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Evolution and Faith: Clarified Terminology and Reasonable Debate

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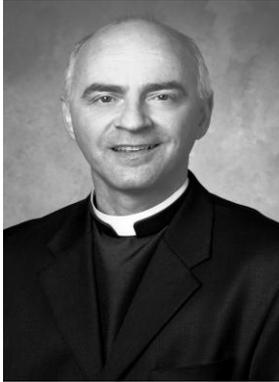
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Abstract

In lieu of an abstract, below is the essay's first paragraph.

"In recent years the news media have characterized the theory of evolution as contentious and that science and religion are incompatible. The so-called debate is fomented self-labeled scientist/believers who claim that the theory of evolution is scientifically ambiguous at best, contending that intelligent design is a viable alternative —scientific theory. What follows below is an attempt to illustrate how the contentiousness of the issue follows from a misuse of language the ignorance of which falsely enables the so-called debate to continue. At issue is the ambiguous meaning of the word —random—specifically, the scientific sense of random mutations that drive evolution versus the popular meaning of random as unplanned. First I start with some background information about biological evolution and the various theological interpretations prevalent in Christian theological understanding of creation."



Fr. Donald J Lococo, CSB

Evolution and Faith: Clarified Terminology and Reasonable Debate

In recent years the news media have characterized the theory of evolution as contentious and that science and religion are incompatible. The so-called debate is fomented self-labeled scientist/believers who claim that the theory of evolution is scientifically ambiguous at best, contending that intelligent design is a viable alternative “scientific” theory. What follows below is an attempt to illustrate how the contentiousness of the issue follows from a misuse of language the ignorance of which falsely enables the so-called debate to continue. At issue is the ambiguous meaning of the word “random”—specifically, the scientific sense of random mutations that drive evolution versus the popular meaning of random as unplanned. First I start with some background information about biological evolution and the various theological interpretations prevalent in Christian theological understanding of creation.

Two presuppositions ground any course in biology:

1. All living things are composed of cells, and any discussion of the function of living things is necessarily cellular.
2. Living things are members of species that emerged into existence through the process of evolution.

These two are the grounding theories that make the study of modern biology possible. The first of these is self-evident—the proof of cell theory is obvious to us in the present moment. The second is not

self-evident because evolution's truth-value is gleaned through scrutiny of a gradual and greatly extended process of events extending from the past. Both have truth-value of divergent qualities.

Microscopic evidence, first gathered by the Dutch biologist, Anton Loewenhook in 1673, has definitively established the cellular composition of living things. The cellular structure of life is factually definitive and evident to anyone with even the crudest toy microscope. Cell theory is evidently factual.

In contrast, evolution is a scientific theory based on solid inductive evidence gathered in its support over the last century and a half. Evolution is a process posited to occur incrementally over a one billion year time frame. Evolution cannot possess the same kind of scientific verity as cell theory because comparable visual evidence is not immediately obtainable. Evidence to support evolution has been, and continues to be gathered inductively, like clues in a mystery story. The majority of biologists accept its verity as scientifically and conclusively factual, but its definitude remains subject to debate in a way that cell theory is not.

For some non-scientists, evolution is a contradiction to their religious conviction that God created the ancestors of all living things in six days. To them, evolution is therefore false. The first two theories are scientific in nature, this third theory, creationism, is not scientific but a faith-based religious conviction. Each is a different way of knowing. The issue facing us is whether the third way of knowing is superior to or capable of refuting the other two.

Early in my career of teaching biology, a student asked, "As a priest, how can you be a biologist and teach evolution?" I told him that, as a Catholic, I found no direct contradiction between evolution and creation. In fact, the Catholic Church has never openly condemned the theory of evolution, but instead has shown an historical tolerance for it. As the 1909 edition of the Catholic Encyclopedia related, the evolution of life seemed to be "in perfect agreement with the Christian conception of the universe." The same article stated that the church also had no difficulty with an evolutionary origin of the human race. The crucial theological qualification was and always has been that *the human soul cannot be the product of any material process*. Although the human body may have evolved, the soul was created directly by

God. The former conclusion was the product of the scientific method. The latter emerged from the theological method.

