New Evolutionary Theory and Catholic Theology

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Abstract: My interest in the relationships between new evolutionary theory and Catholic theology has been prompted by the intellectual movement that has been called “sociobiology” or “evolutionary psychology.” Sociobiologists propose that, in addition to animal behavior, natural selection theory can explain human behavior, history, social interactions, even the faith and practice of the various Churches. Darwinism has shaped a worldview, or an hermeneutic through which human existence, history and activity can be understood. One of the underlying problems with classical Darwinian method is that certain ideological presuppositions both overrule observed evidence and interfere with otherwise good scientific thinking. However, evolutionary theory can help explain human behavior and historical development. This paper will thus survey some experimental work in relating theology to sociobiology. However, I am taking the experimental approach of exploring newer, or reformed, evolutionary thinking.

Key Words: Darwinism; evolution; socio-biology; evolutionary psychology; theology-science dialogue; natural selection; tradition

Darwinism as a Paradigm Shift

For Lonergan, Darwinian thought is the outstanding instance of probability as a principle of explanation. Darwin’s method stands in a line of scientific paradigm shifts, from the classical focus on essence, through the Galilean focus on the mechanism intelligible in experimental observations, to the statistical method, in which Darwin appeals not to mechanistic determinism, but to natural selection and “chance.” As Bronowski observes, Darwin brought to us the understanding that life on earth is not static, but it changes dynamically, and somewhat unpredictably, in a way that physical processes do not.

From Darwinian Gradualism and Single Level “Natural Selection” to Punctuated and Multi-Level Evolution

In opening the final chapter of the Origin of Species, Darwin wrote that “this whole volume is one long argument.” Darwin’s logic regards:

(1) agency, or organismal struggle as the nearly exclusive level of operation for natural selection;
(2) efficacy or the gradual [and uniform] process natural selection as the creative force of evolutionary adaptive change; and
(3) scope, or extrapolation of what see in the microevolution of artificial selection to the macroevolution present in nature.5

Darwin's essential argument is based on three supposed facts: overproduction of offspring, variation and heritability, and the inference that organisms enjoying differential reproductive success will on average, be those variants that are better adapted to changing environments, and that these variants will pass their favoured traits to offspring.6

Darwin did make a philosophical commitment that is crucial to his theory. He privileged uniformitarian extrapolation as an explanatory device. He assumed that observable, small-scale processes of microevolution could, by extension through the immensity of geo-time, explain all patterns in the history of life. He applied to "evolution" the geologist Lyell's belief in the uniformity of rate. By invoking uniformitarianism, or gradualism, he had what Gould calls a strong argument based on maximal information at smallest scale.7

The methodological problem with Darwin is noted by his disciple Thomas Huxley, who in writing to Darwin offered to go to the stake for natural selection, but also warned that, "You have loaded yourself with an unnecessary difficulty in adapting Natura non facit saltum so unreservedly."8 Indeed, Darwin's theory relied absolutely on the principle that nature works gradually and in uniform rate. However, Darwin's commitment to gradualism is ideological, rather than scientific, for the fossil record does not reveal the uniform and gradual change to which Darwin was committed. To this potentially devastating problem, Darwin responds:

Why then is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic chain; and this, perhaps, is the most obvious and gravest objection which can be urged against my theory. The explanation lies, as I believe, in the extreme imperfection of the geological record.9

I note that Richard Dawkins, famous for The Selfish Gene (1989) and The Blind Watchmaker (1986) makes an identical assumption in supporting natural selection against the clear evidence of the fossil record. In lay terms, one can say that Darwin had altered or ignored the facts so as to fit the theory.

It is interesting to note the Darwinist response to research such as that carried out by Rebecca Cann, Douglas Wallace, and Ulf Gyllensten, who used Mitochondrial DNA to show that the first humans arose about 200,000 years ago, that the divergence of Africans and non-Africans occurred between 52,000 and 28,000 years ago and that there soon followed a population explosion outside Africa.10 Thus, the DNA evidence shows that

5 Gould, Structure, 59.
7 Gould, Structure, 45, 58, 106.
8 Huxley, cited in Gould, Structure, 151.
10 Nature (7 December 2000).
human evolution has not been steady and gradual, but punctuated and rapid (at least in geo-time). Despite the strength of the readily observable evidence, the approach of using Mitochondrial DNA has been attacked by some Darwinists as ‘anti-Darwinian’ because it conflicts with the ideology of gradualism.

Another aspect of Darwin’s theory is that it is restricted to a single level of causality. Challenges to survival impact upon the causal agent (organism) and are met, through natural selection, by evolutionary change. Darwinism is thoroughly reductionist, finding natural selection as a series of adaptive events occurring on the level only of organisms. Thus, while Darwin called his great work, The Origin of Species, he did not really deal with the dynamics of species, the conceived lineages resulting from natural selection of organisms. In lay terms, Darwin’s natural selection is a single-level or two-dimensional model (matter and time) rather than a multi-levelled three-dimensional model (bio-space, matter, and time).

