasar*. 11 January 2007
<http://en.wikipedia.org/wiki/Hans_Urs_von_Balthasar>.
- _____. *Henri de Lubac*. 11 January 2007
<http://en.wikipedia.org/wiki/Henri_de_Lubac>.
- _____. *Historical Materialism*. 17 January 2007
<http://nostalgia.wikiedia.org/wiki/Historical_Materialism>.
- _____. *Humani Generis*. 3 June 2006
<http://en.wikipedia.org/wiki/Humani_Generis>.
- _____. *Intrinsic Finality*. 11 January 2007
<http://en.wikipedia.org/wiki/Intrinsic_finality>.
- _____. *John Courtney Murray*. 11 January 2007
<http://en.wikipedia.org/wiki/John_Courtney_Murray>.
- _____. *Joseph Maréchal*. 27 December 2006
<http://en.wikipedia.org/wiki/Joseph_Mar%C3%A9chal>.
- _____. *Karl Rahner*. 30 December 2006
<http://en.wikipedia.org/wiki/Karl_Rahner>.
- _____. *Materialism*. 17 January 2007
<<http://en.wikipedia.org/wiki/Materialism>>.
- _____. *Metaphysical Naturalism*. 11 January 2007
<http://en.wikipedia.org/wiki/Philosophical_naturalism>.
- _____. *Milford H. Walpoff*. 21 June 2006
<http://en.wikipedia.org/wiki/Milford_H._Walpoff>.
- _____. *Pierre Teilhard de Chardin*. 11 January 2007
<http://en.wikipedia.org/wiki/Pierre_Teilhard_de_Chardin>.
- _____. *Pontifical Gregorian University*. 30 December 2006
<http://en.wikipedia.org/Pontifical_Gregorian_University>.

- _____. *Pope Pius X*. 22 January 2007
<http://en.wikipedia.org/wiki/Pope_Pius_X>.
- _____. *Pope John XXIII*. 19 January 2007
<http://en.wikipedia.org/wiki/Pope_John_XXIII>.
- _____. *Scholasticism*. 17 January 2007
<<http://en.wikipedia.org/wiki/Scholasticism>>.
- _____. *Talk: Humani Generis*. 6 June 2006
<http://en.wikipedia.org/wiki/Talk:Humani_Generis>.
- _____. *Thomism*. 27 December 2006
<<http://en.wikipedia.org/wiki/Thomism>>.
- _____. *Thomas M. King*. 24 January 2007
<http://en.wikipedia.org/Thomas_M._King>.
- _____. *University Laval*. 30 December 2006
<http://fr.wikipedia.org/wiki/University_Laval>.
- _____. *Yves Congar*. 11 January 2007
<http://en.wikipedia.org/wiki/Yves_Congar>.
- Willcox, David L. *Adam Where Are You? Changing Paradigms in Paleoanthropology*. 21 June 2006
<<http://www.asa3.org/asa/PSCF/1996/PSCF6-96Wilcox.html>>.
- Wilkins, John. *Evolution and Philosophy*. 3 June 2006
<<http://www.talkorigins.org/tags/evolphil.html>>.
- Williams, Fred. *Evolution, a Fairytale for Grownups*. 4 June 2006
<http://www.evolutionfairytale.com/articles_debates/fossil_record_quotes.htm>.
- Wyn, Thomas. *The Origin of Speech*. 21 June 2006
<<http://web.uccs.edu/twynn/Origins%20of%20speech.htm>>.
- Wildman, Wesley, ed. *Boston Collaborative Encyclopedia of Western Thought: Bernard Lonergan*. 26 December 2006
<http://people.bu.edu/wwildman/weirdwildweb/courses/mwt_themes_840_1>.
- Woodhead, Ira and Frank Keller. *The Ivan Illich Archive*. 26 December 2006
<<http://cogsci.ed.ac.uk/~ira/illich/>>.

Zenit News Agency. *Evolution in the Eyes of the Church (Part One): Father Edward Oakes on the Importance of Definitions*. 11 January 2007
<<http://www.zenit.org/english/visualizza.phtml?sid=74786>>.

Zenit News Agency. *Evolution in the Eyes of the Church (Part Two): Father Edward Oakes on the Difficulty of Reconciling Science and Faith*. 11 January 2007
<<http://www.zenit.org/english/visualizza.phtml?sid=74785>>.

GENERAL INDEX

- abiogenesis 3, 10, 23, 32, 34, 36, 49, 52, 56, 57, 59, 64, 68, 70, 74, 95, 98, 111, 114, 118, 119, 132, 133, 135, 137-139, 143, 197, 210, 211, 215, 223, 241, 334, 591-594, 596, 600, 601, 603, 604, 606-608, 611, 612, 614-617, 746, 755
- Adam 11, 190, 222, 234, 271, 564, 653
- Adamic revelation 90, 91, 96, 102
- adaptation 91, 225, 226, 284, 285, 380, 386, 431, 481, 549, 727, 731
- Adler 141, 142, 193-197, 332, 358, 396, 479, 513, 522, 581, 593, 599, 604, 605, 608, 612, 613, 643, 687, 733
- agere sequitur esse 20, 46, 430
- Albertus Magnus 27, 63, 77, 85, 152, 153, 157, 173-175, 177-180, 184, 252, 578, 747, 749
- analogies 172
- analogous 129, 155, 174, 193, 314, 331, 453, 581, 598, 609, 644, 658, 688, 693, 708, 728, 734
- analogy 45, 50, 107, 160, 197, 246, 289, 331, 394, 397, 470, 490, 560, 564, 581, 598, 609, 614, 639, 644, 658, 688, 693, 734
- anatomy 22, 166, 265, 353
- Anaxagoras 25, 263, 330, 394, 446, 447, 577
- Anaximander 7, 358, 394, 446, 593
- Anaximenes 394, 446
- animal .. 7, 9, 17, 21, 22, 48, 53, 77, 98, 112, 115, 119, 122, 142, 155, 166, 199, 236, 243, 244, 267, 285, 326, 332-334, 336, 409, 410, 451, 476-478, 480, 481, 484, 490, 495, 498-502, 504, 506, 509, 512, 513, 516, 522, 552, 556, 558, 560, 566, 572, 574, 581, 584, 586-589, 593, 599, 609, 612, 644, 663, 686, 688, 734, 754, 755
- Anthropic Principle 183, 198, 199, 246, 277, 569, 620, 622, 637, 717, 750, 752-754
- anthropoids 48, 493, 499
- anthropology 5, 47-50, 63, 67, 120-122, 124, 125, 127, 212, 258, 265, 504, 558, 570, 571, 573, 575, 580, 586, 608, 643, 687, 733
- archeology 122
- Aristotle . 1, 7-9, 24-26, 36, 39, 46, 49, 51, 59, 61, 65, 73, 76, 77, 84, 104, 106, 107, 113, 118, 129, 134, 136, 142, 144, 147, 156, 157, 160-165, 167, 169, 170, 175, 176, 182, 193-195, 208, 209, 232, 250, 251, 255, 263, 271, 274, 315, 316, 329, 332, 343, 350, 353, 357, 358, 362, 363, 365, 367, 370, 371, 380, 381, 386, 387, 398, 400-402, 414, 419, 420, 422, 423, 426, 429, 439-446, 449, 453, 461, 464, 466, 472-474, 479, 484, 502, 512, 513, 522, 528, 530, 531, 535, 540, 556, 567, 572, 577, 589, 593, 599, 606, 612, 618, 621, 625, 626, 652, 697, 714, 723, 742, 745, 748, 755
- Aristotle Metaphysics 84, 429, 441, 453
- Aristotle Physics 84, 357, 365, 423, 441, 445, 446, 464
- Ashley 152, 192-194

