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A Modest Proposal for Resolving the Apparently Never-Ending Evolution Debate: Reconsidering the Question

Somewhere the eminent twentieth-century historian of philosophy Étienne Gilson contends that most philosophical mistakes arise from badly-framed questions. This article takes Gilson’s contention as a proximate first principle, a starting point. Its major thesis is that Charles Darwin’s failure to understand the complicated nature of the question he was considering in his two famous works (i.e., *The Origin of Species by Means of Natural Selection: Or the Preservation of Favored Races in the Struggle for Existence* and *The Descent of Man and Selection in Relation to Sex*) could likely be responsible for the apparently endless debates that have ensued since his time in Western culture about the question of the origin of species.¹

Many people today claim that these two works are studies in modern “physical science,” “biology,” that prove the evolution of the

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This article expands on earlier papers on “Darwinian Fundamentalism” delivered at The John Paul II Catholic University of Lublin (Poland), Conference on “Man in Culture,” 18 April 2007, and The Catholic Academy of Sciences in the USA, The Catholic University of America, 29 September 2007.

¹ Charles Darwin, *The Origin of Species by Means of Natural Selection: Or the Preservation of Favored Races in the Struggle for Existence, and, The Descent of Man and Selection in Relation to Sex* (New York: The Modern Library, 1955). Hereafter cited as: *Darwin 1955*.

human species from some sort of more primitive species. Part of my chief purpose in this article is to show why, whether or not evolution is a reality, (1) Darwin's teaching in these works cannot be "scientific" in a modern, classical, or any, sense and that, consequently, in them, (2) Darwin did not scientifically prove the reality of evolution of species. If I achieve these modest goals, I think a reasonable conclusion that accompanies this success should be that Darwin's intellectual sloppiness could be responsible for a large part of the seemingly interminable nature of the evolution debate since his time.

My chief thesis in this article is that, while the question of the origin of genera and species is principally and primarily a metaphysical problem, Darwin's ignorance of the nature of philosophy and metaphysics and the complexity of the problem of the nature of genera and species caused him mistakenly to frame this metaphysical problem as one of physics, more precisely as one of biology, which Darwin reduced to a natural history of living, physical beings. By so doing, I contend that, unwittingly, Darwin revived in the domain of modern physics and biology a centuries-old debate initially introduced into Medieval logic by the third-century A. D. (ca. 232–304) Greek Aristotelian commentator Porphyry the Phoenician: the Problem of Universals. This unintended mistake that Darwin made helps explain why this debate is difficult to put to rest.

A Brief History of the Medieval Problem of Universals

Porphyry had first presented this problem to Medieval intellectual history in his famous *Introduction (Isagogue)* to a logical work of Aristotle (the *Categories*) by saying:

At present, regarding genera and species, I shall refuse to say whether they subsist or whether they are placed in the naked understandings alone or whether subsisting they are corporeal or

incorporeal, and whether they are separated from sensibles or placed in sensibles and in accord with them. Questions of this sort are most exalted business and require very great diligence of inquiry.²

After announcing that he would later consider the nature and mode of existence of genera and species, as a good teacher, at the start of a work in logic written for beginners, Porphyry postponed until later problems that, Gilson says, “belong to advanced metaphysics.” According to Gilson, such problems involve examining the mode of existence of genera and species, what philosophers have commonly called “universals,” or “general ideas”—e.g., whether they are subsistent realities considered in themselves, mind-independent realities, or simply mental conceptions; material or immaterial; and, supposing they are immaterial, examining whether they exist apart from material things or do so only as existentially united to them.³

Gilson thinks that this problem is chiefly metaphysical, not logical, because it is “one of those fundamental problems which the human mind stumbles upon every time it tries to grasp, beyond all particular sciences, the conditions that make knowledge itself possible.” When some practitioner of a particular science, or art, confronts such a problem, that person tends not to recognize that this problem falls outside the order of questions proper to that practitioner’s specialization. In some cases, Gilson observes, that person will attempt to resolve this problem according to the methods of his or her discipline, as if it were a problem proper to that person’s discipline, as if he or she is simply tracing back his or her discipline to its fundamental implications.⁴

² Étienne Gilson, *The Unity of Philosophical Experience* (New York: Charles Scribner’s Sons, 1965), 8.

³ Étienne Gilson, *History of Christian Philosophy in the Middle Ages* (New York: Random House, 1954), 98.

⁴ Gilson, *The Unity of Philosophical Experience*, 5–6.

Gilson presents Peter Abailard (1079–1142) as a prime example of a Medieval thinker who made the error of mistaking a metaphysical problem for a logical problem and then attempting to solve this problem by logical methods. Gilson thinks Abailard did so because in Abailard’s time scholars had identified science, philosophy, with logic. Questions like, what is a definition?, species?, genus?, generic and specific difference? are proper objects of speculation for a logician. What is the nature of our ideas and their relation to things?, and, do general substances exist inside or outside the mind?, are not. Properly speaking, these questions are concerns of metaphysics, not of logic or physics.

Yet these were exactly the kind of philosophical questions that would naturally arise in the mind of any normal human being who also happened to be a great logician, because, as Gilson indicates, they arise on the border that divides logic from normal human metaphysical interest. “An almost invisible line indeed,” Gilson says. “Yet as soon as you cross it, you find yourself in an entirely different country, and if you do not notice it, you get lost.”⁵

In making the preceding observations about a practitioner of some science, or art (like that of the logician Abailard) confronting and mistakenly attempting to solve “according to the methods of his or her discipline” a problem that “falls outside the order of questions proper to that practitioner’s specialization” as if the problem in question is “proper to that person’s discipline, as if he or she is simply tracing back his or her discipline to its fundamental implications” (logical methods in the case of Abailard regarding the order of questions proper to metaphysics), Gilson made a stunning discovery upon which he never appears to have capitalized: *Most philosophical, as well as all mistakes that propose to begin actually-doable and actually-undoable human pursuits, do not start from badly-framed questions. They start from fail-*

⁵ *Ibid.*, 10–11.

ing precisely, or at all, to recognize the genus a person, or organization, is initially confronting and methods that can be profitably applied to generate knowledge in relation to that genus. The genus to which a subject belongs comprises the composite/organizational whole that determines whether one question, or a whole order of them, is proper to a practitioner's specialization!

I make the above claim because, as Aristotle and St. Thomas Aquinas well understood, all intelligent questions, questions capable of generating advance in intellectual discovery, knowledge (not endless intellectual dead-ends, conflicts) essentially demand: (1) that a person have at least a generic understanding of the nature of the being, subject, about which he or she is asking questions; and (2) that the person asking the questions refer them to the subject according to a uniform method capable of advancing knowledge about the respective subject. For example, to engage in intellectually profitable investigations (those that advance human knowledge, discovery) about the human heart both a biologist and a medical doctor would have to know that: (1) they are studying the human heart and (2) they are doing so according to the methods of their respective sciences: as life-generating according to the science of biology and as health-generating according to the methods proper to the science of the medical doctor.

Framing any kind of good question (especially, scientific, philosophical, ones) presupposes: (1) that a person has at least a generic understanding of the subject about which he or she is talking and (2) that he or she is doing so according to some consistently-applied way, or method, that can actually generate new knowledge of the subject. For these reasons, precisely because it attempts to include as subjects about which a mathematician is attempting to solve a mathematical problem non-mathematical subjects (subjects that do not belong to the genus of mathematics) and does so in a way (according to a generic method) that no serious mathematician would attempt to use to solve a mathematical

problem—*thus, asking whether Socrates, or Plato, of Athens was a better third-baseman for the 1950s Brooklyn Dodgers is a badly-framed question.*

In my opinion, the seemingly-endless evolution debates to which the contemporary world is still being subjected was initially, and unwittingly, generated by Darwin's ignorance of the nature of real genera and species. This ignorance caused him to engage in a process of asking badly-framed questions that generated logical fallacies of question betting and circular reasoning that continue to this day. To help end this unnecessary intellectual taffy-pull is the project upon which I now embark.

A Brief History of the Problem of Universals, Genera and Species

(in Relation to Pre-Modern Western Philosophy
and the Ancient Greek Problem of the One and the Many)

While many contemporary philosophers still tend to speak of Mediaeval philosophy as though it had dealt almost entirely with the problem of universals, as if the Middle Ages had given birth to this problem, in actuality this problem had first arisen in Greek antiquity as simply one more instance of the philosophical Problem of the One and the Many.

Contemporary “philosophers” tend to present the Problem of the One and the Many in antiquity (which, during the Middle Ages, will become what is often called the “Problem of Universals”) as if it were a problem unique to Greek physics, as the starting point on the road to the Greek discovery of logic, in which philosophy supposedly reached full bloom. This account is wrong.

Philosophy in Greek antiquity was a sustained reflection upon the Problem of the One and the Many, or on the relationship between genera and species. The “Problem of the One and the Many” was not a

problem unique to ancient philosophical physics. It was the chief problem considered by the whole genus of ancient Greek philosophy from Thales through Plotinus.⁶

Contemporary “philosophers falsely-so-called” tend to present the Problem of the One and the Many in antiquity as if it was a problem unique to Greek physics because, like Abailard and René Descartes, contemporary “philosophers” tend to reduce philosophy to logic, to a dialectic of competing logical systems or bodies of knowledge. This is not what philosophy was for the ancient Greeks.⁷ Ancient philosophy was a study of the many different ways that things could be one and many and the different principles and causes that were involved to explain these ways of being one or many.

