



El 7 de julio de 2005, el Arzobispo de Viena, Cardenal Christoph Schönborn, publicó en el *New York Times* una columna titulada *Finding Design in Nature*, en la que recogía y explicaba la afirmación del Papa Juan Pablo II "la evolución es más que una hipótesis". Tras la publicación del artículo, se produce una respuesta, vía ensayo, del físico Stephen Barr, publicada en la revista *First Things* bajo el título *The Design of Evolution*.

Comienza así un intenso

debate dentro de la Iglesia Católica que se desarrolla sobre todo en internet, permitiendo que el tono del mismo sea más el de una conversación "familiar", entre personas que, en principio, tienen pareceres similares.

Sin embargo, salvo interesantes excepciones, el diálogo se transforma en una discusión terminológica, en línea con la argumentación de Barr, y en la que el propio físico interviene insistiendo en lo expuesto en su ensayo.

Este acalorado debate

refleja, en realidad, una controversia mayor que enfrenta a los defensores del neodarwinismo con los que apoyan la teoría del diseño inteligente. A su vez, ejemplifica la cuestión de fondo que quería tratar el cardenal Schönborn: la existencia de un "*spirit-matter dualism*" en la comunidad católica, que permite la convivencia de una mentalidad materialista para juzgar la vida y la evolución, a la que se suma una fe difusa y ambigua.

Como expone el cardenal en su segundo texto, y como

también apuntan algunos a lo largo del debate, si se distingue entre neodarwinismo como mecanismo y como filosofía, sí sería compatible con la religión católica.

A continuación recogemos los textos del Cardenal Schönborn, del doctor Barn, así como algunos ejemplos del debate que éstos originaron en internet.

01

Finding Design in Nature

Christoph Schönborn

Ever since 1996, when Pope John Paul II said that evolution (a term he did not define) was "more than just a hypothesis," defenders of neo-Darwinian dogma have often invoked the supposed acceptance –or at least acquiescence– of the Roman Catholic Church when they defend their theory as somehow compatible with Christian faith.

But this is not true. The Catholic Church, while leaving to science many details about the history of life on earth, proclaims that by the light of reason the human intellect can readily and clearly discern purpose and design in the natural world, including the world of living things.

Evolution in the sense of common ancestry might be true, but evolution in the neo-Darwinian sense –an unguided, unplanned process of random variation and natural selection– is not. Any system of thought that denies or seeks to explain away the overwhelming evidence for design in biology is ideology, not science.

Consider the real teaching of our beloved John Paul. While his rather vague and unimportant 1996 letter about evolution is always and everywhere cited, we see no one discussing these comments from a 1985 general audience that represents his robust teaching on nature:

"All the observations concerning the development of life lead to a similar conclusion. 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."

He went on: "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. It would be to abdicate human intelligence, which would thus refuse to think and to seek a solution for its problems."

Note that in this quotation the word "finality" is a philosophical term synonymous with final cause, purpose or design. In comments at another general audience a year later, John Paul concludes, "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."

Naturally, the authoritative Catechism of the Catholic Church agrees: "Human intelligence is surely already capable of finding a response to the question of origins. The existence of God the Creator can be known with certainty through his works, by the light of human reason." It adds: "We believe that God created the world according to his wisdom. It is not the product of any necessity whatever, nor of blind fate or chance."

In an unfortunate new twist on this old controversy, neo-Darwinists recently have sought to portray our new pope, Benedict XVI, as a satisfied evolutionist. They have quoted a sentence about common ancestry from a

2004 document of the International Theological Commission, pointed out that Benedict was at the time head of the commission, and concluded that the Catholic Church has no problem with the notion of "evolution" as used by mainstream biologists –that is, synonymous with neo-Darwinism.

The commission's document, however, reaffirms the perennial teaching of the Catholic Church about the reality of design in nature. Commenting on the widespread abuse of John Paul's 1996 letter on evolution, the commission cautions that "the letter 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."

Furthermore, according to the commission, "An unguided evolutionary process –one that falls outside the bounds of divine providence– simply cannot exist."

Indeed, in the homily at his installation just a few weeks ago, Benedict proclaimed: "We are not some casual and meaningless product of evolution. Each of us is the result of a thought of God. Each of us is willed, each of us is loved, each of us is necessary."

Throughout history the church has defended the truths of faith given by Jesus Christ. But in the modern era, the Catholic Church is in the odd position of standing in firm defense of reason as well. In the 19th century, the First Vatican Council taught a world newly enthralled by the "death of God" that by the use of reason alone mankind could come to know the reality of the Uncaused Cause, the First Mover, the God of the philosophers.

Now at the beginning of the 21st century, faced with scientific claims like neo-Darwinism and the multiver-



se 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. ■

02 *The Design of Evolution*

Stephen M. Barr

Catholic theology has never really had a quarrel with the idea that the present species of plants and animals are the result of a long process of evolution -or with the idea that this process has unfolded according to natural laws. As the 1909 *Catholic Encyclopedia* put it, these ideas seem to be "in perfect agreement with the Christian conception of the universe".

Catholic theologians were more hesitant with respect to the origin of the human race, but even here, the old encyclopedia admitted, evolution of the human body is "*per se* not improbable" and a version of it had "been propounded by St. Augustine". The crucial doctrinal point was that the human soul, being spiritual, could not be the result of any merely material process: biological evolution any more than sexual reproduction. The soul must be conferred on each person by a special creative act of God. And so the Church is required to reject atheistic and materialistic philosophies of evolution, which deny the existence of a Creator or His providential governance of the world. As long as evolutionary theory confined itself to properly biological questions, however, it was considered benign.

This was the view that was taught to generations of children in Catholic schools. The first formal statement



on evolution by the *magisterium* did not come until the encyclical letter *Humani Generis* of Pope Pius XII in 1950. The only point that the pontiff asserted as definitely dogmatic was that the human soul was not the product of evolution. As for the human body, Pius noted, its evolution from those of lower animals could be investigated as a scientific hypothesis, so long as no conclusions were made rashly.

