

Darwinian Ideology or Universal Teleology?

Science, Causation, and Providence

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As last year's *Kitzmiller v. Dover* case makes abundantly clear, evolutionary theory continues to be a hotly contested issue.¹ Without denying the political significance of that widely reported legal battle, I suspect that a closely related academic debate is far more noteworthy in terms of its potential long-term cultural ramifications. A virtual firestorm within scientific circles was sparked by Archbishop Christoph Schönborn's unexpected statement, "Finding Design in Nature."² The controversy is

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¹ Judge John E. Jones III's opinion in *Tammy Kitzmiller et al. v. Dover Area School District et al.* can be found at http://coop.www.uscourts.gov/pamd/kitzmiller_342.pdf.

² Christoph Cardinal Schönborn, "Finding Design in Nature," *New York Times*, July 7, 2005. Cardinal Schönborn's statement was provoked by a piece written by Lawrence M. Krauss, "School Boards Want to 'Teach the Controversy.' What Controversy?" *New York Times*, May 17, 2005, <http://www2.kenyon.edu/Depts/Religion/Fac/Adler/Politics/evolution11.htm>.

reflected in various pointed responses from both Catholic and non-Catholic writers.³ It has been suggested that the cardinal's anti-Darwinian statement signals an alarming reversal of Catholic theology on the question of evolution. Some, including Kenneth Miller, a Catholic biologist at Brown University, have even submitted a letter requesting clarification from Pope Benedict XVI.⁴

In this article I do not intend to offer a detailed analysis of each of the published reactions to Cardinal Schönborn's important statement. Instead, I will focus chiefly on an illustrative response by Stephen Barr,⁵ although my analysis applies no less to the claims of other neo-Darwinists. One of the more lucid and cautious champions of evolutionary theory, Barr is a Catholic scientist who has expressed opposition to scientism and who contends that the domains of scientific reason and divine revelation are compatible. My primary aim in this analysis will be to show that Cardinal Schönborn's anti-Darwinian stance merits the unqualified endorsement of any person who acknowledges the need to integrate infused faith and natural reason.⁶

³ See, for example, Francisco Ayala, Lawrence Krauss, and Kenneth Miller to Pope Benedict XVI, July 12, 2005, <http://genesis1.phys.cwru.edu/~krauss/papalettet.txt.htm>; George V. Coyne, S. J., "God's Chance Creation," *The Tablet* 259.8600 (August 6, 2005): 6–7, <http://www.thetablet.co.uk/cgi-bin/register.cgi/tablet-01063>; John F. Haught, "Darwin and the Cardinal," *Commonweal* 132.14 (August 12, 2005): 39, http://www.commonwealmagazine.org/article.php?id_article=1340; Lawrence Krauss, "The Pope and I," *Skeptical Inquirer* 29.6 (November–December 2005), http://genesis1.phys.cwru.edu/~krauss/Kraus_SI.pdf; Lawrence Krauss, "Evolution and the Catholic Church," interview by Ira Flatow, *Talk of the Nation*, National Public Radio, August 12, 2005, transcript available at <http://www.npr.org/transcripts/>; and Kenneth R. Miller, "The Cardinal's Big Mistake: Darwin Didn't Contradict God," *Providence Journal*, August 10, 2005, <http://www.millerandlevine.com/km/evol/catholic/projo.html>.

⁴ See Ayala, Krauss, and Miller to Pope Benedict XVI.

⁵ Stephen M. Barr, "The Design of Evolution," *First Things* 156 (October 2005): 9–12, <http://www.firstthings.com/ftissues/ft0510/opinion/barr.html>.

⁶ See Pope John Paul II's encyclical letter *Fides et ratio* (September 14, 1998), preface, http://www.vatican.va/holy_father/john_paul_ii/encyclicals/: "Faith and reason are like two wings on which the human spirit rises to the contemplation of truth; and God has placed in the human heart a desire to know the truth—in a word, to know himself—so that, by knowing and loving God, men and women may also come to the fullness of truth about themselves (cf. Ex 33:18; Ps 27:8-9; 63:2-3; Jn 14:8; 1 Jn 3:2)." See also David Ruel Foster and Joseph W. Koterski, S.J., eds., *The Two Wings of Catholic Thought: Essays on Fides et ratio* (Washington, D.C.: Catholic University of America Press, 2003). Such integration, which would affirm that science depends on human intelligence, and human intelligence depends on God, seems difficult to reconcile with the nonscientific opinion cited approvingly by Lawrence Krauss: "As my friend, Steve Weinberg, who's a physicist and notably antireligious, has said, 'Science does not make it impossible to believe in God. It just makes it possible to not believe in God.'" Luncheon keynote speech, American Enterprise Institute conference on "Science Wars: Should Schools Teach Intelligent Design?" October 21, 2005, Washington, D.C., transcript at <http://www.aei.org/events/filter.all,eventID.1169/transcript.asp>. Familiarity with the eminent work of Stanley L. Jaki, O.S.B., including his 1974–1976 Gifford Lectures, published as *The Road of Science and the Ways to God* (Chicago: University of Chicago Press,

False Conflict?

Apparently roused by the cardinal's stance, Barr opines that Cardinal Schönborn "obscur[es] the clear teaching of the Church that no truth of science can contradict the truth of revelation," and that he has inadvertently buttressed the conviction of "those neo-Darwinian advocates who claim that the theory of evolution precludes a Creator's providential guidance of creation."⁷ Barr rightly takes Cardinal Schönborn to be saying that the "notion of 'evolution' as used by mainstream biologists—that is, synonymous with neo-Darwinism"—contradicts Catholic teaching.⁸ There is little doubt that today most people, including mainstream biologists,⁹ often speak as if the idea of evolution is synonymous with Darwinism, whether classical or modern.¹⁰ Even Barr sometimes employs the terms "evolution" and "neo-Darwinism" as if they were essentially equivalent in meaning.¹¹

Given our present cultural milieu, this linguistic equation is understandable; nevertheless, equating these terms has led to serious misunderstandings. Evolution in the broad sense signifies the idea that all species of organic life are biological descendants of a few or perhaps one primitive form of life.¹² Although the general theory of common ancestry is often attributed to Darwin, various scholars recognize the inaccuracy of such attribution.¹³ Darwin's own contribution is to be located in his at-

1978), would help correct Weinberg's misguided antireligious bias. See John-Peter Pham, "Saving Good Science from Bad Philosophy," a review of Jaki's *A Mind's Matter: An Intellectual Autobiography*, in *Crisis* 20.10 (November 2002): 54–55, <http://www.crisismagazine.com/november2002/book2.htm>. Moreover, insofar as the existence of the human person is involved, Krauss errs in asserting that "evolution, like Lemaître's Big Bang, is itself 'entirely outside of any metaphysical or religious question.'" Lawrence Krauss, "School Boards." Krauss could benefit from a more careful reading of Pope John Paul II's October 1996 message to the Pontifical Academy of Sciences, "On Evolution" (<http://www.ewtn.com/library/PAPALDOC/JP961022.HTM>), which he cites in his previously mentioned letter to Pope Benedict XVI.

⁷ Barr, "The Design of Evolution," 12.

⁸ *Ibid.*, 9.

⁹ See, for example, Kenneth Miller, *Finding Darwin's God: A Scientist's Search for Common Ground between God and Evolution* (New York: HarperCollins, 1999).

¹⁰ For the sake of convenience, I will employ the terms "Darwinism" and "neo-Darwinism" interchangeably in this article, unless the context indicates that I intend classical Darwinism rather than the modern synthesis.

¹¹ Consider, for instance, the abrupt linguistic shift in paragraph six, line one of "The Design of Evolution."

¹² Concerning the related question of the origin of terrestrial life, see Robert E. Brennan, O.P., *General Psychology: An Interpretation of the Science of Mind Based on Thomas Aquinas* (New York: Macmillan, 1942), 72–82.

¹³ See, for instance, David J. Depew and Bruce H. Weber, *Darwinism Evolving: Systems Dynamics and the Genealogy of Natural Selection* (Cambridge, MA: MIT Press, 1996), 34, 49–50, 170–172; Peter J. Bowler, *Evolution: The History of an Idea*, rev. ed (Berkeley, CA: University of California Press, 1989), 81–86, 142–148.

tempt to support the theory of common ancestry by postulating the explanatory mechanism of natural selection acting on random mutations.

One must keep this distinction in mind to provide an accurate assessment of the cardinal's position.¹⁴ If the term "evolution" is used to signify the idea of common ancestry, Cardinal Schönborn grants that this idea is logically compatible with Roman Catholic doctrine, as long as one admits without qualification that man's immortal soul cannot be produced by any cause other than God.¹⁵ If the term "evolution" is used to signify neo-Darwinism, however, his statement clearly affirms that the Catholic faith cannot be reconciled with a blind and unguided evolutionary process, and such a process is normally associated with the Darwinian mechanism of natural selection acting on random variation.