Another way to restate my claim is that the whole of ancient philosophy is a sustained reflection on the problem of the relationship between genera and species. Philosophy started in ancient Greek physics with an attempt by thinkers such as Thales, Anaximander, and Anaximenes to understand which of the four everlasting material elements (earth, air, fire, or water) existed as the most primitive generic body, the substrate, or principle, that, somehow, contained the other three species of matter and from which the other three emerged or started to “appear.” All the ancient Greek physicists were sense realists, just as were all the ancient Greek poets and the early Greek sophists.⁸

⁶ For a detailed defense of this claim, see Peter A. Redpath, *Wisdom's Odyssey: From Philosophy to Transcendental Sophistry* (Amsterdam, Atlanta, Ga.: Editions Rodopi, B. V., 1997), 1–62.

⁷ For a precise analysis of how modern philosophers started to change the classical understanding of philosophy into a study of systems or bodies of knowledge, see Armand A. Maurer, “St. Thomas and the Nominalists,” in *St. Thomas Aquinas, 1274–1974. Commemorative Studies*, vol. 2, ed. Armand A. Maurer (Toronto: Pontifical Institute of Mediaeval Studies, 1974), 269–291.

⁸ For a detailed defense of this claim, see Redpath, *Wisdom's Odyssey*, 1–62.

The ancient Greek physicists made no distinction among physics, mathematics, logic, and metaphysics because they had not developed logic as a separate, formal division (genus) of learning; and, initially, they had reduced mathematics and metaphysics to physics. For the early Greek physicists everything that exists (even the gods) emerged, or was generated, from some material that had previously existed and somehow contained whatever it generated. The chief problem these early physicists had was to try to figure out which was the first everlasting, common matter (the genus), from which all the other species of matter had initially emerged and how this emergence occurred and continues.

Today, some teachers of ancient philosophy will sometimes refer to the ancient Greek physicists subscribing to a notion of evolution of species. *Strictly speaking, the notion of evolution of species is essentially incompatible with ancient Greek thought because evolution presupposes novelty, newness in existence, progress.* Western theology, especially the notion of creation *ex nihilo* and the teachings of St. Aurelius Augustine, appear to be the remote historical foundation for the modern notion of evolution. Outside a created universe in which progressive good and new, more-or-less-perfect, species, that had never before existed can all at once come into being, or “evolve,” the idea of evolution is rationally incoherent, in principle unintelligible. For this reason, since the doctrine of creation *ex nihilo* had not been doctrinally defined within Christendom until toward the thirteenth century and had not taken hold widely within Christian culture until after the Italian renaissance and its influence on the rest of Europe, reasonable is that a teaching about evolution such as that of Darwin would eventually arise a short time later.⁹

⁹ St. Augustine, *Confessions*, bks. 11–13. Available online—see the section *References* for details.

The ancient Greeks tended to subscribe to a cyclical understanding of the universe. In such a universe, nothing new can happen. Consequently, nothing can evolve, no newness can come to be. Whatever happens simply repeats what has already existed. Such a universe has no notion of novelty, newness, in the modern and contemporary, evolutionary, progressivist sense.

This does not mean that no one in antiquity had recognized the appearance of new species or the disappearance of old ones. Some ancient physicists were aware of anomalies in fossil records, and even the first philosophers thought that one kind of matter was somehow the most primitive, appeared first, and somehow contained, and acted as the substrate for, other kinds of matter. The problem of the relationship between genera and species had existed in the West long before it started to become expressed in terms of the Medieval problem of universals. It comprised the chief problem of ancient Western philosophy.

Medieval thought simply moved this problem of the relationship between the One and the Many to a new plane, which sought to trace the origin of genera and species in faculties of the human soul to facultatively-independent principles; and attempted to understand how the transition occurs from the one mode (genus) of existence (inside the human intellect) to the other (outside the human intellect). Such a move was not entirely new. Long before Porphyry or Abailard, in ancient physics, Parmenides had started to move the Problem of the One and the Many to a different plane (genus), from physics to metaphysics.

Parmenides is sometimes portrayed today as a metaphysician. Parmenides could not possibly have been a metaphysician for the simple reason that Parmenides had thought that all being is physical, that, as Aristotle says, “that which is was identical with the sensible

world.”¹⁰ For this reason, among others, the great historian of ancient philosophy Joseph Owens correctly recognized that “Parmenides . . . appeared to Aristotle and the Greek doxographers as a physicist in the ancient sense, a philosopher of nature.”¹¹

Like Abailard, Parmenides had existed on the frontier of a new scientific genus: the new science of metaphysics. Hence, he was unable easily and precisely to distinguish metaphysical problems from problems in physics in which his ideas had become incubated. Not being fully aware that he was glimpsing complicated problems belonging to a yet-to-be discovered genus behind and beyond those that physics is able properly to investigate or resolve, Parmenides apparently had thought, as Gilson observes about Abailard regarding logic, that he was simply tracing back physics to its fundamental principles.¹²

Parmenides had rocked the world of ancient physics by undermining one of the basic metaphysical principles upon which ancient physics had rested. He had called into question the ancient Greek physical assumption that an everlasting matter could generate anything.

Parmenides had maintained that, if being is identical with perfect unity, if the original matter is essentially everlasting and one, then this matter is essentially without parts and is, therefore, unchangeable. As such, nothing, no species or individuals, can emerge from it. Being (the one, unchangeable, always the same) is being (one, unchangeable, and always the same) and non-being (the changeable, the multiple, the always different) is non-being (many, changeable, always different).

The world of ancient physics had stayed rocked by the thought of Parmenides at least until the time of Plato, when, as Aristotle tells us,

¹⁰ Aristotle, *Metaphysics*, in *The Basic Works of Aristotle*, ed. Richard McKeon (New York: Random House, 1968), bk. 1, ch. 5, 986b32–34.

¹¹ Joseph Owens, *A History of Ancient Western Philosophy* (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1959), 70–71.

¹² Gilson, *The Unity of Philosophical Experience*, 5–6.

Plato “gave separate existence to these universally predicated substances.”¹³ Plato had attempted metaphysically to solve the problem that Parmenides had introduced into ancient Greek physics by maintaining that, if we can separate matter as a principle of existence from another principle that causes matter to exist in different ways, matter can be everlasting and change can still occur in the physical world. So, Plato maintained that, while matter is everlasting, considered in itself it is qualitatively indefinite, is, at best, an inert quantified body.

Another principle, which Plato called a “Form” or “Idea,” makes matter qualifiedly definite so as to be able to generate action. But Plato had maintained that this principle (a Species/Form/Idea) is immaterial and exists apart from the material world. Physical things change by reflecting or participating in Forms, Species, Ideas that exist apart from individually existing material beings.

Hence, by causing species to exist apart from individual beings, Plato had caused species to become everlasting and had made them incapable of evolving or of being principles of generation and action existing within material beings. By so doing, as Aristotle notes, Plato transformed the Problem of the One and the Many into the Problem of Universals, the problem of how what we *judge to be* general relates to what we *judge* to exist as individual. As Aristotle says:

But if the principles (that is, genera and species) *are* universals, either the substances composed of them are also universal, or non-substance will be prior to substance; for the universal is not a substance, but the element or principle is universal, and the element or principle is prior to the thing of which it is the principle or element.

All these difficulties follow naturally, when they make the Ideas out of elements and at the same time claim that apart from the substances which have the same form there are Ideas, a single

¹³ Aristotle, *Metaphysics*, bk. 13, ch. 10, 1086b5–10.

separate entity. . . . The statement that all knowledge is universal, so that the principles of things must also be universal and not separate substances, presents indeed, of all the points we have mentioned, the greatest difficulty.¹⁴

One such difficulty, as Aristotle maintains, is that, in different senses, the statement, *judgment*, that “all knowledge is universal” is true and false. Just as the term “sight” can refer to the specific ability to see color in general and the individual act of seeing “this” color, so Aristotle says that, in a sense “knowledge is universal, and in a sense it is not.” Another difficulty is that,

if we know each thing by its definition, and the genera are the principles or starting points of definitions, the genera must also be the principles of definable things. And if to get knowledge of the species according to which things are named is to get the knowledge of things, the genera are at least starting points of the *species*.¹⁵

In short, to put this problem in terms of physical science, physicists seek *to apply* universal definitions (principles, units of intelligibility) to understand and articulate in a universal way the principles of the motion of individually-existing things (apply a one to a many). To do so scientifically these principles must exist in these individual things as the proximate starting points, causes, generators, of their motions; and a physicist must be able to articulate (express in terms of scientific judgments) these principles as universal and necessary starting points of the different motions and actions of every individual member of a species of motion.

If first principles (genera and species) are universals *that exist apart* from individual things *and not in* individual things, how can they be intrinsic sources (proximate principles, causes, generators) of indi-

¹⁴ *Ibid.*, 1087a1–15.

¹⁵ *Ibid.*, 1087a15–25.

vidual motion or action? And if genera and species exist only apart from individual things as generalities of the human mind or separate Forms or Ideas existing in another world, how can they be intrinsic and scientific principles of motion or action?

Unhappily for posterity, after posing this problem, Aristotle did not adequately resolve it. He left it unsolved for Porphyry to pass on to the Latin Middle Ages. Being largely ignorant of the nature of ancient Greek philosophy, Porphyry did so mainly as a problem of logic, not as a problem of metaphysics that had originally grown out of problems in ancient Greek physics.