Stephen Jay Gould and Niles Eldrege have pioneered a next generation of evolutionary thinking. Their theory of punctuated equilibrium is what one may call a “second mouse” theory – named after comedian Stephen Wright’s observation that the early bird may catch the worm, but the second mouse gets the cheese. Having seen the liabilities of classic Darwinian theory, Gould and Eldrege took the approach of accepting the fossil evidence at hand, which indicated that there has been a geologically abrupt appearance and subsequent extended stasis of species. Instead of Darwin’s near exclusive organismic selection, Gould proposes a hierarchy that includes genes, cell lineages, organisms and species. Gould wants to replace Darwin’s single levelled theory with a hierarchical account of distinct, but interacting modes. Instead of Darwin’s linear concept of evolving organisms Gould proposes a system that accounts for the success (or otherwise) of entire species.

Gould admits that there are conceptual problems presented by theories based on causes operating at several levels simultaneously. These problems are so unfamiliar to people trained in the simpler models of causal flow that “we [scientists] have had to reach out to colleagues explicitly trained in rigorous thinking about such issues.” One such multi-levelled model is found in the philosophy of Bernard Lonergan, which I shall mention below.

Schemes and Emergent Probability

The first step in a multi-level understanding of evolution is to recognise that Darwinian method, as with reductionism in general, arbitrarily limits philosophical discourse to observable variations in individuals or species. Complexity theory, on the other hand, regards collective behaviour of the parts of some system only if they are studied in the context in which they are found. Thus, causes and effects are not just “linear” but they give rise to “emergent properties” (such as water from oxygen and hydrogen).

From yet another perspective is the part of complexity studies known as “Chaos theory.” I think “chaos” is a misnomer, though it sells many books. It plays on our intuition towards determinism. Chaos theory is better conceived as the study of the enormous

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12 Gould, Structure, 39.
13 Gould, Structure, 32.
14 Gould, Structure, 28.
diversity and complexity in nature and the rejection of single-level reductionism in favor of the acceptance of multi-levelled schemes of development and emergence.\textsuperscript{15}

To compare reductionist and complex methods, we observe that one can be limited to the probability of events (as in Darwin) or one can take up the probability of schemes (as in Lonergan). Darwin conceives only of a conditioned series of organisms, realised according to successive realisations of probabilities. If I can put Gould into Lonergan's words, punctuated equilibrium theory regards not a series of single organisms, but a series of schemes or systems which are realised according to successive schedules of probabilities.\textsuperscript{16} An example of what one may mean by system or scheme is the carnivorous scheme, which presupposes the herbivorous scheme, which presupposes the scheme of plant nourishment.

**Theological Implications**

Having labored through complex evolutionary theory, I’d like to sketch some possible implications for theology.

**Tradition**

There is a temptation, sometimes in Church teaching and at other times in theology, to think of “tradition” as a linear progression of perceptibly connected, slowly developing adaptations of a single Gospel message. Such would be a trend in fundamentalist thinking and it may also have been a trend in the abuse of Thomism in an overly deductive form of scholasticism. If we take the canonical Gospels themselves, I find it helpful to conceive the different Gospels not as restatements of the same theology, but theological “species” in their own right. Each Gospel tradition is not a progression on the same linear path, but each is an intelligible response to the challenge of understanding Jesus. Each is a theological scheme that interacts with the broader Christian tradition, which itself is a higher level system.

Gould's concept of hierarchy\textsuperscript{17} helps here. Instead of the vernacular sense of hierarchy as relative value and importance, Gould’s evolutionary hierarchy – genes, organisms, species, points to hierarchy in the structural sense of rising levels of inclusivity.

**Ecclesial Development, Structure and Organisation**

Gould’s notion of hierarchy also has implications for the way in which one views Church hierarchy. We can think of ecclesial hierarchy not as the dominance of more highly valued authority over others, but as a service of building a system in which “levels” of Church participation are brought into increasing levels of inclusivity. Colloquially, this would mean that instead of a downward and linear authority structure from pope to bishops to laity, one can say that the lay system is included in the papal system, such that the papal or episcopal “systems” could not exist without the “power” or dynamism they gain in integrating the lay systems. (I say “systems” deliberately. By conceiving Church as “complex system” one would neither recoil from pluralism nor seek to eliminate plurality, but one would bring together in relationship plural systems in the “higher” integration of the Church.)

\textsuperscript{15} McPartland, *Lonergan*, 40.

\textsuperscript{16} Lonergan, *Insight*, 143.