Two Debates

Bearing in mind the Church's teaching concerning the metaphysical reach of human intelligence (i.e., that the human mind can attain universal metaphysical truths, including God's existence and the immortality of the human soul),¹⁶ one should avoid interpreting the cardinal's anti-Darwinian statement as an endorsement of "physico-theology,"¹⁷ which is presupposed by some advocates of intelligent design

¹⁴ I underscore the need to avoid the error of reducing evolutionary theory to neo-Darwinism in a previous article, "Darwin and Design: Exploring a Debate," in *Truth Matters: Essays in Honor of Jacques Maritain*, ed. John G. Trapani, Jr. (Washington, D.C.: The Catholic University of America Press, 2004), 124 and note 92.

¹⁵ See Pope John Paul II, "Message to the Pontifical Academy of Sciences" (October 1996), n. 5. If the reality of the human soul is not rejected, the philosophical truth that only God can create the immaterial human soul is too often ignored, if not explicitly denied, within evolutionary circles. See Robert T. Pennock, *Tower of Babel: The Evidence against the New Creationism* (Cambridge, MA: MIT Press, 1999), 114–115. Another dissenting voice is that of Karl Rahner, S.J. For a critical summary of Rahner's views on this key point, see Brian J. Shanley, O.P., *The Thomist Tradition* (Boston: Kluwer Academic, 2002), 86–90. Barr, in contrast, is among those who would admit the non-evolutionary origin of rational souls. See his article, "The Intellect and Evolution," *The National Catholic Bioethics Quarterly* 3.3 (Autumn 2003): 463–470. Whether he can, within a neo-Darwinian framework, manage to integrate spirit and matter in the concrete reality of the human person, while skirting the pitfalls of Cartesian and Kantian dualism, is a separate question.

¹⁶ See, for example, Pope John Paul II, *Fides et ratio*, nn. 22, 55, 61, 73–74, 76–78, 83, 95, 97, and 105–106; and Joseph W. Koterski, S.J., "The Challenge to Metaphysics in *Fides et ratio*," in *Two Wings of Catholic Thought*, 22–35. For an account of the anti-metaphysical bias in modern thought, see Timothy Sean Quinn, "Infides et Unratio: Modern Philosophy and the Papal Encyclical," in *Two Wings of Catholic Thought*, 177–192.

¹⁷ In brief, "physico-theology" is the view that one can demonstrate a metaphysical truth (e.g., the existence of God) without exceeding the methodological limits of natural science; it blurs the line of demarcation between natural science and metaphysics. (In the philosophy of science, there is ongoing debate over the demarcation question, but that debate is beyond the scope of this paper. Elsewhere, however, I would insist on the importance of the distinction, not separation, between empirical sciences and transempirical forms of knowledge, and

(ID) theory, inspired by the thought of figures such as Robert Boyle and William Paley.¹⁸ At no time did the cardinal assert that natural science by itself could demonstrate the existence of a superhuman Intelligence. His anti-Darwinian statement respects the distinction between natural science and metaphysics. To identify his statement as a particular illustration of ID theory based on physico-theology would be as objectionable as asserting that he seeks to defend God's providence to the exclusion of chance or contingency.

A strictly accurate reading of the cardinal's statement depends on the recognition that there are, in fact, two distinct issues under dispute. One debate is between those who advocate modern ID theories and those who emphasize the direct involvement of natural causes in the macroevolutionary process of speciation defended by many scientists.¹⁹ As indicated in the International Theological Commission's 2004 document, *Communion and Stewardship: Human Persons Created in the Image of God*, one cannot resolve this particular debate simply by turning to theology:

A growing body of scientific critics of neo-Darwinism point to evidence of design (e.g., biological structures that exhibit specified complexity) that, in their view, cannot be explained in terms of a purely contingent process and that neo-Darwinians have ignored or misinterpreted. The nub of this currently lively disagreement involves scientific observation and generalization concerning whether the available data support inferences of design or chance, and cannot be settled by theology.²⁰

In his statement Cardinal Schönborn shows no interest in joining the debate concerning the perceived need to introduce various external interventions of an intelligent designer to explain the diversity of biological species. On the basis of the potentialities of self-organizing matter tending toward molecular and anatomical complexity, Christians may admit the scientific value of the idea of common ancestry. Moreover, such an

I would contend that genuine proofs for the existence of non-material being fall beyond the competence of experimental science, but not that of metaphysics. For a useful overview of the relation between science and religion, see Shanley, *The Thomist Tradition*, 67–91. A more detailed treatment is provided by Mariano Artigas, *The Mind of the Universe: Understanding Science and Religion* (Radnor, PA: Templeton Foundation Press, 2000).

¹⁸ See John Hedley Brooke, *Science and Religion: Some Historical Perspectives* (New York: Cambridge University Press, 1991), 192–225. One should note that the ID movement is not a monolithic school of thought. Some ID proponents endorse the theory of common ancestry (e.g., Michael Behe), and some would deny that ID theory depends necessarily on the idea of external divine intervention. On the latter point, see William Dembski, "Rebuttal to Reports by Opposing Expert Witnesses," http://www.designinference.com/documents/2005.09.Expert_Rebuttal_Dembski.pdf. As the notion of design is not univocal but analogical (i.e., there are multiple meanings of "design," such as intrinsic and extrinsic design), I think it would be accurate to say that Cardinal Schönborn's statement presupposes that the term "design" can be used in more than one sense.

¹⁹ One might call this dispute the "external-interventionism debate."

²⁰ International Theological Commission, *Communion and Stewardship: Human Persons Created in the Image of God* (July 23, 2004), n. 69, http://www.vatican.va/roman_curia/congregations/cfaith/cti_index.htm.

admission would not require any “external interference” or suspensions of physical laws as conceived within a neo-deistic framework.²¹ One would need to presuppose, however, the universal and *transcendent* causal agency of God,²² whose intimate involvement in and regulation of every aspect of the unfolding order of created being is philosophically defensible, the views of authors such as John F. Haught notwithstanding.²³

When we encounter stable patterns or tendencies toward order rather than disorder, we might refer to chance and necessity as ultimate explanatory principles in nature, or we could acknowledge the need for a transcendent Mind to explain ultimately the intelligible order discovered, not invented, by the human mind.²⁴ As the pagan father of classical logic would have surely agreed, the first option is equivalent to an “abdication of human intelligence” and, by implication, a betrayal of scientific rationality.²⁵ The second option enables one to preserve scientific rationality and to maintain the metascientific distinction between philosophical naturalism (the theoretical basis of the first option) and methodological naturalism.²⁶ Methodological

²¹ Cardinal Schönborn surely understands the philosophical flaws of deism, the influence of which lingers even today in the minds of many. Nor should we forget deism’s seminal role in Darwin’s own intellectual evolution. On deism and its various flavors, see Avery Cardinal Dulles, “The Deist Minimum,” *First Things* 149 (January 2005): 25–30.

²² See Peter Pagan, “Darwin and Design,” in *Truth Matters*, ed. John Trapani (Washington, D.C.: American Maritain Association/Catholic University of America Press, 2004), 119, note 66; 121, note 79; 122, note 84; 123, note 87; and 124, note 89. The limitations of a purely physical theory of causation and the need for a metaphysical theory of causation are emphasized in that article. On the fundamental importance of the several, not unrelated, philosophical meanings of causality, see Michael Dodds, O.P., “Science, Causality and Divine Action: Classical Principles for Contemporary Challenges,” *CTNS Bulletin* 21.1 (Winter 2001): 3–12. See also Gregory Rocca, O.P., *Speaking the Incomprehensible God: Thomas Aquinas on the Interplay of Positive and Negative Theology* (Washington, D.C.: The Catholic University of America Press, 2004), 132–134.

²³ See, for instance, Haught’s *Science and Religion: From Conflict to Conversation* (Mahwah, NJ: Paulist Press, 1995), 60–64.

²⁴ See Pierre Conway, O.P., *Faith Views the Universe: A Thomistic Perspective*, ed. Mary Michael Spangler, O.P. (Lanham, MD: University Press of America, 1997), 10–17. Here I differ with George Coyne, S.J., who has said: “There is another part of this idolatry, which can only be understood if we see the idol that is associated with modern science. This is the idolatry of making God ‘explanation.’ We bring God in to try to explain things that we cannot otherwise explain: How did the universe begin? How did we come to be? and all such questions. We latch onto God, especially if we do not feel that we have a reasonable scientific explanation. He is brought in as the Great God of the Gaps.” “The Dance of the Fertile Universe,” presented at the American Enterprise Institute conference on “Science Wars: Should Schools Teach Intelligent Design?” October 21, 2005, Washington, D.C., http://www.aei.org/docLib/20051027_HandoutCoyne.pdf.

²⁵ See Aristotle, *Physics*, II, 4–6 (195b31–198a13) and 8 (198b10–199b33); St. Thomas Aquinas, *Commentary on Aristotle’s Physics*, II, lectures 7–10 and 12–14.