The Medieval debate about the problem of universals remained largely unchanged from the time of Abailard until the thirteenth century, when, as Jorge J. E. Gracia maintains, “the terms of the controversy changed somewhat because of the introduction of new terminology found in the recent translations of Aristotle and the commentaries upon them by Averroes and Avicenna.”¹⁶ Gracia says that talk about genera, species, universals changed to talk about natures. And the conversation started to focus on the kind of being and unity natures have. Reportedly, St. Thomas Aquinas took the classic moderate position by arguing that we can consider natures “absolutely or in relation to the mind or individual things.”¹⁷

What Gracia tells us is that the thirteenth-century discovery of “new terminology” found in recent translations of Aristotle and Arabic commentaries at least somewhat moved the talk about genera and species out of sole province of the genus of logic and back into the genus

¹⁶ Jorge J. E. Gracia, “Philosophy in the Middle Ages: An Introduction,” in *A Companion to Philosophy in the Middle Ages*, ed. Jorge J. E. Gracia and Timothy B. Noone (Malden, Mass., et al.: Blackwell Ltd., 2003), 9.

¹⁷ *Ibid.* Gracia’s exposition is based on Aquinas’s discussion of the relation of essence to genus, species, and difference in Chapter Three of *On Being and Essence*. See St. Thomas Aquinas, *On Being and Essence*, trans. Armand A. Maurer (Toronto: Pontifical Institute of Mediaeval Studies, 1968), 45–50.

of metaphysics. Absolutely considered, no matter where it might, or might not, exist (the way a metaphysician should consider it) a nature would be what a definition includes. In this sense, we cannot say that natures have or lack being or unity because, considered simply according to what they signify (or their intelligible content), natures do not expressly include or exclude these in their definition. For example, “the nature man is neutral with respect to being and unity.”¹⁸ When I talk about the nature “man,” I could be talking about one man or the species “man,” about an existing or non-existing man. If, absolutely considered, we define “man” as rational animal, then we exclude from our consideration whether the nature about which we are talking is numerically-one man or the species man, an existing or non-existing man. We are simply talking about the intelligible content that the definition signifies.

According to Gracia, in Aquinas’s classic formulation, we refer being and unity to natures only when we consider natures relationally to mind-dependent or mind-independent realities:

In relation to the mind, natures are concepts properly speaking and, therefore, are universal and have mental being. In relation to individual things, natures are individual and have individual being. Man, when understood, has both being and unity, the being proper to a mind, where it is found as a concept, and the unity proper to universals, because it can be used to think about not any man in particular but about each and every man. Man, considered in relation to individual men, has both individual being and unity, the being and unity of each man where it is found as their nature.¹⁹

Armand A. Maurer makes Gracia’s point about the relation of genus and species to a thing’s nature in a slightly different way: “Both genus and species designate relations: genus the relation of an essence

¹⁸ *Ibid.*

¹⁹ *Ibid.*

to many things different in species (for example, animal to rational and irrational animal); species the relation of an essence to many things different in number (for example, man to Peter, Paul, etc.).”²⁰

By indicating that “genera” and “species” refer to relations of essences, not to essences or natures considered as such, Aquinas provided the means for solving the problem of universals and a host of other philosophical difficulties. Up to his time, thinkers who addressed this problem had tended to treat universality as a property of concepts and essences. They had tended to think that the concept “man” was universal in the mind that represented a singular essence in things.

According to Aquinas, universality is a property of relation, not of essences, natures, or concepts. For him the concept man is not a universal or singular. Considered in and of itself, the idea is simply a sign of an essence or nature, a “sign-vehicle” (to use John N. Deely’s way of speaking), that we are intellectually considering, thinking about, judging, predicating in a universal way.²¹

Universality in the mind *is a property of predication, judgment*, of the fact that we can, or cannot, predicate, the term in a universal way; saying, or not saying, it about, all individual men.²² For Aquinas, strictly speaking, universality is not a property of concepts, substances, natures, or essences. For him, strictly speaking, no universal concepts, substances, natures, or essences exist.²³

²⁰ Armand A. Maurer, *St. Thomas Aquinas: The Division and Methods of the Sciences, Questions V and VI of His Commentary on the De Trinitate of Boethius* (Toronto: Pontifical Institute of Mediaeval Studies, 1963), 75, n. 14.

²¹ On the notion of a concept as a sign-vehicle, see John N. Deely, *Four Ages of Understanding* (Toronto, et al.: University of Toronto Press, 2001), esp. 383–394.

²² St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, vol. 2, trans. John P. Rowan (Chicago: Henry Regnery Co., 1961), bk. 7, l. 13, c. 1569.

²³ I derived my understanding of St. Thomas’s teaching about genera and species chiefly from reading Maurer, especially his *St. Thomas Aquinas: The Division and Methods of the Sciences, Questions V and VI of his Commentary on the De Trinitate of Boethius*.

This does not mean, however, that Aquinas denied the existence of real universals (in a way he did; in a way he did not) of real genera and species, that he has nothing to add to help resolve this current debate. Just what he can contribute I will attempt to show in my consideration of Darwin's treatment of the question of the origin of species in his two major works and whether or not, precisely speaking, this treatment merits the name "scientific."

Why Darwin's Teaching about Genera and Species Cannot Be Scientific

For three chief reasons I maintain that Darwin's two major works cannot be studies in science or modern physical science: (1) Darwin did not accept the existence of real species. In fact, he had no precise understanding of the meaning of "species." As the full title of his most famous work, *On the Origin of Species by Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, suggests, Darwin confounded the notion of species with a race, or population, a multitude of individuals that inhabit, and dominate, a geographical region and have common ancestral parents, original individuals (called "species") that first settled a place and geographical region from which other individuals have historically descended.²⁴ (2) Darwin had equally defective understandings of "science," "physical science," and a general notion of matter that underlies modern physics. (3) By conflating the idea of a species with that of a "race" historically descended from an original species, Darwin had committed a logical fallacy of "circular

See also Deely's brilliant analysis of the notion of sign in his masterful *Four Ages of Understanding*.

²⁴ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 15–50.

reasoning” called “begging the question,” that is, assuming in a premise what a person is claiming to prove in his or her conclusion.

Whether we talk about “science” or “physical science,” we must talk about some species of human knowledge that, to some extent, claims to demonstrate universally necessary conclusions that essentially, necessarily, refer to some psychologically-independent reality. As Darwin’s work *On the Origin of Species* indicates, Darwin was a nominalist. He had claimed that “species” was just a convenient name, which he had used as a handy labeling-device.

Nominalists deny the real foundation of universal judgments. Or they claim that, while some real foundation for universal judgments might exist, we cannot apprehend this foundation by natural human reason. As Deely rightly notes, “The denial of real relations is the very essence of nominalism.”²⁵ Since Darwin had thought that universals are just names for individuals, strictly speaking, his theory of evolution cannot be scientific or exist as a scientific theory because a nominalistic science is an oxymoron, is no science at all.

The true universal judgments a scientist makes are scientific precisely because they express necessary relations really existing within organizational wholes (real genera and species) that act as proximate principles, causes, for generating the kind of unity and action they do within and through these wholes. Darwin could not have explained the origin of species because, as Larry Azar has rightly proven, and Darwin had readily admitted, Darwin did not think that real species exist.²⁶

All sciences study a real genus, a multitude of species related, in the present, to one generic nature as effects to a proximate and proper cause. Strictly speaking, the origin of a species is a common nature, a

²⁵ John N. Deely, *Intentionality and Semiotics: A Story of Mutual Fecundation as Told by John Deely* (Scranton and London: University of Scranton Press, 2007), xxv.

²⁶ Larry Azar, *Evolution and Other Fairy Tales* (Bloomington, Ind.: Authorhouse, 2005), 452.

proximate genus really existing as a generic principle of unity and action within real species and (through real species) in the present within real individuals. The origin of presently-existing species is not a species existing in the past to which some presently-existing individual is historically related as a racial descendant.

For example, the genus *animal* exists in, and proximately causes, the species *lion*, *dog*, and *human being* just as the genus *figured body* exists in and causes the species *linear*, *circular*, and *triangular bodies*. *Linear*, *circular*, and *triangular bodies* are not historical descendants of *figured bodies*. Isosceles triangles are not historical descendants of the genus triangle, some ancient missing-link *figure* that a contemporary triangle vaguely resembles. They are figured bodies, instances of the quality figure existing as a proximate cause in material bodies causing their matter to extend in place in dimensional and angular ways.

Analogously, as a real species, *considered as such*, human beings are not historically descended from some remote, domestic or wild, species any more than, as Aristotle observed in his *Politics*, citizens are historical descendants of the founders of a political order (for, after all, founders of a political order, or genus, most of all deserve the title “citizen”).

If what I am saying is false and what Darwin is claiming is true (that species are historical descendants of parents who originally settled a geographical region), as Aristotle had recognized millennia ago, since they cannot be historically descended from themselves, if a “citizen” is someone descended from a parent who is a citizen, the founders of a city could not be citizens of the city (even though, strictly speaking, the founders of a political order, more than anyone else, appear to deserve the title “citizen”).²⁷ *Analogously considered, Darwin is assuming in*

²⁷ See Aristotle, *Politics*, bk. 3, ch. 1, 1275b30–35. Available online—see the section *References* for details.

one of his founding premises what he maintains is one of his biological conclusions: that the original species from which human beings were historically generated could not have been human.

We cannot even start to engage in scientific speculation without being able to recognize the existence of many species all belonging to the same genus, or something conceived after the fashion of a genus, that, in the present, because of its action in them as a proximate principle, or source, of their action, causes them to belong to the same species and makes them recognizable to us.

For example, to do human dentistry, dentists first have to admit that they know the existence and the nature of a human tooth and admit that they have some knowledge of some sort of generic, organic, matter commonly present in all species of teeth that causes them to be species of teeth, not of eyes or ears. To be able to recognize a species, we first have to be able in the present *to perceive it* as a really and presently existing member of a really and presently existing genus.