The Church's position on evolution was formalized in the encyclical, *Humani Generis* by Pope Pius XII in 1951. The Pope noted that the evolution of the human body from lower animals could be investigated so long as no conclusions were made rashly. I presented these two citations in reply to my student's query. However, he thought it a rather legalistic response. More colloquially I told him that there is no rational contradiction between God using evolution as a means to ongoing creation. Only when there is a contradiction between Christian faith and what we learn through human knowledge would there be a reason to consider scientific knowledge dogmatically questionable. This latter conclusion is the basis of the evolution debate among the various Christian fundamental interpretations of the dogma of creation. My student was not very satisfied. I encouraged him to do some reading. A short conversation cannot fully justify the history of tolerance that Catholic intellectuals have had for the notion of evolution over the past 150 years—as long as it does not lead to necessary atheistic conclusions.

The Theory of Evolution is a by-product of 19th C thinking. In contrast to what it contends about living things, the theory did not spring into existence out of no-where. Evolution is the end product the philosophical speculations from a century of thinkers and naturalists prior to, and not merely proposed by Charles Darwin, who formulated it as a scientific theory in two books, *The Origin of Species* (1859) and *The Descent of Man* (1871). In Toronto in the late 1990s, I heard the famous church history scholar, Jaroslav Pelican, present a talk on Cardinal Newman's notion of the evolution of Christian dogma. During the reception afterwards, I asked Dr. Pelican if in his writings Cardinal Newman had anything directly to say about biological evolution. He said no, which I interpreted to mean that if Newman had a problem with biological evolution, he certainly would have written against it. Then, unbidden, Dr. Pelican said something interesting: "In the nineteenth century, evolution was in the air".

The concept of incremental change entranced the natural sciences in the nineteenth century, and permeated philosophy, theology, history, and the other human sciences. Indeed, modern historical

research *grounds* its very discipline with the presumption of incremental change, of the passing events of human experience, and the constantly changing point of reference from which we interpret the past. As Hans-Georg Gadamer contended in *Truth and Method*, each day we live is different than the day before, changing us, making us different people, and each moment of new interpretation reflects that difference. Today I am a different person than I was yesterday because I have grown incrementally from the experiences I am continuously having. This intellectual attitude towards change, in part, reflects the church's modern approach to tolerance of scientific method. Modern theology is more willing to be informed by science than it was in the past. Otherwise our study of God would be in peril of statically ignoring new knowledge about the natural world. For theology to be informed by science, there must be common ground for understanding causation in the natural world.

Aristotle thought there was four ways things are caused. We will consider two of these ways: ultimate cause and efficient cause. Another way of putting it is that we can study "that" things exist or we can study "how" they came to be in time. Theologically, "that" things exist depends upon their ultimate source in God—not a time-dependent process. "How" things exist, or come to be, depends upon a sequence of incremental events that unfold through time that leads to their appearance in the here and now. Of course these two ways are not mutually exclusive. For example, everything we experience in human life unfolds for us within our sense of time, but each and every moment that we do exist, we relate to God as the source of who we are. God's providence maintains us in existence, in an dialogue between the ultimate cause and us, the created effect.

We make can distinguish between these two causalities but there is a common basis to both of them. I will illustrate by a gardening example. When we mow the lawn, it is usually easy for us to distinguish between the grass and the rose garden. We take different approaches to gardening with each of them—use different tools, expect a different outcome—despite the fact that grass and roses both grow out of the same ground. If we did not make these distinctions, and instead just mowed down the roses with the lawn

mower, or alternatively if we tried to cut the grass using only rose-pruning shears ... in both cases, no matter which approach we took, plants still grow from the ground.

Similarly, when we pursue truth through inquiry, we use different methods, depending upon the methodology of the intellectual discipline we are employing. Before we begin the process of truth gathering, we presume that all truth has the same common origin. In other words, Truth cannot contradict truth. This summarizes one of the teachings of the First Vatican Council.

