Evoltion in the Catholic Tradition: Lecture II

Charles Darwin's Evolutionary Theory and the Catholic Tradition

In 1832 Charles Darwin signed on as a naturalist on the HMS Beagle for a five year voyage around the world to observe flora (plants) and fauna (animals) in South America. After 27 years of amassing observations on the variations of species, Charles Darwin published the first edition of *On the Origin of the Species* in 1859, which spelled out his famous theory of evolution. Most scientists would agree that it is one of the most important books of science ever to be written. The theory has been somewhat modified with the advances in modern science, especially the discoveries in molecular biology, and is now often referred to as Neo-Darwinism.

As with any revolutionary idea, Darwin's theory of evolution has received a wide variety of reactions both inside and outside the scientific community. The recent decisions by the Kansas State Board of Education indicate that strong reactions are still generated by this extraordinary work and they can even show up in the public forum. Unfortunately the word "evolution" has taken on several meanings often resulting in confusion in popular literature and popular understanding.

Therefore, before we proceed, we need to outline Darwin's revolutionary thesis. Darwin's theory has two major components: 1) natural selection and 2) the common ancestry of all earthly life. This second component is less controversial. The idea that all life descends from a single source implies that all life on earth constitutes a single community. This idea has found favor in the mystical insights of St. Francis (1182-1226) and in the pioneering work of the Jesuit scientist/theologian Teilhard de Chardin (The Phenomenon of Man 1955). While the official Catholic Church finds no real objection to the theory of common ancestry, it does have some reservations which revolve around questions of the creation of individual human "souls" and the doctrine of original sin.

It is the theory of natural selection that is most controversial. In developing the theory of natural selection, Darwin observed that living species tend to produce more offspring than will ever survive and reach maturity. He noted that not all individual offspring were identical and thus some were more adapted or more "fit" than others to survive and reproduce. Inevitably, those best adapted to survive are more likely to survive and will produce more offspring than other members of the species. Their offspring will inherit those adaptations that helped them survive and thus nature will favor (select) their descendants and eliminate other lines less adapted for survival. In any environment resources to sustain life are limited and predators are a factor, so those best adapted to acquire resources and elude predators will live and reproduce, while those not so well adapted are more likely to perish. Adapting over long periods of time to changes in their environment -- climate, food, predators -- the species will change or in Darwin's terms, evolve.
These observations themselves do not seem too threatening, however the mechanisms

related to the process of natural selection are matters of heated debate. It is these mechanisms as interpreted by many scientists that generated the label "Darwin's Dangerous Idea", the title of a book by the philosopher Daniel Dennett of Tufts University which maintains that while Darwin's theory does not prove that God does not exist, at least after Darwin an interventionist or designer God is not needed as an explanation for the advent and history of life on our planet.

Dennett and others rightly point out that there are two main mechanisms that Darwin postulated to operate in the process of natural selection and they call for an answer by any theist who would consider adopting Darwin's evolutionary theory:

1) Randomness/Chance -- Darwin observed that the small variations in individuals that led to differentiation of species seem purely random or undirected. Today (in neo-Darwinism) these differentiations are understood as genetic mutations and are attributed in theory to pure "chance". Dennett calls the process *algorithmic* -- meaning purely mathematical, automatic, impersonal. The notion of a God who controls with a providential design is judged as not necessary to explain the advent and process of life. For Dennett and others like him, life evolves without design, meaning or purpose.

2) Struggle -- The fact that all offspring must struggle to survive, and that most do not, suggests a basic cruelty and indifference within the process, particularly toward the weak. Only the "fit" survive to reproduce, the rest die. This led the philosopher Herbert Spencer to coin the phrase "survival of the fittest". This process of struggle and death is offered as a challenge to the traditional Christian idea of a providential God who loves and cares for what He has created.

In the view of these scientists (many avowed atheists), Darwin's seemingly mindless process of natural selection, operating by blind chance and struggle, suggests that the universe is essentially indifferent to life. This process seems to exclude any purpose or final cause to the historical process of life on this planet. What happens, happens. All without design or ultimate meaning. The providential God of Christianity seems absent.