²⁶ *Philosophical naturalism* rejects “the validity of explanations or theories making use of entities inaccessible to natural science” (i.e., supernatural phenomena or phenom-

naturalism is necessary to a proper understanding of the essence of modern science, an understanding reflected in Pope John Paul II's incisive teaching.²⁷

A second, substantially different, debate has as its focal point the topic of global teleology.²⁸ With the aid of empirical data drawn from the physical universe, can the human mind discover the pervasive operation of natural teleology? This disputed question is far more basic. Strictly naturalistic evolutionary theories that claim to supply a properly causal explanation of the evolutionary process, in which man is considered an unintended by-product of biological evolution rather than its natural telos,²⁹ advance a position designed to replace and eliminate the need for global teleology.³⁰ It is just such an elimination that concerns Cardinal Schönborn. The same unambiguous concern surfaces in *Communion and Stewardship*, which includes the observation that Pope John Paul II's 1996 Message to the Pontifical Academy of Sciences "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."³¹ This key observation concerning John Paul II's 1996 message does not escape the cardinal's notice; Barr's critical response to Cardinal Schönborn, however, suggests a remarkable inattentiveness to the very same observation, which might explain why Barr would insist that his own defense of evolutionary theory should be construed as a defense of the neo-Darwinian paradigm. Or perhaps Barr would contend that the observation merely restates an alleged misunderstanding, namely, that evolutionary theories of a Darwin-

ena that cannot be measured scientifically.) It also rejects the idea of teleology, or innate purpose, in natural phenomena and events. *Wikipedia*, s.v. "Naturalism (Philosophy)," http://www.reference.com/browse/wiki/Philosophy_naturalism. *Methodological naturalism* is "the philosophical tenet that, within scientific enquiry, one ... must not make reference to the existence of supernatural forces and entities," but should use only natural explanations. *Wikipedia*, s.v. "Methodological Naturalism," http://www.reference.com/browse/wiki/Methodological_naturalism.

²⁷ This teaching is described under The Lure of Fideism, below.

²⁸ One might name this dispute the "global-teleology debate."

²⁹ "Why is the human being at the top? It is because we are ignorant. We do not know what else to put at the top. The human brain is the most complicated mechanism we know. Do we need God to explain this [evolutionary process]? Is there a certain finality, directness, purpose behind this? My personal answer is: 'Absolutely not. I do not need God. Thank you, I can do perfectly well in trying to understand the universe by using the capacity that I have to put the universe in my head.' I do believe, by the way, that such a capacity has been given to me by God." Coyne, "The Dance of the Fertile Universe."

³⁰ By "teleology" or "finality," I mean to signify the view that each thing, whether rational or not, acts *for the sake of* some purpose or end (telos), and that all beings, insofar as they act, aim at or are naturally inclined or directed to some goal. See Aquinas, *Summa theologiae*, I-II, Q. 1.2.

³¹ International Theological Commission, *Communion and Stewardship*, n. 64. See also Jaki, "Cosmic Rays and Water Spiders," in *The Limits of a Limitless Science and Other Essays* (Wilmington, DE: ISI Books, 2000), 233.

ian pedigree preclude the role of divine providence in the development of life. In that case, one could wonder why he chose to enlist the aid of *Communion and Stewardship* in his effort to refute the cardinal's statement.

With respect to the first debate regarding common ancestry, *Communion and Stewardship* indicates that the controversy must be settled without the arbitration of revealed theology. With respect to the second debate regarding global teleology, however, Cardinal Schönborn's anti-Darwinian position is perfectly consistent with the teaching of *Communion and Stewardship*. If Barr were to continue defending neo-Darwinism, then he would need to reject at least part of *Communion and Stewardship*. It is not obvious, however, whether he would insist on an agnostic stance vis-à-vis the teleological foundation of (non-Darwinian) evolutionary theory. Whether or not scientists like Barr decide to modify their views and throw their scientific weight behind the search for a non-Darwinian theory of evolution, it is difficult to see how one could avoid an oxymoronic result if one were to insist on synthesizing neo-Darwinian theory and the principle of finality without distorting either the theory or the principle.³²

As it is commonly understood, the Darwinian mechanism does not clearly admit the intelligent direction of divine providence as taught in the Catholic faith. Yet Barr insists that neo-Darwinism is compatible with Catholic teaching and that the contrary view held by Cardinal Schönborn is mistaken. Barr attempts to rebut the cardinal's statement by arguing that a precise mathematico-scientific understanding of the notion of randomness does not necessarily exclude God's involvement in the evolutionary process,³³ and by suggesting that Cardinal Schönborn overlooks the fact that a properly *scientific* conception of randomness and contingency is logically compatible with a *theological* understanding of divine providence. In sum, Barr believes that Cardinal Schönborn's "central misstep" consists in his implicitly reducing (a) natural selection acting on statistically random genetic variations to (b) "an unguided, unplanned process."³⁴

Unintelligible Indeterminism?

Having read Barr's previous contributions to *First Things*, I was hardly surprised to find that his October 2005 reply to Cardinal Schönborn provides a clear, albeit brief, treatment of the scientific conception of randomness or chance.³⁵ Unlike those who believe that chance precludes the existence of God, Barr holds that the reality of God and chance—understood as the lack of statistically verifiable correla-

³² I should emphasize that I do not intend to deny that there are several neo-Darwinian theories of evolution; however, what these theories have in common is the commitment to the Darwinian mechanism of natural selection acting on random variation, which is blended with modern genetic theory and molecular biology in the neo-Darwinian synthesis.

³³ One might note, however, that the notion of randomness is commonly used in an implicitly if not explicitly exclusionary fashion.

³⁴ Barr, "The Design of Evolution," 10.

³⁵ A more technical examination of the scientific conception of chance is provided by Antony Eagle, "Randomness Is Unpredictability," *British Journal for the Philosophy of Science* 56.4 (December 2005): 749–790.

tion—are not logically contradictory. It is not clear, however, that the mathematical conception of chance defended by Barr admits without significant revision the traditional Catholic understanding of divine providence espoused by Catholic theologians such as Cardinal Schönborn and St. Thomas Aquinas.³⁶

On the basis of a revealing analogy concerning the use of prose as opposed to poetic diction (prose seemingly exhibiting more randomness in view of the absence of rhyme, but actually containing as much planning), Barr infers that “God, though he planned His work with infinite care, may not have chosen to impose certain kinds of correlations on certain kinds of events [such as those studied in quantum mechanics, for instance], and the motions of the different molecules in a gas, for example, may exhibit no statistically verifiable correlation.”³⁷ Almost immediately he proceeds to assert with greater force that “statistical randomness, *based on the lack of correlation among things or events*, can be exploited to understand and explain phenomena through the use of probability theory.”³⁸ Later, he maintains that there is “statistical randomness and lack of correlation in our world ... because events do not march in

³⁶ Anticipating a possible objection, I would note in advance that the traditional Catholic understanding of divine providence is, as theologians such as Cardinal Schönborn would affirm, perfectly consistent with the Christian doctrine of participated (creaturely) freedom. Should one or another scientist assert the contrary (e.g., Kenneth Miller; see Pagan, “Darwin and Design,” 121–122), I would remind him of a sagacious remark by a distinguished expert in the fields of science and theology: “Einstein at least recognized that the science of physics entitled no one to sit in judgment over the question of freedom versus determinism.” Jaki, “Chance or Reality: Interaction in Nature versus Measurement in Physics,” in *Chance or Reality and Other Essays* (Lanham, MD: University Press of America, 1986), 14. Readers interested in a detailed study concerning the dependence of human freedom on divine providence must consider the magisterial analysis by Steven A. Long, “Providence, liberté et loi naturelle,” trans. Hyacinthe Defos du Rau, O.P., and Serge-Thomas Bonino, O.P., in *Revue thomiste* 102 (December 2002): 355–406; Long, “Providence, Freedom, and Natural Law,” in *Nova et Vetera*, forthcoming; and Long, “Divine Providence and John 15:5” in *Reading John with St. Thomas Aquinas: Theological Exegesis and Speculative Theology*, ed. Michael Dauphinais and Matthew Levering (Washington, D.C.: The Catholic University of America Press, 2005), 140–150. Also see the important excursus of Romanus Cessario, O.P., *Introduction to Moral Theology* (Washington, D.C.: The Catholic University of America Press, 2001), 144–148; and Cessario, “Why Aquinas Locates Natural Law within the *Sacra Doctrina*,” in *St. Thomas Aquinas and the Natural Law Tradition: Contemporary Perspectives*, ed. John Goyette, Mark S. Latkovic, Richard S. Myers (Washington, D.C.: The Catholic University of America Press, 2004), 86–87.

³⁷ Barr, “The Design of Evolution,” 10.