assent . . . 290, 291, 299, 346-348, 384, 385, 407, 408, 434, 435, 462, 463, 492, 493, 519, 520, 546,
 547, 582, 583, 609, 610, 644, 645, 688, 689, 734, 735
 atheism 33, 53, 61, 69, 71, 99, 127, 132, 134, 139, 189, 191, 205, 208, 285, 327, 702-706, 710,
 711, 719-731, 733, 736-740, 742, 755
 Augustine . . 8, 51, 59, 74, 89, 133, 189, 307, 329, 330, 381, 387, 471, 530, 531, 534, 545, 593, 594,
 597, 625, 707, 711
 Australopithecus 619, 620
 Averroes 531
 Avicenna 8, 330, 429, 577, 597
 Ayala 187-189, 194, 382, 386
 Babolin 49, 50, 56, 494, 752
 balance 716
 Barrajón 86, 101, 126, 127, 131, 132, 278, 280, 281, 286, 300, 303, 304, 315, 319, 504, 528
 Barrett 153, 154, 179, 180, 192-194, 222, 273
 behavior . 122, 123, 144, 145, 165, 171, 257, 264, 266, 268, 294, 480, 481, 502, 504, 518, 524, 558,
 655, 656, 658, 661, 662, 680, 686, 692, 747
 Behaviorism 81, 145, 146, 267, 396, 680
 Benignus . . 23, 137-139, 193-197, 213, 264, 312, 313, 317, 318, 333, 365, 378, 383, 386, 389, 390,
 444, 466, 467, 485, 496, 502, 508, 517, 523, 542, 548, 549, 568, 574, 575, 578, 584,
 585, 588, 600, 605, 661, 671, 673, 680, 681, 690, 693, 694, 703, 704, 706, 708, 720,
 737
 Bergson 14, 75, 77, 81, 130, 209, 286, 397, 398, 469, 532
 bible 83, 189, 222, 232, 237, 270, 307, 308, 311, 351, 530, 625, 650
 biochemistry 164, 192, 265, 353
 biogenesis 23
 biopoesis 607, 609
 Bittle 134, 135, 193, 195-197, 246, 262, 271, 285, 286, 306, 307, 323, 327, 351, 353, 392, 394,
 395, 399, 400, 418, 420, 436, 447, 449, 478, 480, 481, 501, 523, 524, 527, 544, 549,
 550, 552, 553, 555, 556, 577, 579, 580, 591, 592, 594, 596
 Boff 202-207, 215
 born . 25, 34, 35, 47, 50, 53, 57, 71, 75, 77-79, 82, 85, 87, 96, 99, 101, 103, 105, 108, 116, 124, 130,
 141, 150, 171, 172, 179, 181, 183, 200, 201, 203, 234, 263, 301, 593, 653
 Boyer . . 32, 33, 36, 42, 44, 45, 56, 57, 70, 82, 98, 136, 253, 258, 259, 264, 266, 283-285, 323, 324,
 348-351, 385, 409, 435, 450, 464, 469, 520, 548, 583, 611, 690, 736, 751
 Brennan 167-169, 192, 196, 197, 324, 342, 343, 348, 349, 351, 646, 647, 651
 Buffon 10, 269, 324, 357, 594
 Calcagno . . . 1, 2, 16, 22, 24, 25, 31, 32, 44, 56, 57, 84, 98, 115, 116, 199, 218, 250, 253, 258, 261,
 274, 279, 289, 297, 298, 306, 317-319, 323, 324, 328, 340, 341, 350, 351, 360-362,
 366, 377-379, 386, 388, 421, 422, 429, 430, 438, 440, 444, 450-456, 459, 460, 462,

465, 468-471, 473, 474, 494, 498, 505, 507, 552, 560, 613, 628, 635, 651, 654, 659-661, 664-667, 673-675, 681, 690-697, 701, 706, 709, 710, 713-716, 718, 722, 737, 749-752

Callus 154, 194

Cambrian Period 311

Carbone 116-118, 130-132

Carroll 185, 186, 192, 193, 195, 197, 256, 276, 283, 300, 301, 306, 307, 309, 722

cell 13, 20, 230, 600, 612, 723

certitude .. 3, 29, 50, 55, 171, 210, 229, 261, 262, 274, 279, 289-291, 293, 298, 299, 318, 346-353, 384-390, 407-414, 434-440, 462-466, 468-473, 475, 492-494, 496-499, 501, 502, 510, 519-528, 546-556, 574, 582-589, 609-613, 615-617, 644-652, 688-697, 734-742, 745, 749

chance 14, 21, 26, 34, 45, 52, 67, 73, 90, 108, 109, 118, 128, 142, 143, 148-150, 156, 162, 182, 187, 188, 194, 196, 228, 230, 232, 236, 251, 284, 311, 346, 350, 356, 357, 359, 363, 365, 366, 369-371, 373-375, 377, 379, 381-384, 386, 420, 430, 493, 505, 509, 517, 521, 560, 590, 592, 597, 600, 603, 611, 612, 626, 627, 649, 655, 711, 717, 720, 721, 740, 746-748, 752, 754

Chauvin 94

chemical 19, 164, 233, 255, 395, 415-417, 425, 470, 535, 604, 607, 639, 641, 643, 660

Christian . 34, 48, 62, 79, 83, 84, 93, 94, 101, 105, 110, 121, 127, 137, 152, 157, 180-182, 189, 190, 197, 205, 210, 218, 219, 221, 224, 225, 228, 230, 237, 247, 270, 300, 307, 310, 315, 316, 319, 330, 331, 359, 363, 411, 418, 479, 515, 517, 518, 537, 557, 598, 678, 702, 704, 705, 710, 713, 721

chromosomes 13, 400

circumstantial 281, 292, 293

Clark 267, 281

Communism 208, 221, 223, 240, 293, 294, 672, 677, 678, 701

Communist Manifesto 679

Comte 41, 60, 71, 136, 264, 273, 276, 305, 393, 663, 701

Concordism 191, 235, 320

Congar 78, 79, 83, 86, 94, 95, 151, 192

constancy 161, 381, 430, 438, 624

contingence 382, 475, 590, 676

cosmic .. 3, 11, 23, 51, 59, 77, 103, 161, 162, 168, 186, 199, 202, 215, 223, 248, 307, 564, 581, 608, 619, 621-624, 629, 632, 635, 638-640, 643, 647-653, 687, 705, 733, 755

cosmos .. 37, 51, 52, 89, 106, 111, 132, 134, 139, 147, 161, 183, 205, 209, 212, 216, 228, 231, 271, 277, 321, 359, 363, 364, 383, 564, 611, 614, 619-622, 624, 632, 635, 643, 650, 653, 719, 720, 738

Cosmozoic Theory	607
creation	17, 18, 36, 46, 50-52, 55, 59, 61, 64, 67, 68, 89, 98, 102, 108, 111, 115, 118, 119, 122, 127, 129, 133, 139, 147, 148, 173, 176, 183, 185-187, 189, 190, 197, 203, 205, 208, 209, 211, 215, 227, 228, 230, 232-235, 237, 240, 241, 246, 250, 256, 270, 273, 276, 280, 282, 283, 300, 301, 303, 306, 307, 309, 310, 312, 325, 327, 329, 334, 344, 346, 359, 360, 484, 501, 506, 507, 509, 510, 513, 518, 522, 525, 529, 536-538, 541-545, 550-552, 557, 568, 569, 577, 578, 585, 595-597, 599, 602, 603, 606, 612, 615, 619, 621-623, 625-627, 630, 631, 634-639, 650, 671, 699, 700, 704-709, 716, 717, 719, 720, 722, 725, 730, 737, 753-755
Creationism	5, 17, 55, 71, 73, 119, 120, 131, 132, 288, 289, 298, 308-311, 320, 327, 350, 459, 505, 534, 550, 705
Croce	81
Crushon	56
cultural evolution	258, 558, 568, 570, 575, 576, 688, 745, 748, 753-755
culture	31, 42, 61, 89, 99, 121-123, 131, 132, 135, 136, 198, 200, 207, 225, 226, 299, 300, 302, 482, 494, 496, 499, 520, 527, 562, 563, 575, 688, 734, 753
Cuvier	9, 14, 178, 297, 324
Dambricourt	90-92, 94, 95
Darwin	5, 11, 12, 14, 15, 21, 33, 34, 40, 48, 55, 63, 64, 77, 81, 104, 110, 113, 121, 125, 149, 155, 175, 178, 185, 187, 191, 193, 199, 243-245, 247, 248, 258, 265, 266, 273, 276, 280, 292, 294, 297, 302, 309, 324, 334, 335, 349, 356, 382, 418, 419, 478, 561, 580, 581, 593, 594, 608, 643, 656, 662, 663, 679, 687, 701, 727, 733, 754
Darwin Centennial	63, 175, 243, 244, 248, 258, 276, 292, 302, 349, 580, 608, 643, 687, 733
Darwinism	12, 18-21, 34, 67, 80, 82, 90, 92, 94, 98, 104, 111, 118, 125, 131, 149, 185, 187, 188, 191, 192, 196, 244, 245, 248, 301, 303, 305, 308, 311, 322, 356, 411, 559, 655-657, 662, 704
Das Kapital	679
dating	31, 270, 271
Dawkins	92, 94, 302, 303, 307, 316, 656, 701, 702, 705, 710-712
De Finance	43, 45, 46, 72, 125, 366-368, 379, 382, 386, 391, 458, 487, 490, 494, 495, 497, 498, 511, 566, 568, 571, 572, 576, 585, 590, 605, 628, 632, 638, 676, 716, 717, 753
De Koninck	85, 155, 246, 247
De Lubac	82, 83, 94, 95, 192, 358
definition	17, 18, 27, 93, 108, 117, 146, 155, 156, 158, 166, 167, 193, 195, 201, 242-249, 257, 267, 332, 344, 346, 370, 376, 401, 402, 405-407, 418, 420, 421, 423, 431-434, 441, 452, 453, 537, 574, 582, 587, 599, 609, 624, 633, 641, 644, 674, 677, 686, 688, 734, 736, 746
Delage	395
Democritus	25, 394, 396, 417, 419, 439, 447, 593, 621, 731
Denton	94

