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A CATHOLIC THEOLOGICAL PERSPECTIVE
ON EVOLUTION AND INTELLIGENT DESIGN

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I. INTRODUCTION: CARDINAL SCHÖNBERN’S “FINDING
DESIGN IN NATURE”

On July 7, 2005, Christoph Cardinal Schönborn set off an intense
debate when the New York Times published “Finding Design in Nature.” As the editorial secretary for the Catechism for the Catholic Church and a collaborator of Pope John Paul II and Pope Benedict XVI, Schönborn carried great weight. The cardinal wished to correct what he believed to be a misperception: that the Catholic Church in the person of Pope John Paul II had accepted or at least acquiesced to a neo-Darwinian formulation of evolution. Rather, he maintained that one must distinguish between the following: legitimate scientific explorations into the origin of design and purpose in life forms, evolutionary theory, and an illegitimate ideological

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1. Christoph Schönborn, Finding Design in Nature, N.Y. TIMES, July 7, 2005, at A23 available at http://www.nytimes.com/2005/07/07/opinion/07schonborn.html. Strong reactions came swiftly. Letters to the Editor accused the Cardinal of advocating creationism or intelligent design and betraying the progressive vision of Pope John Paul II. Catholic scientists such as Stephen Barr, George Coyne, S.J., and Kenneth Miller countered, arguing the compatibility of neo-Darwinian evolution and Catholic orthodoxy. In September 2006, Pope Benedict dedicated the annual meeting of his Schülerkreis, the study circle of his former doctoral students, which includes Cardinal Schönborn, to discuss evolution and creation. The following year saw the proceedings published in several languages. That same autumn, in Vienna, the Cardinal began a monthly catechesis on creation, out of which came his book, CHRISTOPH SCHÖNBERN, CHANCE OR PURPOSE? CREATION, EVOLUTION AND A RATIONAL FAITH (Hubert Philip Weber ed., Henry Taylor trans., 2007). On March 4, 2009, during the 150th anniversary of the publication of Charles Darwin’s The Origin of Species, the Cardinal addressed the Austrian Academy of Science to whom he proposed that creation and evolution ought to be understood as two paradigms that can constructively interact in the search for truth. For a more thorough treatment of the first year of this controversy, see Martin Hilbert, Darwin’s Divisions, TOUCHSTONE, June 2006, at 28, available at http://www.touchstonemag.com/archives/article.php?id=19-05-028-f.
formulation thereof, namely, neo-Darwinism. The focal point of concern appears to be a philosophical rather than intrinsically scientific prejudice that distorts the data by predetermining what may be considered. In particular, materialistic philosophies misread the data because they reduce evolutionary explanation to chance and necessity. Closing, the cardinal argued that the Church must enter the fray to protect human dignity:

Now at the beginning of the 21st Century, faced with scientific claims like neo-Darwinism and the multiverse hypothesis in cosmology invented to avoid the overwhelming evidence for purpose and design found in modern science, the Catholic Church will again defend human reason by proclaiming that the immanent design evident in nature is real.\(^2\)

The case of Cardinal Schönborn illustrates well the converging factors that make this an urgent and important debate. Schönborn, the Archbishop of Vienna, is a prominent contemporary Catholic theologian and bishop. Fluent in several Western languages, Cardinal Schönborn writes books, gives lectures, and leads retreats, even as he directs a demanding Central European archdiocese. His name often appears on lists of the *papabili* in journalistic speculations. Coming from a country of only eight million people, the cardinal decided not to publish in a German language newspaper. Instead, he made his intervention in a well known newspaper from a metropolitan area of over twenty-one million people in the United States of America. By choosing the *New York Times*, he acknowledged the global reach of English as the international language of scholarship and the dominance of American mass media. The debate featured prominently in *First Things*.\(^3\) Presumably, the main reason for the appearance of this article in English in a New York newspaper is the fact that the debate of evolution and intelligent design is principally, though not exclusively, an American phenomenon. Similar controversies have not so far occurred on a popular level in Europe with perhaps the exception of Germany. In order to appreciate the deep roots involved with the debate about evolution and intelligent design, it is worthwhile to dwell on Cardinal Schönborn’s title through a deeper consideration of the resonances of the terms, “nature” and “design.”

1.1 Nature

A cursory review of nature and its related terms reveals a morass of possible meanings and referents. For example, how should one understand the term “natural law”? Is this a physical law according to Newtonian

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3. *First Things* is a New York based interreligious journal founded by the late Father Richard John Neuhaus.
mechanics? It depends on context. The term "nature" derives from the Latin
natura, which translates into the Greek word, physis. English speakers use
the words natural and physical, but to what end? Alternatively, does nature
refer to something else, such as "human nature," i.e., that which pertains to
being human? In this case, "nature law" has to do with the goal or end of
being human, rather than anything to do with motion or rest. The term
"nature" has a number of important inter-connected meanings that converge
with the term, telos. That Greek term, which means goal, purpose, or aim,
Latin renders as finis, which in turn gives English such words as finality or
is interchangeable in this sense with the word "end."

1.1. According to Greek Philosophers

Physis, a noun derived from the verb phyein (to grow), appears for the
first time in Homer's Odyssey, where it is translated as "nature." Greek
philosophers developed a rich variety of related meanings for nature. For
example, Aristotle treated the physical, that which grows or changes, and
the metaphysical, that which does neither grows or changes, but rather
refers to the principles and causes of things that exist. The metaphysical,
moreover, came to mean that which is literally beyond or above growth and
change. Latin theologians much later adopted this distinction as the division
between the natural and the supernatural. Thus, nature is mutable,
immature, imperfect, and incomplete, whereas the metaphysical or
supernatural is perfect, immutable, whole, and complete. This corresponds
to the Ptolemaic cosmology that opposed the mutable earth with the
immutable heavens. In this vision, contrary to the commonplace
interpretation of geocentrism, the earth is less at the center of the universe,
than at its bottom, or even its sewer.

Ultimately, nature refers to the domain of growth and change, where

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4. "So saying, Argeiphontes gave me the herb, drawing it from the ground, and showed me
its nature [physis]." HOMER, THE ODYSSEY bk. 10, line 302 (A. T. Murry trans., Harvard

5. In fact, Aristotle's Metaphysics specifically refers to a collection of writings that follow
his Physics, hence meta-physics, "after" the physics. Though Aristotle did not use the term, it has
become standard to employ it to refer to these set of writings. S. Marc Cohen, Aristotle's

As for the correlative of human nature, namely, the 'supernatural,' the word, taken in
the technical sense which alone belongs t it here, appears rather late in the language of
Latin theology, and even later in ecclesiastical documents. I believe it occurred for the
first time in 1567, in St. Pius V's bull condemning Baius, (propositions 21 and 23).
What the term designates is not so much God or the order of divine things considered in
itself, in its pure transcendence, as, in a general and as yet indeterminate manner, the
divine order considered in its relationship of opposition to, and of union with, the
human order.

UNIVERSE IN WESTERN THOUGHT 190 (2003).
birth and death occur. Therefore, nature itself came to be seen as alive, as an organism. Further, Greek philosophers noted that this growth and change was ordered, suggesting an organizing principle, a mind or an intelligence.\(^8\) Rationality or \textit{logos} regulated nature through laws making a cosmos. Therefore, nature was a cosmos rather than a chaos because of its rational constitution. The cosmos was not only rational, but also purposive because it had a \textit{telos}. Thus, Plato\(^9\) and Aristotle\(^10\) could conceive of nature as a living intelligent organism.\(^11\)

1.1.2 Encounters Biblical Revelation

Nature underwent two important developments in its contact with biblical revelation: the doctrine of creation \textit{ex nihilo} and the use of nature in theology.

\subsection{1.1.2.1. Creation \textit{ex nihilo}}

First, through their speculations, Christian theologians expanded the Greek philosophical inheritance in a new direction. They developed of a distinctive biblical vision of creation that differed from a Greek concept of nature. Biblical revelation refuted the Greek concept of nature as an eternal, living, and intelligent organism. Obedient to the biblical revelation of creation, Christian theologians formulated the doctrine of creation \textit{ex nihilo}, namely, that God created everything out of nothing.\(^12\) Thus, the cosmos is

\begin{itemize}
\item \textbf{8.} R.G. COLLINGWOOD, \textit{THE IDEA OF NATURE} 3 (1960).
\item \textbf{9.} PLATO, \textit{TIMEAUS} 29-30c (Book Jungle 2008): "[t]herefore, we may consequently state that: this world is indeed a living being endowed with a soul and intelligence . . . a single visible living entity containing all other living entities, which by their nature are all related."
\item \textbf{10.} ARISTOTLE, \textit{METAPHYSICS} bk. 12 (Green Lion Press 2002); \textit{see also ARISTOTLE, DE ANIMA} (Penguin Classics 1987).
\item \textbf{11.} COLLINGWOOD, \textit{supra} note 8, at 8:
The Greek view of nature as an intelligent organism was based on an analogy: an analogy between the world of nature and the individual human being, who beings by finding certain characteristics in himself as an individual, and goes on to think of nature as possessed of similar characteristics. By the work of his own self-consciousness he comes to think of himself as a body whose parts are in constant rhythmic motion, these motions being delicately adjusted to each other so as to preserve the vitality of the whole; and at the same time he finds himself to be a mind directing the activity of this body in accordance with its own desires. The world of nature as a whole is then explained as a macrocosm analogous to this microcosm.
\item \textbf{12.} \textit{See generally Genesis; Psalms; Wisdom; 2 Maccabees 7:28; and the Christological elaborations in the New Testament (Corinthians). The Catechism of the Catholic Church treats creation \textit{ex nihilo} under the title of "God the Creator and creation." CATECHISM OF THE CATHOLIC CHURCH ¶¶279-324 (Libreria Editrice Vaticana 1994) [hereinafter CCC]. Paragraph 296 states, "We believe that God needs no pre-existent thing or any help in order to create, nor is creation any sort of necessary emanation from the divine substance," citing the constitution \textit{Dei Filius}. See \textit{SECOND VATICAN COUNCIL, Dogmatic Constitution on the Catholic Faith, in DECREES OF THE ECUMENICAL COUNCILS} 804 (Norman Tanner ed., Georgetown University Press 1990). \textit{See also, CCC, supra} note 12, at ¶ 296, "God creates freely 'out of nothing.'" citing the first canon of the Fourth Lateran Council (1215); \textit{see generally FOURTH LATERAN COUNCIL,}
not an eternal organism, but a historical creation whose rationality and orderliness comes from its creator.