³⁸ *Ibid.*, emphasis added. Readers may note an ambiguity in his formulation. Based on what Barr writes, one might wonder whether the “lack of correlation” is supposed to indicate nothing more than our inability to measure exactly the relevant ontological correlation, or whether this lack of correlation is meant to point to some ontological indeterminism or causal hiatus in nature. The latter alternative, in which probability theory’s purported “explanatory” value assumes a special status, is suggested by a number of Barr’s carefully worded statements, as well as by what he leaves unsaid. It might have helped had Barr said something equivalent to this: “God ... chose not to impose on certain kinds of events physi-

lockstep ... but are part of a vastly complex web of contingency.”³⁹ Barr then cites the use of the idea of contingency by Catholic theologians, including Aquinas, in support of his statistical conception of chance.⁴⁰

A similar view of chance is defended by John Schirger.⁴¹ According to Schirger, If ... one’s theology can take account of *real chance* in the natural world, which *can be subsumed under the higher order of Divine Providence*, then Darwinian evolutionary theory is compatible with Christian theology. I would like to suggest that Thomas Aquinas’s theology possesses the conceptual tools for this task.⁴²

Later, however, Schirger admits that Aquinas’s “fifth way” (his argument regarding the telic order in nature pointing to the existence of God) “is weakened by [incompatible with?] ... Darwinian evolutionary theory, that claims to provide an account of order in the natural world [through chance and necessity] without reference to a Designer.”⁴³ “In order to be consistent with Darwinian theory,” Schirger adds, “... God’s providence cannot be inferred from the order of nature but must ... be accepted from his revelation or inferred from history or personal experience.”⁴⁴ To his credit, Schirger seems to recognize the basic tension between Darwinian mechanism and the philosophical accessibility of the truth of divine providence as revealed in the book of nature via global teleology. Unlike thinkers such as Schirger, however, Car-

cal correlations *that we can measure with perfect accuracy*.” In any event, one may detect at least some measure of semantic ambiguity in Barr’s use of the idea of chance.

³⁹ Ibid., 11.

⁴⁰ Ibid. Regarding the notion of contingency, the theological document cited by Barr refers to Aquinas, *Summa theologiae*, I, Q. 22.4, reply 1. The question addressed in that article is whether the things foreknown by divine providence occur of necessity, to the exclusion of all contingency. Aquinas defends *both* necessity *and* contingency without sacrificing either the exceptionless principle of causality or the philosophical truth that every finite thing known by God is caused by divine knowledge (see *Summa theologiae*, I, Q. 14.8 and 14.13). Aquinas’s notion of contingency must not be confused with the idea of physical indeterminism. The Thomistic understanding of contingency within the order of created being is perfectly consistent with the recognition of the *universal* operation of efficient causality in the world of nature. On the modern shift from universal causation to ontological indeterminism, see Jaki’s illuminating essay “Chance or Reality,” 1–21.

⁴¹ John A. Schirger, M.D., “Aquinas and Darwinian Chance and Necessity,” *The National Catholic Bioethics Quarterly* 3.3 (Autumn 2003): 471–478.

⁴² Ibid., 473, emphasis added.

⁴³ Ibid., 477. If Schirger’s line of argument is sound, it would appear to justify the common opinion that the evolutionary mechanism postulated by Darwin is a “design-defeating hypothesis,” a phrase employed in Schönborn’s “The Designs of Science,” *First Things* 159 (January 2006): 37. The latter is Archbishop Schönborn’s lucid reply to Barr’s “The Design of Evolution.” As I mentioned above, Cardinal Schönborn’s anti-Darwinian stance presupposes the analogy of design.

⁴⁴ Schirger, “Aquinas and Darwinian Chance,” 478. Here one might question whether one should concede that history and personal experience fall completely outside the order of nature. After all, are not human persons part of the natural world?

dinal Schönborn is not prepared to abandon final causality as a universal philosophical principle accessible to natural reason. It seems to me that one must adopt Cardinal Schönborn's position, not that of Schirger.

"Intelligible Chance" and the Priority of Non-accidental Causality

What is the essential difficulty with Schirger's line of reasoning? His reasoning calls for a fideist approach to the question of global teleology;⁴⁵ however, the theoretical integrity of classical arguments for the existence of God based on efficient causality, which Schirger wishes to preserve, requires the truth of final causality, the philosophical ground of Aquinas's theological understanding of divine providence.⁴⁶ The philosophical intelligibility of chance is not prior to, but presupposes, the operation of efficient causality,⁴⁷ and efficient causality presupposes final causality—the most important of the classical four causes.⁴⁸

Schirger's proposal situates "real chance" beyond the orbit of divine providence. "Real chance" as understood by Schirger cannot be "subsumed under the

⁴⁵ According to *Fides et ratio*, n. 55, "fideism ... fails to recognize the importance of rational knowledge and philosophical discourse for the understanding of faith, indeed for the very possibility of belief in God."

⁴⁶ "Providence is concerned with the direction of things to an end. Therefore, whoever denies final causality should also deny providence, as the Commentator says in *II Physic.*" Aquinas, *De veritate*, Q. 5. 2, resp. Regarding the issue under dispute, this article merits sustained reflection.

⁴⁷ "Chance, Gilson insisted, 'is by no means there [in Peripatetic philosophy] conceived as a pure indetermination, that is to say as something that happens without cause, and, in this respect, it makes no breach in the universal determinism; nevertheless, it is incompletely determined, it is accidental with respect to the [secondary] efficient cause because [it is] not produced thereby in view of an end, or because the thing produced is other than the end for which the [secondary] cause acts.'" Jaki, "Gilson and Science," quoting Etienne Gilson, *The Spirit of Medieval Philosophy*, trans. A. H. C. Downes [New York: Scribner, 1936], 367–368, in *Patterns or Principles and Other Essays* (Bryn Mawr, PA: Intercollegiate Studies Institute, 1995), 183–184.

⁴⁸ "The final cause is the cause of the efficient cause ... inasmuch as it is the reason for the causality of the efficient cause. For the efficient cause is a cause inasmuch as it acts, and it acts only because of the final cause. Hence the efficient cause derives its causality from the final cause. ... Even though the end is the last thing to come into being in some cases, it is always prior in causality. Hence it is called the cause of causes, because it is the cause of the causality of all causes. For it is the cause of efficient causality ... and the efficient cause is the cause of the causality of both the matter and the form, because by its motion it causes matter to be receptive of form and makes form exist in matter. Therefore, the final cause is also the cause of the causality of both the matter and the form. Hence, in those cases in which something is done for an end (as occurs in the realm of natural things, in that of moral matters, and in that of art), the most forceful demonstrations are derived from the final cause." Aquinas, *Commentary on Aristotle's Metaphysics*, Bk. V, trans. John P. Rowan (Notre Dame, IN: Dumb Ox Books, 1995), nn. 775 and 782.

higher order of Divine Providence,” for his understanding of chance is inconsistent with the philosophical truth of global teleology. Without that philosophical truth, the affirmation of divine providence must be understood within the framework of fideism, and fideism precludes a Catholic integration of faith and reason.⁴⁹ In that case, a traditional Catholic understanding of divine providence cannot be reconciled with Darwinian chance as defended by Schirger. Furthermore, the principle of efficient causality is another casualty of Darwinian chance, inasmuch as this principle cannot stand apart from global teleology.⁵⁰ Such is the connection between global teleology, efficient causality, and divine providence that the rejection of any single one of these rational principles entails the rejection of all three, the objections of philosophical naturalists notwithstanding.

Schirger’s proposed reconciliation between Darwinian chance and divine providence suggests a rather dubious conclusion. It would be analogous to saying that a spacecraft could steer itself without the guidance of a human pilot. Schirger’s proposal does not place the proverbial wagon before the horse; rather, it eliminates the horse altogether. One must keep in mind that the spacecraft’s automatic pilot would be altogether useless were it not for the foreseen goal *selected* by human intelligence, not by the automatic pilot.⁵¹ Despite the objections some might pose from a strong artificial intelligence perspective, which presupposes philosophical naturalism, the automatic pilot’s intelligibility presupposes human intelligence, which belongs to a different order of being.⁵² Moreover, if the scientific intelligibility of a computerized

⁴⁹ See Avery Cardinal Dulles, S.J., “Faith and Reason: From Vatican I to John Paul II,” in *Two Wings of Catholic Thought*, 196.

⁵⁰ Thus, in his *New York Times* op-ed piece, Cardinal Schönborn quotes Pope John Paul II: “To all these indications of the existence of God the Creator, some oppose the power of chance or of the proper mechanisms of matter. To speak of chance for a universe which presents such a complex organization in its elements and such marvelous *finality* in its life would be *equivalent to giving up the search for an explanation* of the world as it appears to us. In fact, this would be *equivalent to admitting effects without a cause*” (emphasis added.).

⁵¹ Note that there can be no true selection of a good or end without presupposing intelligence. Properly understood, natural selection points to a transcendent Intelligence. See Aquinas, *Summa theologiae*, I-II, Q. 1.2. This claim, of course, does not fit within the framework of Darwinian ideology. See Armand Maurer, “Darwin, Thomists, and Secondary Causality,” *Review of Metaphysics* 57.3 (March 2004): 502.

⁵² For a defense of the position that rational thought is not reducible to the mechanical operations of an ultra sophisticated problem-solving computer, see John R. Lucas, “Minds, Machines and Gödel,” *Philosophy* 36 (1961): 112–127; and Jaki, *Brain, Mind and Computers* (Washington, D.C.: Gateway Books, 1989), 197–251. In the latter study, Jaki quotes a Nobel-laureate biochemist to make a key point regarding the ontological leap from computers to human intelligence: “Couldn’t we save ourselves work by teaching the computer how we write those programs, and then let it program itself?” (259–260, note 11). We would surely save time were we to write a computer program capable of writing any computer programs we might wish to write. Such a “super program” would, in effect, have the abstract mathematical abilities, if not the emotions, of a human programmer. As Jaki and others argue, however, producing such a program is humanly impossible. The capacity to write count-

navigation system presupposes the metascientific intelligibility of human intelligence, it is true a fortiori that the metascientific intelligibility of human intelligence, which is not entirely self-explanatory, presupposes a metaphysically self-explanatory Intelligence, which does not belong to any order of finite being.