Descartes . . . 9, 47, 58, 69, 121, 124, 136, 146, 159, 269, 275, 357, 393, 394, 396, 397, 402, 413, 578,
 592, 621
 Descent of Man 21, 527
 determinism . 81, 95, 134, 135, 144, 201, 203, 206, 212, 226, 334, 378, 411, 586, 659-662, 673, 678,
 680-682, 692-694, 697, 755
 Dezza . . . 34, 35, 56, 57, 253, 259, 324, 342, 343, 348, 349, 370, 393, 394, 396, 398, 411, 467, 543,
 603, 604, 611, 613, 615, 616, 752, 753
 Di Napoli . . 17-19, 24, 32, 45, 57, 60, 71, 75, 79, 87, 96, 97, 115, 118, 119, 130-132, 251, 262, 288-
 292, 294, 304, 478, 495, 498, 505, 525, 527, 528, 544, 549-551
 dialectical materialism 164, 174, 176, 223, 252, 293, 294, 563, 678, 701
 Dilthey 293, 358
 discontinuity 22, 52, 113, 123, 135, 144, 199, 450, 472, 476, 491, 492, 494, 527
 divine concurrence 364, 365, 383, 384
 DNA 20, 67, 265, 266, 272, 356, 507, 695
 Dobzhansky 64, 88, 125, 248
 Donat 11, 32, 84, 97-99, 111, 245, 248, 253, 254, 256, 275, 301, 324, 326, 327, 332, 380, 386, 397,
 405, 406, 412, 413, 415, 417, 421, 430, 438, 452-454, 464, 471-473, 495, 498, 507,
 537, 552, 559, 562, 564, 579, 598, 607, 621-623, 626, 630, 631, 633, 636, 639, 641,
 642, 646-650, 652, 661, 682-685, 704, 722, 723, 737, 738
 Dorlodot 15, 721, 728
 Dougherty 4, 146, 147, 146-148, 196, 197, 324, 342, 343, 348, 349, 380, 386, 623, 624
 Driesch 75, 106, 107, 130, 133, 196, 209, 286, 313, 314, 358, 417, 449, 469, 475
 Duve 94
 earth . 7, 9, 66, 123, 137, 147, 152, 162, 188, 199, 202-204, 234, 243, 270, 302, 447, 564, 592, 605,
 613, 635, 636, 639, 640, 642, 646, 652, 657
 ecology 203
 eduction 34, 95, 135, 336, 343, 421, 536-539, 545, 556, 606, 623, 729
 efficient causality 11, 391, 413, 629, 651, 713, 718, 754
 Einstein 5, 65, 162, 236
 Eldrege 13, 125
 embryology 75, 130, 323, 353, 417
 Empedocles 7, 263, 358, 394, 447, 593
 Engels 121, 419, 678
 entropy 113-115, 149, 211, 212, 215, 236, 282, 641, 642, 720, 727, 738, 739, 755
 Equilibrium Theory 245

 equivocal 3, 45, 141-143, 149, 155, 156, 193, 246, 321, 346, 365, 366, 369, 373, 374, 377-379,
 382, 384, 386, 387, 389, 509, 517, 521, 524, 558-560, 563, 568, 580, 582, 588, 589,
 591, 596, 600, 603, 608, 609, 611, 614, 617, 619, 624, 632, 643, 644, 651, 654, 666,

686-688, 696, 699, 710, 733, 734, 744, 746, 747

equivocal generation 366, 374, 603, 611

essence . 18, 61, 76, 101, 116, 117, 119, 136, 180, 186, 207, 250, 256, 257, 326, 380, 400, 406, 419,
422, 424, 426, 454, 457, 466, 535, 543, 550, 556, 572, 604, 624, 633, 701, 712, 713,
725

evidence . . 64, 119, 126, 131, 139, 148, 170, 229, 280, 281, 287-290, 293, 301, 302, 310, 316, 323,
352, 353, 459, 506, 520, 521, 527, 617, 646, 651, 680, 681, 696, 702, 705, 711, 724,
734, 742, 755

evolutionary theory 10, 66, 264, 282, 285, 288, 303, 322, 562, 656

Evolutionism . 2, 4-7, 16-23, 28, 29, 34, 35, 38, 52, 53, 55, 63, 70, 77, 104, 107, 108, 118-120, 125,
126, 130, 131, 137, 138, 141, 143, 176, 192, 193, 195, 207, 208, 215, 222, 223, 237,
242-246, 248, 249, 251-253, 255, 258, 260, 262, 264, 273, 279, 280, 282, 285, 286,
289, 293, 294, 298, 301-304, 308, 320-322, 324, 325, 327, 340, 341, 343, 346, 348,
349, 352-358, 366, 372, 373, 375-380, 385-387, 390, 392, 398-401, 405-407, 409-411,
414, 416, 418, 425, 429, 433, 435, 437, 440-443, 461, 462, 464, 465, 473, 478, 509,
520, 548, 561, 563, 581, 583, 603, 608, 611, 622, 643, 646, 660, 662, 678, 687, 690,
705, 714-716, 719, 733, 734, 736

Existentialism 38, 61, 76, 101, 110, 124, 223, 293, 731

extra-terrestrial 101, 103, 133, 147

Fabro 45, 60, 61, 71, 110

Facchini 122-124, 131, 132, 235, 270, 280, 296, 312, 518, 524, 527, 528

fact of evolution . . 55, 63, 64, 87, 117, 129, 134, 135, 196, 210, 223, 229, 247, 248, 258, 262, 264,
276, 277, 279-283, 285, 287, 289-291, 293, 294, 296, 302, 322, 323, 328, 348, 349,
353, 354, 385, 409, 435, 443, 464, 520, 548, 561, 583, 611, 646, 662, 690, 724, 734,
736

faith 54, 68-70, 75, 81, 86, 96, 100, 101, 109, 110, 139, 151, 152, 178, 191, 194, 204, 221, 227,
228, 230, 232, 233, 238, 239, 277, 289, 297, 298, 300-302, 304, 308, 311, 315, 317-
319, 555, 571, 573, 625, 702, 721, 724, 740

Fernando Pascual 20, 127, 128, 131, 244, 280, 309

Feuerbach 51, 61, 80, 120, 136, 294, 417, 419, 621, 678

figure 150, 204, 404

final cause . . . 14, 15, 38, 107, 108, 118, 140, 209, 312, 335, 355, 361-363, 366-368, 380, 381, 391,
398, 401, 403, 422, 467, 565, 566, 568, 704, 707, 713, 719, 721, 728, 748

finality . . 26, 34, 37, 52, 53, 57, 73, 84, 90, 93-95, 106, 108, 111, 114, 119, 129, 134, 135, 137-141,
147, 148, 168, 180, 188, 191, 196, 198, 199, 208, 209, 213, 215, 222, 229, 236, 251,
272, 286, 312, 327, 332, 346, 355, 356, 358, 359, 361-363, 366-370, 372, 375-382,

385-390, 398, 401, 430, 431, 489, 525, 562, 565, 603, 605, 611, 617, 621, 647, 651,
 700, 703, 704, 713, 716, 720, 722, 731-733, 736, 738, 740, 742, 750, 752, 754
 fine arts 62
 fire 88, 162, 259, 265, 338, 361, 403, 447, 619
 Florio 205-207
 Fondi 94
 formal cause 19, 335, 402, 422, 423, 461, 673, 707, 729
 fossil 10, 119, 131, 271, 285, 293, 294, 302, 311, 323, 503, 520
 free will . . 104, 111, 113, 115, 118, 121, 123, 132, 138, 226, 231, 268, 350, 496, 655, 658, 659, 661,
 663, 666, 667, 672-683, 686, 690-693, 697, 700, 712, 755
 Freud 144-146, 172, 267, 268, 396, 662, 681, 694
 function 165, 171, 225, 253, 392, 403, 442, 458, 482, 488, 491, 496, 657
 Galileo 5, 65, 69, 177, 187, 220, 243, 269, 270, 274, 314, 315, 394, 639, 754
 Gannon 144, 257, 264, 266-269, 272
 Gardeil . 25, 26, 82, 84, 85, 94, 95, 250, 255, 263, 337, 338, 353, 354, 357, 362, 363, 365, 370, 380,
 381, 386, 390, 391, 397-399, 401, 402, 414, 419, 428, 439, 440, 445, 446, 454, 455,
 464, 467, 473, 474, 502, 528, 556, 565, 580, 589, 618, 629, 652, 697, 716, 723, 724,
 736, 737, 742
 Garey 156, 193, 194
 gene 191, 656
 generation . 10, 13, 27, 31, 34, 58, 59, 68, 82, 113-115, 177, 185, 187, 190, 243, 333-335, 337, 338,
 340, 360, 366, 371-374, 376-378, 386, 387, 437, 441, 446, 447, 449, 455, 462, 509,
 511, 512, 518, 522, 525, 529, 533, 538, 544, 545, 549, 555, 568, 585, 592, 595, 596,
 603-605, 607, 611, 613, 616, 664, 707
 Genesis 232, 234, 307, 310, 329, 705
 genetic mutation 49
 genetics 5, 52, 191, 265, 288, 353, 656, 660
 genus . . . 2, 33, 126, 244, 291, 294, 336, 349, 404, 420, 433, 442, 456, 458, 460, 465, 470, 474, 533,
 541, 581, 609, 644, 651, 688, 724, 729, 734, 746
 Gevaert 120, 121, 130-132, 313, 357, 358, 430, 438, 563
 Gill 113-115, 219, 270, 299
 Gilson . 72, 78-81, 94, 95, 247, 270, 330-332, 363, 411, 418, 419, 515-517, 537, 542, 543, 557, 598,
 678, 713, 714, 720, 721, 724, 725, 736, 737
 Giustiniani 124, 125, 131, 132
 Glenn . . . 140, 141, 192, 193, 195-197, 357, 361, 362, 381, 386, 387, 393, 416, 425, 631, 725, 737
 Glutz 157, 158, 193-195