We can only know something is true in any discipline if we presume, in the first place, that the universe in which we live makes sense. The ancient Greeks made this presumption, that the universe must be ruled by a rational principle that unifies all that is true into a sensible universal package. The universe is one and the universe is true. Any scholar who teaches at this college, whether their discipline considers this statement explicitly or not, presumes this to be true before they conduct their research or step into a classroom. In short, that the universe is rational is the first axiom of all intellectual inquiry. If unity of truth were in doubt, then anything one says is just words with questionable correspondence to reality. In the case of biology and theology, we are safe in our original unambiguous assumption of unity.

The Greeks called the rational principle that unifies all truth the *logos*. In Greek, *logos* means “word” or “language.” As language it cannot be understood apart from *logos* as “rational meaning.” Words correspond to meaning. When we find meaning, we search for words to describe it or we invent some. If we come upon a word that we don’t know, we always presume there is a meaning to discover. Whether our activities are primarily in the practical everyday world or in theoretical intellectual pursuits, we presume that things make sense, or else at least they should, or eventually will. Otherwise there is no point in looking for truth at all. Those who give up expecting to find truth have truly descended into despair.

Logos, or the expectation of reasonableness, is the grounding presupposition of every question we have, or will ever ask in biology or in theology. This presupposition grounds both ultimate questions and questions whose solution we seek through an efficient, time-dependent sequences of events.

Evolution can be distinguished from creation in the theological sense using these two causal principles. God is the ultimate source of creation; evolution is a possible efficient means of bringing it about. Using causal perspective, the question in dispute, from the evangelical point of view—and for some Catholics who are not clear why the church does not condemn evolution—is this:

Does asking an ultimate question contradict the time-dependent efficient question or vice versa?

Or from the journalistic perspective, can a tolerance of evolution contradict faith in creation? For Catholics, these are not necessarily in contradiction. I will expand this response from two standpoints.

Firstly, the theological sense of the word “creation” corresponds to the “meaning” of origins. Religious questions about origins depend upon the ultimate cause in God’s creative love. Christians believe that God created the universe in order to enter into a love relationship with creatures created in his image. This creator/creature relationship mirrors the infinite love that the Father has for the Son in the Holy Spirit. The universe is the very image of the divine community of Trinitarian love. This is foundational to confessing Christian faith. When theologians study creation, they presuppose this creature/Creator relationship as *a priori*, or a given fact. No amount of scientific investigation or measurement, or any amount of mathematical analysis could have cause on to draw this conclusion outside of divine revelation. Nor as a result can scientific analysis disprove it scientifically. Christians believe that God revealed these truths to humanity. Every other doctrine in Christianity proceeds from this grounding concept, including the redemption.

However, when *scientific* questions about origins are asked, this grounding theological concept is not, cannot be available for consideration by the scientific method. Science only studies what is sensible, what can be seen, felt, even tasted, and smelled. Scientific method presumes that the universe makes sense, and that the laws that unify it into a unity are deductible and inducible according to laws of nature as they have been rendered into language for human understanding. Even though scientific method treats with data available to the five senses, it also presumes a universal unity that cannot be directly sensed. In effect, both theology and science are grounded in a basic belief in *logos* or reason.

The difference between the *logos* of science and the *Logos* of faith is that science is limited to what can be sensed. Theology is not limited merely to the senses but also relies on revelation. Hence the *logos* of science is not exactly the same as the *Logos* of theology, although historically they derive from each other, depending on whether you look at it ultimately or efficiently.

To get back to the question my student asked me all those years ago ...