It is sometimes argued that the fact of evil ultimately warrants the opinion that God does not exist. For it appears that evil is logically incompatible with the existence of an all-knowing, omnipotent, and all-good God.⁵³ In response to such an atheological line of thought, Aquinas contends that the fact of evil entails God's existence! For if good were altogether nonexistent, there would be no evil, inasmuch as evil is the privation of some good within the order of good things. Moreover, there would never have been any order of good things were it not for the creative agency of self-subsistent goodness—God—upon whom this order depends for its conservation in existence.⁵⁴ Analogously, in response to those who maintain that chance falls outside the order of divine providence, one may contend that chance necessarily depends on the universal rule of divine Wisdom. For the very intelligibility of chance depends on a prior order of regular patterns or sequences of events or physical interactions which occur always or for the most part, inasmuch as a random occurrence is an unanticipated departure from the normative pattern of natural events. Furthermore, that prior intelligible order depends on an ordering intelligence or intelligent ruler beyond the intelligible universe of regulated natures.⁵⁵

The affirmation of statistical randomness or chance in nature is *an acknowledgment of unpredictability and human ignorance* vis-à-vis the underlying causal

less computer programs for countless purposes requires a type of intuitive insight or understanding that is not reducible to purely physical processes. It requires an openness to the infinite, to what exceeds the limits of a completely physical system, and a mere computer is a purely physical artifact, no matter how sophisticated it might be.

⁵³ Indeed, the problem of evil has led many, including Darwin, to abandon the Christian doctrine of divine providence in favor of some other theory. See Armand Maurer, "Darwin, Thomists, and Secondary Causality," 498.

⁵⁴ Aquinas, *Summa contra gentiles*, III, 71.

⁵⁵ If the intelligent ruler of the intelligible universe were part of this natural order, this ruler would not transcend the universal rules or laws of nature but would be subject to them. Only an intelligent cause that transcends nature and its universal laws, however, can be their causal principle. Just as what is actualized is actualized by another, so what is ruled is ruled by another. The supreme ruler, however, cannot be ruled by another; all else must fall under his rule. What falls under the rule of another cause is in some way dependent on that cause, but the primary causal principle of the universal order of nature cannot be dependent on another cause. The universal order of nature, which is not the sufficient reason for its own being, depends necessarily on an extrinsic, transcendent cause of being. See Aquinas, *Summa theologiae*, I, Q. 3. 8; Q. 22. 1–3; Q. 103. 1–8; I–II, Q. 91. 1; and Q. 93. 1 and 3–6. Regarding the principle that whatever is actualized is actualized by another, a noteworthy article was published by James A. Weisheipl, O.P., "The Principle *Omne Quod Movetur Ab Alio Movetur* in Medieval Physics," in *Nature and Motion in the Middle Ages*, ed. William E. Carroll (Washington, D.C.: The Catholic University of America Press, 1985), 75–97.

explanations of unforeseen and seemingly uncorrelated events.⁵⁶ It would be an instance of philosophical confusion, *pace* authors such as Robert T. Pennock, to cite chance as a (*per se*) cause of any given event.⁵⁷ Barr, nevertheless, seems to think that chance can play a strong explanatory role in nature:

The promoters of ... Intelligent Design ... usually admit that the ideas of statistical randomness, probability, and chance can be part of legitimate explanation of phenomena.... To make a scientific inference of "design" ... one must first exclude other explanations, including "chance."⁵⁸

Commenting on *Communion and Stewardship*, by the International Theological Commission, Barr adds, "If an 'inference of chance' as part of the explanation of a phenomenon cannot be ruled out on theological grounds, then the competing claims of neo-Darwinians and their ... critics ... cannot be settled by theology."⁵⁹ Nevertheless, as indicated earlier, to refer to chance is to refer not to some essential causal explanation, but to one's inability to identify the relevant underlying causal explanation of the observed effect.⁶⁰ Sometimes we refer to an unforeseen effect (e.g., winning the lottery) as a result of pure chance, a sheer coincidence. In fact, one can

⁵⁶ Various scholars recognize that Darwin, unlike several of his modern disciples (e.g., Kenneth Miller), held the traditional "ignorance interpretation" of chance. See Depew and Weber, *Darwinism Evolving*, 113, 206, 487. On the traditional conception of chance, see Jaki, *God and the Cosmologists* (Edinburgh: Scottish Academic Press, 1989), 142–149. In view of Darwin's recognition of the "ignorance interpretation" of chance, he was more balanced scientifically to that extent than a number of his twentieth-century disciples, who assert a radical ontological indeterminism in nature. What Darwin and these disciples have in common is their failure to grasp the true nature of participated freedom.

⁵⁷ See Pennock's *Tower of Babel*, 92–94 and 96. Aristotle recognized chance as a cause, but only as an accidental cause, not as a *per se* cause. As an accidental cause, chance necessarily presupposes essential causes, including physical things and intelligence. See Aristotle, *Physics* II, ch. 6 (198a6–13).

⁵⁸ Barr, "The Design of Evolution," 11. Properly understood, of course, chance and teleology are not mutually exclusive. Barr's use of the idea of chance, however, is not in all cases clearly in accord with the principle of final causality and the Catholic understanding of divine providence. "People have used the words 'random,' 'probability,' 'chance,' for millennia without anyone imagining that it must *always* imply a denial of divine providence" (11; emphasis added). The philosophical meaning of that statement is altered significantly if one replaces "always" with "sometimes." (Denying the claim that divine providence is *always* inapplicable is consistent with affirming the claim that divine providence is *sometimes* inapplicable. I would affirm that divine providence is always applicable.) Among those who affirm that chance, properly understood, is perfectly consistent with universal divine providence, one may include Pierre Conway, O.P., *Faith Views the Universe*, 11.

⁵⁹ Barr, "The Design of Evolution," 11. Immediately thereafter he makes it clear that, in his view, the dispute must be settled by natural science. Needless to say, I think Barr has misconstrued the theological document on which he comments.

⁶⁰ One might add that if it is impossible to measure with perfect accuracy a physical interaction (at the subatomic level, for instance), one need not infer that there is some ontological indeterminacy in the physical world. The reality of a determinate causal rela-

say that a chance event or unforeseen coincidence is providence incognito. Given a proper *philosophical* conception of chance, one must admit that there would be no chance or unforeseen coincidences without divine providence. A coincidence unforeseen by secondary causes presupposes efficient causality, which depends on final causality, which falls under divine providence.

Barr's "scientific" response fails to engage Cardinal Schönborn's anti-Darwinian stance at this higher level of discourse. Barr seems to believe that a correct grasp and application of the idea of statistical randomness speaks adequately to the dominant concern of the cardinal's statement, which pivots on the idea of finality or global teleology. The real issue, however, is whether human reason can rightly infer that evolution in the broad sense bears witness to global teleology established by divine Wisdom. Indeed, more than a few critics fail to appreciate the *philosophical* crux of the cardinal's statement.⁶¹ Seeking to challenge "the widespread abuse of John Paul's 1996 letter on evolution," Cardinal Schönborn draws the reader's attention to two general audiences of John Paul II, where he advanced a "robust teaching on nature":

The evolution of living beings, of which science seeks to determine the stages and to discern the mechanism, presents an *internal finality* which arouses admiration. This finality which directs beings in a direction for which they are not responsible or in charge, obliges one to suppose a Mind which is its inventor, its creator.... It is clear that the truth of faith about creation is radically opposed to the theories of materialistic philosophy. These view the cosmos as the result of an evolution of matter reducible to pure chance and necessity.⁶²

"Stacking the Deck"

Some readers might still doubt whether Darwinian natural selection acting on random variation precludes natural teleology. Even so, it seems exceedingly difficult

tion in the physical world does not depend on our ability or inability to obtain a perfectly accurate measurement of the physical correlation between cause and effect. In this connection I recommend Jaki's important essay "Chance or Reality," 1–21.

⁶¹ Despite "The Designs of Science," Cardinal Schönborn's reply to "The Design of Evolution," Barr continues to misunderstand the cardinal's *philosophical* point, if we are to judge from a subsequent reply: "The question of the adequacy of neo-Darwinism, then, is ultimately one of numbers—which means that it can be resolved only by detailed calculations, not by aprioristic arguments or philosophical reflection, however deep." Stephen Barr, "The Miracle of Evolution," *First Things* 160 (February 2006): 32. If the question of the adequacy of neo-Darwinism were exclusively scientific in nature, which is debatable, then Barr's metascientific argumentation on behalf of neo-Darwinism would be quite beside the point, and one could safely ignore both "The Design of Evolution" and "The Miracle of Evolution." In point of fact, Barr has ventured into knotty philosophical territory, and both Cardinal Schönborn and I welcome his valuable participation in this indispensable philosophical dialogue. I understand why positivists such as Richard Dawkins, however, who admit no common ground between science and theology, would *not* welcome the participation of an able philosopher-theologian such as Cardinal Schönborn.