 God . . 6, 8, 9, 14, 15, 17, 18, 22, 23, 33, 35, 36, 46, 49, 51, 58, 64, 68, 71-75, 77, 82, 84, 90, 91, 93,
 95, 96, 102, 104, 107, 108, 110, 111, 113-115, 118-121, 124-127, 130-132, 135, 137,
 139-143, 147, 148, 164, 173, 175, 176, 184-187, 189, 190, 194, 197-199, 202, 205,

207-209, 211, 215, 216, 220, 226-228, 230, 233-238, 240, 241, 264, 300, 304, 307,
 309, 310, 312, 313, 317, 321, 323, 329-333, 340, 342, 345, 357, 359, 360, 363-365,
 371-373, 375, 378, 380, 381, 383, 386, 393, 413, 440, 444, 453, 457, 466, 480, 482,
 487, 497, 501, 505-508, 510, 511, 513-518, 521-526, 529, 530, 533, 534, 538, 539,
 541-546, 549, 550, 553-555, 557, 565, 568, 570-572, 574-579, 584, 585, 587, 589,
 592, 594, 596-599, 602-607, 611, 612, 615-617, 620-624, 627-629, 631-636, 638-642,
 646-650, 654, 659, 665, 671, 694, 699, 712-717, 719-733, 736-740, 742, 743, 748,
 753, 755
 Goethe 10, 12, 324, 563
 Gonzalez . . . 207-209, 214, 215, 218, 245, 273, 308, 562-564, 567, 571, 577-580, 588-590, 663, 679,
 725, 726, 737
 Gould 13, 94, 125, 245, 301, 314
 governance 363, 364, 380, 596
 Gredt 58, 59, 70, 71, 82, 324, 419, 453, 490, 495, 498, 507, 517, 533, 534, 536, 541, 544, 551,
 577, 594, 597, 612, 635, 636, 647-649, 652, 659-661, 665, 676, 690, 691, 726, 737
 growth . . . 6, 12, 44, 45, 60, 65, 70, 114, 130, 135, 154, 179, 194, 197, 200, 225-227, 252, 263, 286,
 300, 313, 397, 500, 564, 619
 Haeckel 12, 73, 74, 82, 121, 125, 245, 356, 393, 394, 401, 417, 418, 622, 701
 Haffner . . . 20, 189-191, 193-195, 219, 222, 226, 228, 232, 235, 244, 280, 283, 305, 331, 359, 360,
 364, 383, 386, 515, 526, 576, 598, 611, 614, 616, 700, 707
 harmony 104, 164, 168, 189, 227, 236, 238, 369, 383, 439, 725, 731
 Hegel 42, 46, 51, 107, 136, 275, 294, 663, 679
 Heidegger 101, 103, 107, 120, 325, 626
 Heisenberg 69, 270
 Hellin . . . 87, 208, 209, 212-216, 313, 356, 357, 359, 360, 363, 364, 383, 384, 387, 390, 393, 394, 396,
 398, 399, 402, 405, 406, 410-413, 415, 443, 444, 447-450, 453-455, 464, 467, 472,
 576-578, 586, 593, 621-623, 634, 637, 647, 648, 650, 651, 701, 704-706, 713-715,
 726, 727, 737-740, 742, 743
 Henderson 605
 heredity 11-13, 113, 262, 284, 664, 681
 Herodotus 7
 historicism 208, 223, 237, 273, 293
 Hobbes 11, 417, 664, 701
 Hoenen 27, 28, 37-39, 56, 61, 67, 70, 75, 82, 253, 268, 275, 324, 342, 343, 348, 349, 397, 402,
 404, 405, 420, 421, 424, 428-430, 437, 442, 450, 460, 469, 471, 495, 498, 531, 536,
 540, 572, 623, 626, 749, 751
 hominids 122, 125, 213, 214, 503, 521
 Homo . . . 49, 91, 123, 213, 214, 221, 222, 244, 254, 259, 326, 334, 336, 361, 380, 480, 481, 491, 494,
 501, 504, 506, 507, 511, 512, 518, 524, 569, 574, 578, 584, 586, 619, 620, 665, 667,
 692

Homo sapiens 49, 91, 123, 213, 244, 326, 481, 504, 507, 518, 519, 524, 619, 620
Hoskin 159, 193, 194
Hoyle 147, 236
Hugon 73, 74, 82, 94, 95, 284, 285, 327, 355, 360, 381, 386, 388, 390, 393, 394, 398, 400, 401,
411, 418, 432-434, 436, 447, 454, 468, 475, 479, 489, 490, 501, 505, 506, 508, 516,
542, 559, 566, 567, 574, 577, 584, 621, 622, 638-641, 647, 650, 652, 659, 677, 681,
682, 684-686, 693, 694, 696, 727, 737
human evolution 4, 21, 22, 31, 185, 192, 196, 254, 388, 591
human soul 3, 52, 59, 82, 115, 135, 144, 197, 211, 227, 237, 333, 380, 421, 426, 495, 501, 507,
510, 512, 518, 522, 529, 532-536, 538, 540-542, 544, 545, 549-553, 555-557, 565-
568, 572, 577, 585, 586, 619, 709, 728
human species 73, 91, 123, 190, 215, 262, 478, 504, 509, 538, 559, 575
Humani Generis 190, 210, 221, 223, 224, 229, 237-239, 526, 555, 679, 741, 743
humanism 571
Husserl 99, 100, 181
Huxley . 63, 86, 110, 125, 156, 178, 193, 245, 247, 248, 297, 301, 356, 394, 418, 561-563, 581, 594,
608, 643, 657, 687, 701, 733
Huygens 269
hypothesis 10, 17, 32, 40, 43, 55, 56, 69, 109, 118, 119, 122, 125, 134, 135, 138, 158, 161, 192,
193, 202, 203, 210, 229, 234, 237, 274, 278, 279, 284, 287-292, 304, 306, 307, 315,
316, 352, 472, 493, 503, 504, 506, 509, 525-528, 588, 600, 603, 604, 607, 616, 634,
636, 651, 652, 693, 696, 697, 703, 710, 722, 723, 741, 746, 747, 755
ideology . 2, 87, 93, 117, 122, 127, 132, 139, 174, 189-191, 195, 208, 222, 235, 236, 239, 248, 293,
298, 299, 301-305, 307, 308, 313, 678, 701
Illich 31, 200, 201, 206, 207
imagination 250, 256, 270, 371, 451, 491, 533, 545, 670
immortality 95, 115, 118, 120, 121, 125, 142, 194, 197, 563, 567, 572, 573, 577
inclinations 681
indeterminacy 273
Indeterminism 149, 212, 378, 396
induction 158, 160, 193, 259, 271, 293, 352, 421, 445, 464, 472, 526, 588, 617, 651, 696, 742
inertia 641
information 30, 81, 92, 158, 287, 291, 293, 319, 392, 393, 409, 506, 660
inorganic . 6, 10, 14, 32, 38, 74, 84, 147, 168, 196, 211, 395, 402, 424, 430, 465, 470, 471, 505, 582,
594, 605, 607, 609, 615, 616, 629, 639, 644, 688, 694, 734, 751
instinct 45, 48, 77, 144, 476, 479-481, 485, 486, 489, 493, 500, 664, 665
intellect . 36, 53, 99, 117, 121, 138, 160, 165, 187, 226, 227, 337, 355, 361, 367, 368, 370, 371, 375,
422, 451, 456, 477, 479, 485-491, 495, 497, 500, 530-532, 536, 540, 571, 574, 584,
587, 589, 664, 668-670, 673, 674, 677, 682, 684, 685, 694, 695, 708, 732, 733