\textsuperscript{17} Gould, *Structure*, 33.
A strict Darwinism sees the units of evolution (organisms, or genes in Dawkins) as replicators. Punctuated equilibrium theory sees units of evolution (genes, organisms and species not as replicators but as interactors in the complex systems of life.\textsuperscript{18} I suggest that fundamentalism is an attempt to avoid interacting with “the outside systems” of science, literature, higher criticism and so forth, instead seeking to pursue the linear replication of selected orthodoxies.

I would also propose that the “pay, pray and obey” ecclesiology of years past was in effect a reduction of the Church to one level of “replication,” rather than interaction between ordained, religious and lay and interaction with the systems of the outside world. This would seem to reflect the difference in attitude between Pope John XXIII and those “prophets of doom,” as he called those who sought only to maintain a linear replication of tradition.

\textit{Moral Theology}

Sociobiology, operating out of a strict Darwinism, reduces human living to only one level of existence, on which there is no good or evil, only that which fosters survival. That reduction of human existence and morality is part of what Daniel Dennett called “Darwin's Dangerous Idea.”\textsuperscript{19} Reductionist Darwinism finds no higher integration or purpose in our actions, only the thrust towards survival. Moreover, Darwinism perceives nothing intrinsically or catastrophically evil, only a slow progression in one way or another. Perhaps this is why Jewish scholars have been so sensitive to strict Darwinism. Under the Darwinian paradigm, the Nazi Holocaust is simply inconceivable. But a punctuational model of morality would assert that even though a person or a group can have a basic orientation (fundamental option) towards which one is evolving, there are radical actions that can give rise to a system of evil of force greater than its cause.

That much may hold for evil, but a linear Darwinism also cannot conceive of the power of good. The Talmudic saying, “he who saves a single life, saves the world entire” makes no sense to Darwinian gradualism. Under a punctuational model though, we can understand that the seemingly small good done by one, when included in the higher system of human life, can cause a good greater than the “good action.” One can also say that Darwinian gradualism would find the life of Christ unintelligible. Linear Darwinism could only see the incalculably small contribution of a person to the slow and steady improvement of humanity. However, the punctuational model is powerful enough to affirm how a pivotal once-and for all sacrifice of one person can save humanity entire.

\textit{Probability and Contingency}

If we consider Catholic theology in the light of new evolutionary theory, some questions arise concerning probability and contingency. If we take seriously the evolved and evolving reality of our universe, we accept that many things are only probable or contingent.

We can ask the questions, “Does God work through probability and contingency, or against them?” and, “Is Christ’s redemption a necessary cause of salvation (so that all must be saved) or is the redemption the condition through which salvation will be contingent but possible?”


One may ask of salvation history, whether it is a series of events through which God’s will has been done by forced necessity, or whether salvation history shows the contingent interaction of God and humans, with saving grace being realized probably but not necessarily.

As for eschatology, one may ask if the fulfilment of all things is prescribed for a set and necessary time, or if eschatological fulfilment is contingent upon events and interactions that will be realized with increasing probability as God’s reign comes upon us. Could it be that the "son of man" could not tell the day or hour because that time was in fact contingent upon the future realizations of probabilities?

**Contingency/ Probability of Existence**

A last point, that one may find humbling, is that the new evolutionary theory reminds us that existence is not necessary but contingent, and somewhat precarious. In a way, Darwinism regards the universe as necessary, not contingent. Modern physics, however, has revealed that even the existence of our universe is contingent. Given that what we call space, time and matter, even the laws of nature may have been formed at the primordial event called the big bang, we can no longer even take existence for granted -- Say for example if anti-matter had prevailed over matter, would there be anything existent? This raises the old question, whether being, or existence is ultimately intelligible and if there is an ultimate ground of intelligibility. Hawking tells us that if we could answer that question we would be exploring the mind of God.

**CONCLUSION**

The project of relating Catholic theology and new evolutionary theory is one that promises new insights not only for the expected area of Christian anthropology, but also for the fields of ecclesiology, moral theology, theology of tradition and soteriology. However, I am very aware that this project is highly speculative and prone to many dead ends and mistakes. Lonergan tells us that insights a dime-a-dozen, but one can take comfort from Darwin’s statement that,

> False facts are highly injurious to the progress of science, for they often endure long; but false views, if supported by some evidence, do little harm, for everyone takes a salutary pleasure in proving their falseness.20

I am even more comforted by Vilfredo Pareto’s bold statement, “Give me a fruitful error any time, full of seeds, bursting with its own corrections. You can keep your sterile truth for yourself.”

The new evolutionary theory is not only methodologically more credible than classic Darwinism, but the new worldview and understanding of what is “natural” has the potential to affect many areas of Catholic theology. No doubt some insights may not prove to be true, but even if these new insights are ultimately false, they will no doubt serve as “fruitful errors” that will lead us deeper into the truth.

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