This is how things stood for another half century. Then, in 1996, in a letter to the Pontifical Academy of Sciences, Pope John Paul II acknowledged that the theory of evolution is now recognized as "more than a hypothesis", thanks to impressive and converging evidence coming from a variety of fields. He reiterated what he called the "essential point" made by Pius XII, namely that "if the human body takes its origin from pre-existent living matter, [nevertheless] the spiritual soul is immediately created by God".

Some commentators in the scientific and popular press took this statement to mean the Church had once rejected evolution and was now at last throwing in the towel. The truth is that Pius XII, though cautious, was clearly willing to let the scientific chips fall where they might; and John Paul II was simply noting the obvious fact that a lot of chips had since fallen. Nevertheless, John Paul's statement was a welcome reminder of the Church's real attitude toward empirical science. It was followed in 2004 by a lengthy document from the International Theological Commission (headed by Cardinal Ratzinger) entitled *Communion and Stewardship: Human Persons Created in the Image of God*. This important document contained, along with much else, a lucid and careful analysis of evolution and its relation to Catholic teaching.

So why did Christoph Schönborn, the cardinal archbishop of Vienna, lash out this summer at neo-Darwinism? In an opinion piece for the *New York Times* on July 7, he reacted indignantly to the suggestion that "the Catholic Church has no problem with the notion of 'evolution' as used by mainstream biologists—that is, synonymous with neo-Darwinism". Brushing off the 1996 statement of John Paul II as "vague and unimportant", he cited other evidence (including statements by the late pope, sentences from *Communion and Stewardship* and the *Catechism of the Catholic Church*, and a line from the new Pope Benedict XVI's installation homily) to make the case that neo-Darwinism is in fact incompatible with Catholic teaching.

In the United States, the harsh questions and mocking comments came fast and furious. Could it really be that the modern Church is condemning a scientific theory? How much doctrinal weight does Schönborn's article have? (After all, if a letter by a pope addressed to scientists can be called "unimportant", how important can a letter by a cardinal to the readers of a newspaper be?) Why did he write it? (It appears that it was done at the urging and with the assistance of his friend Mark Ryland, a philanthropist and ardent champion of the anti-Darwinian Intelligent Design movement). And what, precisely, was the cardinal saying?

The Church in recent centuries has avoided taking sides in intramural scientific disputes—which means the form as well as the content of the cardinal's article came as a shock. The issues it treats, having chiefly to do with the relation of chance and randomness to divine providence, are extremely subtle and cannot be dealt with adequately in the space of a newspaper column. It

was nearly inevitable, therefore, that distinctions would get lost, terms would be ill-defined, and issues would be conflated.

By saying that "neo-Darwinism" is "synonymous" with "'evolution' as used by mainstream biologists", Schönborn indicates that he means the term as commonly understood among scientists. As so understood, neo-Darwinism is based on the idea that the mainspring of evolution is natural selection acting on random genetic variation. Elsewhere in his article, however, the cardinal gives another definition: "evolution in the neo-Darwinian sense [is] an unguided, unplanned process of random variation and natural selection". This is the central misstep of Cardinal Schönborn's article. He has slipped into the definition of a *scientific* theory, neo-Darwinism, the words "unplanned" and "unguided", which are fraught with *theological* meaning.

The line he quotes from *Communion and Stewardship* may seem to support him: "An unguided evolutionary process—one that falls outside the bounds of divine providence— simply cannot exist". And, since it is a fundamental Christian doctrine that God's providential plan extends to all events in the universe, nothing that happens can be "unplanned" as far as God is concerned.

But *Communion and Stewardship* also explicitly warns that the word "random" as used by biologists, chemists, physicists, and mathematician in their technical work does not have the same meaning as the words "unguided" and "unplanned" as used in doctrinal statements of the Church. In common speech, "random" is often used to mean "uncaused", "meaningless", "inexplicable", or "pointless". And there is no question that some biologists, when they explain evolution to the

public or to hapless students, do argue from the "randomness" of genetic mutations to the philosophical conclusion that the history of life is "unguided" and "unplanned". Some do this because of an antireligious *animus*, while others are simply careless.

When scientists are actually doing science, however, they do not use the words "unguided" and "unplanned". The Institute for Scientific Information's well-known *Science Citation Index* reveals that only 48 papers exist in the scientific literature with the word "unguided" in the title, most having to do with missiles. Only 467 have the word "unplanned", almost all referring to pregnancies or medical procedures. By contrast there are 52,633 papers with "random" in the title, from all fields of scientific research. The word "random" is a basic technical term in most branches of science. It is used to discuss the motions of molecules in a gas, the fluctuation of quantum fields, noise in electronic devices, and the statistical errors in a data set, to give but a few examples. So if the word "random" necessarily entails the idea that some events are "unguided" in the sense of falling "outside of the bounds of divine providence", we should have to condemn as incompatible with Christian faith a great deal of modern physics, chemistry, geology, and astronomy, as well as biology.

This is absurd, of course. The word "random" as used in science does not mean uncaused, unplanned, or inexplicable; it means uncorrelated. My children like to observe the license plates of the cars that pass us on the highway, to see which states they are from. The sequence of states exhibits a degree of randomness: a car from Kentucky, then New Jersey, then Florida, and so on—because the cars are uncorrelated: Knowing where one car comes from tells us nothing about where the next



one comes from. And yet, each car comes to that place at that time for a reason. Each trip is planned, each guided by some map and schedule. Each driver's trip fits into the story of his life in some intelligible way, though the story of these drivers' lives are not usually closely correlated with the other drivers' lives.