But is this a completely valid interpretation of Darwin's views? The answer may be yes and no. Yes, it is true that for Darwin the elements of chance and randomness were observed to play a central and defining role in the process of natural selection. No, it is not necessary therefore to assume that the results of Darwin's application of the scientific method to the natural world provide the only knowledge available about the universe -- this is a philosophical assumption, which by definition is outside of scientific investigation.

Interestingly enough, Darwin himself never proposed an atheistic view of evolution. The central role of chance and randomness did not lead to an inevitable replacement of the Creator in Darwin's mind. Certainly his ideas of God changed and he was never able to recover the simple faith of his youth. However, in *On the Origin of Species*, Darwin makes some seven positive references to a Creator. On page 488 of the same text Darwin states: "To my mind, it accords better with what we know of the laws impressed on

matter by the Creator that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes like those determining the birth and death of an individual".

Further, in the last sentence of the *Origin* Darwin writes: "There is grandeur in this view of life, with its several powers, having been *originally breathed into a few forms or into one* (italics mine); and that, whilst this planet has gone on cycling according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved." Does this sound like the Darwin of scientific materialists like Dennett, Dawkins, Wilson and their colleagues? So when we use the phrase "Darwin's theory of evolution" we must be careful to distinguish modern interpretations based on scientific materialism from the words of Darwin himself.

However, there are many modern atheistic scientists and, of course, many fundamentalist theists who still maintain that Darwin's theory leaves us with an explanation of nature that is completely explainable by blind chance rather than design, one that exhibits cruelty and indifference rather than providential care and in the final analysis is a blind, impersonal, meaningless and indifferent process. Accepting such a scenario seems to leave no room for the traditional all loving, all powerful and purposeful creator of the universe described in the Judeo-Christian tradition. And it certainly runs headlong into any literal interpretation of the Genesis accounts of creation which most Christians consider to be inspired by God and thus inerrant. So how do we within the Catholic tradition react to Darwin as he presents himself in the *Origins* and his modern interpreters? The official Catholic position, outlined by Pope John Paul II, runs something like this:

Religion answers the WHY question: Why is there something rather than nothing? The answer is God. He Who creates and sustains the universe and all its mechanisms.

Science answers the HOW question: How does God create the universe? What mechanisms does He employ? The answer is to be found by way of scientific analysis using the scientific method.

Of course, whether or not Darwin's scientific analysis as set out in the *Origins* sufficiently answers the HOW question is a matter of some dispute and one that religion cannot settle. It is a scientific question. Indeed, while an overwhelming number of scientists support Darwin's theory *as science* and accept it as *the* integrating principle in natural science, there are some who challenge evolutionary theory on purely scientific grounds. This is to be expected. As we indicated in lecture one, it is one of the characteristics of the scientific enterprise that all theories are subject to modification or rejection based on an analysis of new data. It is generally acknowledged that many useful theories cannot explain all observed phenomena within a particular field of study.

For example, some of the most important scientific theories (Newton's Laws, Quantum Theory and Relativity) are incomplete in many areas. Newton's laws cannot explain

actions at large distances or quantum and relativity effects. While Einstein's Special Theory of Relativity is seen as complete, his General Theory (1916) remains incomplete almost a century later. However, the theories of Newton and Einstein are not labeled "wrong" or simply rejected (or banned from textbooks) because of their gaps, but are seen as important steps in the advance of science and our understanding of the world. An important function of science is to fill the "gaps" in our understanding of the world.

Nevertheless, modern scientific challenges to the theory of evolution are important. While the theory of common ancestry is generally accepted by scientists and theologians alike, the process of natural selection, with its central dynamic of chance and struggle without direction, remains the subject of some controversy.

For our purposes, we will give a bare outline of some of the scientific challenges to the process of natural selection. The scientific questions posed here are not concerned about *whether* evolution has occurred (a question for fundamentalists), but what processes explain it:

1) The best known challenge concerns the fossil record. The fossil record shows a "stepped" pattern of large, relatively rapid change. The modern challenge for supporters of evolution is to explain why in the 3.8 billion year history of life, 60% of this history involved only the evolution of microorganisms. They must also answer, using Darwin's model, why the most complex organisms evolved only in the last 15% of organic history and the evolution of mammals in the last 2% of life's history. The theory must also explain the "stepped" increase in complexity after prolonged periods of gradual accumulation. In response, Neo-Darwinists, Stephen Gould and Niles Eldredge have proposed a revised version of Darwin's theory which they describe as "punctuated equilibrium" which attempts to explain the uneven order of change which modern science has discovered.