intelligence 14, 103, 123, 141, 160, 162, 172, 197, 330, 356, 367, 368, 476, 483, 499, 500, 591,
 621, 639, 685, 716, 732
 Iturrioz . . 200, 209, 214, 219, 328, 347, 357, 360, 363, 365, 368, 374-376, 379, 384, 389, 408, 434,
 463, 483, 492, 498, 501, 519, 547, 569, 577, 582, 595, 610, 645, 677, 689, 735
 Jaki 191-193, 196, 197, 303, 305
 Jaspers 120, 124
 judgement 260, 278, 288, 295, 507, 673, 694, 746
 Jung 396
 Kane . 62, 85, 95, 152, 154-156, 158-161, 163-165, 167, 169-172, 174, 177-180, 192, 193, 196, 749,
 752
 Kant . . . 41, 47, 50, 69, 71, 72, 81, 102, 107, 120, 134, 136, 147, 208, 217, 247, 305, 357, 532, 577,
 578, 592, 593, 621, 636, 639
 Kepler 187, 269, 639
 King 86, 182, 183, 182, 183, 265
 Kircher 9
 Kleutgen 96, 97, 110, 111
 Klubertanz 18, 20-23, 27, 142, 143, 142, 143, 154, 192-197, 242, 245, 248, 257, 258, 284-288,
 292, 295, 304, 307, 324, 326, 327, 337, 341, 343-346, 348-354, 365, 366, 373-379,
 383, 386, 387, 389, 393, 423, 424, 439, 448, 449, 462, 467, 475, 478, 479, 481, 490,
 495, 496, 501, 502, 508, 509, 517, 518, 521-525, 527, 528, 532, 533, 535, 536, 538,
 546, 549, 561, 565-567, 577, 581, 586, 593, 600-603, 608, 611-615, 617, 618, 624,
 638, 643, 647, 648, 651, 659, 660, 662, 663, 678, 687, 692, 696, 704, 727, 728, 733,
 737, 742
 Kocourek 159, 160, 249
 Kovach 184, 192-194
 La Vecchia 1, 6-14, 17, 20-22, 28, 47, 49, 51-53, 56, 57, 73, 107, 242-244, 253, 254, 260, 277,
 278, 280, 286, 296, 322-324, 349, 355, 356, 382, 385, 386, 392, 409, 416, 437, 443,
 476, 479, 481, 484, 490, 496, 498, 503, 507, 508, 511, 516, 520, 521, 523, 529, 536,
 558, 561, 577, 581, 591, 608, 619, 620, 643, 654, 655, 671, 687, 699, 700, 729, 733,
 737, 751-753
 Lamark 727
 language . 30, 32, 35, 36, 48, 53, 84, 99, 102, 113, 121-124, 131, 135, 140, 200, 202, 207, 246, 247,
 254, 258, 260, 270, 310, 418, 476, 487, 488, 490, 496, 500, 501, 581, 608, 643, 650,
 655, 687, 700, 705, 728, 733, 734, 749, 750
 Laplace 147, 264, 275, 636, 638, 639, 652

 law . . . 11, 12, 14, 22, 23, 55, 59, 60, 64, 67, 79, 80, 91, 92, 104, 113-115, 210, 215, 219, 223, 237,
 239, 248, 257, 266, 268, 273, 284, 285, 313, 321, 347, 358, 383, 385, 408, 415, 418,
 435, 463, 493, 520, 547, 561, 562, 581, 583, 608-610, 628, 639, 641-645, 659, 664,

	682, 687-689, 710, 733-735, 744, 746, 747, 754
Le Roy	14, 18, 119, 245, 505
Leakey	63
Leibnitz	397
Leroy	15, 721, 728
Liberatore	28, 57, 58, 70, 253, 450, 468
Linnaeus	9, 73, 269
Loneragan	42-45, 50, 56, 70, 72, 106, 753
Lotz	106-108, 110, 111, 145, 560
Lyell	10
Maher	22, 112-115, 247, 272, 279, 299, 305, 559
Maimonides	139, 317, 724
Marcel	62, 120, 124, 563
Marcozzi	19, 20, 47-49, 52, 56, 57, 67, 70, 73, 107, 119, 232, 233, 245, 255, 259, 260, 481, 482, 490, 493, 494, 496-499, 502, 505, 525, 526, 548, 700, 729, 737, 752
Maréchal	43, 45, 71, 72, 80, 82, 94, 95, 106, 136, 705
Maritain	2, 26, 27, 39, 51, 66, 68, 72, 75-78, 80, 82, 85, 94, 95, 100, 107, 110, 117, 120, 129, 130, 179, 184, 250, 251, 257, 275, 292, 294, 299, 313, 314, 317, 333, 353, 354, 397, 400, 410, 411, 413-415, 433, 436, 449, 467-470, 473, 475, 535, 606, 747-749, 752
Marquart	12, 467, 468, 721
Marrou	294
Martelet	50, 51, 87
Marx	42, 51, 60, 61, 80, 121, 305, 418, 419, 563, 678, 679, 701
Massi	253
material cause	19, 422, 461, 474, 537, 565, 707, 729, 738
Materialism	2, 19, 21, 25, 40, 56, 64, 73, 80, 81, 98, 109, 111, 114, 115, 121, 125, 130, 131, 133-136, 138, 139, 144, 147, 164, 174, 176, 189, 191, 196, 207, 209, 215, 223, 228, 232, 233, 237, 239, 252, 276, 285, 293, 294, 301, 306, 416-420, 424, 425, 429-431, 433-440, 478, 563, 643, 678, 679, 681, 701, 703, 754
McDowell	160-162, 193-197, 284
McKeon	162, 163, 194, 195
McNicholl	62, 63, 70, 273
Mechanicism	2, 21, 25, 38, 39, 41, 61, 80, 81, 104, 111, 118, 131, 134, 135, 137, 138, 144, 146, 148, 207-209, 215, 223, 304, 358, 392-402, 405-407, 410, 411, 413-415, 475, 754
memory	91, 92, 195, 286, 480, 552, 553, 662, 670
metaphor	246, 490, 533
Michelson	65, 264
Miller	298, 613
mind	43, 86, 134, 142, 146, 153, 157, 164-166, 177, 179, 226, 260, 272, 274, 278, 281, 293, 299, 370, 436, 482, 510, 532, 533, 580, 608, 614, 643, 657, 680, 683, 686, 687, 727, 733,

	734
models	247, 394, 581, 609, 644, 656, 688, 734
Mondin	26, 27, 46, 61, 66-68, 70, 77, 85, 117, 125, 251, 252, 283, 292, 299, 302, 305, 325, 329-333, 335, 353, 357, 358, 360, 367, 369, 371, 372, 374, 375, 392, 394, 396-398, 400-403, 409-412, 420, 426, 427, 441-443, 448, 452, 453, 457, 458, 461, 466-468, 473, 484-488, 513, 514, 523, 531, 540, 541, 551, 568-578, 585, 587, 592, 593, 597, 599, 600, 606, 613, 616, 622, 624-629, 631-637, 647, 648, 653, 667-672, 687, 704, 705, 707-712, 717, 718, 730, 731, 737, 747, 749
Monism	223, 436, 447, 449, 621
monogenesis	190
monophyletic	6, 15, 59, 142, 143, 256, 324
Moraczewski	164, 165, 192, 194, 196, 197
moral	21, 48, 60, 103, 104, 110, 128, 151, 161, 164, 165, 171, 172, 180, 182, 188, 194, 195, 218, 225, 231, 268, 294, 304, 330, 347, 385, 408, 435, 452, 463, 477, 482, 493, 520, 547, 554, 562, 575, 577, 583, 610, 645, 662, 663, 679, 685, 687, 689, 694, 711, 735, 747, 748
Murray	150-152, 192, 193, 196, 358
mutability	25, 342, 711
mutation	10, 13, 34, 39, 49, 107, 129, 244, 255, 266, 277, 285, 382, 454, 456, 460, 561, 581, 608, 625, 643, 687, 733
natural law	104
natural philosophy	26, 41, 52, 59, 63, 65, 67, 77, 85, 97, 155, 157, 158, 167, 169, 172-174, 176, 180, 193, 194, 208, 211, 251, 269, 309
natural selection	6, 11, 13, 21, 34, 73, 80, 90, 91, 108, 113, 118, 123, 149, 187, 188, 284, 288, 301, 306, 309, 311, 353, 356, 359, 382, 394, 399, 409, 561, 581, 608, 643, 655-658, 662, 687, 693, 733
natural species	35, 254, 259, 326, 327
Neanderthal	88, 214, 215, 244, 259, 265, 481, 507
necessity	98, 111, 114, 117, 128, 155, 175, 188, 189, 208, 211, 225, 227, 289, 294, 320, 347, 348, 350, 357, 362, 363, 382, 383, 385, 393, 408, 430, 431, 435, 440, 463, 469, 475, 493, 520, 524, 539, 547, 548, 583, 610, 626, 642, 645, 659, 664, 671, 672, 679, 689, 694, 695, 702, 710, 719, 721, 731, 732, 735, 737
Neo-Darwinism	12, 20, 244, 322, 356
Neo-Lamarckianism	13
Newton	5, 65, 159, 174, 187, 261, 269, 358, 394, 448, 592, 639, 754
Nietzsche	121, 397, 701
Nogar	4, 5, 7, 21, 23, 63, 64, 67, 70, 71, 85, 87, 117, 179, 222, 243, 244, 246-249, 258, 262, 264, 276, 277, 279-283, 285, 287-294, 300, 302, 303, 305, 307, 319, 326, 348-350, 353, 382, 383, 385, 386, 392, 396, 409, 435, 464, 494, 498, 503, 504, 506-508, 513, 515,