Basic to the apparent contradiction between evolution and creation, in the minds of many today, is the literal inconsistency between the Genesis account of creation and the scientific theory of evolution. Many students have quoted this argument to me over the years. When I am specifically challenged by people that evolution contradicts the creation story in Genesis, I ask them *which* story. There are actually two creation accounts in Genesis, one in chapter one and the second in chapter two. These are two different accounts from two different literary sources and traditions. The older one is in Genesis 2, which is the story of the creation of Adam from the dust of the earth and Eve from the rib in his side. The other creation account in Genesis 1 begins with “Let there be light” and thereafter follows six days of Divine labor, each day God making incremental additions to what God made the day prior. Ultimately God makes “man in his own image” and rests the seventh day. Unless God made humanity twice, there exist two different creation stories, one the account of a spontaneous creation event, the other an account of incremental creation occurring over time.

The creation stories in Genesis were traditionally believed to be written by Moses. Modern scholars have concluded that they were actually written down by Israelite scribes living in exile in Babylon in the eighth century before the birth of Jesus Christ. They were written down to preserve them because the origin of the nation of Israel was important to a people whose country lay in ruins. Even if we somehow consider these two accounts as one, there are also several other creation accounts in both the Old and New

Testaments culminating in the most important creation account in the whole bible, the first chapter of the Gospel of John. So which creation account does evolution contradict?

The problem with quoting from scripture to defend an argument is that the line and verse quoted are just a small part of the unified whole of the record of God's revelation to his people. Just as there is a unity to creation, and a unity to truth, there is also a unity to scriptural revelation. From a Christian perspective, unity in scripture is centered in an expectation that everything written in the bible somehow speaks about Jesus Christ. From the Christian perspective of the Old Testament, everything written there is *literally* about the time reported and *simultaneously* prefigures Christ's life on earth in the first century *and* his presence in the Church in the here and now. In this context, whenever the Old Testament speaks of creation, whether in Genesis, or in the Psalms, or in the book of Wisdom, it is also and especially speaking of the role that Jesus Christ had in creation.

The Book of Wisdom relates that the wisdom or reason of God was present when the world was created. This theology of Christ's presence at creation is mirrored in St. Paul's letters. The reason of God or the *Logos* of God, is precisely what the first chapter of John's Gospel is about. "In the beginning was the Word, and the Word was with God, and the Word was God". *Logos* has been translated as Word. So, the difference between the reason of the world, the *logos* that is the sense than unifies all created truth, and the uncreated reason and wisdom of God, is that *the divine Logos is a divine person* – The uncreated Word made flesh.

The ancient Greeks never conceived of *logos* as personified and were shocked to hear it posited. For Christianity, the reason of the world finds its origin, its ultimate cause, in divine reason, the Word of God, Jesus Christ. This is a faith statement—a presupposition grounded in religious conviction. Theologically speaking, scientific *logos* is created—divine *Logos* is the uncreated Son of God, who created the world of time. For scientific method to acknowledge *this* presupposition would first require a confessional statement of religious faith. That would be contrary to its methodology. Science would no longer be science, but instead a branch of theology.

A corresponding contradiction holds for theology. To contend that the reason of the world is *not* a creation of God, the image of Divine Reason, contradicts the method of theology. Theology would be nothing more than a branch of physics.

Yet somehow, some scientists, specifically atheistic ones, draw conclusions beyond the presuppositions of their methodology. Scientists who are confessional atheists, stretch scientific conclusions and imply that science proves God is not the ultimate cause. Stephan Hawking has recently drawn this conclusion and claimed it was scientific. How can science conclude anything about things unseen or inaccessible to scientific theory or measurement? This is the problem with the so-called evolution debate: it is the classic apples/oranges dichotomy at the intellectual level.

This brings us, finally, to problems in terminology. Some scientific terminology has a meaning that is not precisely matched by its theological cognate – for example, the word “random”. The principle of evolution, according to several different interpretations, states that it is driven by “random chance”. Specifically, the mainspring of evolution is natural selection acting on random genetic variation. Theologically, there is nothing random about God’s intent in creation. God created in love, eternally and decisively, for the sake of establishing a loving relationship with creatures, especially the ones created in the divine image and likeness. To say God’s intent is random seems to make him out to be a Divine scatterbrain. At least this would be true if we presume there is an exact equivalence between the scientific and theological meanings of the word random. Theologically, random means “unplanned” or “unguided”. Scientifically, random does not possess the same connotation.