The fossil challenge is based on the assumption that Darwin proposed a model of evolution through natural selection based on a smooth, gradual order of change. However, in *Origins* (pp.119-20), Darwin wrote: "But I must here remark that I do not suppose that the process ever goes on so regularly as is represented in the diagram, though in itself made somewhat irregular, nor that it goes on continuously; it is far more probable that each form remains for long periods unaltered, and then again undergoes modification".

2) Another important challenge concerns the actual "origin" of new species. Evolutionary theory presumes that all species evolved by successive divergence from a single ancestral stock and there is much evidence to support such a presumption. However some claim that the theory still does not explain the mechanisms involved in such a divergence. Natural selection may work well within a species (or genome), but does it adequately explain the origin of a new species? Some scientists say yes, others no. This is at the heart of the so-called "micro-evolution/macro-evolution" debate.

3) The next focus of debate is on the applicability of natural selection as a complete

explanation of the advent and continuation of life on our planet. The question here is how the incredible complexity that exists in life can be explained simply by the blind processes of chance. For example, many scientists claim that it is difficult, if not impossible, to show how natural selection alone could be responsible for the evolution of life from non-living matter. The mechanism for the emergence of life from non-life is still an open question.

Modern science has shown that fundamental particles form atoms in strictly defined ways. Similarly, atoms then combine to form elements, in ways nearly as strict. Thus, some scientists now propose that we must view the creative role of chance within some kind of law-like structure or include the notion of an "original design". Such structure or design could be present at the moment of the "Big Bang" and be structurally inherent in the universe.

4) The last challenge we shall consider concerns the matter of human behavior. While Darwin gave some attention to the behavior of non-human life, he made no real case for evolution as the explanation of human behavior. Modern Neo-Darwinists like sociobiologist Richard Dawkins have proposed such explanations as the "selfish gene" theory to explain altruism as simply a part of genetic survival. However, the best scientific evidence is that human behavior is explained best by psychology and human culture, not simply the mechanisms of evolution.

Given the above challenges, important questions remain: Is natural selection, with its mechanism of chance, the only or major mechanism that will explain evolutionary complexity and if it is, does this present a problem for our belief in God? Even if all mechanisms known today are used, are they sufficient to explain how life emerged from non-life; the origin of new species; major increases of complexity in life; and the evolution of human behavior? Is science simply waiting for new discoveries or has science reached its limits in the explanation of the advent and continuance of life on this planet?

If it is true that these questions remain to be fully answered, where does this leave Darwin's theory of evolution? Put simply (undoubtedly too simply), even if we admit that Darwinian biology has not solved all the mysteries of life, nevertheless Darwin's theory of evolution does indeed integrate a vast amount of empirical data and provides a powerful analytic tool to understand life on this planet. If Darwin's theory can adequately address the challenges listed above and be judged on scientific grounds to be basically correct,
what are the implications for religion, and specifically the Catholic tradition? What would have to be added to or subtracted, if anything, from Darwin's evolutionary theory to make it compatible with the religious conviction that a provident God creates and sustains the universe? There are many questions to be answered here, but for our purposes we shall focus on this central question: **If Darwin's theory of evolution is basically correct, does it rule out the existence of God?**

As we progress, we will not only examine the official response of the Catholic Church,

but the responses of others in our society -- atheistic materialists, fundamental theists and some unofficial, but important, speculations of current Catholic theologians. To do so we will employ John Haught's categories, which we used in the first lecture i.e., Conflict, Contact, Contrast and Confirmation.