The doctrine of creation *ex nihilo* firmly established the contingency of the universe. Since eternity is a divine attribute, only God, not nature, not creation, necessarily exists. In a certain sense, Christians secularized nature by denying its eternity and necessity. Creation might exist – it is contingent – but it need not. Only God must exist since he is God. This demotion of nature to the status of a creation no more devalues the world than calling human beings “creatures” devalues human dignity. On the contrary, the frequent affirmations of the goodness of creation, marriage, family life and human society, the incarnation of the Son of God, the institution of the sacraments (in particular the Eucharist), and finally the promise of resurrection and new creation strongly reject the anti-body spirituality of Platonism and Gnosticism. Even Christian asceticism, celibacy, and virginity rely on a fundamentally different basis inasmuch as the very goodness of embodiment and ordinary human existence permits one to sacrifice that goodness for love of God and neighbor as Jesus himself did.

1.1.2.2 Nature in Trinitarian Theology and Christology

A second field of meaning for the term “nature” refers to the essence or substance of a thing, its identity, what makes it this and not that. For example, Jewish and Christian theologians pondering God’s statement to Moses that His Name is “I Am Who Am” have concluded that, among others things, it is God’s nature to \textit{exist}.\textsuperscript{3} Hence, necessary existence is a divine attribute because only God must exist. All other beings come into existence and may go out of existence. Only God is eternal, without beginning or end.

The Church Fathers made frequent use of the term “nature” in

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DECREES OF THE ECUMENICAL COUNCILS 227-272 (Norman Tanner ed., Georgetown University Press 1990). These statements affirm that God and creation are radically distinct, as the U.S. Bishops’ gloss asserts: “CREATION: The act by which the eternal God gave a beginning to all that exists outside of himself. Creation also refers to the created universe or totality of what exists, as often expressed by the formula ‘the heavens and the earth.’” \textit{CCC, supra} note 12, at 873. The first part of the definition refers to the act of creation \textit{ex nihilo} when it says, “God gave a beginning to all that exists outside of himself.” \textit{See also, CCC, supra} note 12, at §§ 296. The bishop of Antioch, St. Theophilus (died ca. 183), whom the Catechism approvingly cites, gives the oldest extant orthodox Christian witness to the doctrine of creation \textit{ex nihilo}: “If God had drawn the world from pre-existent matter, what would be so extraordinary in that? A human artisan makes from a given material whatever he wants, while God shows his power by starting from nothing to make all he wants.” \textit{See also, ROBERT L. WILKEN, THE CHRISTIANS AS THE ROMANS SAW THEM} 89 (Yale University Press 2003) (1984): “Theophilus wished to preserve God’s transcendence, his sole rule or sovereignty \textit{(monarchia)}. If matter was introduced as a principle along side God, it would imply that matter had existed prior to the creation. Only God is eternal.”

Christology and Trinitarian theology. The Council of Nicaea (325 A.D.) used a related philosophical term to protect the divinity of Christ, namely *homo-ousios*, "same-substance," which the current liturgical translation of the Creed renders as "one in Being." This appears elsewhere as "consubstantial" or "one nature." This *ousia* or *physis*, which Christ shares with his Father, is their common property, their divinity. Thus, nature is the principle of their unity when used in Trinitarian theology. However, in Christology, the principle of unity is not nature or substance, but the person of Christ. Rather his two natures (or substances) assert the truth of incarnation, namely, that the Word became flesh. Translated into theological language, the eternal Son of the Father, who with the Father is one God, took on human nature. Unsurprisingly, therefore, a careful study of the controversies surrounding the first ecumenical councils (Nicaea, Constantinople, Ephesus, Chalcedon) reveals the confusion caused by these terms, nature and substance, shifting between different philosophical traditions and theological schools, especially between Alexandria and Antioch. Later, with the rediscovery of Aristotle's writings in the Middle Ages, Thomas Aquinas created an enduring philosophical-theological synthesis that remains a perennial model for all Catholic theologians.

1.1.3 Nature as Machine

A third critical development in the history of the term "nature" is the philosophical and scientific revolution associated with Descartes, Galileo and Newton. These replaced the biblically inspired concept of creation with a new understanding that viewed nature as a machine. Scientists unlocked the workings of nature through new instruments and new methods. Using mathematics and new tools, scientists measured and mapped nature. What were once unknown and uncontrollable became manageable units and predictable routines that the human race could harness for its own purposes. God's creation becomes humanity's raw material. In addition, the discovery of the laws of nature that adequately explained causation eliminated God's providential governance of creation, the *creatio continua*. This reduced God's role at most to that of a divine legislator or an engineer who set the universe in motion and laid down its laws. Thus conceived, nature's operations fall strictly within the scope of a closed system.

15. See John 1:14 ("And the Word became flesh and dwelt among us.").
16. A classic treatment that illustrates this point is ALOIS GRILLMEIER, CHRIST IN THE CHRISTIAN TRADITION 1 (1975).
18. An open system exchanges information, energy, and matter with its environment, while a closed system does not. Thus, to conceive of nature or the universe as a closed system means that anything outside of the system, for instance, God, does not interact with nature or the universe.
1.1.4 Nature as Evolution

The most recent phase of conceptualization of nature introduces the concept of change in history – evolution. While the mathematical elegance of physics lent itself to a visualization of nature as a machine, the disarray of life suggests otherwise. The emergence of evolutionary thinking in the nineteenth century responded to the accumulation of evidence that indicated that life on earth, indeed the earth itself, changed over time. For example, the Danish scientist and later Catholic bishop, Niels Stensen, sought an explanation for the presence of marine fossils he unearthed in the Tuscan countryside. Naturalists, like Stensen, needed to account for the extinction of species to which the fossil record attested as well as the unexpected presence of animals where they ought not to be. Thus, the data countered the prevailing assumptions about the fixity or immutability of species.

Moreover, evolutionary thinking viewed nature as an open-ended system that does not appear to have an end or goal. Rather, explanation for change is sought through mechanisms or structures that constrain possibilities or make certain outcomes more likely. For example, Charles Darwin proposed the mechanism of natural selection to explain the data of


20. The definition of immutability of species: all life forms that exist have always existed from the beginning of the world and are distinct and separate from every other life form. Regarding the immutability of species, Galleni wrote:

Two Different Visions of How Living Beings Adapted. We cannot talk about the evolution of living beings unless we consider it from a wider point of view, i.e., by taking biology into consideration and its birth as a science which studies living organisms. The first biological inquiry took place precisely when the first human beings started observing nature and noticing its regular cycles and changes. It is from this kind of observations that the concept of "species" first stemmed, since it was soon realized that all living creatures could be placed into different groups which could be named and distinguished by their morphological features. The features which identify each species persist unaltered through time and are handed down to their descendants through reproduction, i.e. each from their own semen. This was the very biological concept introduced both in Genesis and in the other books of the Old Testament to illustrate the world of the living, where the authors clearly referred to and made large use of the description of nature developed by science in their times. Since the origin of living beings appears to be the result of a single act of creation for every single species, the narrators seem to have based their story on an apparently fixistic framework. In fact, natural observations corresponding to science of that time proved that living species tended to preserve their features possibly unaltered, becoming therefore the premise on which the narrators based and diffused the theological teaching concerning the origin of the universe and of all living species as being created by God. Paradoxically, such a fixistic framework divulged by the Bible overshadowed the meaning of history, that was indeed the great novelty of biblical theology. In fact, unlike other creation tales reported by extra-biblical religious traditions, the biblical account told in Israeli tradition contained a precise historical perspective, being a history of alliance, salvation, and redemption. It may well be an ante litteram example of how scientific paradigms sometimes influence the message of freedom and richness expressed in the theological message.

Galleni, supra note 19.
species diversity and the unity of life.\textsuperscript{21} As a mechanism, natural selection features a law-like operation whereby all life forms are subject to selection according to the criteria of successful adaptation to their environment and reproductive fitness. This mechanism is natural inasmuch as it belongs to nature. It contrasts with what is beyond nature, namely, the supernatural or God. Further, it is an open-ended process since no plan or goal orders the evolution of species. In this sense, evolution is random or undetermined. At the same time, it is orderly and regular within the logic of natural selection. It is not purely guided by chance because there are criteria that constrain and limit possible outcomes. This suggests directionality, even if not teleology.

Evolutionary thinking appeared at this time not only in the natural sciences, but also in history, philosophy, and the emerging social sciences. In each of these cases, there was a desire to account for change through an appeal to a natural – as opposed to supernatural – explanation. Process replaced essence and history displaced eternity as focal points for inquiry. Therefore, nature itself ceased to be a Platonic form or an immutable identity. Rather, it became a movement, a flow, a plurality. Thus, scientists moved away from attempting to determine what things were in and of themselves, but rather how they worked, namely, their function, how they arose, and their origin. Moreover, evolutionary thinking was not restricted to the life or earth sciences. Physics also underwent a revolution because the evidence suggested that the universe is not only the well ordered system of Newton, but at least on the sub-atomic level it exhibits chaotic behaviors that required different explanations, such as those of Einstein.