In an October 25, 2005 article in the journal *First Things*, Stephen B. Barr, a theoretical particle physicist from the University of Delaware, attempted to clarify misunderstandings that arose from an article written by the Archbishop of Vienna, Cardinal Schonborn on evolution. The Cardinal took the meaning for the scientific term random to be equivalent to the theological meaning of unplanned or unguided. Dr. Barr argued conversely that scientists never use unplanned and unguided in relationship to evolution. He showed that the Institute for Scientific Information’s well-known and well-utilized *Science*

Citation Index for that year reveals that only 48 scientific papers even mention the term “unguided” in the title, most of them having to do with missiles. Only 467 have the word “unplanned”, almost all referring to pregnancies and medical procedures. By contrast there are 52,633 papers with “random” in the title from all fields of scientific research.

“Random” is a basic term in science that relates to statistical dynamics. For example, the movement of atomic or molecular particles in a gas, or fluctuations in quantum fields, or the recombination of genes during the process of meiotic cell division. The word random in science does not mean uncaused or unplanned but statistically “uncorrelated”. Dr. Barr uses the example of his children’s game of recording the origin of cars that pass by reading out their license plates while riding in the car. If you record each plate, noting the state of origin, then the sequence of them will exhibit a degree of randomness such that in no case can you accurately predict the next license plate based upon what you have already recorded. The origins of the cars are uncorrelated. Yet, each car is where it is, in that sequence, at that time for a reason.

This example illustrates a persistent problem with using statistics to analyze human behavior. The presumption of randomness inherent in statistical theory collides with the purposefulness of human action. The children’s car game illustrates that an action can be both random and purposive simultaneously. Hence it is statistically impossible to deny that the random activity in recombination of genes that eventually leads to species change, or evolution, is a possible means by which God directs creation without contradicting the scientific observation that there is no correlation between that and what is observed. It could be both purposive and scientifically random. To accomplish such a feat should not be too difficult for an omnipotent being with infinite knowledge, and an infinite capacity for loving and giving.

Yet at a rally on campus of this very college, a visiting scientist and a mathematician spoke to students denied the scientific validity of evolution by proclaiming their understanding of the word “random” as unguided in contradiction to the scientific meaning of “uncorrelated”. They deliberately used

the colloquial meaning to convince students that randomness contradicts the biblical creation accounts makes the theory of evolution unscientific. This was professional fraud or incompetent ignorance of the methodology of their fields of study. If there is a contradiction, it does not reside in science versus religion, but in the misuse of language for rhetorical purposes

Carrying on a valid debate in the so-called conflict between science and religion, the problem is knowing the limits of methodology. In the 17th C the church exceeded its limits by making dogmatic statements about scientific methodology that exceeded theological method. Paradoxically, in the current climate, some atheist scientists draw theological conclusions that God could have nothing to do with the outcome of evolution or the causal engine driving it by citing their personally derived “convictions” as scientific proof. On the other side of the political debate, are those who still wish to force the scientific method to obey Christian dogma. The news media limit their reporting of evolution to this apparent standoff and willfully foment debate for the sake of spicy headlines. This aspect of the dialogue is more about power politics than religion. The current “debate” is not a dialogue but a polemical standoff. Crushing your enemies, like modern politicians do, denying the possibility of the disclosure of truth and its understanding. The intention of debate in modern human affairs has been reduced to the pursuit of power gained from being on the winning side.

Truth is only disclosed in true dialogue. Debate should further our understanding of reason. True debate has the *logos* as its common ground. From the perspective of the Incarnation, because the risen Jesus is the Christ-always-with-us, the *Logos* of God infinitely indwells the world maintaining it reasonably in being. Now that we have defined our terms, for believers or non-believers, the process of evolution is random in the scientific sense. For believers, randomness *itself* is God’s means of continuously creating the universe in love, so that those with the intelligence and capacity to understand it might love God back in response.