Or consider this analogy. Prose, unlike a sonnet, has lines with final syllables that do not rhyme. The sequence those syllables form will therefore exhibit randomness. But this does not mean a prose work is "unguided" or "unplanned". True enough, the writer did not select the words with an eye to rhyming them, imposing on them that particular kind of correlation. But the words are still chosen. So God, though he planned His work with infinite care, may not have chosen to impose certain kinds of correlations on certain kinds of events, and the motions of the different molecules in a gas, for example, may exhibit no statistically verifiable correlation.

We should distinguish between what we may call "statistical randomness", which implies nothing about whether a process was planned or guided, and "randomness" in other senses. 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. We may wish to determine, for example, whether the incidence of cancer in a certain county is consistent with statistical expectations, or whether there is some as-yet-unknown causal factor at work. By looking at the actuarial statistics, the age profile, and so on, one can compute the expected number of deaths due to cancer and see whether there is a statistically significant deviation from it. Implicit in all such computations are assumptions

about randomness. Entire subfields in science (such as "statistical mechanics") are based on these methods: the properties of gases, liquids, and solids, for instance, can be understood and accurately calculated by methods that make assumptions about the randomness of molecular and atomic motion.

The promoters of the anti-Darwinian Intelligent Design movement usually admit that the ideas of statistical randomness, probability, and chance can be part of legitimate explanation of phenomena. They argue instead that to be able to make a scientific inference of "design" in some set of data one must first exclude other explanations, including "chance". The members of the International Theological Commission were clearly referring to the Intelligent Design movement when they wrote in *Communion and Stewardship*: "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".

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 Intelligent Design critics about biological complexity cannot be settled by theology. To their credit, many of the best writers in the Intelligent Design movement, including William Dembski and Michael Behe, also insist the issue is one to be settled scientifically.



We cannot settle the issue of the role of "chance" in evolution theologically, because God is omnipotent and can therefore produce effects in different ways. Suppose a man wants to see a particular poker hand dealt. If he deals from a single shuffled deck, his chance of seeing a royal straight flush is 1 in 649,740. So he might decide to stack the deck, introducing the right correlations into the deck before dealing. Alternatively, he might decide to deal a hand from each of a billion shuffled decks. In that case the desired hand will turn up almost infallibly. (The chances it will not are infinitesimal: 10^{-669}). In which way did God make life? Was the molecular deck "stacked" or "shuffled"?

This poker analogy is weak, of course. We don't know the order of a shuffled deck —that's one reason we shuffle it. But God knows all the details of the universe from all eternity. He knows what's in the cards. The scientist and the poker player do not look at things from God's point of view, however, and so they talk about "probabilities".

People have used the words "random", "probability", "chance", for *millennia* without anyone imagining that it must always imply a denial of divine providence. "I returned and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill, but time and *chance* happeneth to them all", as Ecclesiastes notes. Or, to make the point in dry technical terms, there is not a perfect correlation between being strong and winning or between having bread and being wise.

Why is there statistical randomness and lack of correlation in our world? It is because events do not march in lockstep, according to some simple *formula*,

but are part of a vastly complex web of contingency. The notion of contingency is important in Catholic theology, and it is intimately connected to what in ordinary speech would be called "chance".

Communion and Stewardship settles this point. "Many neo-Darwinian scientists, as well as some of their critics, have concluded that if evolution is a radically contingent materialistic process driven by natural selection and random genetic variation, then there can be no place in it for divine providential causality", the document observes. "But it is important to note that, according to the Catholic understanding of divine causality, true contingency in the created order is not incompatible with a purposeful divine providence. Divine causality and created causality radically differ in kind and not only in degree. Thus, even the outcome of a purely contingent natural process can nonetheless fall within God's providential plan. According to St. Thomas Aquinas: 'The effect of divine providence is not only that things should happen somehow, but that they should happen either by necessity or by contingency. Therefore, whatsoever divine providence ordains to happen infallibly and of necessity, happens infallibly and of necessity; and that happens from contingency which the divine providence conceives to happen from contingency'. In the Catholic perspective, neo-Darwinians who adduce random genetic variation and natural selection as evidence that the process of evolution is absolutely unguided are straying beyond what can be demonstrated by science".

It is not neo-Darwinists as such that are being criticized here, but only the invalid inference drawn by "many" of them (along with "some of their critics") that the putative "randomness" of genetic variation necessa-



rily implies an "absolutely unguided" process. It is clearly the intention of this passage to distinguish sharply the actual hypotheses of legitimate science from the philosophical errors often mistakenly thought to follow from them.

In his article, Schönborn cites the *Catechism of the Catholic Church*: "We believe that God created the world according to His wisdom. It is not the product of any necessity whatever, nor of blind fate or chance". And yet, it is one thing to say that the whole world is a product of chance and the existence of the universe a fluke, and quite another to say that within the universe there is statistical randomness. The cardinal also quotes the following passage from an address of the late pope: "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 marvelous finality in its life would be equivalent to giving up the search for an explanation of the world as it appears to us". Indeed. But to employ arguments in science based on statistical randomness and probability is not necessarily to "oppose" the idea of chance to the existence of God the Creator.

Even within the neo-Darwinian framework, there are many ways that one could see evidence of that "finality" (the directedness of the universe and life) to which John Paul II refers. The possibility of an evolutionary process that could produce the marvelously intricate forms we see presupposes the existence of a universe whose structure, matter, processes, and laws are of a special character. This is the lesson of the many "anthropic coincidences" that have been identified by physicists and chemists. It is also quite likely, as suggested by

the eminent neo-Darwinian biologist Simon Conway Morris, that certain evolutionary endpoints (or "solutions") are built into the roles of physics and chemistry, so that the "random variations" keep ending up at the same destinations, somewhat as meandering rivers always find the sea. In his book *Life's Solution*, Morris adduces much impressive evidence of such evolutionary tropisms. And, of course, we must never forget that each of us has spiritual powers of intellect, rationality, and freedom that cannot be accounted for by mere biology, whether as conceived by neo-Darwinians or their Intelligent Design critics.