1.2 DESIGN

The above discussion of nature has already alluded to the debate over goal-oriented activity in Western thought, i.e., whether someone, such as God or an “intelligent mind,”\textsuperscript{22} has designed the universe, or whether it arose out of only natural rather than supernatural causes. Design is part of the larger discourse of purpose in nature, namely, teleology. As a discourse on purpose, aims, and goals, teleology addresses matters of fulfillment, perfection, and completion.\textsuperscript{23}

\textsuperscript{22} ANTONY FLEW, THERE IS A GOD 158 (2007).
\textsuperscript{23} For example, the climax of the crucifixion in John’s Gospel reports Jesus saying, depending on the translation, “It is finished/fulfilled/consummated,” John 19:30, the Greek word is the verbal form of \textit{telos}. See 8 Theological Dictionary of the New Testament 49ff and 59ff, (Gerhard Kittel & Gerhard Friedrich eds., Geoffrey W. Bromiley trans., W.B. Eerdmans Publishing 1972).
1.2.1 Philosophical Background

In ancient Greece a strong tradition of teleology appeared. Philosophers with the notable exception of the Atomist, Democritus, recognized that the cosmos existed for a reason and manifested purpose. Heraclitus based this view on the logos (the cosmic law), Anaxagoras on the nous (the cosmic mind), Plato on his theory of the ideas or forms, and Aristotle on his analysis of causation and his cosmological proofs. Further, in the Timeaus, Plato introduced a creative agent, the Demiurge, a divine craftsman, into the creation of the cosmos. The Roman philosopher and doctor, Galen, elaborated on Plato’s theology of the Demiurge in his work, On the Usefulness of the Parts of the Body, which expounded a teleological interpretation of the body. Indeed, Galen’s treatment alluded to teleology’s ethical component inasmuch as it contended that everything has a purpose, including human beings, even body parts. Discerning this purpose and living in harmony with it constitutes the good life. Thus, the confluence between teleology and nature leads to the natural law tradition that attempts to discern rationally what is proper according to a given nature, such as human nature. That is, to order choices according to appropriate goals.

1.2.1.1 Christian Adaptation

The fathers of the Church and the medieval scholastics strongly affirmed the teleology present in creation as a mode of reaching God. Paul began his letter to the Romans claiming a possible natural knowledge of

25. *Id.*. Heraclitus’ thought comes down to today only in fragments. Thus, understanding Heraclitus depends on interpreters. For instance, consulting Martin Heidegger’s writings, the anthropologist Roy Rappaport concludes that Heraclitus’ logos “is an ordering principle subordinating and binding all that exists into a coherent and enduring whole.” ROY RAPPAPORT, RELIGION AND RITUAL IN THE MAKING OF HUMANITY 348 (1999).
26. Plato developed this theory throughout his professional career. COLLINGWOOD, supra note 8, at 55–71.
27. ARISTOTLE, PHYSICS bk. 2, § 3 (Oxford University Press 1999), ARISTOTLE, METAPHYSICS, supra note 10, at bk. 5, § 2.
28. ARISTOTLE, METAPHYSICS, supra note 10, at bk. 12.
29. PLATO, TIMEAUS, supra note 9, at 29a. See also, WILKEN, supra note 12, at 85.
30. Galleni, supra note 19; see generally WILKEN, supra note 12, at 83–88.
God through reflection on the creation. This means that human reason can discover God, something that the First Vatican Council (1870) reaffirmed in the face of doubts from Rationalists and Fideists alike. However, sin disrupts man’s natural ability to reach God through creation. Thus, the Catholic Church also teaches that the actual possibility to know God by reason alone is virtually impossible. Consequently, God must seek out man to reveal himself and to save the human race.

Starting with Genesis and concluding with Revelation, the Bible narrates the story of creation, sin, the long road to salvation in Christ, and finally the hope of resurrection. Latin theologians conceptualized this story as a two-stage, goal oriented movement: a going-out from God (exitus) and a returning to Him (redditus). In this, Christ occupies the center of creation and redemption. Thus, Christians hold that eternity and history, transcendence and imminence, and the divine and the human converge in the person of Jesus of Nazareth. It was he who at the Last Supper claimed to be “the way, the truth and the life.”

1.2.1.2 The Fall and Rise of Teleology

Teleological thinking remained influential throughout the Renaissance and Enlightenment. It even played an important role in Newton’s physics. However, subsequent scientific revolutions in physics and Darwinian biology in the nineteenth century, in addition to Freudian psychology in the twentieth century, cast doubt on a purpose-driven understanding of existence. They purported to show that things move, life evolves, and human beings make decisions because of structures and mechanisms rather than deliberate choices and rational plans. Teleological explanations appeared destined for extinction.

However, scientific discoveries in the latter half of the twentieth century again made teleology appear plausible. New evidence from astronomy, cosmology, geology, and molecular biology suggested that the existence of life is highly improbable, if not impossible, and yet it exists. The 1964 discovery of cosmic microwave background supported the big...
bang theory and thereby confirmed that the universe is historical albeit 13.7 billions years old\textsuperscript{37} rather than eternal.\textsuperscript{38} Thus, arguments about the inevitable emergence of life based on probabilities that rely on an infinite amount of time suddenly looked unlikely, i.e., as life no longer had an infinite amount of time to emerge because the clock was running. Teleological arguments based on cosmology, astrobiology, and astronomy lent credence to the "anthropic principle," which contended that the universe is fine-tuned to evolve human life. Further, increasing knowledge about the microcosm from molecular biology and genetics revealed astounding complexity and elegance. This evidence convinced biologist Michael Behe to argue that design is not only plausible, but also necessary to explain the emergence and complexity of life forms, such as human beings.\textsuperscript{39}

1.2.1.3 Intelligent Design

Behe joined mathematician William Dembski, professor of law Philip Johnson, and others to launch intelligent design as a serious scientific proposal in the mid-1990s. Defined as "the science that studies signs of intelligence," intelligent design plays a critical and constructive role in engaging evolutionary theory.\textsuperscript{40} First, intelligent design criticizes the neo-Darwinian account of evolution by contending that natural selection and random genetic mutation do not adequately explain the emergence of complexity. Second, it proposes an "intelligent designer" as an additional necessary explanation for the origin and complexity of life along with neo-Darwinian evolution. Behe also articulates the competencies of these domains of explanation, distinguishing between those aspects of life that neo-Darwinian evolution can explain and those it cannot.\textsuperscript{41} Though

\textsuperscript{37} PAUL DAVIES, THE GOLDILOCKS ENIGMAS 23 (2007).
\textsuperscript{38} The astronomers Edwin Hubble and Vesto Slipher studied light from many galaxies and found that the more distant ones were redder. This coincided with the knowledge about light wave behavior when viewed as either approaching or departing from a point. Thus, the further light moves away, it shifts towards the red end of the spectrum; when it approaches, it shifts toward the blue. Hubble and Slipher found that this red shift occurred in all directions uniformly. They concluded based on these observations that the universe must be expanding since the red shift suggested that everything was moving away from each other. This expansion suggested a common starting point from which the expansion commenced in an explosion. Derisively called the big bang by Fred Hoyle, another astronomer who supported an alternative view of the universe, the Steady State model, Hubble's proposal required further evidence. In 1967, Arno Penzias and Robert Wilson furnished that evidence when they stumbled across radiation left over from the big bang in the microwave region of the electromagnetic spectrum. The discovery of the cosmic microwave background confirmed the historical nature of the universe and disproved the steady state model that held among other things that the universe was eternal. For a more detailed explanation, see also DAVIES, supra note 37, at 20–26.
\textsuperscript{39} See generally MICHAEL BEHE, DARWIN'S BLACK BOX (1996).
\textsuperscript{40} WILLIAM A. DEMBSKI, THE DESIGN REVOLUTION 33 (2004).
\textsuperscript{41} See MICHAEL BEHE, THE EDGE OF EVOLUTION (2007).
Dembski acknowledges that intelligent design has theological implications, he maintains nevertheless that it is a serious scientific – not theological – proposal and research agenda.\(^4\)

Behe and Dembski note, moreover, that intelligent design may reveal a designer that does not suit contemporary theologies. Behe presciently encapsulates this point: "[m]aybe the designer isn’t all that beneficial or omnipotent. Science cannot answer questions like that. But denying design simply because it causes terrible pain is a failure of nerve, a failure to look the universe fully in the face."\(^4\) Behe has identified the moral and theological dimension of the design-evolution controversy inasmuch as evolution offers one possible solution for theodicy (the justification of God).\(^4\) While science cannot answer questions about God, it constrains theologies that attempt to resolve the problem of evil and innocent suffering while maintaining belief in a good, all-powerful, and wise creator. Behe’s observations suggest that evolution, indeed any science, ultimately wrestles with the question of God and implicitly contains a theology, even if inchoate or latent.

By way of contrast, Cambridge paleontologist Simon Conway Morris also finds the fine-tuning in evolution impressive.\(^4\) Yet, rather than advocating intelligent design he prefers a different approach that relies on frequent “convergences” that have occurred in the history of life.\(^4\) Living organisms are replete with examples of independent evolutionary paths resulting in similar outcomes. For example, crows, dolphins, and great apes exhibit similar intelligence though they are the products of separate evolutionary paths. Thus, while he rejects intelligent design as a scientific proposal,\(^4\) he nevertheless leaves open the possibility that the ubiquity of convergences in evolution points to a creator\(^4\) and that the scientific project

\(^{42}\) DEMBSKI, supra note 40, at 44.

\(^{43}\) BEHE, EDGE, supra note 41, at 239.

\(^{44}\) Theodicy come from the title of philosopher Gottfried Leibnitz’s Essais de Théodicee sur la bonté de Dieu, la liberté de l’homme et l’origine du mal (Attempts to justify God on the goodness of God, the freedom of man and the origin of evil). In this work he sought to defend the goodness of God in the face of the problem of evil. The term theodicy refers to the turning the Reformation’s concern for justification on its head. Rather than the sinner needing justification before God, now the human race demands that God be justified on account of the existence of evil. GOTTFRIED LEIBNIZ, ESSAIS DE THEODICEE SUR LA BONTE DE DIEU, LA LIBERTE DE L’HOMME ET L’ORIGINE DU MAL (Aubier 1962) (1710).

\(^{45}\) SIMON CONWAY MORRIS, LIFE’S SOLUTIONS 21 (2003): “[s]ome cosmologists like to speculate that the Universe is designed to be the home of life, to which some biologists might add ‘Yes, and not only that but we have a pretty shrewd idea of what was on the cards.’”