516, 520-523, 548, 549, 552, 558-561, 563, 575, 580-584, 586, 587, 589, 597, 599,
 607-609, 611-613, 643, 644, 646, 650, 662, 678, 679, 686-688, 690, 693, 697, 701,
 731, 733, 734, 736, 737, 749
 novelties 731
 nutrition 155, 169, 452, 459, 460, 465, 470
 Olduvai Gorge 48
 operatio sequitur esse 406, 490, 536, 548-550, 556, 566, 577, 715
 organic . 12, 14, 84, 138, 196, 211, 243, 323, 328, 358, 394, 395, 399, 400, 402, 465, 470, 480, 510,
 542, 582, 595, 596, 609, 613, 615, 644, 656, 663, 664, 688, 700, 734, 751
 organization 90, 92, 123, 248, 287, 304, 352, 395, 527, 541, 550, 554, 617, 651, 696, 742
 Origin of Species 67, 73, 121, 178, 246, 296, 326, 341, 343, 352, 375, 394, 455, 472, 526, 588,
 591, 617, 651, 656, 696, 738, 741, 742
 original sin 89, 190, 226, 530, 659
 paleontologist 87, 90, 91, 213
 paleontology 5, 52, 88, 90, 122, 223, 228, 288, 293, 324, 349, 353
 Palmes . . . 210, 211, 214, 215, 243, 245-248, 253, 268, 324, 326-328, 392, 402, 404, 407, 409, 410,
 414, 416, 417, 419, 421-424, 426, 430-432, 436-440, 449, 466, 468, 470, 471, 477-
 480, 482-484, 488-491, 496, 498, 500, 503-506, 509, 510, 518, 526, 532-539, 542,
 544, 546, 549-551, 553-557, 592-596, 606, 607, 611, 615, 679, 682-686, 694, 695,
 697
 Pantheism 147, 203, 208, 209, 215, 223, 470, 622
 Pascual . . . 5, 13, 14, 20, 53-57, 68-70, 75, 82, 86, 87, 90, 92, 93, 101, 122, 126-129, 131, 187, 189,
 191, 198, 205, 213, 219, 222, 226, 228, 232, 235, 243, 244, 246, 251, 255, 263, 269,
 273, 277-280, 282, 283, 296, 300, 301, 303-305, 308, 309, 314, 315, 317, 319, 320,
 331, 339, 349, 359, 360, 382, 459, 468, 504, 515, 518, 524, 526-528, 576, 586, 598,
 611, 614, 616, 700, 707, 747, 752, 753
 Pasteur 607, 616
 Paul . . 20, 35, 75, 79, 83, 100, 105, 109, 126, 127, 140, 160, 182, 189, 190, 219, 222, 226-232, 235-
 240, 244, 277, 280, 283, 299, 305, 315, 316, 331, 357-361, 364, 383, 392, 393, 409,
 416, 425, 515, 526, 560, 575, 576, 598, 611, 614, 616, 631, 660, 663, 700, 701, 707,
 725
 per accidens 338, 365, 369, 370, 374, 428, 429, 454, 545, 577, 587, 675, 726, 746, 748
 per se . . . 170, 284, 308, 319, 336, 338, 351, 365, 370, 422, 423, 426-428, 430, 451, 453-455, 460,
 468, 470, 471, 545, 548, 564, 572, 573, 577, 587, 589, 642, 706, 710, 712, 713, 715,
 717, 722, 726, 738, 743
 Perennial Philosophy 106, 107, 161, 176, 304, 755
 Perrier 13, 92-96, 282
 person 82, 100, 107, 125, 127, 130, 170, 171, 180, 189, 200, 201, 209, 215, 226, 227, 233, 234,
 300, 345, 392, 409, 424, 483, 501, 510, 542, 545, 557, 560, 561, 566, 569, 570, 576,
 602, 670-672, 677, 684, 727

Peter Lombard	8
phenotype	91
philosopher . . . 3, 10, 20, 35, 37, 40, 57, 58, 60, 65, 71, 75, 85, 87, 90, 94, 96, 99, 101, 110, 115-118,	
122, 124, 126, 132, 142, 155, 157, 162, 165, 167, 181-183, 192, 199, 200, 202, 211-	
213, 232, 264, 282, 306, 307, 311, 351, 353, 354, 390, 391, 397, 413, 414, 440, 445,	
469, 473, 501, 502, 525, 528, 548, 549, 556, 575, 589, 613, 615, 617, 625, 652, 697,	
702, 724, 731, 742, 746	
philosophy of man . . . 21, 22, 36, 52, 59, 120, 146, 195, 251, 253, 257, 320, 744, 745, 750, 751, 753,	
754	
philosophy of nature 2, 4, 26, 27, 32, 38-40, 47, 53, 56, 57, 63, 75, 76, 81, 84, 85, 95, 144, 146,	
149, 153, 154, 157-161, 166, 167, 169, 173-175, 179, 180, 184, 192-195, 209, 212,	
213, 251, 253, 257, 259, 264, 269, 314, 327, 339, 342, 343, 353, 354, 380, 390, 413,	
414, 436, 440, 452, 459, 464, 473, 502, 504, 528, 556, 589, 613, 617, 624, 646, 652,	
697, 736, 742, 745, 747-752	
physiology	53, 131, 161, 166, 269, 353, 415
Planck	40, 265
Plato	25, 59, 96, 164, 175, 263, 330, 358, 449, 530, 531, 577, 621, 704, 739
Pliny the Elder	7, 8, 10
polygenesis	190
polyphyletic	6, 9, 59, 70, 98, 111, 256, 324, 327
Pope Benedict XVI	109, 204, 235, 239, 241
Pope John Paul II 79, 100, 105, 109, 126, 127, 182, 190, 228-232, 236-240, 277, 299, 315, 316,	
358, 360, 364, 383, 575, 611, 614, 616, 663, 707	
Pope John XXIII	83, 225, 226, 231, 240, 663
Pope Leo XIII 24, 58, 70, 72, 96, 97, 115, 116, 210, 216-218, 220, 238-240, 300, 468, 534, 555,	
663, 695	
Pope Paul VI	75, 83, 226, 227, 238, 663
Pope Pius IX	97, 218, 220, 240, 468
Pope Pius X	210, 217-219, 239, 240, 741
Pope Pius XI	210, 219-221, 238, 240, 663
Pope Pius XII 33, 78, 131, 153, 181, 182, 190, 210, 221, 222, 221, 223-225, 229, 236-240, 526,	
555, 738, 741, 743	
Positivists	37, 41, 272, 357, 393, 399, 418, 532, 563, 621, 701, 754
Possenti 14, 128, 129, 131, 255, 263, 273, 278, 280, 296, 339, 348, 385, 409, 435, 459, 464, 468,	
520, 548, 583, 611, 646, 690, 736	
potency . . . 24, 62, 69, 82, 135, 137, 138, 168, 170, 216, 336, 339, 340, 342, 351, 368, 372, 373, 379,	
380, 396, 402, 403, 405, 420, 421, 423, 428, 437, 441-444, 446, 449, 451, 455-457,	
459, 460, 462, 465-468, 510, 539, 540, 544, 553, 566, 596, 606, 679, 681, 723, 728,	