As Gilson, following St. Thomas, once keenly observed, *what we first perceive is not individually-existing things considered as such. We first sense generically, then specifically, and, finally, individually.* As he says in an article entitled “In Quest of Species,” if we really do not *see* species, how do we account for the fact that we say things such as we *see* a horse, man, and so on?

What I perceive by sense is in itself something particular, but my perception of it is something confused. By observing it more closely, and analyzing it, reason forms a clearer notion of it. Seen from a distance, what I see is some thing. If it gets nearer, I see an animal; still nearer, a man. Finally, I see John or Peter. In the end, I think I am perceiving by sense, not the sensible qualities of the object, but its very nature. Of course, that is largely an illusion; but there is some truth in it, and in his commentary on Aristotle’s *De anima*, Thomas Aquinas says why that illusion is justified up to a point. Both the same man, the same soul, perceive by

the senses and conceive by the intellect. One should not say that our senses perceive this and our intellect conceives that, but rather that *men* know by sense and intellect. The two modes of knowledge communicate in the unity of the knowing subject. In Thomas' own words, "Taken at its summit, man's power of sensing somehow participates in understanding because in man sense is conjoined to intellect." In short, because I know that what I am perceiving is a dog, I say I see a dog. In so doing, I merely say that I see what I know I am seeing.²⁸

Unlike Gilson, however, Darwin thinks that a genus is simply a historically remote, and largely unrecognizable, somewhat wild-ancestor of a bunch of presently-existing individuals.²⁹ Hence, his whole method of study involves question-begging, consists in circular reasoning.

To know a species we must first know its genus, as a proximate cause somehow existing within it. We cannot know what an ancient genus is as a remote, historical, original species unless we can first recognize a presently-existing species that is the proximate effect of a presently existing genus that acts as a proximate cause of that species existing in the present. We cannot recognize a presently-existing species by saying it resembles a long-dead, wild ancestor that is extinct and, because we have never seen it, unidentifiable to us.

In short, incredible as it may appear, Darwin: (1) does not precisely distinguish individuals from varieties, varieties from species; (2) does not accept the real existence of species; and (3) makes no distinction between a species and a genus except to maintain that a genus is a pre-existing, primitive species that generated historical descendants.³⁰

²⁸ Étienne Gilson, "In Quest of Species," in *Three Quests for Philosophy*, ed. Armand A. Maurer (Toronto: Pontifical Institute of Mediaeval Studies, 2008), 38–39.

²⁹ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 15–50.

³⁰ For a more detailed critique of all these problems in Darwin, see Azar, *Evolution and Other Fairy Tales*.

Regarding individuals, varieties, and species, Darwin says:

I look at the term “species” as one arbitrarily given, for the sake of convenience, to a set of individuals closely resembling each other, and that it does not essentially differ from the term “variety,” which is given to less distinct and more fluctuating terms. The term “variety,” again in comparison to mere individual differences, is also applied arbitrarily, for convenience’s sake.³¹

For convenience he calls “species” “strongly-marked permanent varieties,” and “varieties” incipient species, “groups of forms, unequally related to each other and clustered round certain forms—that is, around their parent-species.”³² *Such sloppy use of language is not scientific.*

Much like Menon in Plato’s *Meno*, Darwin thinks varieties and species are just different names we give groups of individuals that closely look alike.³³ He also thinks a genus is simply a name for groups of species that closely resemble each other. Simultaneously, he holds that a genus temporally exists before a species because a genus is simply an ancient species, the original, or parent, species that all subsequent species remotely resemble and from which they all temporally descended through minute variations.

Moreover, he maintains that we can recognize the existence and reality of species and genera by means of our external senses by (1) collecting minute differences between and among species that occur slowly over time and (2) recollecting how these differences resemble some common ancient ancestor that we never sensed, but can somehow remember, which originated all these differences. Apparently he thinks that we can find the common matter (this ancient ancestor, genus) that makes two species the same by minutely examining with our senses the

³¹ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 46.

³² *Ibid.*, 50, 83–84, 359.

³³ See Plato, *Meno*, trans. W. K. C. Guthrie, in *Plato Collected Dialogues*, ed. Edith Hamilton and Huntington Cairns (New York: Pantheon Books, 1966), 72A–D.

way multitudes of species are different and, through this method, discover the common sameness between them.

As Plato showed us centuries ago, we can never identify how two things are the same by describing in minute detail a common, sensory difference between them for the simple reason that differences make beings different, many. They do not make beings the same, one. To know how two beings are the same, we must intellectually apprehend these principles, abstractly, by turning our souls away from visible, sensory effects to seek the invisible cause, the common matter causing qualitatively unequal specific differences in perfection of possession of generic unity that we can never sense with any one or all of our senses. We only sense a genus in and through the species parts in which it exists as a unifying cause of the species unequally relating the species to numerically one-act, generic unity, or aim.³⁴

My opinion is that Darwin's method in his two major works suffers from the same problem as that of prisoners in Plato's cave. The problem of the origin of species is not essentially a problem of physics or biology.

It is essentially a metaphysical problem demanding a metaphysical method for its framing and solution. We can never resolve it by confounding biology with natural history and attempting to find the genus from which a species originates by trying to locate this genus with our senses through historical descent with variation from primitive species.

The problem of the origin of species cannot be solved without first solving the problem of the origin of genera. And, to answer this question, since species are parts of a genus (unequally related as different parts to the same whole genus), among other difficulties, a person who claims to be a "scientist" needs to be able to answer questions about the natures and origin of: all wholes and parts, unity, diversity,

³⁴ *Ibid.*, 531E–532D.

sameness and difference, equality and inequality, opposition, contrariety and contrary opposites (i.e., beings that are somewhat the same and somewhat different) belonging to the same whole genus.

The reason for this is that all science studies some limited multitude. No science studies an infinite multitude because it studies multitudes related as parts of a whole: a genus, or organizational whole, composed of a multitude of species unequally possessing some quality of generic unity ranging from opposite extremes of the most to least perfect. For example, the science of medicine studies healthy and unhealthy bodies ranging from the most perfectly healthy to the most deprived and diseased. Analogously, the same is true of politics, economics, and so on. Politics studies war and peace. Economics studies wealth and poverty. And all these sciences study anything essentially related to promoting or impeding the maximum quality, perfection, of its subject.

So, for example, medicine studies diet, exercise, prescription drugs, medical devices, educational practices and institutions, and so on. Economics studies anything and everything that promotes or impedes wealth. And, analogously, politics studies anything and everything that promotes or impedes peace.

Why is this? Strictly speaking, medical doctors, economists, and politicians cannot answer these questions because these problems are essentially metaphysical, not physical, medical, political, economic, or, even, historical. To solve them, a person needs to be able to answer the questions of whether or not a genus is created in time, or exists with no temporal beginning. If it is not created in time, a person needs to be able to explain how the physical universe can be everlasting and contain all the above-mentioned somewhat-opposing, principles needed to generate multitudes as parts of an organized whole. Contemporary medical doctors, physicists, economists, politicians, biologists, and historians are no more competent to solve these problems than was Darwin.

The material universe is itself a finite genus, organized whole, in which all other material genera and species exist. If it were a universe with no limits to its extent, it would not be an organized whole, and could have no finite relationships (relationships being a kind of opposition) existing within it. It would have *no* internal unity and *no* “within” or “without;” and gravitational force and mass (finite, material resistance and receptivity to action from another) could not exist within it and would be unintelligible. Because we human beings can only know things in terms of locating them as individuals, finite limits (defining them within specific differences, within proximate genera), even if it were an unbounded material universe (genus), in principle, such a universe (organizational whole) and its essential parts would be existentially and intellectually incoherent (conceptually contradictory, oxymoronic), and unknowable to us.

If, on the other hand, we try to explain the origin of species within an everlasting material universe in which matter is eternal and everlasting like it was for Parmenides, this is an absurd task, an undoable deed.

The only universe in which a theory of evolution makes sense is one that is created *ex nihilo* (like the Judaeo-Christian one) or a non-Judeo-Christian one everlastingly, createdly, co-existing with and perpetually caused by, an infinitely-powerful God.

Not realizing the problem he sought to resolve was metaphysical (not biological, physical, or historical in nature) doomed Darwin’s project to failure from the start. While this problem might have a scientific solution, the sciences of ancient and modern biology and physics are unequipped to provide this solution. Strictly speaking, the problem of the nature and origin of genera and species is a problem that biology and physics are totally incapable of properly framing, much less solving.

Darwin turned to evolutionary history to solve his problem of the origin of species because the origin of a species is a genus and because, epistemologically considered, Darwin could not figure out how a genus can be anything other than a mentally-recollected, or remembered, being. If general being exists only in the mind, as a property of ideas or judgments, how can real species or genera exist? If species are only individuals, then, strictly speaking, real species do not appear to exist now or at any time.

Darwin tried to resolve this dilemma historically and epistemologically (not biologically) by maintaining that the reason we now attribute a species name to a multitude of individuals is because we see some sort of resemblance between these presently-existing individuals and a remote historical species that Darwin mistakenly called a “race” (from which all its species have supposedly evolved). Thus, for Darwin, a genus is simply “name” for a recollected universal, an original species, a historical universal that does not now and never did exist as a generic principle within a species here and now that causes a species to act the way it does here and now. (Hence, the general absence of the term “genus” in Darwin’s “biological” works.)