\(^{47}\) Id. at 5–6.

\(^{48}\) MORRIS, LIFE’S SOLUTIONS supra note 45, at 330.
refers to a question beyond its competence.49

Finally, the recent appearance of popular atheist writings, including geneticist Richard Dawkins, underscores the broader nature of the debate between evolution and intelligent design. While the competent authorities must determine the scientific merits of the neo-Darwinian synthesis of Darwin's theory of natural selection, Mendel's genetic theory of inheritance, mathematic population theory, and molecular biology, the implications of this proposal belong to the entire human race. The crux of the matter, therefore, has less to do with the specific conclusions of research, but rather with the presumed implications for human existence. Science, like religion, has not always promoted human dignity, nor coherently practiced what it preached in terms of its fidelity to truth, objectivity, and critical inquiry.

1.2.2 Anglo-American Context

Background to the current American debate on evolution and intelligent design belongs not only to Western intellectual history, but also to the specific history of Britain from the Reformation onwards. By the Act of Supremacy of 1534, the Parliament of England recognized its sovereign, King Henry VIII, as the sole head of the Church of England, and severed ties with the Catholic Church. The subsequent history of the Anglican Church testifies to strongly divergent theological camps that struggled for influence and dominance.

1.2.2.1 America's Distinctive Religious Path

In the two following centuries, British colonization transplanted this religious milieu to North America. Congregationalists founded New England, Anglicans New York, Virginia, and the Carolinas, Quakers Pennsylvania, and Catholics Maryland. The establishment of Churches did not always follow the founders' profession. For example, the official church of Maryland was Anglican, not Catholic. However, the War of Independence (1776-1783), the U.S. Constitution (1787-1790), and the Bill of Rights (1791) introduced new features to the religious environment. America became a republic without an established national church and, furthermore, recognized the rights of its citizens to practice religion freely.

49. THE DEEP STRUCTURE OF BIOLOGY 62 (Simon Conway Morris ed., 2008):

To conclude, science necessarily works in a naturalistic framework, but the identification of any general principles immediately begs foundational issues. The evidence of evolutionary convergence provides a counterpart to natural selection inasmuch as it starts to delineate a landscape across which the Darwinian mechanism operates...If so, then this inevitably poses questions of metaphysics. Whether we choose to address them is another matter.
Alexis de Tocqueville noted in *Democracy in America* (1840):

The philosophers of the eighteenth century explained the gradual decay of religious faith in a very simple manner. Religious zeal, said they, must necessarily fail, the more generally liberty is established and knowledge diffused. Unfortunately, facts are by no means in accordance with their theory. There are certain populations in Europe whose unbelief is only equaled by their ignorance and their debasement, whilst in America one of the freest and most enlightened nations in the world fulfils all the outward duties of religious fervor.  

Indeed, Roger Finke and Rodney Stark argued that freedom of religion and non-establishment help to structure a religious economy that fosters competition, innovation, and creativity among churches. This freedom leads to a vibrant religious scene, specifically Christianity, which plays a prominent and personal role in the lives of the majority of Americans, in contrast to most other Western societies. Therefore, if science must oppose religion (the conflict model) rather than science and religion interacting in a critical and complementary relationship (the cooperation model) then “culture wars” logically follow. Indeed, the struggle over the presence of intelligent design in public school curricula alludes to broader socio-economic, political, and regional divides. This struggle suggests that scientific curricula are anything but “value-neutral” or “objective” because they touch on foundational questions about knowledge, truth, and the meaning of existence, which must draw from other disciplines, such as philosophy and theology.

**1.2.2.2 British Design Theology**

A second element of this background is the rise of the British Empire due, in part, to the Scientific Revolution and its successor, the Industrial Revolutions. In the eighteenth century, Anglican theologians wrestled with the implications of Newton’s laws. Hitherto arguments from design appealed to the order of the universe as evidence for a designer. One of the founders of modern chemistry, Robert Boyle, compared God to a divine watchmaker to demonstrate that the order of the physical universe implied a designer. This approach became “natural theology”, an attempt to infer the

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52. Id. at 281–83.
54. ALISTER MCGRATH, DAWKINS’ GOD 52 (2005).
existence and attributes of God from nature. However, Newton’s physics soon rendered this version of the designer argument for God obsolete. Theologians then turned to biology to sustain the argument from design for the existence of God.

William Paley’s *Natural Theology: or, Evidences of the Existence and Attributes of the Deity* (1802) is a monument to the effort to present empirical (hence, natural) — rather than revealed (or supernatural) — arguments for the existence, omnipotence, and benevolence of God through a consideration of living organisms. Paley opened his last work with a parable about a watch in a field, thereby alluding to Boyle’s divine watchmaker. The discovery of such a contrivance, a term that implied both design and construction, could only be explained by the existence of a watchmaker. Paley’s arguments impressed others because of two critical assumptions: (1) most believed that the earth was relatively young, and (2) the fixity or immutability of species. Teleology furnished an additional element to this argument: whether this designer was the biblical God or some other version of the divinity as Deists held, it did not seem fitting that God would leave his handiwork incomplete or imperfect. After all, a half-finished watch is no more useful than a half-finished organ or organism. Paley’s arguments appealed to the young Charles Darwin, who studied briefly for the Anglican ministry at Cambridge before embarking on his career as a naturalist.

**1.2.2.3 The Counter-Evidence to Design**

Paley’s teleological argument depended on a certain reading of nature. It observed life and its components as elegant, perfect, goal-oriented, and well ordered. From this point of view, nature reflected the attributes of its designer — wise, good, and powerful. Nature raised a symphony of praise to its creator because he had made creation good. Yet, another side of nature, equally evident, undercut this argument. Nature could also be cruel, brutal, wasteful, irrational, and ugly. Alfred Lord Tennyson’s *In Memoriam A. H. H.* (1850), captured in canto 56 the quandary faced by theologians like Paley who wished to demonstrate the existence of a good, all-powerful, and wise God from nature:

*Who trusted God was love indeed*
*And love Creation’s final law*
*Tho’ Nature, red in tooth and claw*

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55. *Id.* at 62.
56. *Id.* at 63.
57. *Id.*
58. *Id.* at 21.
With ravine, shriek'd against his creed\(^{60}\)

How can the belief in an all-powerful, wise, and good creator be reconciled with the realities of suffering, death, and evil? A teleological argument for God appeared either simply wrong or too weak to bear the burden of theodicy. A designer argument implicated God in the evil and suffering of the world inasmuch as he is either not powerful enough to stop it, or he is not good enough to care. Paley's designer theology could not offer persuasive answers. Recall that Paley's natural theology is based on reason rather than revelation. Thus, Paley could not appeal to the Paschal Mystery,\(^{61}\) which is the heart of the Christian reply to the problem of theodicy.

As his private correspondences\(^{62}\) indicate, Darwin was deeply preoccupied with the ubiquity of suffering in the human and natural worlds. A recent study showed that Darwin's humanitarian concerns, as well as his strong opposition to slavery and its justification by scientific racism, played a critical role in sustaining his research program.\(^{63}\) These ideas furnished him with the goal to demonstrate scientifically the unity of all life and the unity of the human species. What the book of Genesis taught by revelation, Darwin seemingly wished to prove by biology: the human family is one.

1.3 INITIAL CONCLUSION

The brief treatment of “nature” and “design” demonstrates that any discussion about evolution and intelligent design requires careful analysis of the use of terms and their resonances. Nature and design are philosophical, theological, and scientific terms whose field of meaning depends on context as well as authorial intention. Yet, these terms also play a vital social role because they bridge discussions about how the world works (scientific explanation), how we can know this world critically (philosophical explanation), and what this means for the fundamental questions of existence (theological explanation). Each of these discourses according to their own methods properly contributes to discovering truth.

This initial consideration cautions that the encounter between Catholic doctrine on the one hand, and evolution and intelligent design on the other, can often be fraught with difficulties. Misunderstandings emerge from the complexity of the discourse that brings together natural science, philosophy, and theology. They also emerge from strongly divergent cultural-historical contexts and the nature of mass communication, which inherently simplifies

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60. ALFRED LORD TENNYSON, IN MEMORIAM A.H.H pt. 56 (University Press 1850).

61. The Paschal Mystery is the suffering, death, and resurrection of Jesus Christ. CCC, supra note 12, at ¶1067.


63. ADRIAN DESMOND & JAMES MOORE, DARWIN'S SACRED CAUSE (2009).
and abbreviates complicated and nuanced arguments. Therefore, the goal of this treatment is to present the Catholic doctrine of creation and the Catholic Church’s view of evolution and intelligent design in light of these conclusions.

II. THE CATHOLIC DOCTRINE OF CREATION

This second part is divided into two sections. The first introduces the Catholic theological method in which the terms “doctrine,” “dogma,” and “theology” are distinguished. The second section outlines the Catholic teaching on Creation.

2.1. CATHOLIC THEOLOGICAL METHOD: DOCTRINE, DOGMA AND THEOLOGY

2.1.1 Biblical Synopsis

The Catholic Church holds that the all-holy, transcendent, and mysterious God chose to reveal Himself to the human race at specific moments and to specific people. Privileged among these are the prophets of Israel, broadly conceived, the greatest of whom is Jesus of Nazareth. During his public ministry, Jesus intentionally gathered followers to realize Israel’s vocation as a light to the nations and to restore unity to the human race, which was lost through sin and death. From among his disciples, he appointed leaders, namely, Peter and the other apostles. Their successors, the pope and bishops, continue to shepherd and teach in Christ’s name. The climax of his life occurred in Jerusalem, where he was publically executed, died, and subsequently appeared on numerous occasions to diverse individuals and groups in a new risen state of existence, namely, the resurrection.64 Once he returned to the Father, he fulfilled the promises to send the Holy Spirit to inaugurate the gathering of the nations and to bring the Church to the New Creation, leaving behind sin and death forever.