⁶² Schönborn, "Finding Design in Nature," quoting John Paul II, general audiences of July 10, 1985, and March 5, 1986.

to reconcile the Darwinian mechanism with *divinely regulated* natural teleology. Was not the Darwinian mechanism supposed to provide a telos-defeating substitute for global teleology? The tension between global teleology and the Darwinian hypothesis of non-intelligent natural selection as explanatory principles is not easily ignored. If divine Wisdom strictly regulates random genetic variations from within,⁶³ then there would seem to be no room for a mechanistic, ateleological conception of natural selection as a creative agency or causal power; within the framework of global teleology established by divine Wisdom, Darwinian natural selection provides little more than a descriptive account of undeniable ecological adaptations. Natural selection describes rather than explains why better-adapted organisms are more suitably adapted to their environment and more likely than not to perpetuate their own genetic makeup. Darwinian natural selection would not function as an efficient or final cause or explanation of superior adaptation. Insofar as it is limited to serving in a strictly descriptive capacity, natural selection hardly responds to the *scientific* expectations of Darwinian orthodoxy. In Darwinian thought, natural selection was postulated to supply a purely mechanistic alternative to divinely regulated teleology. We need to recall that, as indicated in his correspondence,⁶⁴ Darwin was inclined to hold that the high incidence of evil exemplified by the often cruel struggle for existence posed a serious obstacle to the traditional Christian belief in an omnipotent and all-good God intimately involved in each and every aspect of the created universe.⁶⁵ Inspired by deistic modes of thought, the Darwinian idea of natural selection was intended to relieve God of the alleged burden of responsibility for horrendous evil, and one can hardly deny that the problem of suffering has proved to be a stumbling block for many, including the theologically callow Darwin.⁶⁶

⁶³ These random genetic variations are random *to us*, of course, not *to God*. God has, as it were, “stacked the deck,” to use Barr’s analogy (“The Design of Evolution,” 11), although Barr avoids affirming this view.

⁶⁴ See Francis Darwin, ed., *Life and Letters of Charles Darwin*, vol. 1 (London: John Murray, 1888), 309–313, excerpted in *Faith and Reason*, ed. Paul Helm (New York: Oxford University Press, 1999), 254–256. The same excerpt indicates the materialist cast of Darwin’s thought, given his conviction that the human faculty of intelligence could be reduced to the perceptual faculties of “the lowest animals.” For one discussion of the reductionist approach to man and human intelligence, see Jaki, “Glorified Ape,” in *Angels, Apes, and Men* (Peru, IL: Sherwood Sugden and Company, 1990), 41–72.

⁶⁵ See, for example, Wisdom 8:1 and 11:21; Matthew 10:29–30; and Luke 12:24.

⁶⁶ In view of the enormity of suffering in the world, the firm affirmation of God’s intimate involvement in every aspect of the created natural order—*universal* divine providence—can elicit objections not unlike the following: “Why does [God] not intervene when a fire breaks out in the cockpit of an airplane flying over the Atlantic? Or when stray radiation from the sun affects the sequence of a DNA molecule, later causing birth defects? The argument from design prevents a global perspective from the outset and by its very pre-suppositions, which is why Paley’s last chapter in his *Natural Theology*, which treats of this issue of evil, sounds so offensive to modern ears, ears now acutely attuned to the cries coming out of the abattoir we call the twentieth century.” Edward T. Oakes, S.J., “Edward T.

Inasmuch as Darwinian natural selection was designed to supplant finality, the Darwinian position goes beyond the simple admission that global teleology exceeds the proper methodological boundaries of empirical science. One might add that if the term “natural selection” were simply another label for divine direction—something neo-Darwinian biologists surely do not intend—then natural selection would be a metascientific principle, contrary to the views of contemporary neo-Darwinists.⁶⁷ In the end, the Darwinian idea of natural selection cannot yield anything more than a historical narrative of evolutionary phenomena. Evolutionary theories that depend on natural selection as some type of independent creative agency do not fare well under the light of critical analysis, and they must be retired in favor of some new evolutionary paradigm in which natural teleology plays an essential role. At any rate, not a few of the sharp reactions following the publication of the cardinal’s anti-Darwinian statement exhibit the predominantly anti-teleological bias of many writers within the pro-evolution camp. Yet, as Cardinal Schönborn understands clearly, it is ultimately impossible for any finite being to evade the divinely impressed teleology with which the natural order is radically charged.

Oakes and His Critics: An Exchange,” *First Things* 112 (April 2001), 12, <http://www.firstthings.com/ftissues/ft0104/correspondence-oakes.html>. Oakes employs the foregoing example to show that periodic interventionism (of a neo-deistic variety) undercuts theodicy. I agree that deism and periodic interventionism of the sort associated with physico-theology are problematic. The recognition of universal divine providence, however, does not make theodicy’s work any easier. I would suggest that the very attempt to provide a *moral* justification for God’s activity in history is misguided. For a discussion of the problem of evil, see Brian Davies, O.P., ed., *Philosophy of Religion: A Guide and Anthology* (Oxford, U.K.: Oxford University Press, 2000), 571–627; Brian Davies, O.P., “The Problem of Evil,” in *Philosophy of Religion: A Guide to the Subject*, ed. Brian Davies, O.P. (Washington, D.C.: Georgetown University Press, 1998), 163–201; Shanley, *The Thomist Tradition*, 92–127; Aquinas, *On Evil*, trans. Jean Oesterle (Notre Dame, IN: University of Notre Dame Press, 1995); and Aquinas, *The Literal Exposition on Job: A Scriptural Commentary Concerning Providence*, trans. Anthony Damico (Atlanta, GA: American Academy of Religion, 1989). As an aside, I would note that I do not fully concur with Fr. Shanley’s critical analysis of Fr. Davies’ treatment of the problem of evil, although I applaud Shanley’s emphasis on the doctrine of analogy.

Affirming the classical Thomistic understanding of divine providence, I would deal with the mystery of evil in a way that differs significantly from the “process” approach espoused by John F. Haught, who holds that a Darwinian perspective is better suited to address the problem of suffering. See Haught’s *God After Darwin: A Theology of Evolution* (Boulder, CO: Westview Press, 2000), 4–5, 20–22, and 45; and “Process Theology,” http://www.reference.com/browse/wiki/Process_theology. In view of Haught’s inability to affirm a number of fundamental Christian tenets (e.g., the virgin birth of Christ; the historical resurrection of Jesus), it would appear that he and I differ on more than one fundamental question. See *Tammy Kitzmiller et al. v. Dover Area School District, Dover Area School District Board of Directors*, transcript of proceedings of bench trial, afternoon session (September 30, 2005), 93–97, http://www2.ncseweb.org/kvd/trans/2005_0930_day5_pm.pdf.

⁶⁷ See Jaki, “Cosmic Rays and Water Spiders,” 237–238.

The Lure of Fideism

Still, it remains the case that teleology, like the infinite Intelligence behind it, necessarily transcends the methodological limits of modern science. This inherent limitation of empirical science, reflected in what is sometimes called “methodological naturalism,” was acknowledged by John Paul II:

Scientific proofs in the modern sense of the word are valid only for things perceptible to the senses, since it is only on such things that scientific instruments of investigation can be used.... Science must recognize its limits and its inability to reach the existence of God. It can neither affirm nor deny his existence.⁶⁸

Some are fond of citing papal declarations of that sort to support the fideist view (implicitly endorsed by scientists like Kenneth Miller⁶⁹ and the late Stephen Jay Gould⁷⁰) that God’s existence is entirely beyond the range of scientific rationality and must be left to the nonrational sphere of personal faith.⁷¹ One must not forget,

⁶⁸ John Paul II, “The Proofs for God’s Existence,” general audience of July 10, 1985, n. 1, http://www.vatican.va/holy_father/john_paul_ii/audiences/alpha/data/aud19850710.en.html.

⁶⁹ “Science is, just as John Paul II said, silent on the issue of ultimate purpose, an issue that lies outside the realm of scientific inquiry. This means that biological evolution, correctly understood, does not make the claim of purposelessness. It does not address what Simpson called the ‘deeper problem,’ leaving that problem [i.e., global teleology established by divine Wisdom], quite properly, to the realm of faith.” Kenneth Miller, “Darwin, Design, and the Catholic Faith,” <http://www.millerandlevine.com/km/evol/catholic/op-ed-krm.html>. A telltale sign of fideism is the slighting of philosophical proofs of metascientific truths (e.g., the human soul’s immortality, God’s existence and providence) in favor of fiducial faith. In fideism there is no appreciation of how philosophical knowledge complements rather than precludes the theological virtue of faith, which is a supernatural perfection of the intellect. See Aquinas, *Summa theologiae*, II–II, Q. 4.2 and 4.5; and John Paul II, *Fides et ratio*, nn. 22, 45–46, 55, 61, 76, 83–84, 88, 95, 97–98, and 105–106.