I personally am not at all sure that the neo-Darwinian framework is a sufficient one for biology. But if it turns out to be so, it would in no way invalidate what Pope Benedict has said: "We are not some casual and meaningless product of evolution. Each of us is the result of a thought of God. Each of us is willed, each of us is loved, each of us is necessary". In his *New York Times* article, Cardinal Schönborn understandably wanted to counter those neo-Darwinian advocates who claim that the theory of evolution precludes a Creator's providential guidance of creation. Regrettably, he ended up giving credibility to their claim and obscuring the clear teaching of the Church that no truth of science can contradict the truth of revelation. ■



03

The Design of Evolution

Christoph Schönborn

In July 2005 the New York Times published my short essay “Finding Design in Nature.” The reaction has been overwhelming, and not overwhelmingly positive. In the October issue of *First Things*, (www.firstthings.com/ftissues/ft0510/opinion/barr.html) Stephen Barr honored me with a serious response, one fairly representative of the reaction of many Catholics.

I fear, however, that Barr has misunderstood my argument and possibly misconceived the issue of whether the human intellect can discern the reality of design in the world of living things.

It appears from Barr’s essay—and a number of other responses—that my argument was substantially misunderstood. In “Finding Design in Nature,” I said:

The Church “proclaims that by the light of reason the human intellect can readily and clearly discern purpose and design in the natural world, including the world of living things.

Any system of thought that denies or seeks to explain away the overwhelming evidence for design in biology is ideology, not science.”

Quoting our late Holy Father John Paul II: “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.”

Again quoting 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 mat-



ter. 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. It would be to abdicate human intelligence, which would thus refuse to think and to seek a solution for its problems.”

Quoting the *Catechism*: “Human intelligence is surely already capable of finding a response to the question of origins. The existence of God the Creator can be known with certainty through His works, by the light of human reason... We believe that God created the world according to His wisdom. It is not the product of any necessity whatever, nor of blind fate or chance.”

Referring to the Church’s teaching on the importance and reach of metaphysics: “But in the modern era, the Catholic Church is in the odd position of standing in firm defense of reason as well. In the nineteenth century, the First Vatican Council taught a world newly enthralled by the ‘death of God’ that by the use of reason alone mankind could come to know the reality of the Uncaused Cause, the First Mover, the God of the philosophers.”

My argument was based neither on theology nor modern science nor “intelligent design theory.” In theology, although the mind’s ability to grasp the order and design in nature is adopted by, taken up into, and elevated to new heights by the faith of Christianity, that ability precedes faith, as Romans 1:19-20 makes clear. In science, the discipline and methods are such that design —more precisely, formal and final causes in natural beings— is purposefully excluded from its reductionist conception of nature.

Instead, my argument was based on the natural ability of the human intellect to grasp the intelligible realities that populate the natural world, including most clearly and evidently the world of living substances, living beings. Nothing is intelligible —nothing can be grasped in its essence by our intellects— without first being ordered by a creative intellect. The possibility of modern science is fundamentally grounded on the reality of an underlying creative intellect that makes the natural world what it is. The natural world is nothing less than a mediation between minds: the unlimited mind of the Creator and our limited human minds. *Res ergo naturalis inter duos intellectus constituta*—“The natural thing is constituted between two intellects,” in the words of St. Thomas. In short, my argument was based on careful examination of the evidence of everyday experience; in other words, on philosophy.

Many readers will no doubt be disappointed. It seemed that, right or wrong, my original essay was all about science, about real, tangible, factual knowledge of the material world. But now I admit to be speaking in the language of natural philosophy, that old-fashioned way of understanding reality which quickly faded into the intellectual shadows after the arrival of the new knowledge of Galileo and Newton. Philosophy continues, it is said, only as a meta-narrative for modern science and contains no positive knowledge of its own. In short, I seem to have admitted that my essay was a meaningless or at best subjective form of argument from a discarded and discredited discipline.

It is my sincere hope that for readers of First Things I need not respond to this modern caricature of philosophy. Philosophy is the “science of common experience” which provides our most fundamental and most

certain grasp on reality. And, clearly, it is philosophical knowledge of reality that is most in need of defense in our time.

Today, spirit-matter dualism dominates Christian thinking about reality. By “spirit-matter dualism” I mean the habit of thought in which physical reality is conceived of according to the reductive claims of modern science (which is to say, positivism), combined in a mysterious way with a belief in the immaterial realities of the human and divine spirits as known only by faith (which is to say, fideism).

But human reason is much more than just positivistic “scientific” knowledge. Indeed, true science is impossible unless we first grasp the reality of natures and essences, the intelligible principles of the natural world. We can with much profit study nature using the tools and techniques of modern science. But let us never forget, as some modern scientists have forgotten, that the study of reality via reductive methods leads to incomplete knowledge. To grasp reality as it is, we must return to our pre-scientific and post-scientific knowledge, the tacit knowledge that pervades science, the knowledge that, when critically examined and refined, we call philosophy.

Stephen Barr criticizes me for confusing two very different things: the modest scientific theory of neo-Darwinism (which he defines as “the idea that the mainspring of evolution is natural selection acting on random genetic variation”) and what he calls the “theological” claim that evolution is an “unguided, unplanned” process. “This,” he asserts, “is the central misstep of Cardinal Schönborn’s article.”

Let us assume for the moment that I indeed made a mistake. Is there any excuse, any basis for my error?

Barr, treating Darwinism with great delicacy, says nothing. But there is much he could have said. He could have listed quotations from Darwinian scientists going on dozens of pages in which they make such “theological” assertions, in bold and completely unqualified ways, assertions that evolution by means of random variation and natural selection is an unguided, unplanned process.