In Chapter Three of his *Origin*, entitled “Struggle for Existence,” Darwin starts to explain how he thinks the process of evolution originates from this historically-remote genus (which he thought to be a “species”). “When we look at the plants and bushes clothing an entangled bank,” Darwin says, “we are tempted to attribute their proportional numbers and kinds to what we call chance. But how false a view is this!” Darwin exclaims.³⁵

Law, not chance, is the cause. The term “struggle for existence,” which Darwin says he uses “in a large and metaphorical sense,” refers

³⁵ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 51.

to the natural fact that “each organic being is striving to increase in geometrical ratio.”³⁶

Darwin rightly understands that all organic beings are related, and that we cannot comprehend real genera or species without, to some extent, looking at real relations and granting the existence of final causes. But his claim that some sort of natural inclination exists within species to reproduce geometrically is questionable, especially since Darwin does not accept the existence of real species and many members of the human species reproduce freely and for many different reasons. The claim that this is a scientific law from the standpoint of modern, classical, or any scientific, physics is specious.

When referring to “natural selection,” Darwin tells us he is using this term “metaphorically.” “By nature,” he says he means “only the aggregate action and product of many natural laws, and by laws the sequence of events as ascertained by us.”³⁷ Put another way, “natural selection” is simply “selection by natural law” metaphorically understood.

In short, natural selection is just an analogous way of referring to “natural law.” It is an analogous adaptation of the classical Aristotelian moral principle that human beings are naturally inclined to seek the good and avoid evil transformed into a metaphysical principle, an eternal law (providential guidance of all things toward their proper good), and then reduced to biology conceived of as natural history. Hence, Darwin says, “natural selection can only act through and for the good of each being.”³⁸

The closest that Darwin comes to identifying real species is his reference to them as “domestic races,” immigrant populations that have moved into a new geographical region to inhabit it and take it over to

³⁶ *Ibid.*, 62.

³⁷ *Ibid.*, 64.

³⁸ *Ibid.*, 66.

become natives.³⁹ In this sense, Darwin appears to be identifying a genus with what Aristotle had called the “natural place” toward which a historical species tends to move and is able to survive as most fit for it (because a species only exists, can survive, within its genus!).

As an Enlightenment thinker, Darwin rejects the notion of natures existing within things. Like many Enlightenment Protestant thinkers, he replaces the notion of nature, or real substances, with “law.” Many Protestant intellectuals of this period tended to do this as a means, conjoined with nominalism, of denying the existence of any internal, universal, principles of action (natures, forms, or essences) in individual things.⁴⁰ In this way they thought they could attribute all action in the universe to external relations, which they sometimes called “spirits,” by which God regulated the action of every created thing.

Hence, Darwin has no way rationally of arguing for the reality, existence, or evolution, of species. At best, for him, an individual substance is a collection of accidents, a bundle of legally-related incidental differences. The best Darwin can do in this situation to attempt to explain the origin of higher kinds, higher species or substances, is to try to readapt Aristotle’s doctrine of natural place and the classical notion of natural law as a principle of natural movement to the neo-gnostic, spiritualism of his age, which has replaced real natures, substances, with spirits (or laws) as causes of material motion.

For him, *natural selection is simply a social feeling, or spirit, that dominates an immigrant population, part of the system of nature, inclining it to move to and take over a geographical region that it can call home; and in which it can start to generate beings of higher, more domesticated, social feeling.* Hence, he says that, “natural selection will

³⁹ *Ibid.*, 34–37.

⁴⁰ To see how Sir Isaac Newton did this in his physics, see Peter A. Redpath, *Masquerade of the Dream Walkers: Prophetic Theology from the Cartesians to Hegel* (Amsterdam, Atlanta, Ga.: Editions Rodopi, B. V., 1998), 9–32.

always act according to the nature of the places, which are either unoccupied or not perfectly occupied by other beings.”⁴¹

Despite Darwin’s attempt to reframe the issue, the whole problem of evolution is scientifically impossible to frame, much less intelligently to discuss, apart from accepting the reality of different, qualitatively unequal, kinds of substances. The notion of external “law” binding individuals in higher relations of social consciousness cannot account for evolution of greater kinds of substances for the simple reason that higher substances cannot exist in a physics that denies the existence of qualitatively different kinds of matter. Classical Aristotelian physics accepted the existence of living and non-living matter, corruptible and incorruptible matter, higher and lower forms. Modern physics accepts none of these. Hence, strictly speaking, the notion of evolution is not something modern physics can even intellectually consider, much less resolve.

Still Darwin attempts to explain evolution of higher kinds in terms of natural law by maintaining that those beings survive in the struggle for existence that are best able to domesticate, to fit into some geographical place and take it over. The dominant population then becomes the race (genus) that can trace itself back historically to common geographical parents.

Hence, present species are lineal, historical, descendants of long-dead, or extinct parent-species (their genus), that first inhabited a geographical region they could fittingly domesticate. They vaguely resemble some long-dead “ancestor” through many slight variations that happened slowly over a long time. (Or, put in the more Biblically-fundamentalistic terms that Darwin had been trained in his youth, they vaguely resemble this individual who “begat” that individual.)

⁴¹ *Ibid.*, 89.

Because this long-dead ancestor had been just recently a somewhat wild, undomesticated, ancient species, just recently having moved from living in the wrong place, or places, into its natural place, Darwin maintains that later descendents no longer greatly resemble their original species, or genus.

And because they are made up of individual differences, we can never find the missing link between them and us for the simple reason that, as Plato recognized centuries ago, we can never get a proper understanding of a scientific genus by adding up individual differences (because a scientific genus is not a difference or a concatenation of differences). A scientific genus is what all specific differences share in common, their common matter, proximate subject, principle, cause, internal generator. Scientific genera and species are not sensible or non-sensible differences, or laws, at all.

No matter how much, or how quickly or slowly, we add up differences between the size, shape, color, and other differences of bees, we will never discover in these differences singly or collectively the living, sentient, specific matter that makes a bee a bee. No matter how much, or how quickly or slowly, we add up differences between a plant and an animal or an animal and a human being, we will never find the transitional common matter, the generic matter, that transforms, or displaces, the vegetative matter of a plant into sentient matter of an animal; or the sentient matter of an irrational animal into the living matter of a rational animal. No matter how much, or how quickly or slowly, we add up differences, or legal and historical relations, we will never get a scientific genus or species because scientific genus and species refer to common subjects, principles, which we cannot directly sense, that underlie differences and ground laws. Scientific genera and species

are not any one or the total of such differences or bundle of legal relations.⁴²

In classical physics substantial change never involves one species morphing over time into another. The specific matter of a fish can never evolve through minute differences over time into the specific matter of an ape any more than a circle can evolve through small differences over time into a square, or a football team can evolve into a debating society.

For a quantified, continuum, body (say, a piece of wood) to change from being circular to becoming square, for example, the identical piece of wood must first become dispossessed of its triangular shape, reduced to a generic body qualitatively capable of being circular (the wooden body, now no longer triangular capable of assuming a square shape), and then made circular. The final stage of becoming square could involve two instantaneous acts (one in which it is circular; the next in which it is square); or the final stage could be the final act of series of acts that occur over time in which the triangular shape is slowly removed and the square shape is slowly approached. In this case, the next to final stage still occurs in one act and the final stage in another. Hence, no time separates the final dispossession of one shape and the possession of the other.

Triangles are triangles, are triangles. Squares are squares, are squares. The species triangle can never become the species square, and the species square can never become the species triangle. A generic body, like wood, that is square can become a generic body that is circular, or vice versa. A human being who is a football player can become a human being who is a baseball player, but football will never evolve into baseball.

In classical physics, evolution of one species of substance into another is unobservable to the external senses because it can never oc-

⁴² Plato, *Republic*, bk. 7.

cur even in principle; and because its specific and generic matter are unobservable to the external senses. Sensibly observable are its quantified and qualified matter; not its specific or generic matter. Wood, considered as such, is not empirically observable.

Wood of a specific quantity and quality (of qualified, determinate dimensions) exists. This, in turn, means that the mechanisms through which evolution occurs are unobservable, even in principle, to the external senses. Hence, strictly speaking, Darwin cannot sensibly, or mathematically, observe natural selection or change of species occurring.

Among others, one reason for this is that a real genus generates, causes, is the proximate principle of, its species. Real species do not generate the genus. *A real genus is an organizational cause unifying a qualified multitude into parts of an organizational whole through unequal relation of the parts to numerically-one general aim or act (like a general contractor uniting a multitude skilled technicians as specific parts of homebuilding activity).* A real genus is what, today, Westerners would call “an organizational whole,” generating, through the harmonious action of its internally-existing specific parts, numerically-one organizational action.

As Gilson observes in a footnote appearing on page twenty of his brilliant monograph *Painting and Reality*: “Order is the only kind of unity that multiplicity can receive.”⁴³ *That is, the only kind of unity a multitude can have is as parts of an organizational whole.* And, while Gilson fails to mention the following fact in this book, the only way to transform an indeterminate multitude into parts of a whole (an order, or organization) is through unequally and co-operatively-generating numerically-one aim, or co-operative organizational act.

⁴³ Étienne Gilson, *Painting and Reality* (New York: Pantheon Books, 1957), 20, n. 17.

As Gilson realized, along with Aristotle and St. Thomas, what we first, and can only, perceive with the help of our external senses is an existing unity. If something does not exist, if it does not possess the act of existing as an actual unity, or whole, we cannot know it. What we first, and always, perceive, and later wonder about as sensible, philosophical subjects, are acting subjects, numerically-one organizational wholes: individually-existing, operational organizations; qualitatively-different, acting organizations; numerically-one organizational generators of action organizationally unified through unequal, and harmonious, relation to numerically-one final act.

In short, what we first, and always, perceive is a unity of order, or organization, not of discrete and unrelated individuality. And ordered, or organizational, unity can only exist within a multitude of species-parts unequally contributing to generating numerically-one organizational harmony (generic unity and act) through execution, exercise, of numerically-one, co-operative, generic (or organizational) action.