1) Conflict

The Conflict Position answers our question by declaring that if Darwin is correct, it rules out the God of the Bible. It is important to note that the Catholic Tradition does not embrace the Conflict Position. However, in our first lecture, we noted that there are those in both the scientific and religious communities that see no way to reconcile Darwin's theory of evolution with religion. In other words, they believe that if Darwin's theory of evolution is correct as they interpret it, it rules out the existence of God. We identified these two major intellectually opposing groups in the Conflict Position as Scientific Materialists and Biblical Literalists. Earlier we described scientific materialism as *scientism* and biblical literalism as *fundamentalism* -- neither of these positions is representative of the current Catholic position.

Scientific Materialists maintain a reductionist view that, since Darwin, it is possible to account adequately and to completely explain all we encounter in nature in terms of random/chance variations within the process of natural selection operating over vast eons of time. There is no scientific evidence for God and thus no need for the designer God. It is based on an unscientific, philosophical assumption that the scientific method is the only path to truth and if it does not discover a God, no God exists. Some in this group are atheists first and use evolution to demonstrate that their atheism is justified, others maintain that their atheism is the result of there studies into the evolutionary process, which in their opinion excludes God as a necessary option to explain the universe.

Some important writers in the scientific community who adopt the conflict position in some way based on scientific materialism include:

Jacques Monod - *Chance and Necessity*
Daniel Dennett - *Darwin's Dangerous Idea* and *Consciousness Explained*
Richard Dawkins - *The Blind Watchmaker* (a reply to Wm. Paley's *Natural Theology)*
Steven Weinberg - *Dreams of a Final Theory*
Stephen Hawking - *A Brief History of Time*
Francis Crick - *Of Molecules and Men*
E.O. Wilson - *Sociobiology: The New Synthesis* and *On Human Nature*

There are of course many others, but this list it provided so that when reference is made to them in books or articles, it will be possible to identify their philosophical/scientific positions.

Biblical Literalists agree with their scientific materialist opponents that science and religion do indeed conflict, but, of course, for different reasons. This group can perhaps be broken down into two closely related positions. Both groups agree that the scientific

materialists have it all wrong, because biblical truth is superior to scientific truth. Their "biblical truth", including "biblical science" is generated by a "literal" reading and interpretation of the Bible without regard to subject matter or literary form. All forms of modern, critical methods of interpreting the Scripture are rejected.

Creationists - Those holding a creationist position also take a conflict position to the relationship of religion and science. Thus when it is obvious that a fundamentalist reading of the creation accounts in Scripture are radically different from that of Darwin, they simply reject Darwin and his scientific materialist followers on the grounds that Scriptural truth is higher that secular scientific truth.

Scientific Creationists - This group attacks Darwin's on "scientific grounds" pointing out gaps in the fossil record, the lack of an explanation of how matter made the transition from non-living to living matter and a host of other valid and non-valid objections. Their conclusion is that Scriptural "science" is superior to secular science and thus the Genesis creation accounts are a better scientific explanation than Darwin's theory of evolution.

2) Contrast

The Contrast Position has no problem with Darwin's theories as science. They cannot rule out the existence of God because evolution is science and science and religion operate on two different and parallel levels. At the popular level, many Catholics hold a position that there is no conflict between true science and true religion, because they ask different questions, use different methods and they are not competing explanations of the same subject matter. If asked, they may say that they believe that God created the universe, but it is the business of science to show us how. While this is a major and perhaps necessary step forward from the Conflict Position, the official Catholic Tradition, especially since the pontificate of Pope John Paul II, proposes that we must take a step beyond the Contrast Position, as we shall see later.

3**) Contact**

The Contact Position holds that if Darwin's theory of evolution is true, it cannot rule out the existence of God, because truth cannot contradict truth. The Contact Position comes closest to describing the official Catholic Tradition at this moment in history. John Paul II put it simply by reiterating the traditional belief that true science and true religion cannot contradict each other, but adding that there are "points of contact". In 1988, in a *Message to the Directory of the Vatican Observatory*, he alluded to these "points of contact" by remarking that "Science can purify religion from error and superstition (and) religion can purify science from idolatry and false absolutes".