Many of those assertions are in textbooks and scientific journals, not just in popular writings. I will leave it to others to compile a complete account of such quotations. I made a small contribution of three quotations in my recent catechesis on creation and evolution in the cathedral church of St. Stephen’s in Vienna. Here is one of those three examples, a quotation from the American scientist Will Provine: “Modern science directly implies that the world is organized strictly in accordance with deterministic principles or chance. There are no purposive principles whatsoever in nature. There are no gods and no designing forces rationally detectable.”

Barr argues that such “theological” claims are separable from a more modest science of neo-Darwinism. I agree that there is a difference between a modest science of Darwinism and the broader metaphysical claims frequently made on its behalf. But which of those two is more properly called “neo-Darwinism” in an unqualified way, as I did in my essay?

For now, I happily concede that a metaphysically modest version of neo-Darwinism could potentially be compatible with the philosophical truth (and thus Catholic teaching) about nature. If the Darwinist, taking up Descartes’ and Bacon’s project of understanding nature according only to material and efficient causes, studies the history of living things and says that



he can see no organizing, active principles of whole living substances (formal causes) and no real plan, purpose or design in living things (final causes), then I accept his report without surprise. It is obviously compatible with the full truth that the world of living beings is replete with formality and finality. It comes as no surprise that reductionist science cannot recognize those very aspects of reality that it excludes—or at least, seeks to exclude—by its choice of method.

But how successful is modern biology, seeking to be true to its founding principles, at excluding the rational consideration of final cause? One way to grasp this problem is to examine the question of “randomness” and the role it plays in modern evolutionary biology.

The notion of “randomness” is obviously of great importance. The technical error at the heart of my analysis of neo-Darwinism, says Barr, is my misunderstanding of how the term “random” as used by Darwinian biology. “If the word ‘random’ necessarily entails the idea that some events are ‘unguided’ in the sense of falling ‘outside the bounds of divine providence,’ we should have to condemn as incompatible with Christian faith a great deal of modern physics, chemistry, geology, and astronomy, as well as biology,” he wrote.

“This is absurd, of course. The word “random” as used in science does not mean uncaused, unplanned, or inexplicable; it means *uncorrelated*. My children like to observe the license plates of the cars that pass us on the highway, to see which states they are from. The sequence of states exhibits a degree of randomness: a car from Kentucky, then New Jersey, then Florida, and so on—because the cars are uncorrelated: knowing where one car comes from tells us nothing about where the next one comes from. And yet, each car comes to that place

at that time for a reason. Each trip is *planned*, each *guided* by some map and some schedule.”

I certainly agree with much of what Barr says, and I appreciate his delightful example. I would like to suggest, however, that he may be overlooking something when it comes to modern biology. First of all, we must observe that the role of randomness in Darwinian biology is quite different from its role in thermodynamics, quantum theory, and other natural sciences. In those sciences randomness captures our inability to predict or know the precise behavior of the parts of a system (or perhaps, in the case of the quantum world, some intrinsic properties of the system). But in all such cases the “random” behavior of parts is embedded in and constrained by a deeply mathematical and precise conceptual structure of the whole that makes the overall behavior of the system orderly and intelligible.

The randomness of neo-Darwinian biology is nothing like that. It is simply random. The variation through genetic mutation is random. And natural selection is also random: the properties of the ever-changing environment that drive evolution through natural selection are *also* not correlated to anything, according to the Darwinists. Yet out of all that unconstrained, unintelligible mess emerges, *deus ex machina*, the precisely ordered and extraordinarily intelligible world of living organisms. And this is the heart of the neo-Darwinian science of biology.

Be that as it may, let us return to and extend Barr’s license plate example and see what we might learn. Suppose the Barr family sets out on a trip southward from their home in Delaware—and, while hearing a brief introductory lecture on the proper meaning of randomness, the children start writing down the state



of each passing license plate. After hours have passed, the children, pausing at their work, provide the following report: while each individual car's license plate does indeed seem uncorrelated to the previous and next, or to anything in the immediate environment, there may nevertheless be a pattern in the data. At first, almost all the license plates were from Delaware. A little later the majority shifted to Maryland. A few hours after that there was a big upswing of District of Columbia plates, mixing in near-equal proportion to the Maryland plates. A short time later the majority became Virginia plates. Now they see a dramatic shift to North Carolina plates. Is there a pattern here? Is there a reason one can think of for that pattern?

The Darwinian biologist looking at the history of life faces a precisely analogous question. If he takes a very narrow view of the supposedly random variation that meets his gaze, it may well be impossible to correlate it to anything interesting, and thus variation remains simply unintelligible. He then summarizes his ignorance of any pattern in variation by means of the rather respectable term "random." But if he steps back and looks at the sweep of life, he sees an obvious, indeed an overwhelming pattern. The variation that actually occurred in the history of life was exactly the sort needed to bring about the *complete set of plants and animals that exist today*. In particular, it was exactly the variation needed to *give rise to an upward sweep of evolution resulting in human beings*. If that is not a powerful and relevant correlation, then I don't know what could count as evidence against actual randomness in the mind of an observer.

Some may object: this is a pure tautology, not scientific knowledge. I have assumed the conclusion, "rigged

the game," and so forth. But that is not true. I have simply related two indisputable facts: evolution happened (or so we will presume, for purposes of this analysis), and our present biosphere is the result. The two sets of facts correlate perfectly. Facts are not tautologies simply because they are indisputably *true*. If the modern biologist chooses to ignore this indubitable correlation, I have no objection. He is free to define his special science on terms as narrow as he finds useful for gaining a certain kind of knowledge. But he may not then turn around and demand that the rest of us, unrestricted by his methodological self-limitation, ignore obvious truths about reality, such as the clearly teleological nature of evolution.

Let us return to a telling word of Barr. He refers to my allegedly over-broad understanding of neo-Darwinism as unwarranted extension of the theory into the realm of "theology." Does his use of that term mean that we can only know that teleology is real in the world of living beings by reference to revealed truth? Does it mean that unaided human reason cannot grasp the evident order, purpose, and intelligence manifested so clearly in the world of living beings? Does it mean that we worship an unjust God who, as Romans 1:19-20 teaches, punishes people for their failure to abide by natural law, a law St. Paul says they cannot fail to recognize through the manifest order in the nature world?