In perceiving this or that in a confounded way *as a something, or some one thing*, we are perceiving a harmoniously-acting, composite-unity, qualitatively different from some other harmoniously-acting composite-unity. We first perceive “a something” by sensing some harmonious unity, order, within a multitude of harmoniously-ordered parts constituting a composite whole.

Darwin, in contrast, appears to think that: (1) what we first perceive are Humean-like, discrete individuals; (2) a “species” is just a name for discretely-existing individuals; and (3) a “genus” is simply a name for a multitude of species capable of surviving the struggle for life by developing a species of consciousness within a geographical location toward which they are naturally selected to gravitate: by locating and inhabiting a suitable geographical region (the geographical region containing its fitting, or suitable, species thus becoming the “genus” for the individuals in question).

He appears to understand that: (1) the perfection of a genus is the final cause of the existence of species, gives species a collective aim causing them to relate in cooperating to generate a common activity; (2) all species of individual, physical beings exist and survive only within a genus; and (3) beings that understand the chief aim of their genus are most able to survive within it. No matter what the genus, aimless beings, being that do not understand the way they relate generically to other species within their genus and in relation to other genera and species, are the least likely, fit, to survive.

Properly understood, change of species is a kind of substantial change. Substantial change involves dispossession of specific differences and reduction of a subject undergoing change to the conditions of its generic matter. Before acquiring a new specific form, its generic matter has to become dispossessed of its present specific form and neutralized to the qualitative ability and disposition of assuming another specific form.

For an irrational animal, for example, to evolve over time into a rational one, the changing subject would have to remain over some time an animal with generic matter dispossessed of any specific difference neutrally disposed to become rational or irrational. Impossible. To exist as a determinate, or definite, individual, an individual must at all times exist within a species. And no species can exist without the existence of individual members.

Like transition from living matter to non-living matter, all substantial change occurs in an instant of time, not over a process of time. Time as a process occurs between two instants of time; in the case of substantial changes, between two instances of substantial changes in which what had been one substance, *now, instantly*, becomes another. Hence, strictly speaking, substantial change is a qualitative organizational change (from one organizational whole to a qualitatively and

completely different one, with qualitatively different organizational parts and aims) unobservable to the external senses.

Moreover, because it occurs in an instant, while secondary causes can prepare for this change to occur by properly qualifying a generic matter to become receptive to new specific differences (become a new organizational whole), and while they might even be one of the causes involved in effecting a substantial change, because all substantial change occurs in an instant, strictly speaking, evolution, as Darwin conceives it, could never be its cause.

In modern physics, generic and specific change can never occur because modern physics, following Descartes, identifies matter with quantity, with something essentially inert. What is essentially inert cannot act, much less, evolve, become more or less perfect in qualitative, organizational unity and action.

What Are Scientific Genera and Species?

If scientific genera and species, universals, are not legal, historical, or geographical relations (as Darwin appears to have conceived them), what are they? Because Western philosophy derived its notion of genus and species chiefly from the work of Aristotle related to the nature of a real genus, one way to attempt to answer this question is to consider how Aristotle first understood the notion of a genus. In his *Metaphysics* Aristotle distinguished four senses of genus:

(1) Continuous generation of things that have the same specific form. In this sense a “genus” means an uninterruptedly-generated multitude of individual beings sharing the same specific material principle as their begetter, like the race of human beings are generated from their principle, their specific nature: “human nature.”

(2) Historical descent from some common first parent. In this sense we derive the name “genus” from the first generator, like Helen

(from whom the race of Hellenes arose) not from the material principle (human nature) by which Helen was able to generate descendents. Hence, a genus consists of the race of Hellenes because they share Helen as a common historical parent.

(3) The proximate subject of necessary specific accidents, properties, from which these accidents proceed as effects from their necessary subject, principle, and cause. In this sense, in geometry, a surface body is the genus of all plane figures (triangles, circles, squares, and so on) because it is the underlying subject, to which these relate as effects, present in this subject as is the necessary condition of their generation and continued existence.

(4) An intelligible whole that exists as part of a definition of an essence and is predicable of many species.⁴⁴ St. Thomas understood Aristotle to have derived this notion of *the logical sense of a genus* from one of the constituent parts of an essence: its matter. He said that Aristotle got this sense of genus from his understanding that an essence is composed of two wholes that combine to become its parts. One whole is matter (a subject). The other whole is form (a quality).⁴⁵

For example, if we define man's whole nature or essence as a rational animal, even though "genus," as something predicably universal is not material, we derive this notion of genus from our understanding of "sentient nature" (animal). Hence, we say the genus of the species man is "animal." We get the notion of species by adding a difference (rational or irrational) to sentient nature in a way analogous to adding a quality to a subject, which thereby modifies and specifically limits the subject.

Hence, in a way, the genus animal acts as the subject for qualification by the formal difference *rational* or *irrational* to cause a subject

⁴⁴ Aristotle, *Metaphysics*, bk. 5, ch. 28, 1024a29–1024b9.

⁴⁵ St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, bk. 3, l. 8, c. 442.

about which we now think to be transformed from being a generic subject into a specific one. For this reason, in his famous “Treatise on Man” (I, q. 77, a. 3, *respondeo*) of his *Summa theologiae*, regarding specification of human rationality, St. Thomas locates the specific difference of our human rationality *in a per se otherness within the sensitive, or animal, part of the intellectual soul*, which is sometimes found with and sometimes without reason.

By analogous extension from this metaphysical conception of animal rationality, since the logical sense of genus is a whole potentially containing, or divisible into, sensory and rational natures, or potential parts, logicians can predicate the abstractly-considered essence “animal” of rational and irrational animals because, in a way, it contains both.

Regarding this logical sense of “genus,” absolutely considered, the essence “animal” is not exclusively rational or irrational animal. It includes rational and irrational natures. The essence simply refers to some one or multitude of material being(s) that has a sensory nature, no matter how dumb or how smart.

When we think of this one essence as a genus, we think of it as a complex whole (a one) containing a multitude of natures (a many, potential parts that, considered in themselves, are intelligible wholes, species). The genus potentially contains, it does not exclude, the differences of its species. One part of this whole essence is animal nature, sensory matter that can be rational or irrational. The other part is its form, rationality or irrationality qualitatively proportionate to sensory matter.

Hence, we would not attribute to the essence animal as a genus the rationality of angels or God. Human rationality is the formal difference that makes animal matter become humanly rational, not irrational, animal matter.

A crucial point to recognize when talking about genera and species in relation to essences or natures is that we are talking about wholes containing parts that relate to an essence or nature as a part of greater whole. “In one sense a genus is a whole because inasmuch as it is predicated of several things, and in another sense it is a part inasmuch as a species is composed of a genus and a difference.”⁴⁶

Another crucial point to recognize is that this is the logician’s, not, as St. Thomas maintains, the metaphysician’s, mathematician’s, or physicist’s understanding of a genus.⁴⁷ Properly speaking, according to Aquinas, genus for a philosopher, scientist, should be Aristotle’s third understanding of it above. Darwin, however, clearly uses the term “genus” in Aristotle’s second understanding and conflates it with Aristotle’s fourth understanding of “genus,” the logical sense, which Darwin interprets as a nominalistic whole.

Hence, Darwin tends to view a genus to be a multitude of individuals sharing common parents who, *by natural selection*, have domesticated a geographical region. These common parents represent the logical species “irrational animal,” systems of non-social feelings from which, through small differences impelled by natural law (*natural selection*), over a long time, rational, or social, animals (animals with social feelings) have supposedly evolved. If St. Thomas is right, Darwin’s understanding of genus cannot be correct, or scientific.

Why Darwin’s Teaching about Biology Cannot Be Scientific

When we talk about modern physical science, we are talking about a subject that has its roots in a mechanistic theory of the unity of matter, that material beings differ in degree, not kind. Going back to Descartes, modern physical science has worked under the assumptions

⁴⁶ *Ibid.*, bk. 7, l. 13, c. 1569.

⁴⁷ *Ibid.*, bk. 5, l. 22, c.1127.

that: (1) only one common matter exists for all physical beings; matter is inert extension devoid of activity; (2) the physical world is a machine; (3) spirit, a reality wholly diverse from matter, is the only active reality in the universe (knowingly or unknowingly modern science identifies spirit with “law”); and (4) that only mathematics and its methods can enable us to know matter’s nature.

Strictly speaking, Darwinian evolutionary theory makes no sense in the world of modern physics, which, for centuries, has viewed physical reality as a machine whose matter is universally the same (extended and inert). While contemporary physics might be moving away from a mechanistic understanding of matter, the modern physics coming from Descartes rejects the notion that different kinds of matter, different kinds of substances, exist. And evolution presupposes the existence of qualitatively different, higher, progressively more perfect, better, kinds of matter, different kinds of substances. These two views are contrary opposites. As such, they cannot simultaneously be true.

Darwinian evolution makes no sense within classical Aristotelian physics because Aristotle had considered species to be immutable, everlasting.

Darwinian evolution appears only to make some sense within the context of a substantially-altered Aristotelian physics modified by an Augustinian, or secularized-Augustinian, interpretation of Christian revelation’s teaching about creation, which cannot be science in the modern, Enlightenment, or any rational, sense.⁴⁸ Moreover, Darwin’s teaching about biology cannot be biology in the modern sense because he thinks of biology in terms of “natural history.”⁴⁹

⁴⁸ For St. Augustine’s teaching about creation, see his *Confessions*, bks. 11–13.

⁴⁹ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 371.

If Darwin's Teaching about Evolution and Biology Cannot Be Scientific, What Is It?