	729, 755
potentialities	620
Precambrian Era	302
prehistory	53, 246, 258, 293, 581, 687
primates	91, 506, 507
principle of causality	31, 36, 140, 141, 143, 283, 286, 332, 340, 348, 378, 389, 407, 414, 430, 433, 437, 440, 461, 465, 473, 496, 501, 549, 550, 555, 556, 594, 595, 598, 599, 616, 647, 660, 691, 713, 720, 745, 746
principle of contradiction	56, 106, 108, 314, 317, 574, 584, 587-589, 719-721, 737, 742
principle of finality	52, 57, 73, 111, 114, 137, 138, 140, 141, 147, 148, 196, 208, 209, 213, 229, 286, 355, 363, 366, 367, 375, 376, 379, 380, 386-388, 390, 605, 611, 617, 647, 651, 720, 722, 742, 752
principle of sufficient reason	41, 53, 108, 138, 229, 286, 341, 348, 353, 375, 377, 387, 390, 410, 414, 438, 440, 461, 465, 473, 496, 497, 501, 522, 527, 550, 555, 584, 589, 605, 606, 612, 616, 617, 647, 648, 652, 691, 697, 719, 722, 737, 739, 742
probability	64, 66, 188, 281, 282, 289-291, 293, 307, 311, 347, 353, 384, 385, 408, 434, 463, 492, 510, 519, 547, 582, 605, 610, 639, 645, 652, 689, 702, 735
prodigality	661
Proudhon	294, 679
providence	64, 71, 142, 143, 176, 189, 208, 209, 216, 228, 230, 231, 298, 346, 359, 363-365, 369, 371-375, 377-380, 382-384, 386, 509, 513, 517, 521, 522, 586, 599, 600, 603, 611, 612, 614, 627, 636, 650, 659, 708, 716, 717, 732, 739, 742, 746, 748
psychobiologist	14
psycho-social	558
Pythagoras	7, 479
quality	32, 40, 52, 157, 250, 296, 395, 454, 563, 641, 657, 684, 724
quantity	15, 40, 140, 196, 454, 459, 474, 629, 641, 723, 724
quantum mechanics	174, 212, 751
quantum theory	288
races	254
radioactivity	642
Rafael Pascual	5, 13, 14, 20, 53-57, 69, 70, 75, 82, 86, 87, 90, 92, 93, 101, 122, 126-129, 187, 189, 191, 198, 205, 219, 222, 226, 228, 232, 235, 243, 244, 246, 251, 255, 263, 269, 273, 277-280, 282, 283, 296, 300, 303-305, 309, 314, 315, 319, 331, 339, 349, 359, 360, 382, 459, 468, 504, 515, 518, 524, 526-528, 576, 586, 598, 611, 614, 616, 700, 707
Rahner	43, 45, 61, 72, 83, 86, 101-103, 106, 110, 111, 120, 286, 300, 504, 528, 740
randomness	282, 283
rational animal	21, 22, 166, 243, 326, 481, 566, 574, 581, 584, 586-589, 609, 644, 688, 734, 755
rational soul	130, 185, 471, 525, 540, 546, 564, 631, 639
rationality	68, 69, 139, 246, 318, 624

Ratner 169, 192-194
reasoning . 2, 16, 41, 165, 175, 261, 279, 281-283, 285, 287, 298, 318, 319, 359, 399, 420, 449, 451,
480, 482, 483, 485, 488, 500, 509, 535, 565, 595, 622, 664, 706, 712, 746
recent . . . 1, 28, 30, 31, 71, 85, 92, 112, 151, 235, 247, 277, 298, 301, 306, 349, 387, 397, 411, 438,
468, 498, 501, 507, 523, 525, 552, 586, 613, 648, 692, 738
Redi 269, 607
relativity 39, 65, 174, 273, 749, 751
religion 4, 44, 53, 54, 61, 62, 67, 69, 71, 110, 114, 123, 128, 150, 174, 176-178, 183, 185, 189,
191, 195, 203, 220, 224, 225, 227, 231, 237, 238, 263, 301, 302, 304, 314, 318, 494,
495, 639, 693, 697, 701-704, 710, 711, 726, 731, 746
religious sense 731
religious truth 307, 313
Renard 135-137, 157, 192-194, 196, 197, 216, 256, 283, 324-326, 336, 337, 339-343, 348, 349,
355, 367, 368, 373, 382, 386, 430, 431, 440, 448, 451, 454, 455, 458, 460, 468, 474,
533, 574, 580, 581, 584-589, 608, 609, 643, 644, 687, 688, 731-734, 737
repair 433
reproduction 91, 93, 378, 387, 433, 491, 607
Rolbiecki 132-134, 193, 195-197
Rousseau 87, 664
Rousselot 106
rudimentary organs 297
Russell 264
Salcedo . . 210, 214, 216, 219, 222, 250, 261, 279, 290, 291, 299, 347, 348, 384, 385, 407, 408, 434,
435, 462-464, 492, 493, 519, 520, 547, 548, 582, 583, 609, 610, 644, 645, 678, 688,
689, 734-736
Sánchez-Sorondo 68-71
Sartre 120, 183, 325, 430, 438, 626, 701
Scheler 60, 124, 469
Schillebeeckx 85, 86, 94, 95
Schönborn 108-111, 235, 277, 300, 301
Schopenhauer 268, 286, 621, 623
scientific method 43, 163, 169, 170, 190, 229, 236, 246, 270, 271, 281, 291, 294, 507, 749
Scientism 75, 110, 127, 132, 174, 195, 232, 239, 303-305
scientist . 10, 68, 93, 107, 117, 122, 169, 178, 235, 246, 247, 264, 270, 271, 273, 287, 297, 299, 345,
548, 602, 604, 614, 702, 705
Scotus 24, 136, 216, 451
self-consciousness 123
Selvaggi . . 26-28, 37-39, 56, 57, 67, 77, 126, 251-254, 259, 263, 264, 269, 273-276, 278, 304, 412,
751, 752
sensation 19, 41, 267, 272, 436, 476, 513, 661, 662, 680, 682

Sensationalism	146, 478
sense . . . 41, 43, 44, 59, 69, 80, 88, 109, 136, 142, 155, 176, 220, 225, 243, 246, 267, 268, 273, 283, 294, 301, 302, 308, 318, 334, 336, 337, 347, 353, 385, 393, 404, 408, 409, 414, 421, 422, 435, 440, 452, 463, 473, 476, 477, 480-482, 484-488, 491, 493, 495-497, 500, 502, 516, 520, 528, 547, 548, 556, 583, 587, 589, 610, 618, 645, 652, 662, 664, 675, 676, 682, 684, 687, 689-691, 697, 702-704, 708, 711, 729, 731, 735, 742	
Sermonti	94
Sigmond	59, 71, 663, 672
Simmons	170, 193
Simpson	125, 282, 294
Sinanthropus	48
Smith	4, 11, 147-149, 148, 149, 193-197, 282, 283
Soccorsi	40, 41, 56, 418, 649, 653, 665, 752
Socrates	157, 158, 193, 195, 358
soul . . . 3, 15, 18, 19, 22, 33, 35, 36, 52, 53, 59, 77, 82, 84, 85, 95, 98, 102, 104, 111-115, 118, 119, 121, 123-127, 130-132, 134, 135, 142-146, 156, 164, 185, 190, 194, 195, 197, 211, 215, 223, 226, 227, 230, 233, 234, 236-238, 254, 259, 320, 333, 334, 346, 373, 378, 380, 413, 421-426, 430, 437, 438, 449, 462, 471, 481, 482, 484, 488, 490, 495, 496, 501, 507, 510, 512-514, 517, 518, 522, 524-527, 529-536, 535-546, 549-557, 563-568, 571-574, 577, 580, 584-587, 589, 591, 594, 596, 603, 615, 619, 622, 631, 639, 654, 682, 697, 699, 700, 709, 721, 728, 729, 754, 755	
spirituality	48, 71, 72, 87, 207, 237, 426, 507, 532, 536, 538, 540, 659
spontaneous generation	31, 34, 113-115, 525, 592, 595, 596, 604, 605, 607, 613, 616
stability	13, 14, 658
statistics	289, 660, 694, 749
Staune	90, 92-94
Stein	99, 100, 110, 111
Stock	171, 172, 192, 197
structure . . 35, 40, 46, 80, 84, 108, 145, 198, 228, 230, 235, 237, 238, 367, 417, 490, 544, 550, 569, 607	
struggle for survival	284, 657
Stuart Mill	268, 292, 478, 701
Suarez	24, 74, 106, 136, 216, 331, 515, 537, 598
supernatural	103, 304, 309, 310, 578, 605, 625, 672, 702, 710
Synthetic Theory	12, 49, 67, 125, 244, 285, 356, 416
taxonomy	6, 15, 260, 322, 326, 353
technology	149, 200, 225, 239, 616
Teilhard de Chardin . . . 6, 15, 18, 31, 36, 48, 50, 55, 67, 77, 82, 86, 87, 86-91, 94-96, 119, 120, 125, 130, 182, 183, 190, 245, 286, 308, 357, 358, 505, 719-721, 728, 737	
Thales	162, 263, 393, 446