2.1.2 The Church’s Task

Translating this biblical narrative into theological language requires the introduction of certain key terms. The Catholic Church understands that she bears the charism or grace of indefectibility. This means that she cannot abandon Christ because she is his faithful bride.65 Though her members may individually fall away, she will always faithfully bear the Word of God on earth because that is God’s plan. Because of this indefectibility, the leaders of the Church, namely, the college of bishops with and under the successor

64. 1 Corinthians 15:5–8.
of Peter, receive a charism, the grace of infallibility. By this gift, the Catholic Church holds that her bishops—when in communion with one another and the bishop of Rome, the pope—unfailingly teach the Gospel of Jesus Christ in matters pertaining to faith and morals without error. Thus, infallibility is a safeguard to assure the faithful, as well as those outside of the Church, that the doctrine of the Catholic Church communicates the Gospel of Jesus Christ reliably. This reliability means that the truth of the Gospel is available, even if this truth remains always capable of a deeper and clearer exposition. Moreover, the claims of infallibility have never included a claim of impeccability or sinlessness for the leaders of the Church.

Since the Church bears a truth that is prior to her existence, she has no proprietary rights to delete, add, or alter divine revelation. However, she does have the duty to communicate and safeguard it. In this process of translation, the Church must vigilantly discern between the Word of God and the human words that express it. In doing so, the Church may use various formulations to express the same truth. St. Thomas Aquinas expressed this Catholic practice axiomatically: "Actus autem (fidei) credentis non terminatur ad enuntiabile, sed ad rem (enuntiatam)," or "the believer's act of faith does not terminate in the propositions, but in the realities [which the propositions express]." Catholics believe in the content of divine revelation, not in the formulations per se, which only adequately communicate God's message.

2.1.3 Doctrine

In proclaiming the same Gospel in different times and places, the Church has developed a set of teachings and practices, which the term "doctrine" subsumes. The Church authoritatively teaches, through the successors of the apostles, this body of doctrines which pertains to faith and morals. Together they constitute the Magisterium, or the teaching authority of the Church. As a group—or college—sub et cum Petro (with and under Peter), the bishops ordinarily teach Catholic doctrine through a variety of means, including preaching, catechesis, and preeminently the celebration of the liturgy and sacraments. The Church also recognizes the possibility of a deeper penetration of the mysteries of faith, which John Henry Cardinal Newman called the "development of doctrine." Such developments, if they are correct, must conform to the perennial faith of the Church and cohere

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67. THOMAS AQUINAS, SUMMA THEOLOGICA pt. 2-2, §1(2.2) (Fathers of the English Dominican Province trans., Christian Classics 1948).
68. Doctrine includes practices to avoid an inappropriate separation between faith and morals or theory and practice and to emphasize the unity of truth and love.
with her body of doctrine, even if in practice it appears otherwise. 69

2.1.4 Dogma

The foundation for Catholic doctrine is “dogma.” Dogma is that which (1) has God as its author, (2) is revealed to the apostles by Jesus, (3) the Church has held always and everywhere (thus, in a catholic manner), and (4) the authoritative teachers proposed for acceptance by the faithful. 70 The interaction between dogma and theological reasoning gives rise to Catholic doctrine, which is a differentiated body of beliefs arranged in a hierarchy of truth. 71 Doctrine rests on dogmatic foundations that support the Church’s edifice of teachings and practices. Before the Second Vatican Council, theologians used an elaborate system of notes ranging from “divinely revealed” to mere “theological opinions” to assign to each teaching its level of certainty. 72

Although the Church recognizes all dogma as true, the Church has only defined or declared contested dogma. For example, the Nicene-Constantinopolitan Creed professes the fundamental articles of faith. Each article expresses a truth or dogma integral to the faith. However, the Church has never defined or declared solemnly certain articles of faith, such as the communion of saints. The Church communicates the dogmatic foundations of her faith by the ordinary or daily means of Church life – liturgy, prayers, catechesis, and teaching. However, during moments of crisis, doubts, and disputes, the teachers of the Church have chosen to make interventions in extraordinary fashion, to which the terms “define” and “solemnly declare” refer. Thus, the Magisterium teaches in extraordinary and ordinary modes to propose a truth of the faith. In neither case does the Church have the competence or authority to modify the dogmatic content of the faith, since its author is God.

Therefore, on these rare occasions, when the Magisterium extra-ordinarily re-proposes a truth, the Church engages in an act of framing a perennially held truth. This extraordinary act of framing does not – indeed cannot – create a “new truth.” Its purpose is to clarify ambiguity, dispel


70. These attributes coordinate with the four marks of the Church: one, holy, catholic and apostolic: (1) One in as much as the authoritative teachers hand on the same doctrine. (2) Holy in as much as the source of the revelation is God: (3) Catholic in as much as it is believed always and everywhere. (4) Apostolic in as much as it has its origins in the preaching and teaching of the apostles, the privileged witnesses to the Resurrection.


doubt, and inspire confidence. This is worth reiterating because it has often been mistakenly claimed for whatever reason that the Catholic Church, especially in the person of the pope, can invent new truth whenever it serves. On the contrary, insofar as any teaching act of the Magisterium is infallible, it is on account of its direct reliance on divine revelation. The Word of God, not human teachers, is the source of Catholic dogma. The Church’s teachers, namely, the pope and bishops in communion with him, may be likened to picture framers, whose job it is to create statements that frame and surrounding the truths of faith so that they easily distinguished from other beliefs and opinions that are not God’s Word, but rather human reflections thereon, namely, theology. Thus, popes and ecumenical councils occasionally define a dogma solemnly in a manner similar to the way in which a picture framer places a work of art in a gilded baroque picture frame. The purpose of the extraordinary act of teaching infallibly is to safeguard and draw attention to the dogma, not creating something new, but rather repeating something already received from the beginning.

2.1.5 Theology

“Theology” is a rational discourse on God, who insofar as he is ineffable, mysterious, and holy, is radically other. Since God chose to reveal himself, however, human beings can come to know him truly. The Bible is a privileged and reliable place for this divine self-disclosure because its authors were inspired and its books canonized under the influence of the Holy Spirit. Furthermore, the Catholic Church also recognizes that God’s Word is not limited exclusively to Scripture, but includes the interpretative context in which Scripture is understood correctly, namely, the sacred Tradition. Searching divine revelation for the truth about God, man, and the world through study and prayer, worship and discipleship, preaching and service, Catholic theologians work to explore the mystery of God, to make the Gospel intelligible to each generation, and to show the credibility of the Catholic faith. They ultimately wish to demonstrate the reasonableness of belief, even as many dogmas escape human categories because they refer to transcendent mysteries. Yet, as useful and necessary as a theology may be, it is not the Catholic faith per se. Rather, theologies are instruments in the Church’s toolbox. As such, their value depends on specific needs, their accuracy, and their adequacy. Consequently, theologies can and do change. Some become obsolete or go extinct, and new ones arise, many of which fail and a few endure.

2.2 THE CATHOLIC DOCTRINE OF CREATION

The exposition of the Catholic faith in the Catechism of the Catholic
Church follows two authoritative professions of faith: the Apostles' Creed\(^73\) and the Nicene-Constantinopolitan Creed.\(^74\) While their content is essentially the same, their formulations vary.\(^75\) The proper interpretation of the creed, like the proper interpretation of the Decalogue, recognizes that subsequent articles must be understood within the context of the first article. Thus, just as the Ten Commandments ought to be read as an exposition and expansion of the first commandment, "I am the Lord, Your God, who brought you out of the land of Egypt, where you were slaves,"\(^76\) so too ought one to understand the articles of faith in light of the first article.

2.2.1 Father Almighty

The profession, "God is Father," refers to Him as the first origin of everything and transcendent authority, as well as that He is good and loving towards His children.\(^77\) The Catechism clarifies that God is neither male nor female, surpassing all human fatherhood or motherhood. At the same time, the Father implies the Son (Jesus), who in history reveals God to be a communion of persons, namely, the Father, the Son, and the Holy Spirit. Thus, God is love inasmuch as He is a unity in distinction, a mutual indwelling, and an eternal exchange of gifts.\(^78\) The creed attributes omnipotence to God the Father, meaning that God can realize whatever He wills.\(^79\) His will, however, is not arbitrary or capricious since it expresses His goodness, truth, justice, and love. Indeed, the power of God is so immense that He humbles Himself to become man and even die on a cross. Stunningly, God dies. In so doing, He overcomes death, sin, and suffering. Thus, at the heart of God's strength is the mystery of His humility and powerlessness that opens the way for salvation and eventual glorification of all creation.

2.2.1.1 Creation as a work of the Trinity

Even though the act of creation belongs properly to God the Father, Trinitarian theology affirms that each person plays an active and proper role in creation. Cardinal Schönborn observed that Christian art until the

\(^73\) The ancient baptismal creed of the Church of Rome. CCC, supra note 12, at ¶194.
\(^74\) The creed of the first two ecumenical councils that Greek and Latin Christians commonly profess. CCC, supra note 12, at ¶195.
\(^75\) For example: "I believe in God the Father Almighty, Creator of Heaven and Earth" (Apostles' Creed) and "I believe in one God, the Father, the almighty, the maker of heaven and earth, of all that is seen and unseen" (Nicene Creed).
\(^76\) Exodus 20:2.
\(^77\) CCC, supra note 12, at ¶239.
\(^78\) 1 John 4:8.
\(^79\) Psalms 115:3.
Renaissance depicted Christ as the creator. This vision likely drew inspiration from the prologue of John's Gospel, resting on antecedent Old Testament wisdom and word theologies, as well as the Christological hymns of Colossians and Ephesians. John's Prologue explicitly recalls Genesis with the words "in the beginning," which in this case firstly refers to ultimate origins of reality and only secondly to time. John explicitly states that God created through the Word (Logos), which translates to the Hebrew word debar. Though once fashionable to believe, this Logos-theology represents an illicit intrusion of Greek thought in John's Gospel. Greater knowledge of the actual historical and theological context discloses that a developed theology of the Word already existed within the Jewish framework.