Barr's essay addresses at some length the question of design in biology, but does not clearly affirm that reason can grasp the reality of design *without the aid of faith*. If my reading is correct (and I hope I am wrong), in that respect Barr has followed the overwhelming trend of Catholic commentators on the question of



neo-Darwinian evolution, who gladly discuss its compatibility with the truths of faith but seldom bother to discuss whether and how it is compatible with the truths of *reason*.

Perhaps now that the role of fideism is in view, I can profitably return to the question of the essential meaning of the term “neo-Darwinism.” If, as many seem to think, neo-Darwinism serves as a valid “design-defeating hypothesis” at the level of human reason but is rescued from any ultimately improper conclusions only by the intervention of theology, then it seems that my expansive definition is fully vindicated. If reason is incapable of grasping real teleology in living things and their history, then neo-Darwinism—which obviously is incapable of taking into account theological truths—can truly be said to be a theory that asserts, in the words of my original essay, that evolution is “an unguided, unplanned process of random variation and natural selection.” What so many Catholics seem to be saying is that, so far as we can determine with our unaided human intellects, according to even the “metaphysically modest” version of neo-Darwinism, there is no real plan, purpose, or design in living things, and absolutely no directionality to evolution; yet we know those things to be true by *faith*. In other words, a “metaphysically modest” neo-Darwinism is not so modest after all. It means a Darwinism that does not conflict with knowledge about reality known through faith alone. In the debate about design in nature, *sola fides* takes on an entirely new meaning.

Modern science alone may well be incapable of grasping the key truths about nature that are woven into the fabric of Catholic theology and morality. And theology

proper does not supply these key truths either. Prior to both science and theology is philosophy, the “science of common experience.” Its role in these crucial matters is indispensable.

Let us return to the heart of the problem: positivism. Modern science first excludes *a priori* final and formal causes, then investigates nature under the reductive mode of mechanism (efficient and material causes), and then turns around to claim both final and formal causes are obviously unreal, and also that its mode of knowing the corporeal world takes priority over all other forms of human knowledge. Being mechanistic, modern science is also historicist: it argues that a complete description of the efficient and material causal history of an entity is a complete explanation of the entity itself—in other words, that an understanding of how something *came to be* is the same as understanding *what it is*. But Catholic thinking rejects the genetic fallacy applied to the natural world and contains instead a holistic understanding of reality based on *all* the faculties of reason and all the causes evident in nature—including the “vertical” causation of formality and finality.

Some may object that my original small essay in the *New York Times* was misleading because it was too easily misunderstood as an argument about the details of science. As a matter of fact, I expected some initial misunderstanding. Even had it been possible to state in a thousand words a highly qualified and nuanced statement about the relations among modern science, philosophy, and theology, the essay would likely have been dismissed as “mere philosophy,” with no standing to challenge the hegemony of scientism. It was crucially important to communicate a claim about design in



nature that was in no way inferior to a “scientific” (in the modern sense) argument. Indeed, my argument was superior to a “scientific” argument since it was based on more certain and enduring truths and principles.

The modern world needs badly to hear this message. What frequently passes for modern science—with its heavy accretion of materialism and positivism—is simply wrong about nature in fundamental ways. Modern science is often, in the words of my essay, “ideology, not science.” The problems caused by positivism

are especially acute in the broad anti-teleological implications drawn from Darwin’s theory of evolution, which has become (in the phrase of Pope Benedict XVI, writing some years ago) the new “first philosophy” of the modern world, a total and foundational description of reality that goes far beyond a proper grounding in the descriptive and reductive science on which it is based. My essay was designed to awaken Catholics from their dogmatic slumber about positivism in general and evolutionism in particular. It appears to have worked. ■

04 *Randomness and Intelligent Design*

The controversy resulting from Cardinal Schönborn’s opinion article in the *New York Times* has engaged, among others, faithful and well-informed Catholics who nonetheless disagree with each other on matters of substance. In his criticism of Cardinal Schönborn’s statement (“The Design of Evolution,” October), Stephen Barr was right, I believe, to focus on two crucial points: the relation between finality or purpose and the modern scientific method, and the meaning of randomness. Yet, at the risk of temerity, I will say that Barr’s article adds to the confusion that prevails when these two points are discussed.

In Barr’s example of shuffled cards, he concludes: “The scientist and the poker player do not look at things from God’s point of view, however, and so they talk about ‘probabilities.’” Precisely. And that is why “random genetic variations” are “foreseen” from God’s point of view and have determinate causes. It is only because the scientist is unable to discover or track the



causes that he terms an event “random.” And what the scientist predicts in terms of probabilities are really unknown (to him) certainties.

It won’t help to invoke Laplace, claiming that his universal determinism and the Newtonian physics that underlie it have been superseded. It is a philosophical (not theological) principle that every event must have a cause. And Cardinal Schönborn is entirely correct in quoting with approval John Paul II: “To speak of chance . . . would be equivalent to giving up the search for an explanation... In fact this would be equivalent to admitting effects without a cause.” Barr agrees with this, too. But he goes on to say: “But to employ arguments in science based on statistical randomness and probability is not necessarily to ‘oppose’ the idea of chance to the existence of God the Creator.”

The confusion arises when scientists and non-scientists alike speak of “random” or “chance” mutation. In the minds of many of them this *does* equal “uncaused” and therefore “unplanned” —and therefore opposed to the existence of God the Creator. Barr rightly maintains that this is not science. And so does Cardinal Schönborn, which is why he calls it “ideology, not science.” But many scientists do make this equation. And many say so publicly, some quite stridently— Richard Dawkins and James Watson being notable examples. It is to these that Cardinal Schönborn’s criticism is directed. And it is not an intrusion of theology or philosophy into science; it is a higher order of knowledge showing where science has gone beyond the limits of its own method. One cannot deny the principle of causality, upon which meta-scientific assumption all science depends, without undermining all science and all knowledge.