theologian . . . 3, 57, 78, 85, 86, 96, 101, 103, 105, 106, 115, 181, 183, 201, 202, 205, 235, 311, 351,
 413, 501, 525, 613, 650
 theory 4, 5, 8-10, 12-14, 16-18, 23, 26, 39, 49, 55, 56, 64-70, 72, 74, 89, 92, 94, 102, 105, 110,
 113, 114, 118, 119, 124-127, 130-133, 138, 139, 142, 147, 149, 155, 163-165, 172,
 177, 178, 188, 189, 191, 192, 198, 217, 227-230, 235, 236, 242, 244, 245, 247, 250,
 264, 271-273, 277, 282, 285-288, 297, 298, 301, 303, 304, 306, 307, 309, 312, 318,
 322-324, 327, 328, 334, 335, 343-345, 352, 353, 356, 366, 373, 378, 379, 382, 384,
 386, 387, 389, 392-395, 399-401, 406, 410, 412, 416-418, 430, 436, 443, 445, 449-
 452, 458, 466, 467, 471, 472, 478, 503, 509, 515, 517, 524, 527, 530, 548, 552, 553,
 561, 562, 581, 583, 587, 593, 601, 603, 604, 607, 608, 616, 617, 634, 644, 651, 653,
 655, 656, 663, 664, 679-681, 688, 696, 697, 702, 704, 705, 712, 720, 733, 742, 747-
 749, 752, 754, 755
 Theory of Evolution . 23, 55, 67, 68, 94, 110, 125-127, 149, 155, 178, 188, 189, 198, 227, 229, 235,
 236, 242, 244, 245, 282, 284, 286, 287, 297, 298, 303, 304, 306, 307, 323, 328, 334,
 335, 344, 345, 352, 356, 382, 503, 527, 548, 561, 583, 587, 603, 617, 651, 696, 705,
 742
 Theory of Fixism 9, 10, 14
 Theory of Permanence 10, 14, 17, 323, 324, 327, 328
 tool 67, 70, 166, 270, 352, 414, 471, 526, 588, 650, 696, 741
 Traducianism 530, 531, 541
 truth 2, 20, 40, 41, 50, 56, 69, 71, 76, 93, 99, 100, 113, 117, 139, 174, 178, 179, 258, 261, 274,
 275, 281-283, 289, 293, 297-301, 303, 307, 308, 313-317, 325, 359, 398, 399, 419,
 450, 451, 456, 477, 479, 508, 509, 534, 555, 564, 572-574, 579, 584, 587, 589, 594,
 622, 657, 664, 674, 694, 706, 709, 728
 type . . 7, 18, 56, 75, 119, 251, 275, 284-285, 309, 314, 326, 373, 378, 389, 394, 415, 418, 422, 472,
 477, 484, 658, 693
 universe . . . 23, 26, 47, 64-66, 71, 93, 98, 115, 134, 140, 146-148, 160-162, 168, 169, 187, 188, 197,
 199, 205, 211, 212, 215, 236, 248, 250, 263, 264, 277, 284, 294, 329, 332, 342, 343,
 351, 356, 358, 359, 364, 371, 374, 382, 383, 393, 430, 438, 440, 513, 522, 561, 564,
 568-570, 576-578, 581, 585, 590, 598, 599, 608, 611, 614, 619-643, 646-651, 653,
 676, 682, 687, 707, 717, 720, 722, 728, 733, 738, 740, 748
 univocal 60, 72, 155, 193, 327, 533, 560, 581, 609, 644, 688, 734
 Urey 613
 variation 11, 91, 149, 161, 188, 255, 271, 301, 559
 Vialleton 15, 264, 738
 Villagrasa . 5, 69-71, 87, 122, 127, 128, 222, 228, 235, 243, 279, 304, 314, 316, 317, 319, 320, 586
 Viotto 75, 129, 130, 129-131, 251
 Virus Theory 607
 vital activity 395
 vital principle 16, 18, 135, 138, 416-418, 423, 425, 430-433, 437, 439, 484, 497, 535, 536, 538,

	556, 594, 606
Von Baer	298
Von Balthasar	86, 105, 106, 110, 111
Von Hartmann	14
Von Hildebrand	180-182, 192, 193, 196, 197
Wallace	21, 55, 172, 173, 193, 194, 662
waste	383
Weisheipl	62, 63, 67, 85, 87, 149, 152-157, 159, 160, 162, 164, 165, 167, 169-177, 179, 193, 195, 222, 244, 246, 247, 252, 262, 264, 271, 273, 274, 276, 280, 282, 284, 297, 302, 304, 315, 342, 348, 351, 352, 385, 409, 414, 435, 464, 471, 520, 526, 548, 561, 583, 588, 611, 616, 646, 650, 662, 690, 696, 734, 736, 741
Weismann	12, 356
Whitehead	94
Wilson	167, 198, 265, 266, 656-658, 660, 692
Wundt	133, 145, 164, 267, 268, 358, 478, 562, 701
Xenophanes	7
Yancey	177, 178, 296, 297, 561
Zigliara	115, 116, 253, 468
Zycinski	245, 753

THOMISTIC INDEX

Aquinas Compendium Theologiae	175, 331, 369, 515, 598
Aquinas Contra Impugnantes Dei Cultum	672
Aquinas De Aeternitate Mundi	175, 633
Aquinas De Anima	390
Aquinas De Caelo	161, 175, 177, 289, 469
Aquinas De Divinis Nominibus	369, 374, 629, 731
Aquinas De Ente et Essentia	725
Aquinas De Hebdomadibus	170
Aquinas De Malo	339, 668, 673, 693
Aquinas De Potentia Dei	139, 175, 177, 404, 428, 539, 626
Aquinas De Principiis Naturae	337, 338, 345, 427, 428, 580, 602
Aquinas De Regimine Principum	663
Aquinas De Spiritualibus Creaturis	457, 466, 542, 543
Aquinas De Substantiis Separatis	175, 627, 730
Aquinas De Trinitate	139, 149, 253, 263, 317, 318, 459, 474
Aquinas De Veritate	99, 170, 172, 250, 257, 261, 263, 368, 379, 388, 488, 572, 627, 668, 669, 716, 718, 724, 732
Aquinas De Virtutibus in Communi	405, 428, 437, 487, 544
Aquinas In De Anima	368, 426, 438, 458, 541
Aquinas In Metaph.	16, 161, 162, 170, 257, 263, 284, 362, 628, 653
Aquinas In Phys.	149, 156, 162, 167, 168, 175, 176, 263, 351, 363, 370, 391, 403, 426, 427, 454, 736, 737, 748
Aquinas In Post. Anal.	165, 166, 170, 253, 352, 472, 526, 588, 616, 651, 696, 741
Aquinas Liber de Causis	400
Aquinas Quaestiones Quodlibetales	571
Aquinas Resp. de Art. 30	176
Aquinas Resp. de Art. 36	176
Aquinas Scriptum in Liber Sententiarum	9, 157, 257, 299, 335, 339, 367, 403, 457, 466, 469, 487, 540, 542, 551, 554, 572, 595, 625, 669, 670, 717
Aquinas Summa Contra Gentiles	66, 68, 84, 129, 130, 138, 139, 148, 149, 175, 177, 189, 200, 257, 263, 317, 330-333, 342, 344, 355, 360, 365, 367, 369, 371, 372, 375-378, 382, 383, 387, 410, 426, 438, 457, 458, 462, 466, 486, 511-513, 515, 517, 522, 524, 537, 539- 542, 551, 554, 556, 568, 569, 571-574, 585, 586, 590, 597-600, 602, 606, 612, 625, 627-630, 632, 639, 649, 663, 671, 676, 707-709, 717-719, 728, 748

Aquinas Summa Theologiae . .	32, 74, 84, 138, 139, 148, 155, 157, 170-172, 187, 216, 240, 263, 270, 289, 299, 313, 317, 329, 331-333, 336, 337, 339, 340, 344, 345, 350, 355, 361, 365-368, 372, 373, 375, 378, 379, 381, 383, 386, 388, 392, 398, 402, 404, 407, 410, 426, 428, 429, 438, 458, 468, 469, 484-488, 497, 513, 514, 522, 523, 531, 533, 536, 540, 542, 551, 554, 555, 557, 567, 569-571, 573, 577, 597, 599-602, 612, 625, 627-632, 648, 663, 667-669, 671, 674, 692, 695, 706-709, 711-714, 716, 718, 723, 724, 732, 745, 748
St. Thomas . .	3, 8, 23-25, 32, 33, 43, 45, 46, 51, 53, 57-63, 65, 68, 70, 72-74, 76-79, 81, 84, 96, 99, 101, 104, 112, 115, 116, 120, 124, 129, 130, 136-139, 141, 143, 144, 148, 149, 155-157, 160-162, 166-168, 170-176, 179, 180, 184-186, 189, 193, 194, 200, 208-210, 216, 217, 219, 220, 222, 223, 232, 239, 247, 250, 252, 257, 263, 270, 289, 317, 318, 329-332, 334-340, 342, 344, 345, 348, 351-353, 355, 357, 360, 362, 363, 365-372, 374, 375, 378, 379, 381-383, 386-388, 391, 397, 398, 401-404, 410, 411, 414, 418, 419, 425-429, 431, 437, 439, 440, 445, 451, 457-459, 466-469, 471-474, 481, 484-488, 497, 502, 511-515, 517, 522, 524, 526, 528, 530, 531, 533, 535, 537, 539-543, 550, 554-556, 565, 568-573, 580, 585, 588, 589, 597-602, 606, 612, 616, 618, 624-632, 648-652, 663, 667-674, 676, 678, 691, 693, 695-697, 701, 707-718, 722-724, 726, 727, 730, 736-739, 741, 742, 745, 747, 748
Thomism	23, 27, 34, 43, 64, 72, 77, 85, 95, 102, 106, 136, 179, 252, 747
Transcendental Thomism	43, 72, 95, 102, 106