The sacred tradition gives the Holy Spirit another name, the Creator Spirit. Therefore, if Christ is the Logos, the pattern and principle of creation, then the Spirit is the power of God and the breath of life. In the Genesis account, the Spirit - represented as the divine wind - hovers over the void. Indeed, the Nicene Creed calls the Spirit "Dominum," "Lord," and "vivificantem," the "giver of life." Thus, the Trinity reveals that God exists eternally as a dynamic network of loving persons. Never alone, God created beings who also can enter into loving relationships with Him. Fundamentally, creation expresses His goodness inasmuch as God wished to share His eternal existence with other conscious, rational beings.

2.2.2 Heaven and Earth

By "heaven and earth" and "things seen and unseen," the creeds assert that God is the author of everything: nothing precedes Him and He required nothing to create. This contrasts with other creation stories in which divinities make the universe of out pre-existent matter or the universe simply emanates out of a divinity. Rather, the doctrine of creation ex nihilo claims that God freely and consciously chose to create the universe. Furthermore, God has no need for creation to complete Himself or make up for some deficiency, as in Hegel's theology.

Further, the Genesis creation accounts assert that creation is good, that

80. SCHÖNBORN, CHANCE OR PURPOSE? supra note 1, at 129.
82. Cf. John 1:1–1:3 ("In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God. All things came to be through Him, and without Him nothing came to be.").
84. Genesis 1:2.
86. E.g., Plato's Demiurge. PLATO, TIMEAUS, supra note 9, at 29a.
God made it intentionally and freely, that he rejoices in his creation, and that he is its goal and end. Thus, the six days of creation conclude in the Sabbath, an anticipation of the new creation in which the veil that exists between God and His creation will be lifted. During the six days, God makes the different features of creation according to a Hebrew cosmology, and on the seventh day, all creation rests and worships its maker.

What Genesis implies, Exodus explicitly affirms: nothing in creation is divine or deserves worship and that God alone is the author and sustainer of the universe. Even though creation is dependant on God for its origin and continued existence, it does enjoy its own proper autonomy and freedom. Thus, Catholic doctrine maintains that God continually guides and governs creation. This providence, however, involves both divine sovereignty and freedom on the one hand, and the created freedom on the other, “For God grants his creatures not only their existence, but also the dignity of acting on their own, of being causes and principles for each other, and thus cooperating in the accomplishment of his plan.”

2.2.3 Creation of Human Beings

The Catholic Church proposes that humanity occupies a unique and central place in creation, as suggested by the two Genesis accounts of man’s creation and illuminated by the incarnation of the Word of God. The first account reports the creation of man and woman in the image of God on the sixth day, the final day of God’s labor. The second recounts the making of Adam, then other life forms, and finally, Eve, the only fit and equal partner for Adam.

2.2.3.1 In the Image of God

Human beings bear a singular dignity inasmuch they alone know and love God. The image of God refers to the distinctive attributes of human personhood – self-knowledge, self-possession, and the freedom to give one’s self away in the communion of love. All human beings possess this dignity unconditionally. This dignity is prior to politics and every just

89. Genesis opens with the creation narrative in which God is the creator of all things in creation including many objects that human have worshipped as divinities, such as the sun, moon, stars, animals and human beings. This critique is made explicit in the First Commandment or Word of the Decalogue. Exodus 20: 2–5:
   I, the LORD, am your God, who brought you out of the land of Egypt, that place of slavery. You shall not have other gods besides me. You shall not carve idols for yourselves in the shape of anything in the sky above or on the earth below or in the waters beneath the earth; you shall not bow down before them or worship them.
90. CCC, supra note 12, at ¶ 306.
92. CCC, supra note 12, at ¶ 356.
93. CCC, supra note 12, at ¶ 357.
political order must acknowledge and respect it. However, sin obscures and injustice damages this dignity. Consequently, only in the light of the risen Christ can human beings learn the truth about the dignity they bear and receive the grace necessary to bring this dignity to perfection.

### 2.2.3.2 Male and Female

In the Genesis accounts, God intentionally makes human beings male and female. The second account elaborates the creation of Adam, which means "the earth-ling," and Eve,⁹⁴ who is the crowning act of creation. Eve is fashioned from Adam's rib to assert the equal humanity of men and women. Further, since the rib lies closest to the heart, it indicates that women and men exist for intimacy, trust, and communion. Therefore, the meaning of sexual differentiation is not reducible to an evolutionary strategy to recombine genes through sexual reproduction. Rather, it discloses that human beings achieve their full humanity through complementary relationships that actualize the potentialities of man as husband and father, and woman as wife and mother.

Consequently, since marriage emerges from God's created order, it is pre-political and pre-cultural. While human societies may confer obligations and privileges enshrined in law to protect and support marriage and family life, the Catholic Church maintains that no political authority has the competence to alter the constitution of marriage as a permanent and exclusive union of one man and one woman for the purposes of procreation and partnership.⁹⁵ Additionally, God commanded Adam and Eve to be fruitful and multiply, a mandate never rescinded since the procreation of children is one of the essential ends of married love.⁹⁶ Consequently, for this reason and others, the Catholic Church remains faithful to the once universal Christian tradition that contraception opposes God's plan for human beings.⁹⁷

### 2.2.3.2 "Subdue the earth"

God also authorized the human race to subdue the earth. In other words, human beings have the duty to use creatively and imaginatively the goods of creation to humanize the world. Thus, within this command is the call to create culture. This dominion, however, does not permit human beings to exploit one another. In recent times, this command has come under sharp criticism for funding an ideology of exploitation and domination that

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⁹⁵. CCC, supra note 12, at ¶ 1601-1617.
⁹⁶. CCC, supra note 12, at ¶ 2366.
justifies ecological destruction as a legitimate price for economic progress through science and industry. By contrast, the Catholic Church maintains that the essential goodness of creation requires the human race to engage in responsible use of earthly goods, which exist to serve the entire human race and not merely privileged minorities. Indeed, the seventh day, the Sabbath, alludes to God's will that the human race should recall through worship that everything comes from him. Consequently, every creature should have an opportunity to pause from work and savor life on a day for rest and recreation. The Sabbath exists as the first biblical admonition against a dominion over the earth that leads to idolatry and injustice. On this day, the human race remembers that every good thing comes from God.

2.2.3.3 A Union of Body and Soul

In the second account, God fashioned Adam from the earth and breathed his life-giving Spirit into him. The human race is the microcosm, or meeting point, of the spiritual and material orders of creation. Man is spiritual inasmuch as he has a soul. Further, the Catholic Church holds that God—not the parents—creates each immortal soul. At the same time, human beings have bodies. In contrast to Plato's negative judgment about human embodiment in the Phaedrus, the Bible teaches that human beings are not souls that have fallen from heaven. Rather, humans are embodied souls or ensouled bodies, whose home is the earth, even if it is still riddled with the consequences of sin.

2.2.3.4 Sin

God made the world good and the human race initially came into existence in a moment of perfect harmony. The nakedness of Adam and Eve refers to the justice that they lost through their sin. Thus, Genesis commences the account of the ongoing struggle between worship of the true God and idolatry. The biblical concept of justice encapsulates this struggle inasmuch as this term expresses the reality of the right relationship that existed between God and man, and man to himself, to other human beings, and to other living organisms. Human sin disordered God's good creation by disrupting these right relationships and introducing idolatry and injustice. Recounted throughout the Bible, idolatry tempts the human race to trust creatures instead of the creator. Though human beings cannot by themselves overcome sin, the situation was never hopeless because God

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98. Lynn Townsend White, Jr., The Historical Roots of Our Ecologic Crisis, 155 SCIENCE 1203–1207 (1967).
99. CCC, supra note 12, at ¶ 363.
100. CCC, supra note 12, at ¶ 366.
promised in the *proto-Evangelium* that a Savior would arise to strike down the serpent.102 The fundamental orientation of biblical religion is the future, a hope for the final triumph of life over death and justice over sin.

**2.2.3.5 Hope for a New Creation**

The Catholic Church recognizes the fulfillment of this prophecy in Jesus. As the New Adam,103 Jesus defeated sin through the Paschal Mystery, in which he opened the way for the transformation of all creation at a time in the future. In the meantime, the Church holds that each human being receives a personal judgment at death that refers his life to Christ: “either entrance into the blessedness of heaven . . . or . . . immediate and everlasting damnation.”104 At a time known only to God, the dead will rise and Jesus will conduct the Last Judgment through which He will publish the particular judgments, thus revealing the final consequences of the good or evil one did during his earthly life.105 Moreover, the Last Judgment “reveals that God’s justice triumphs over all the injustices committed by his creatures and that God’s love is stronger than death.”106 After the universal judgment, the righteous, namely those who live in right relationships to God, self, other humans, and creation, glorified in body and soul, will reign forever with Christ in the New Creation.107 The resurrection of the human race, moreover, concerns the destiny of the entire creation.108 The principal images of the renewed creation from Revelation,109 namely, the heavenly Jerusalem, the new heavens and the new earth, and the new temple, paint a picture of cosmological, natural, and social harmony. This is the realization of God’s original plan for creation. Since Pentecost, the Church progressively makes present this reality on earth, even if in a hidden and incomplete way, as an anticipation of the coming of the Kingdom of God.

**III. ASSESSING EVOLUTION AND INTELLIGENT DESIGN**

These final sections briefly review two important papal interventions on evolution: *Humani Generis* in 1950 and Pope John Paul’s letter to the Pontifical Academy of Science in 1996. Then they summarize those beliefs about creation that a Catholic must hold and consider how Catholics may approach evolution and intelligent design.

104. *CCC, supra* note 12, at ¶ 1022.
105. *CCC, supra* note 12, at ¶ 1039.
106. *CCC, supra* note 12, at ¶ 1040.
107. *CCC, supra* note 12, at ¶ 1042.
3.1 Papal Interventions

The papal magisterium has engaged the theory of evolution cautiously. Based on recently opened archives, the 2006 book, Negotiating Darwin: the Vatican Confronts Evolution, 1877-1902, reveals the Roman authorities' hesitant treatment of books discussing evolutionary themes by Catholic authors. The Catholic Church evidently wished to avoid the role that atheist and anti-clerical writers assigned to her since the Galileo affair, in which they depict her as the obscurantist, reactionary, and oppressive opponent of reason, progress, and freedom. Rather, the popes and their curial assistants intervened on the matter of proper Catholic biblical interpretation in the face of discoveries from the historical and natural sciences that called much into question about the Genesis account of creation.