⁷⁰ See Stephen J. Gould, “Nonoverlapping Magisteria,” in *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*, ed. Robert T. Pennock (Cambridge, MA: MIT Press, 2001), 737–749. Gould would not concede that philosophical assertions stemming from religious faith are rationally grounded in the extra-mental world. Thus, the Christian affirmation of Jesus’s bodily resurrection or Mary’s physical assumption into heaven should be regarded, if Gould were correct, as non-rational, ontologically baseless myths, for these historical events are scientifically unverifiable. Gould’s position does not permit any real integration between the orders of faith and reason. Insofar as there is no recognition of the philosophical bridge between empirical science and revealed theology, it will be difficult to admit any vital nexus between natural reason and the supernatural gift of divine faith.

⁷¹ In this connection, one might note that the director of the Vatican Observatory, George V. Coyne, S.J., sometimes speaks in ways that border on a pragmatic fideism: “I have never come to believe in God ... by proving God’s existence through anything like a scientific process. God is not found as the conclusion of a rational process like that.... I believe in God because God gave himself to me.... I had no private revelations. But I had

however, that John Paul's acknowledgment of the inherent limits of empirical science was followed by an essential qualification:

From this, however, we must not draw the conclusion that scientists in their scientific studies are unable to find valid reasons for admitting the existence of God. If science as such cannot reach God, the scientist who has an intelligence, the object of which is not limited to things of sense perception, can discover in the world reasons for affirming a Being which surpasses it. Many scientists have made and are making this discovery.⁷²

In other words, through scientific inquiry, an open-minded scientist can gather empirical data used to ground the reasoned conclusion that the universe is foreknown and governed by divine Wisdom, and this is no less true at the subatomic level of quantum mechanics than it is at the astrophysical level of planetary motion. Yet science instructors in tax-funded schools are not permitted to draw students' attention to this eminently rational conclusion. The legal injunction seems to be based on an ideological reading of the Establishment Clause of the First Amendment, which purportedly creates an impermeable wall of separation between religion and politics. Moreover, the secularist philosophy underlying such a reading, espoused by the American Civil Liberties Union and others in the *Kitzmiller v. Dover* case, finds ample support in Darwinian evolutionism.

Scientism and Philosophical Naturalism

In any event, the elimination of natural teleology is a self-defeating position advanced not by genuine science but by scientism.⁷³ For the elimination of teleology would effectively entail the elimination of human intelligence, which clearly exhibits in its own proper acts the existence of teleology *within the natural order*. Without

parents who taught me and educated me in religious ways, and I went to religious schools, and then I challenged it and I thought about it, and I said: 'Who could ever believe that?'—just like most of us do. I went through life doing this, and finally I said: 'You know, it is not that it makes complete sense; the point is that it [belief in the existence of God] enriches my life.'" Coyne, "The Dance of the Fertile Universe."

⁷² John Paul II, "The Proofs for God's Existence," n. 1. This qualification makes clear that Pope John Paul's admission of *methodological* naturalism does not entail *philosophical* naturalism. The refusal to affirm John Paul's qualification, however, would, in effect, imply the endorsement of philosophical naturalism.

⁷³ *Scientism* is "the philosophical notion which refuses to admit the validity of forms of knowledge other than those of the positive sciences; and it relegates religious, theological, ethical and aesthetic knowledge to the realm of mere fantasy." John Paul II, *Fides et ratio*, n. 88. Regarding scientism and the need for philosophy, see Robert J. Henle, S.J., "Philosophical Method and The Cultural Crisis of Our Times," in *The American Thomistic Revival in the Philosophical Papers of R. J. Henle, S.J.* (St. Louis, MO: Saint Louis University Press, 1999), 27–32. The same volume contains two closely related essays by Henle: "A Thomistic Explanation of the Relations Between Science and Philosophy" (33–45) and "Science and the Humanities" (1–25). The latter contains a discussion of "pluralistic epistemology," i.e., the analogy of *scientia* (13). On scientism and evolutionary theories based on philosophical naturalism, one might consider the following observation by Joseph Cardinal Ratzinger, an-

human intelligence, however, there would be no natural science. Indeed, Darwinian evolutionism lacks the theoretic resources needed to explain the appearance of human intelligence in the natural order,⁷⁴ although this intrinsic limitation has not discouraged various authors from trying to locate such an explanation within the narrow purview of philosophical naturalism, according to which everything can be explained reductively by reference to purely natural causes governed by chance and necessity.⁷⁵ Chance and necessity, in turn, are considered ultimate explanatory principles of the cosmic order, which is believed to have emerged from nothingness or from the uncreated shadows of disorder.⁷⁶ The idea of chaos, however, is radically unintelli-

other key author: "Only exact scientific knowledge was knowledge at all [within a system of solely material values]. Any idea about God was thereby made redundant. Auguste Comte's proclamation that one day there would be a 'physics of man,' and that those great questions hitherto left to metaphysics could in the future be dealt with in just as 'positive' a way as everything that now constitutes science, left an impressive echo in our own century in the social sciences. The separation of physics from metaphysics achieved by Christian thinking is being steadily canceled. Everything is to become 'physics' again. The theory of evolution has increasingly emerged as the way to make metaphysics disappear, to make 'the hypothesis of God' (Laplace) superfluous, and to formulate a strictly 'scientific' explanation of the world. A comprehensive theory of evolution, intended to explain the whole of reality, has become a kind of 'first philosophy,' which represents, as it were, the true foundation for an enlightened understanding of the world. Any attempt to involve any basic elements other than those worked out within the terms of such a 'positive' theory, any attempt at 'metaphysics,' necessarily appears as a relapse from the standards of enlightenment, as abandoning the universal claims of science. Thus the Christian idea of God is necessarily regarded as unscientific. There is no longer any *theologia physica* ... that corresponds to it: in this view, the doctrine of evolution is the only *theologia naturalis*, and that knows of no God, either a creator in the Christian (or Jewish or Islamic) sense or a world-soul or moving spirit in the Stoic sense.... Have Christianity and reason permanently parted company? There is at any rate no getting around the dispute about the extent of the claims of the doctrine of evolution as a fundamental philosophy and about the exclusive validity of the positive method as the sole indicator of systematic knowledge and of rationality." Ratzinger, *Truth and Tolerance: Christian Belief and World Religions*, trans. Henry Taylor (San Francisco: Ignatius Press, 2004), 178–179. I am indebted to Roger Nutt for calling my attention to this passage.

⁷⁴ The limitation in question applies to any empirical scientific theory; the existence of human intelligence in the natural order is beyond the explanatory competence of modern empirical science.

⁷⁵ See, for instance, J. J. C. Smart and J. J. Haldane, *Atheism and Theism* (Malden, MA: Blackwell Publishers, 1997), 173–176. For several selections touching on reductionist materialism vis-à-vis (1) the mind/body question, (2) consciousness, and (3) personal identity, see Laurence Bonjour and Ann Baker, *Philosophical Problems: An Annotated Anthology* (New York: Pearson Education, 2005), 307–452. For a popular account of the fate of the notion of soul and, by extension, that of mind in modern thought, see William Barrett, *Death of the Soul: From Descartes to the Computer* (New York: Anchor Press, 1986).

⁷⁶ For a refutation of this antirealist opinion, see Wojciech P. Grygiel, F.S.S.P., "The Metaphysics of Chaos: A Thomistic View of Entropy and Evolution," *The Thomist* 66.2 (April 2002): 251–266; and William E. Carroll, "Aquinas and the Big Bang," *First Things* 97 (November 1999): 18–20.

gible without reference to the philosophically antecedent notion of order, just as the idea of evil presupposes the notion of good. The ultimate foundation of the intelligible cosmic order that is the physical universe cannot be natural causes ruled by chance and necessity, but must be a transcendent Mind.⁷⁷ Contingent and necessary causes must be traced back ultimately to a non-finite, immaterial, superintelligent divine Cause that is neither a contingent nor a necessary cause. The contrary view is incompatible with the universal principle of causality. For this anti-realist (and contra-rational) view would allow that an effect (e.g., human intelligence) could be ontologically superior to its purported cause (e.g., a nonrational animal).⁷⁸ There can be nothing in the effect, however, that is not found antecedently in some way, either univocally or analogically, in its total cause.⁷⁹ Moreover, without the universal prin-

⁷⁷ According to Cardinal Ratzinger, “The question that has now to be put certainly delves deeper: it is whether the theory of evolution can be presented as a universal theory concerning all reality, beyond which further questions about the origin and the nature of things are no longer admissible and indeed no longer necessary, or whether such ultimate questions do not after all go beyond the realm of what can be entirely the object of research and knowledge by natural science.... In the end this concerns a choice that can no longer be made on purely scientific grounds or basically on philosophical grounds. The question is whether reason, or rationality, stands at the beginning of all things and is grounded in the basis of all things or not. The question is whether reality originated on the basis of chance and necessity (or, as Popper says, ... on the basis of luck and cunning) and, thus, from what is irrational; that is, whether reason, being a chance by-product of irrationality and floating in an ocean of irrationality, is ultimately just as meaningless; or whether the principle that represents the fundamental conviction of Christian faith and of its philosophy remains true: ‘In principio erat Verbum’—at the beginning of all things stands the creative power of reason. Now as then, Christian faith represents the choice in favor of the priority of reason and of rationality. This ultimate question ... can no longer be decided by arguments from natural science, and even philosophical thought reaches its limits here. In that sense, there is no ultimate demonstration that the basic choice involved in Christianity is correct. Yet, can reason really renounce its claim to the priority of what is rational over the irrational, the claim that the Logos is at the ultimate origin of things, without abolishing itself? The explanatory model presented by Popper ... shows that reason cannot do other than to think of irrationality according to its own standards, that is, those of reason ... so that it implicitly reintroduces nonetheless the primacy of reason, which [Popper’s explanatory model] denied. Even today, by reason of its choosing to assert the primacy of reason, Christianity remains ‘enlightened,’ and ... any enlightenment that cancels this choice must, contrary to all appearances, mean, not an evolution, but an involution, a shrinking, of enlightenment.” *Truth and Tolerance*, 180–182.