If we cannot discern the existence of order in the universe, despite our limited ability to comprehend that order, we cannot discern the existence of a good Creator. Yet Barr risks overemphasizing disorder when he describes planning without correlation: “So God, though he planned His work with infinite care, may not have chosen to impose certain kinds of correlations on certain kinds of events.” Our human perspective, especially in its scientific mode, may be quite limited in the correlations it can determine, but that does not mean that our human reason cannot discern a greater order to the cosmos through its laws.

And here is the nub of another source of confusion: modern science does not investigate finality or purpose. It limits itself to “natural” phenomena: material and immediate efficient causes. Therefore, from within its own (very successful) method, the scientist as scientist can neither conclude that there is not an Intelligent Designer, i.e. that physical processes are unguided or unplanned, or, for that matter, that there is one. But the scientist as a human being can affirm the latter. As Cardinal Schönborn puts it: “by the light of reason the human intellect can readily and clearly discern purpose and design in the natural world.”

I think Barr’s recourse to contingency also adds to the confusion. He can perhaps be excused since the document of the International Theological Commission he cites is itself confusing when it refers to “a purely contingent natural process.” When St. Thomas refers to “contingent causes,” he is speaking of causes that do not have their natural or necessary effect because they are impeded by other causes. His example is the seed that doesn’t germinate because the “germinating force” is impeded. Contingency is a red herring



in this debate because, for St. Thomas, “contingent” is not equivalent to “statistically random” or “uncaused.”

The present controversy began with a cardinal. Cardinal Newman in his discourse “Christianity and Physical Science” said: “The Physicist contemplates facts before him; the Theologian gives the reasons of these facts. The Physicist treats of efficient causes; the Theologian of final. The Physicist tells us of laws. The Theologian of the Author, Maintainer, and Controller of them.” And, quoting Macaulay approvingly: “it is not easy to see that a philosopher of the present day is more favorably situated than Thales or Simonides. He has before him just the same evidences of design in the structure of the universe which the early Greeks had.”

The Rev. Joseph Fessio, S.Œ. Naples, Florida

Stephen M. Barr’s article is thoughtful and penetrating, but his criticism of Intelligent Design misunderstands the crux of the theory. Barr rightly observes that the presence of randomness at one level of a process does not preclude the designedness of the process as a whole. (My example would be the screen saver that makes kaleidoscopic patterns on my desktop with a random number generator.) ID thinkers do not dispute this point. No ID thinker suggests that if there is any randomness in a process whatsoever, it cannot be designed. What some of them do suggest is that if any aspects of the outcome of the process cannot be reasonably explained by randomness *alone*, or physical law *alone*, or by a combination of randomness with physical law, then it is reasonable to infer that intelligent agency has also been at work. This is a different proposition than the one that Barr attacks, and it escapes his critique. Indeed, if an ID thinker is defined as anyone who considers

design to be empirically detectable, then Barr himself is an ID thinker, for as he writes, “even within the neo-Darwinian framework, there are many ways that one could see evidence of . . . the directedness of the universe and life.” The only thing that needs to be cleared up is how his criteria for detecting design differ from those of the other proponents of ID.

Œ. Budziszewski University of Texas Austin, Texas

It was a pleasure to read Stephen Barr’s “Design of Evolution.” His previous articles have also been impressive, and in this case I especially liked his way of finding the “both/and” rather than insisting on the “either/or.” The randomness and chance that evolution theory emphasizes are brought within the scope of scientific analysis, but at the same time the mechanics of evolution can be brought within the intent of a grand design. In fact, as has been pointed out, “natural *selection*” is a teleological expression!

The theory of evolution does not require it to be beyond the reach of an intelligent design (or else it would not be a theory), nor does the theory of design require it to be restricted to formal methods that exclude natural selection.

Brendan Kneale,

FSC De La Salle Institute Napa, California

Cardinal Schönborn says, “evolution in the neo-Darwinian sense [is] an unguided, unplanned process of random variation and natural selection.” According to Stephen M. Barr, the cardinal “has slipped into a definition of a scientific theory,” something the cardinal, who is not a scientist, apparently should not be doing. But whether he is defining science or not, the cardinal



is right. And he gives his statement an even sharper point by quoting the installation homily of Benedict XVI: “We are not some casual and meaningless product of evolution. Each of us is the result of a thought of God. Each of us is willed, each of us is loved, each of us is necessary.” Perhaps what is going on, to the evident distress of Barr, is a process of correction. The Church is in the world and its members think the world’s thoughts, but when things go too far, the Church returns to its ancient truths, and restates them.

David Shale West Chester, Pennsylvania

Separating philosophical extrapolation from scientific fact is a difficult task when it comes to the topic of evolution. Stephen Barr’s insightful critique of Cardinal Schönborn’s letter on the subject goes a long way toward this end, but while I commend him for his effort I do though think that he was a bit harsh on the cardinal.

Barr takes the cardinal to task for “slipping into the definition of a scientific theory, neo-Darwinism, the words ‘unplanned’ and ‘unguided,’ which are fraught with theological meaning.” The cardinal is not responsible for this misstep; these words have been slipped into neo-Darwinian theory by many influential evolutionary thinkers, and that was no doubt the impetus for the cardinal’s article.

Most popular neo-Darwinian writers have blurred the distinction between natural selection as a scientific theory of evolution and the separate philosophical position that evolution is unguided and therefore atheistic. Nearly all of the leading Darwinian authors —Daniel Dennett, Richard Dawkins, Douglas Futuyama, etc.— have explicitly stated that neo-Darwinian theory is

incompatible with the Christian faith. As Futuyama has written: “Some shrink from the conclusion that the human species was not designed, has no purpose, and is the product of mere mechanical mechanisms —but this seems to be the message of evolution.” This is the version of neo-Darwinian evolution that the cardinal is trying to refute. Unfortunately, as Barr points out, the cardinal probably bit off more than he could digest in a short op-ed piece.