3.1.1 Humani Generis

In his 1950 encyclical, Humani Generis, Pope Pius XII addressed questions posed by evolutionary theory to the Catholic faith. First, the pope leaves open the possibility that evolution might contribute to an explanation

110. The fathers of the First Vatican Council (1870) did not address evolution directly. Rather, they found it opportune to re-propose the Catholic understanding of the relationship of faith and reason in response to contemporary trends in philosophy as well as the historical and natural sciences in Dei Filius, dogmatic constitution on the Catholic faith.


114. The timing of this encyclical is noteworthy. First, the title "Humani generis unitas," the unity of the human race, proposes a dogmatic truth in the light of the horror of genocidal warfare in the name of racial superiority; the rise of Communist regimes in Catholic countries, who officially espoused "scientific materialism," legal racial discrimination in Western democracies, such as the United States of America and Australia; decolonization and national liberation movements; and threats to peace due to new post-war political divisions. As Darwin had earlier argued for the unity of the human race from evolution, so the Pope reiterates the unity of the human race from divine revelation. Second, just a few months later on November 1, 1950, Pope Pius XII solemnly declared ex cathedra the assumption of the Blessed Virgin Mary, body and soul. He thus defined a dogma that adverrs to the resurrection of the dead, the universal judgment of the human race and the new creation. CCC, supra note 12, at ¶998.
for the origin and development of life, even the human body, but not the human soul. Second, he rejects polygenism, namely, that the human race has more than one set of first parents, because it is inconsistent with the doctrine of original sin. Finally, the pope urged researchers, philosophers, and theologians to conduct their considerations with gravity, moderation, and caution and to avoid hasty conclusions based on insufficient reflection on the meaning of evidence.

3.1.2 Message to the Pontifical Academy of Sciences

On October 22, 1996, Pope John Paul II addressed the plenary assembly of Pontifical Academy of Sciences on the 60th anniversary of its re-founding under Pope Pius XI. After reviewing prior pronouncements of the Magisterium, the pope arrived at the contested statement to which Cardinal Schönborn referred: “Today, almost half a century after the publication of the Encyclical [Humani Generis] new knowledge has led us to realize that the theory of evolution is more than a hypothesis.” Thereafter, the pope explicated this statement through review of the epistemological nature of theories and noted further the variety of theories of evolution due to reliance on different philosophical concepts. Moreover, the pope adverts to the need for theological and philosophical analysis to establish the foundation on which these theories stand. Further, the pope strongly reaffirmed the Catholic doctrine on the dignity of the human person, reiterating Pius XII’s teaching on God’s immediate creation of each soul, and thereby rejecting purely materialist accounts of the emergence of mind from matter. Furthermore, the pope argued that the methodology of natural science as measurement and observation cannot treat spiritual realities in the same way. Spiritual realities demand their own proper method, metaphysics. Finally, he concluded that theology provides the human race the chance to know the ultimate meaning of existence, offering a framework for interpreting the results of scientific investigation and philosophical reflection.

While many welcomed the pope’s judicious remarks on evolution,

115. ENCYCLICAL OF POPE PIUS XII, HUMANI GENERIS (1950) reprinted in Gerald Carr Treacy, HUMANI GENERIS: ENCYCICAL LETTER OF POPE PIUS XII ¶36 (Paulist Press 1950); the text is also available at http://www.vatican.va/holy_father/pius-xii/encyclicals/documents/hf_p-xii_enc_12081950_humani-generis_en.html.
atheists and creationists attacked them. The 2004 International Theological Commission’s document, *Stewardship and Communion*, addressed a paragraph to this discourse to dispose of common misconceptions about the meaning of the pope’s comments.¹¹⁸ A year later, Cardinal Schönborn attempted the same in his piece, "Finding Design in Nature."¹¹⁹ That article re-ignited discussion about the Catholic Church’s view on evolution, intelligent design, and creationism.

### 3.2 Catholic Beliefs and Catholic Opinions

This final section applies the foregoing analysis to the practical question of what a Catholic must believe, and what a Catholic may hold vis-à-vis evolution, intelligent design, and creationism.

#### 3.2.1 Catholic beliefs

The twenty propositions summarize the scope of dogmatic teachings from doctrine of the creation.

1. God created the world *ex nihilo* (out of nothing).
2. God made the world freely, intentionally, and good; He made the world with a goal, or *telos*.
3. God created the world through His Word (*Logos*) and Spirit.

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Pope John Paul II stated some years ago that ‘new knowledge leads to the recognition of the theory of evolution as more than a hypothesis. It is indeed remarkable that this theory has been progressively accepted by researchers following a series of discoveries in various fields of knowledge’ (‘Message to the Pontifical Academy of Sciences on Evolution’ 1996). In continuity with previous twentieth century papal teaching on evolution (especially Pope Pius XII’s encyclical *Humani Generis*), the Holy Father’s message acknowledges that there are ‘several theories of evolution’ that are ‘materialist, reductionist and spiritualist’ and thus incompatible with the Catholic faith. It follows that the message of Pope John Paul II cannot be read as a blanket approbation of all theories of evolution, including those of a neo-Darwinian provenance which explicitly deny to divine providence any truly causal role in the development of life in the universe. Mainly concerned with evolution as it ‘involves the question of man,’ however, Pope John Paul’s message is specifically critical of materialistic theories of human origins and insists on the relevance of philosophy and theology for an adequate understanding of the ‘ontological leap’ to the human which cannot be explained in purely scientific terms. The Church’s interest in evolution thus focuses particularly on ‘the conception of man’ who, as created in the image of God, ‘cannot be subordinated as a pure means or instrument either to the species or to society.’ As a person created in the image of God, he is capable of forming relationships of communion with other persons and with the triune God, as well as of exercising sovereignty and stewardship in the created universe. The implication of these remarks is that theories of evolution and of the origin of the universe possess particular theological interest when they touch on the doctrines of the creation *ex nihilo* and the creation of man in the image of God.

4. God not only created, but also continues to guide the world by His providence to its proper goal, namely the New Creation.

5. God chose to make the human race able to know and love Him.

6. God made man, male and female, a union of body and soul, in His irremovable image.

7. This image represents human dignity as rational, free, and responsible persons.

8. God commanded the human race to be fruitful, multiply, and subdue the earth.

9. Marriage is a pre-political institution that God willed to consist only of a life-long, exclusive, and permanent union of one man and one woman for the dual purposes of procreation and partnership.

10. The Sabbath anchors creation in the truth that God is the source and goal of existence.

11. The human race first existed in a state of original justice; Namely, they dwelt in harmony with God, self, other human beings, and creation.

12. Adam and Eve believed in a creature, the serpent, rather than their creator, thus introducing sin, suffering, and death into the world (original sin).

13. The human race cannot deliver itself from sin, death, or suffering.

14. At the appointed time, God initiated salvation history, which begins with Abraham and reaches its climax in the life, death, and resurrection of the Word made flesh, Jesus of Nazareth.

15. The death and resurrection of Jesus breaks the power of sin and death, and inaugurates the New Creation.

16. The glorified Christ sends the Holy Spirit upon the Church at Pentecost to commence the ingathering of the human race.

17. The human race exists in an in-between time between the resurrection of Jesus and the completion of the New Creation.

18. The Church in her deepest essence is the recreated human race, of whom Jesus, Mary, and the saints already constituted its first fruits.

19. The Church exists to proclaim salvation and renewal of creation through word and deed, martyrdom and discipleship, liturgy and sacraments, teaching and service.

20. At the end of history, the dead will rise, Christ will make known the judgment of each human being, and the world will transform into the new heavens and earth (New Creation).

Consequently, a person confessing the Catholic faith will believe and hold these propositions to be true. Of course, this list is not exhaustive since it refers to the doctrine of creation specifically. As is plainly evident,
however, the doctrine of creation touches on all the important elements of the Catholic faith including the Trinity, Christ, the Holy Spirit, the Church, the life of grace, freedom, moral responsibility, judgment, and the hope of eternal life.

3.2.2. Catholic opinions about evolution and intelligent design

The preceding section listed the fundamental beliefs that a Catholic will hold as true. By contrast, this section lays out positions that a Catholic in good conscience may hold, i.e., those matters that depend on the logic of their argumentation, the preponderance of their evidence, and the certainty of their assumptions, not on divine revelation. A second, and equally essential step in this process, is the ethical evaluation of any truth claim in order to avoid a false and facile equation of what is possible with what is right. In other words, just because one knows how to do it (descriptive), does not mean that one should (prescriptive).

3.2.2.1 Evolution

Catholics strongly affirm the cooperation of faith and reason. Consequently, scientific inquiry, inasmuch as it seeks the truth in any ethical manner (namely, respecting human life and dignity), is not only good but may indeed give praise and glory to God. Moreover, evolution as a concept and perspective encompasses more than biology inasmuch as it points to a new viewpoint in philosophy; by which change, time, and movement displace identity, eternity, and constancy as principle themes of inquiry. In the case of the study of life, the neo-Darwinian synthesis represents an impressive achievement. Its greatest strength is that it furnishes economic and plausible explanations for many aspects of the development of life. Even Michael Behe, a leading critic of neo-Darwinism, acknowledges that evolutionary concepts, such as natural selection or random mutation, and theoretical conclusions, such as common descent, do explain adequately a number of important details of life. Recent popes have likewise recognized that evolutionary theory may eventually explain many aspects of biological life. At the same time, neo-Darwinian

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121. BEHE, supra note 41, at 64–83.
122. Pope Benedict XVI remarked on July 24, 2007 to a group of priests: Currently, I see in Germany, but also in the United States, a somewhat fierce debate raging between so-called “creationism” and evolutionism, presented as though they were mutually exclusive alternatives: those who believe in the Creator would not be able to conceive of evolution, and those who instead support evolution would have to exclude God. This antithesis is absurd because, on the one hand, there are so many scientific proofs in favor of evolution which appears to be a reality we can see and which enriches our knowledge of life and being as such. But on the other, the doctrine
evolutionary theory has not yet explained the origins of life, though there are a variety of proposals.