My opinion is that Darwin's understanding of evolutionary biology is a conflation of ancient biology, classical natural law and eternal law theory, Aristotle's physics of natural place, secularized-Augustinian fundamentalism, and Enlightenment Romanticism. Darwin thinks of natural selection as the driving force, invisible hand, or spirit behind natural history (the species-consciousness of the human race) much in the same way that Adam Smith sees an invisible hand, or law, existing in free trade, or Georg Hegel thinks of Absolute Spirit moving the history of human consciousness. As such, natural selection is simply a secularized version of the Calvinistic invisible hand of providence at work in the struggle for existence freely separating members of the "elect" from the non-elect based upon their being favored by *the natural law of election* (history's spirit of increasing sociability of human consciousness) to dominate a geographical region and become a species part of a real genus.

Darwin thinks that man is social-animal-consciousness driven by species-specific social instincts and sympathy at work in the process of natural selection (divine election) to emerge from his primitive, pre-civilized condition and, through domestication, grow in love of humanity in a domestically-suitable geographical region. Natural selection is simply the spirit of humanity emerging from a Rousseau-like pre-cultural state of savage nature to the Enlightened state of a nineteenth-century English socialist.⁵⁰

Darwin's teaching is not science, or biology, in the modern or classical sense. Instead, it appears to be mytho-poieic musings about

⁵⁰ Darwin, *The Descent of Man and Selection in Relation to Sex*, in *Darwin 1955*, 497–511.

human origins that Darwin pieced together from different parts of his religious and secular educational background.

I make this claim to make sense out of Darwin's work, not to disparage it. Recall that Galileo Galilei maintained that, prior to making intellectual advances, we must first stretch the human imagination.⁵¹ And recall that ancient Greek poetry was the necessary condition for the development of ancient Greek philosophy.⁵² Recall that tremendous advances in painting, sculpture, music, and engineering during the Middle Ages and Italian Renaissance preceded the great developments in astronomy and physics made by thinkers such as Johannes Kepler, Galileo, and Sir Isaac Newton. Such poetic musings are a necessary epistemological condition for philosophical, scientific, advancement.

Not being a philosopher and wanting to move biology beyond the mechanistic physics of his time, Darwin had to make some sort of move like this to stimulate intellectual advancement. Still, precisely speaking, the moves he made were not philosophical, not science.

Darwin's family history gives us some sense of how he went about stretching his imagination. Darwin's family was closely associated with a group of nineteenth-century English evangelical-Protestant socialists. These included the Clapham sect, the Bloomsbury group, the Wedgwood family, William Wilberforce, Grenville Sharp, Henry Thornton (governor of the Bank of England), Charles Grant (director of the East India Company), Sir James Stephen (under-secretary of the Colonial Office), John Stuart Mill, Jeremy Bentham, Unitarians and Quakers of different sorts, who considered themselves to be leaders of a new intelligentsia centered around training of clergy at Cambridge Uni-

⁵¹ Galileo Galilei, *The Assayer*, in *The Scientific Background of Modern Philosophy*, ed. Michael R. Matthews (Indianapolis, Ind., and Cambridge, Mass.: Hackett Publishing Company, Inc., 1989), 56–59.

⁵² See Redpath, *Wisdom's Odyssey*.

versity in Evangelical thought centered around “the Calvinist emphasis on original sin and the doctrine of divine election.”⁵³

Darwin’s father, Robert, had married into the Wedgwood family. Charles married his first cousin Emma Wedgwood (his mother’s brother’s daughter).⁵⁴ Darwin’s grandfather, Erasmus, rejected the mechanistic interpretation of matter. He thought that man was “an organic being, not a machine.”⁵⁵ In some way, this was an attempt to return biology to classical Aristotelian realism.

Darwin followed his grandfather and similarly rejected the notion that the physical world was a machine. Like many Romantic thinkers of his time, Darwin followed Jean-Jacques Rousseau in identifying the meaning of nature chiefly with what is pre-cultural, uncivilized, barbaric.⁵⁶ Darwin’s starting point of his reflections on evolution relates to what he calls the “astonishment” he “felt on seeing a part of Fuegians on a wild and broken shore” and realizing “such were our ancestors.” Like Rousseau reflecting on the nature of *Émile* prior to emerging beyond his selfish, pre-moral, stage, Darwin concludes “there can hardly be a doubt that we are descended from barbarians.”⁵⁷

At the time Darwin proposed his thesis, he was opposing the belief advocated by some other thinkers of his age “that man came into the world as a civilized being, and that all savages have since undergone degradation.”⁵⁸ Darwin’s personal travels and observations had caused him to adopt an opposite view.

⁵³ Vincent P. Pecora, *Secularization and Cultural Criticism: Religion, Nation & Modernity* (Chicago and London: The University of Chicago Press, 2006), 162–163.

⁵⁴ Azar, *Evolution and Other Fairy Tales*, 15.

⁵⁵ *Ibid.*, 14.

⁵⁶ Jean-Jacques Rousseau, *Émile or On Education* (New York: Basic Books, 1979).

⁵⁷ Darwin, *The Descent of Man and Selection in Relation to Sex*, in *Darwin 1955*, 918.

⁵⁸ *Ibid.*, 509.

Despite popular depictions of Darwin as irreligious and that he thought of natural selection in terms of blind chance, Darwin maintained that he was not irreligious. And he forcefully denied that natural selection was, or involved, blind chance. Hence, he said:

I am aware that the conclusions arrived at in this work will be denounced by some as highly irreligious; but he who denounces them is bound to show why it is more irreligious to explain the origin of man as a distinct species from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. The birth both of the species and of the individual are equally part of the grand sequence of events, which our minds refuse to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure,—the unity of each pair in marriage,—the dissemination of each seed,—and other such events, have all been ordained for some special purpose.⁵⁹

Moreover, Darwin thought his view of evolution “accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining birth and death of the individual.”⁶⁰ A chief problem that Darwin had, however, that someone like Aquinas did not have, was that, unlike Aquinas, because the existence of secondary causes presupposes that they have natural powers of their own, that God is not the sole and total cause of everything, Enlightenment Protestant intellectuals tended to deny the reality of such causes. And, unlike Aquinas, Darwin’s Protestant, fideistic, background inclined him toward a literalist reading of Scripture from which he had trouble extricating himself. Like St. Au-

⁵⁹ *Ibid.*, 915.

⁶⁰ Darwin, *The Origin of Species by Means of Natural Selection*, in *Darwin 1955*, 373.

gustine before him, Aquinas had no difficulty reading Scripture analogously.⁶¹

Darwin could not do so, despite the fact that he displays a keen appreciation of the need for physical scientists to be able to reason analogously. Hence, like Darwin the evolutionist, Aquinas was quite ready to admit that crossbreeding and influence of secondary causes could occasionally produce new species within a genus and that Christian revelation's teaching about creation is true.⁶²

Clearly, Darwin is no scientist in the modern sense or contemporary. Nor is he irreligious or atheistic. Precisely speaking, he appears to be a neo-gnostic spiritualist, a secularized Calvinist fundamentalist who has lost his faith but still calls upon Calvin and Augustine to help him make sense of reality.

His doctrine of evolution is one more variant of the Enlightenment spiritualism, secularized Augustinianism, a mytho-poieic history, fairy tale, that sees the human species as animal consciousness emerging from a backward state of intellectual darkness to the British socialist light of truth through the spirit of tolerance interpreted via analogous redactions of Aristotle's teaching about natural place and natural law.⁶³ *As such, strictly speaking, we have no rational foundation for calling it "science." It is about time we stop doing so.*

Nonetheless, I think that Darwin vaguely perceived a problem with the way that modern and classical physicists, logicians, and philosophers have used, and continue to use, the terms "genus" and "species." In my opinion, a good likelihood exists that none of the major religious or non-religious fundamentalistic opponents in the evolution

⁶¹ See Augustine, *Confessions*, bks. 11–13.

⁶² St. Thomas Aquinas, *Summa theologiae*, I, q. 73, a. 1, ad 3. Available online—see the section *References* for details.

⁶³ For a more detailed examination and critique of modernity, especially the Enlightenment, as secularized Augustinianism, see Redpath, *Masquerade of the Dream Walkers*.

debate has a proper understanding of the nature of a scientific genus or species.

Darwin understood these in a historical, nominalistic, and racial sense. These cannot be a scientific sense of genus and species. Modern critiques of Darwin often understand these in the logician's sense, of a one predicated of many, and think that universality is a property of mind/consciousness alone, usually of an idea.

None of these understandings of genus and species is the proper way for science to understand genus and species or an appropriate understanding that can contribute to the question of the origin of biological species.

Darwin, at least, to some extent, was convinced that real species exist and that individual members of a species could not exist apart from environmental conditions necessary to support them, that the existence of real species demanded that real natures exist in relation to other real natures within a real genus. Hence, like Aquinas before him, to some extent, *Darwin had recognized that the existence of mental or real species is relational*, involves the relation of one nature to something inside or outside the mind. Darwin's chief problems were that he did not know precisely what genera and species are and that he had a similarly impoverished understanding of science and Western intellectual history.

The Proper Way to Understand “Genus” and “Species” as Scientific Terms

Science is of the universal, Aristotle told us centuries ago. But he also warned us that science is not the study of some universal substance. Universals are not substances and substances are not universals. Such being the case, what is the universal, the genus, that any and every

real science, every legitimate philosophy, studies? St. Thomas Aquinas gives us a distinction that helps us to answer this question.