Barr, for his part, does an admirable job of untangling the scientific position of neo-Darwinism from the unsavory philosophical positions that have become part and parcel of the theory. In doing so, though, it is important to note who did the tangling in the first place: it wasn’t the cardinal.

Daniel Kuebler Franciscan

University of Steubenville Steubenville, Ohio

STEPHEN M. BARR REPLIES:

I must confess to puzzlement at the first several paragraphs of Father Fessio’s letter. It certainly *sounds* like he disagrees with me about something, but I can’t quite make out what. For, after saying that I have added to the confusion on the subject of chance and evolution, he seems to second me on point after point: “Barr was right to focus,” “[Barr] rightly concludes,” “Barr agrees with this too,” and “Barr rightly maintains.” Still, there are some points where I disagree with *him* (reciprocating his “temerity”). He says: “It is only because the scientist is unable to discover or track the causes that he terms an event ‘random.’” That is simply not the case. As I explained in my article (and illustrated with two examples), there are circumstances in which the causes of the events are known or easily traced, but where



nevertheless there is the kind of lack of correlation among events that I called “statistical randomness.” (In *this* sense of the term “random,” by the way, one should not apply it to single events, as Fessio does, but to ensembles or sets of events.)

I must also demur when Fessio says that Cardinal Schönborn’s article “is not an intrusion of theology or philosophy into science.” I am happy to learn that such an intrusion was not the cardinal’s intention. Consider, however, these words of the cardinal’s *New York Times* piece: “defenders of neo-Darwinian dogma have often invoked the supposed acceptance—or at least acquiescence—of the Roman Catholic Church when they defend their theory as somehow compatible with Christian faith. But this is not true.”

Well, if one is talking about what the Catholic Church accepts as compatible with faith, one is certainly talking about theology. It may be natural theology, but it is theology all the same. The only question, then, is whether “neo-Darwinism” is science.

For understandable reasons some people mistakenly imagine that neo-Darwinism is a philosophical system, or entails one. As the letters from Joseph Fessio and Daniel Kuebler rightly emphasize, the blame for this mainly lies with such scientists as Richard Dawkins and James Watson. I suspect, however, that it may also have a linguistic basis. Very few scientific theories, as opposed to philosophical schools, are called “isms” and named after their founders. One does not talk about Maxwellism, Heisenbergism, or Einsteinism. The prefix “neo” also is more common in philosophy. Nevertheless, “neo-Darwinism” is a scientific term. It is univocal and its meaning is generally agreed upon. It refers to the synthesis of Darwin’s theory of natural

selection with the science of genetics that took place in the 1920s and 1930s through the efforts of such men as Sewall Wright, J.B.S. Haldane, and R.A. Fisher. One may consult any number of dictionaries, old or recent, general or scientific, and one will find that each gives only this definition of the term. Consequently there can be no gainsaying the fact that in condemning “neo-Darwinism” one is condemning a scientific, not a philosophical, theory.

By contrast, the word “contingency” does have several meanings that can be distinguished. I bow to Fessio’s expertise and grant his exegetical point about St. Thomas’s usage. But the several meanings of the word contingency are obviously closely related, so I do not think that the International Theological Commission was at all confusing things. Nor do I agree that “contingency is a red herring in this debate.” Rather, it lies at the heart of the debate, as the commission astutely recognized.

Let us look at St. Thomas’s example of the “germinative force,” because it furnishes a wonderful illustration of how chance plays a role in biology. Why doesn’t this force unfailingly produce its natural effect? Because many conditions must be satisfied, such as good soil, moisture, the right temperature, the absence of creatures who will eat and destroy the seeds, and perhaps the presence of other creatures who will eat and excrete and thereby both distribute and fertilize the seeds. And these conditions, in turn, depend on many other factors, such as the weather. In other words, there is a “vastly complex web of contingency” involved (to use a phrase from my article, in which “contingency” is used in an ordinary sense). And thereby does the germination of the seed become subject to the vagaries of



“chance.” Indeed, it is part of the “reproductive strategy” of many species of plants to produce a great quantity of seeds to compensate for the small probability that any one of them will succeed in being fertilized and germinating.

Fessio insists quite properly that we can discern order in the universe and that it points to God. As I have written a book recently that devoted many pages to making just that argument, I do not think I “risk overemphasizing disorder.” On November 9, Pope Benedict gave an address in which, quoting St. Basil, he warned about those who think the world is “left to the mercy of chance” and is without “direction and order.” If this is what Fessio is worried about too, I assure him that I am on his side and that of St. Basil and the pope. The whole point of my article was precisely to demonstrate that the narrow concept of randomness that is used throughout all branches of science is compatible with a divine Providence that governs and directs every event in the universe.

As Fessio notes, “The present controversy began with a cardinal.” Sadly, there is another, much older precedent, that involved a cardinal and science. Cardinal Bellarmine was a great saint and a brilliant theologian, but he helped unintentionally to prepare the way for a fateful collision. In the present case, I am firmly convinced that such a collision will not take place, the distressing forecast in David Shale’s letter notwithstanding.

I thank J. Budziszewski for his very kind words. In referring to my “criticism of the ID movement,” however, he mistakes me. There is nothing in my article that expressed or implied any criticism of the ID movement. On the contrary, I mentioned that movement only to

praise its leading lights for recognizing that “statistical randomness, chance, and probability can be part of legitimate explanation of phenomena” and for rightly insisting that the issues they raise are to be settled scientifically. I agree with everything Budziszewski says in their defense. (This isn’t to say I don’t have criticisms of the ID movement, only that I did not express them in my article). If being an “ID thinker” meant only what Budziszewski defines it here to mean, I would indeed count myself as one. ■