The focal point of the Catholic Church’s concern with evolutionary theory has little to do with the practice of science, which must adhere to the norms of its methodologies. Rather, the Catholic Church finds troubling the exploitation of scientific research to fund ideologies that reject God (namely, atheism and materialism) or threaten human dignity (for example, scientific racism). This concern extends of course to the misuse of other human modes of knowledge, such as philosophy or theology. For this reason, Popes John Paul II and Benedict XVI distinguish between evolution as a scientific theory, which should be judged according to its scientific merits, and “evolutionism” (or “Darwinism”) which exploits evolutionary theory for a variety of non-scientific ideological ends.

A Catholic, therefore, will properly distinguish between a scientific theory and its ideological applications. In this domain, a Catholic must be deeply skeptical and question proposals that deny divine providence in the origin, governance, and final consummation of creation, or reduce human beings to matter-in-motion, genes, or animals. Indeed, Catholics must defend the unique dignity of human beings as intended, loved, and desired by God, human rationality, conscience, freedom, the complementarity of the sexes, the institution of marriage, and the human person as a union of body and soul. Lastly, Catholics must criticize those accounts of the universe and life that fail to acknowledge their unavoidable philosophical and theological suppositions.

3.2.2.2 Intelligent Design

Some interpreted Cardinal Schönborn’s “Finding Design in Nature” as the opening of a campaign to win the Catholic Church over to intelligent design. The term “intelligent design,” however, never appeared in the piece. Moreover, Pope Benedict XVI has only once used the phrase “intelligent design” at a Wednesday audience in a way which clearly did not refer to this proposal. Subsequently, Cardinal Schönborn repeatedly clarified his position, stating emphatically that he has been unfairly associated with this
approach.\textsuperscript{124}

The Catholic Church has not adopted or condemned intelligent design. As with evolutionary theory, its proponents and detractors, both sides of which include Catholics, are free to argue and contend about its scientific status. Whether neo-Darwinian evolutionary theory or intelligent design is scientific is a matter for natural scientists (and probably philosophers of science) to determine. At the conclusion of his 2005 piece, the cardinal clearly stated that his purpose was to open up debate by distinguishing science from ideology.\textsuperscript{125} Thus, the argument between these proposals is profitable inasmuch as it compels greater reflection about their respective scientific, philosophical, and theological status and lays bear their ideological manipulations.

3.2.2.3 Creationism

The Catholic Church has never professed “creationism.” Strictly speaking, creationism is a modern phenomenon that emerged out of the particular cultural circumstances of the United States of America.\textsuperscript{126} While the Catholic Church does confess God as creator, its approach to the doctrine of creation does not rely on a literal interpretation of the Bible. In any case, it is doubtful that many Christians are “Creationists” inasmuch as the deployment of the term as an epithet has less to do with description of actual beliefs than proscription to express belief in God publically.

IV. A ROLE FOR THE CATHOLIC CHURCH IN THE EVOLUTION-INTELLIGENT DESIGN DEBATE

This theological treatment of the debate about evolution and intelligent design has resulted in a number of insights. By way of conclusion, two are worth elaborating: one theoretical and the other practical.

On the theoretical level, this treatment has shown the urgent need for multiple competences among theologians, philosophers, and natural scientists in order to conduct intelligible conversations across disciplinary lines. Too often in the history of science, as in the history of theology and

\textsuperscript{124.} CREATION AND EVOLUTION: A CONFERENCE WITH POPE BENEDICT XVI IN CASTEL GANDOLFO 10 (Michael J. Miller trans., 2008).

\textsuperscript{125.} Schönborn, Finding Design, supra note 1:

Now at the beginning of the 21st century, faced with scientific claims like neo-Darwinism and the multiverse hypothesis in cosmology invented to avoid the overwhelming evidence for purpose and design found in modern science, the Catholic Church will again defend human reason by proclaiming that the immanent design evident in nature is real. Scientific theories that try to explain away the appearance of design as the result of “chance and necessity” are not scientific at all, but, as John Paul put it, an abdication of human intelligence.

\textsuperscript{126.} RONALD NUMBERS, THE CREATIONISTS (1993).
philosophy, these modes of knowledge have been exploited for immoral ends. As researchers expand the quantity of well-established scientific theories and facts, the Catholic Church counsels prudence and deliberation before jumping to hasty conclusions or drawing out radical implications for the meaning of human existence. This is all the more important in democratic societies that depend on a well-informed electorate to select leaders who will make decisions about the allocation of scarce resources and the promulgation of laws that may infringe upon or uphold human dignity.

While natural science can and should serve the human race by disclosing the mechanisms and processes that govern life and the universe, it cannot replace the wisdom that man needs to live in a humane way with the same universe. There lies the boundary between what science can and cannot do. For example, the case of ultimate origins of the universe is simply beyond the scope of science as a method that relies on metrics. Even if evolutionary theory could explain all the details about the origin and development of life on earth, any explanation logically begs the ultimate question: how did the 16 billion-year-old cosmos come into existence in the first place? Physicists propose theories that are not empirically verifiable inasmuch as there is no evidence to test, only equations. Although mathematics might furnish possible origin scenarios, mathematics is not science. Indeed, the very existence of mathematics, its axioms, theorems, and corollaries, is a mystery. As one philosophy of mathematics (mathematical Platonism), mathematical statements are made true by abstract objects that exist outside of time and space, hence inaccessible to the natural science.127 Thus, one believes in the existence of these mathematical objects for which no empirical proof exists. Justin Barrett has similarly described the paradox of the existence of the mind.128 Many everyday experiences of reality lie beyond scientific explanation because they cannot be measured exactly.

Finally, natural science by definition cannot measure anything outside of the universe since those things outside the universe exist in different qualities rather than merely different quantities. Even to dare to speak about such qualitative differences invites danger since errors in language lead to an anthropomorphized or eliminated God. On the one hand, rationalistic language reduces God to an idol, and fideistic language locks God up in an inaccessible heaven from which He cannot speak. Thus, the Catholic Church adopted the philosophical principle of analogy at the Fourth Lateran IV (1215) to govern theological language – which belongs to the created order – about the creator, who transcends this order.129 The principle of

129. "For between creator and creature there can be noted no similarity so great that a greater
analogy allows the Church to speak about the ineffable because it recalls theologians to the reality that God is holy, mysterious, and beyond human comprehension even as God has chosen to reveal himself in human words, and in particular, in one human being, Jesus of Nazareth.

While theology and philosophy are millennia old partners—sometimes friends, sometimes rivals, sometimes enemies—in the search for an adequate account of ultimate realities, natural science is more recent and perhaps therefore less willing to acknowledge its boundaries. Yet, this reluctance may be a developmental stage as the natural sciences continue to mature as a mode of knowledge. Much of the tension that erupts during debates about evolution or intelligent design might be alleviated by a deeper appreciation of the provisional nature of knowledge and the necessity for prudent translation of new knowledge to human choices. With respect to the former, the Catholic Church professes that the risen Christ will come to judge the living and the dead. This eschatological deferment of judgment to Christ at the end of time might likewise suggest that human judgments in general await review and appeal to Christ, who will reveal truth and falsehood as well as sin and justice. Human formulations of the truth require humility and caution rather than dogmatism, whether theological or scientific. Likewise, the translation of scientific knowledge to ethical norms requires a broader discussion that takes into account other modes of knowledge. Otherwise, the reduction of ethics to scientific considerations threatens human dignity and social peace.

On the practical level, the construal and delivery of scientific education in the United States of America leaves much room for reform. Owing to its particular historical path, America has privatized, marginalized, and subjectivized those aspects of reality and existence that fall outside of the competence of scientific theorizing and instrumentation. Scientific education is thus construed narrowly to include only those elements of scientia—knowledge—that fall within the canons of natural science. In part, this reflects an instrumental vision of education as job training rather than human formation. Additionally, popular discussions about evolution and intelligent design reveal the incomplete reception of scientific education as well as the general absence of philosophical and theological education. Consequently, campaigns to include creation science or intelligent design in public school curricula ought to be seen as not only a possible consequence of widespread scientific illiteracy, but also as a rebellion against this particular social construction that excludes other modes of knowledge.

A more inclusive understanding of scientific education could remedy this unsatisfactory situation. In this case, natural science pursues explanation in its proper domains while acknowledging that it cannot furnish answers to meaning or existence because they lie outside of its competence. Therefore, public school curricula should devote time, personnel, and resources to educating students in philosophy and theology. Naturally, the legal and constitutional aspects of this proposal require careful attention and the actual development of a curriculum would be demanding and difficult. Respecting the Non-Establishment Clause of the First Amendment should not hinder this proposal inasmuch as philosophy and theology are proper sciences and are as liable to ideological manipulation as the natural sciences. Any authentic pursuit of the truth requires honesty, self-criticism, and peer review. Therefore, the unwillingness or inability to deal seriously with philosophy and theology as modes of human knowledge aggravates social division, i.e., inasmuch as their exclusion instantiate one particular configuration of power relationships that stands at odds with the worldviews of many Americans. Similarly, public universities should add theology as a discipline that explores the fundamentals of existence, raises serious questions about other disciplines, and ultimately supports democratic civility.

In conclusion, the Catholic Church’s way of thinking about evolution and intelligent design can assist American society progress towards a better paradigm for the pursuit of truth. Embracing a broader sense of science, tenaciously respecting human dignity, and fostering social peace, Catholics enjoy great scope in their scientific, theological, and philosophical investigations because truth comes from God and leads to Him. When problems arise in the effort, their source is human inadequacies. Yet, these difficulties are surmountable inasmuch as God helps human beings by offering a gracious relationship in Jesus Christ to deliver them from sin and death and by revealing Himself and human existence in the eternal Logos, Jesus of Nazareth, whom the Holy Spirit makes present in the hearts of the faithful and in the life and mission of the Church.