Aquinas says that the way a logician understands universality differs from the way a geometrician, physicist, or metaphysician understands it. The logician identifies universality with predication, with the way we can mentally consider, mentally relate, a conceptual content, one nature, definition, or essence to many subjects. The geometrician, physicist, or metaphysician, on the other hand, consider universality in terms of a chief subject of proper accidents, as relationally being the proximate principle or cause of a multitude of effects that, in some respect, by emerging from it, inhere in their proximate cause and universally relate to it as in a principle.⁶⁴

In this sense a scientific genus consists in the relation of an acting nature, a causal nature, to its proximate and necessary effects. While individually-existing substances cannot be abstractly-considered universals, this in no way proves that, as Darwin appears rightly to have understood, universality has no existence as a psychologically-independent relation between a proper cause and its effects within an organizational whole, or real genus. *Properly speaking, this is the universal that science, philosophy, studies.*⁶⁵

Inasmuch as we accept the reality of universals, we must accept the reality of wholes, parts, and their essential internal relations. For effects are related to a cause as parts to a whole. Many modern and contemporary thinkers accept the reality of wholes and parts, but think they can reject the reality of final causes and causal universals. By so doing, once again, modern and contemporary thinkers cannot even coherently enter the debate about the origin of genera and species: because the only way a multitude becomes transformed from being an

⁶⁴ St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, bk. 7, l. 13. c. 1577.

⁶⁵ *Ibid.*, bk. 6, l. 3, c. 1205.

indeterminate mass into being parts of a real whole is by being unequally and qualifiedly related to numerically-one common or universal act, a common end.⁶⁶ In this way, for example, a bunch of men become transformed from being ordinary, but qualified, people into firefighters: by having requisite skills to fight fires and by contributing partial acts to fight some really-existing, numerically-one, same whole fire.

Darwin, on the other hand, was smart enough not to deny the reality of final causality, which Aristotle, and St. Thomas had called “the cause of all causes.”⁶⁷ Being related to a common end, or numerically-one universal act, transforms some multitude from being a disconnected, indeterminate, mass into being parts of a whole.

By denying the reality of final causes, modern and contemporary thinkers make evident that they do not understand the nature of part/whole relationships, or science properly understood; and are unqualified to enter into, much less resolve, the debate about evolution. For without being able to understand real part/whole relationships they cannot possibly understand the nature of real genera and species and how these notions are used differently in logic, physics (including biology), metaphysics, and other disciplines.

*

In conclusion, as far as I can see, the modern “scientific” debate about the origin of species is largely worthless because the likelihood is that most of the religious and non-religious people involved in it are largely ideological fideists who do not understand the nature of genera, species, science, or philosophy.

Most of us today have little precise understanding of these notions. Both main groups involved in the debate appear to me to be composed chiefly of fundamentalists (one side religious, the other side

⁶⁶ Gilson, *Painting and Reality*.

⁶⁷ St. Thomas Aquinas, *Commentary on the Metaphysics of Aristotle*, bk. 5, l. 3, c. 782.

secular), neither of which appears to have a proper idea of the way to consider the problem, much less solve it.

Moreover, if we expect to make any headway in the evolution debate in the future, I think we need to take heed of Pope Benedict XVI's call for revamping the Western notions of reason and science so we can properly divide and relate the different sciences and their methods.⁶⁸ Devoid of such a change, one that (1) contains an updated notion of substance that allows for the existence of real differences in substantial kinds, and (2) can adequately explain the difference among sciences like biology, physics, and metaphysics, I think the current "scientific" debate about the reality or non-reality of the origin of species is largely fruitless.



**A Modest Proposal for Resolving the Apparently Never-Ending Evolution Debate:
Reconsidering the Question**

SUMMARY

The author makes an attempt to show why (1) Darwin's teaching in *The Origin of Species by Means of Natural Selection* and *The Descent of Man and Selection in Relation to Sex* cannot be "scientific" in a modern, classical, or any, sense and that, consequently, in them, (2) Darwin did not scientifically prove the reality of evolution of species. He claims that, while the question of the origin of genera and species is principally and primarily a metaphysical problem, Darwin's ignorance of the nature of philosophy and metaphysics and the complexity of the problem of the nature of genera and species caused him mistakenly to frame this metaphysical problem as one of physics, more precisely as one of biology, which Darwin reduced to a natural history of living, physical beings.

⁶⁸ Pope Benedict XVI, "Faith, Reason, and the University: Memories and Reflections," Lecture to the Representatives of Science (Regensburg, 12 September 2006), 1. Available online—see the section *References* for details.

KEYWORDS

Charles Darwin, Aristotle, Thomas Aquinas, genus, species, substance, evolution, universals, metaphysics, logic, science, nominalism, evolutionism.

REFERENCES

- Aquinas, St. Thomas. *Commentary on the Metaphysics of Aristotle*, vol. 2. Translated by John P. Rowan. Chicago: Henry Regnery Co., 1961.
- Aquinas, St. Thomas. *On Being and Essence*. Translated by Armand A. Maurer. Toronto: Pontifical Institute of Mediaeval Studies, 2nd ed., 1968.
- Aquinas, St. Thomas. *Summa theologiae*. Second and Revised Edition, 1920. Literally translated by Fathers of the English Dominican Province. Available online at: <http://www.newadvent.org/summa/1073.htm#article1>. Accessed Oct. 19, 2018.
- Aristotle. *Metaphysics*. In *The Basic Works of Aristotle*, edited by Richard McKeon. New York: Random House, 1968.
- Aristotle. *Politics*. In *Aristotle in 23 Volumes*, vol. 21. Translated by H. Rackham. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1944. Available online at: <http://www.perseus.tufts.edu/hopper/>. Accessed Nov. 21, 2018.
- Augustine, St. *Confessions*. Translated by E. B. Pusey (Edward Bouverie). Project Gutenberg, 2002. Available online at: <http://www.gutenberg.org/files/3296/3296-h/3296-h.htm>. Accessed Nov. 15, 2018.
- Azar, Larry. *Evolution and Other Fairy Tales*. Bloomington, Ind.: Authorhouse, 2005.
- Benedict XVI. "Faith, Reason, and the University: Memories and Reflections." Lecture of the Holy Father to the Representatives of Science. Regensburg, 12 September 2006. Available online at: http://www.vatican.va/holy_father/benedict_xvi/speeches/2006/september/documents/hf_ben-xvi_spe_20060912_university-regensburg_en.html. Accessed Oct. 10, 2006.
- Darwin, Charles. *The Origin of Species by Means of Natural Selection: Or the Preservation of Favored Races in the Struggle for Existence, and, The Descent of Man and Selection in Relation to Sex*. New York: The Modern Library, 1955.
- Deely, John N. *Four Ages of Understanding*. Toronto, London, Buffalo: University of Toronto Press, 2001.
- Deely, John N. *Intentionality and Semiotics: A Story of Mutual Fecundation as Told by John Deely*. Scranton and London: University of Scranton Press, 2007.
- Galilei, Galileo. *The Assayer*. In *The Scientific Background of Modern Philosophy*. Edited by Michael R. Matthews. Indianapolis, Ind., and Cambridge, Mass.: Hackett Publishing Company, Inc., 1989.
- Gilson, Étienne. *History of Christian Philosophy in the Middle Ages*. New York: Randhom House, 1954.
- Gilson, Étienne. "In Quest of Species." In *Three Quests for Philosophy*, edited by Armand A. Maurer. The Etienne Gilson Series, 31. Toronto: Pontifical Institute of Mediaeval Studies, 2008.

- Gilson, Étienne. *Painting and Reality*. The A. W. Mellon Lectures in the Fine Arts 1955. Bollingen Series 35. New York: Pantheon Books, 1957.
- Gilson, Étienne. *The Unity of Philosophical Experience*. New York: Charles Scribner's Sons, 1965.
- Gracia, Jorge J. E. "Philosophy in the Middle Ages: An Introduction." In *A Companion to Philosophy in the Middle Ages*, edited by Jorge J. E. Gracia and Timothy B. Noone. Malden, Mass., Oxford, Melbourne, Berlin: Blackwell Companions to Philosophy, Blackwell Ltd., 2003.
- Maurer, Armand A. "St. Thomas and the Nominalists." In *St. Thomas Aquinas, 1274–1974. Commemorative Studies*, vol. 2, edited by Armand A. Maurer. Toronto: Pontifical Institute of Mediaeval Studies, 1974.
- Maurer, Armand A. *St. Thomas Aquinas: The Division and Methods of the Sciences, Questions V and VI of His Commentary on the De Trinitate of Boethius*. Toronto: Pontifical Institute of Mediaeval Studies, 3rd rev. ed., 1963.
- Owens, Joseph. *A History of Ancient Western Philosophy*. Englewood Cliffs, N.J.: Prentice Hall, Inc., 1959.
- Pecora, Vincent P. *Secularization and Cultural Criticism: Religion, Nation & Modernity*. Chicago and London: The University of Chicago Press, 2006.
- Plato. *Meno*. Translated by W. K. C. Guthrie. In *Plato Collected Dialogues*, edited by Edith Hamilton and Huntington Cairns. Bollingen Series 71. New York: Pantheon Books, 1966.
- Plato. *Republic*. In *Plato in Twelve Volumes*, vol. 5 & 6. Translated by Paul Shorey. Cambridge, Mass.: Harvard University Press; London: William Heinemann Ltd., 1969. Available online at: <http://www.perseus.tufts.edu/hopper/>. Accessed Nov. 16, 2018.
- Redpath, Peter A. *Masquerade of the Dream Walkers: Prophetic Theology from the Cartesians to Hegel*. Amsterdam, Atlanta, Ga.: Editions Rodopi, B. V., 1998.
- Redpath, Peter A. *Wisdom's Odyssey: From Philosophy to Transcendental Sophistry*. Amsterdam, Atlanta, Ga.: Editions Rodopi, B. V., 1997.
- Rousseau, Jean-Jacques. *Émile or On Education*. New York: Basic Books, 1979.