⁷⁸ Some may attempt to skirt this difficulty by denying the “ontological leap” from subhuman animals to human persons, erasing the metaphysical distinction in kind between the former and the latter. At the very least, one can say that such a denial would constitute a materialistic reductionism in radical conflict with the Catholic faith. See, for instance, *The Church Teaches: Documents of the Church in English Translation*, trans. John F. Clarkson, S.J., et al. (Rockford, IL: Tan Books, 1973), 150–151 and 154.

⁷⁹ Seeing that the reality of the human mind exceeds the methodological boundaries of natural science, Stanley Jaki is among those who clearly grasp the ultimate incoherence of the opinion that mind could somehow be derived from some material principle. See Jaki, “The Mind: Its Physics or Physiognomy?” in *Patterns or Principles*, 204–213. Jaki’s in-

ciple of causality, modern science cannot stand. We would be left with nothing better than metaphysically groundless superstition or mythological constructs.⁸⁰

In firm opposition to philosophical naturalism, Christian intellectuals must maintain that a vigorous metaphysical vision of existence cannot be confined within the methodological parameters of natural science. They must reiterate and defend without reservation the position that empirical science is not the only or highest form of knowledge of reality, and that natural teleology can be known by rational means beyond the boundaries of positivistic science.⁸¹ Otherwise, it will be difficult to maintain the valuable metascientific distinction between methodological naturalism and philosophical naturalism, and the latter is logically incompatible with classical monotheistic doctrines promulgated by the Catholic Church and by other traditional Abrahamic faiths. Moreover, unless Christian intellectuals persistently challenge the tacit cultural hegemony of philosophical naturalism in the public square, it is not evident how we will succeed in preserving the requisite theological roots of an authentically Christian, as opposed to deistic, worldview.

Scientific inquiry and explanation presuppose various metascientific principles, including the principle of finality or natural teleology. As a human enterprise, the pursuit of scientific knowledge is itself a salient instance of teleological activity. For, according to its proper telos, human intelligence is naturally inclined to pursue the truth of things. We observe natural teleology at work, moreover, in the marvelous ontogenesis of individual biological organisms. When comparing a human embryo, an adolescent girl, and an adult woman, for example, reasonable persons with adequate observational experience can easily discern which is the relative point of departure and which is the end of the telic activity of the human person's ontogenetic evolution. Aside from some unforeseen causal impediment or a deliberate human act resulting in the premature loss or destruction of human life, the individual human

cisive paper contains several philosophical pearls for scientists and nonscientists alike: "With matter [physics] began, with matter it will end; it will never trespass into the province of mind" (212, quoting J. H. Newman, *The Idea of a University* [London: Longmans, Green, 1888], 432–433). See also Jaki, "Beyond Science," in *Limits of a Limitless Science*, 96; *The Relevance of Physics* (Edinburgh: Scottish Academic Press, 1992), 381–382; and "The Limits of a Limitless Science," in *Limits of a Limitless Science*, 1–23. It is hardly surprising that scientists and philosophers caught in the web of philosophical naturalism should end up denying the ontological reality of man's intellect. Without the appropriate metaphysical tools, even a strong opponent of philosophical naturalism, such as Alvin Plantinga, will find it impossible to acquire truly demonstrative knowledge of the existence of human and superhuman minds. See Plantinga, *God and Other Minds: A Study of the Rational Justification of Belief in God* (Ithaca, NY: Cornell University Press, 1990).

⁸⁰ See John Paul II, *Fides et ratio*, nn. 36–37, 40–41, 46, 48, 52, and 88.

⁸¹ On the critical question of positivistic science, see Schönborn, "The Designs of Science," 37–38. As noted in the online *New Advent Catholic Encyclopedia*, positivism "denies the validity of metaphysical speculations, and maintains that the data of sense experience are the only object and the supreme criterion of human knowledge"(s.v. "Positivism," <http://www.newadvent.org/cathen/12312c.htm>).

embryo will become a mature woman. Mature women do not become or degenerate into human embryos. The linear, not circular, directionality of ontogenesis is clear and intrinsically intelligible. Natural teleology and the intrinsic intelligibility of evolving organisms stand or fall together.

Following the lead of writers like St. Augustine, one could develop a similar point about the telic directionality of the spiritual history of man, both individually and collectively. The drastic impact of sin on human freedom, however, introduces distortions and obscurities which, apart from the light of divine revelation and the theological virtue of faith, can make it difficult to discern the universal rule of divine Wisdom within the history of intelligent life. This suggests that one must exercise caution whenever the range of evolutionary theory is extended, as it usually is, to include the history of human existence. When the whole truth about man is under consideration, one must transcend the boundaries of both positivistic science and methodological naturalism. One thereby acknowledges the intrinsic limitations of evolutionary science, particularly at a time when the indispensable nexus between evolution and global teleology is being severed implicitly through silence, whether voluntary or legally enforced.

Genuine Methodological Naturalism versus Pseudo-methodological Naturalism

This leads to the next point regarding public education. On the connection between scientific rationality and global teleology, we should avoid conflating two essentially different theoretical postures. The first posture might be expressed in this way: “We are well aware of the central importance of teleology, on which natural science depends, but we cannot demonstrate the reality of teleology without going outside the methodological boundaries of empirical science.”⁸² The second posture could be articulated as follows: “We simply do not know whether there is any such thing as global teleology; consequently, it is entirely appropriate that natural scientists should remain silent on this issue.”⁸³ Unlike the former posture, the latter constitutes an agnosticism that is inimical to the Judeo-Christian tradition, an agnosticism that all teachers should repudiate unconditionally, and not merely for the sake of conserving the philosophic soil of scientific rationality. Thus, Cardinal Schönborn endeavors to “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 ... an abdication of human intelligence.”⁸⁴

⁸² This is a legitimate expression of methodological naturalism.

⁸³ This is not consistent with genuine methodological naturalism, which requires an explicit recognition of metaphysical truths, including the existence of a transcendent efficient cause of being. Methodological naturalism is reduced inevitably to philosophical naturalism in the hands of those who will admit neither a metaphysical theory of causation nor the existence of an intelligent efficient cause extrinsic to and independent of the entire natural order.

⁸⁴ Schönborn, “Finding Design in Nature.”

The opposition in public education to the unqualified endorsement of global teleology is inconsistent with the truth that the intelligibility of what is contingent or necessary depends on the philosophical principle of finality. From the standpoint of human intelligence, there can be no responsible neutrality on the question of teleology. Furthermore, since practicing scientists must rely on one or another conception of the intelligible good whenever they engage in scientific activity, complete silence on the issue of teleology is difficult to reconcile with the scientist's rational conduct. Yet this very silence is frequently, if not always, mandated and legally enforced within our tax-funded schools. Natural teleology must be admitted and defended, however, if we are to preserve both the common good and the good of human intelligence and scientific rationality.

In order to help clarify and bolster the Catholic Church's consistent stance on the vital import of global teleology regulated by divine Wisdom, Cardinal Schönborn chose to inject his own voice into this fundamental cultural debate. For his judicious contribution to the battle over global teleology, we owe him a considerable debt of gratitude. A proper acknowledgment of that debt will depend on our refusal to elide the distinction between the external-interventionism debate and the global-teleology debate.

The Problem of Fuzzy Thinking

Catholic scientists such as Stephen Barr and Kenneth Miller are certainly correct to affirm that no truth of science can contradict the truth of divine revelation. It is equally correct to maintain that evolutionary theory in the broad sense—the idea of common ancestry—is not intrinsically incompatible with the Catholic faith. We tend to promote fuzzy thinking, however, when our linguistic habits reinforce the common opinion that evolutionary theory broadly construed is essentially equivalent to one or another variant of Darwinism. Such fuzzy thinking fosters unnecessary polarization within the public square, weakens the cause of genuine empirical science, and detracts from the good of a sound public education. Moreover, if we ignore the principle of finality and Cardinal Schönborn's admonition concerning Darwinian ideology masquerading as legitimate science, both fideism and positivism threaten to subvert the necessary dialogue between science, philosophy, and the living faith of the Church.