This being said, the Catholic Tradition is just beginning to explore and understand the implications of the "points of contact" mentioned by John Paul II. It is not enough to show that evolution, as proposed by Darwin, does not contradict our religious beliefs, we must be able gain new insights into our religious beliefs in light of the science of evolution. For example, evolutionary theory can give us a deeper understanding of the

immanence or presence of God in the midst of evolution. We can also understand the doctrine of creation, not as contrary to, but making evolution possible. And we can also come to understand ourselves better as organically related to our world and the entire cosmos.

Furthermore, if science tells us that "chance" plays a central role in the evolution of our world, then it may well confirm for us our religious conviction that God loves us, because love never coerces, it lets the other be free to develop and to love in return. Contrary to pantheists, the Catholic Tradition maintains that God creates us and the universe as distinct from Himself. If we are truly distinct then, by definition, we and the material world must have some degree of freedom and freedom involves risks and unpredictable "chance" events.

God is our Creator not our controller or dictator. God has given the world and us a share in His creative process. He calls us to be co-creators of our destinies. Darwin has helped us to gain a deeper understanding of the God revealed to us in Jesus. Jesus was the incarnation of a God who cares and suffers with us. While we believe that God is the ultimate cause of the structures of the universe, we need not posit a God that has designed every event in the history of the universe, but a God who holds out a promise for the future. The structures of the universe created by God must, then, include a major role for chance and novelty, a role that we are only beginning to appreciate.

In conclusion, there are others whom we might include in the Contact Position who differ in important respects from the official Catholic Tradition, but have some fundamental acceptance of modern science and perhaps even some of Darwin's discoveries. However, these two groups or "positions" that we will explore are directly and publicly opposed to scientism -- the atheistic scientific materialism of Dennett, Wilson, Dawkins and the like.

The first position is an older approach that is close to fundamentalism. It tries to accommodate some of the discoveries of science with a modification of a literal approach to the Bible. This approach is call **Concordism.** Concordism has a long history in the Christian tradition going back to the Fathers of the Church. Christians have long felt a need to correlate current scientific knowledge and the Bible.

For example, a concordist approach tries to maintain that the "days" of creation are not literally twenty-four hour days, but correspond in some way to the various geological eras of modern science. Similarly, the fact that most areas of the world have experienced severe floods at one time or another or were covered by water, is seen as evidence for the story of Noah and the Flood. Concordism is an understandable, but unnecessary, attempt to reconcile modern science with the Scriptures, which were never intended to teach science.

A more interesting approach is that of **Intelligent Design**. I hesitate somewhat about using this title because it has been recently adopted largely by fundamentalists and evangelicals who actually hold a Conflict Position. Furthermore, many who invoke the intelligent design label often hold conflicting and contradictory positions.

However, there are others in the scientific and religious community who do not embrace fundamentalism and are not anti-evolution, as such, but maintain that there are still important unresolved scientific issues in the theory of evolution and more importantly, that evolutionary science today has become inseparable from scientific materialism, which is inherently and actively atheistic. As evidence they offer this quote from the Oxford zoologist Richard Dawkins in *Science* 227 - 1997: "the universe we observe has precisely the properties we should expect if there is at bottom no design, no purpose, no evil, and no good, nothing but pointless indifference." Obviously, no theist and certainly no Catholic could allow such a view to go unchallenged.

Therefore, these scientists, by adopting an Intelligent Design approach are determined to show that at some point evolutionary theory fails as an adequate explanation of the natural world and intelligent design (including thereby an Intelligent Designer) must be inserted in the process to "make it work".

A key figure in the Intelligent Design approach is the Catholic molecular biologist Michael Behe. His book, *Darwin's Black Box: The Biochemical Challenge to Evolution* (1996) created a sensation in the ranks of fundamentalists. In this book Behe argues that to fully explain the world as it is, we must insert "intelligent design" into the process in order to explain the existence of certain irreducibly complex molecular "machines" that are unexplainable by Darwin's theory. Behe uses the example of a multi-piece mouse trap that simply cannot work without all its parts. So too some complex molecular "machines" (unknown to Darwin) simply cannot evolve gradually over time. To quote Behe: "Since natural selection can only choose systems that are already working, then, if a biological system cannot be produced gradually, it would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on" (p.39)

Of course, for fundamentalists and evangelicals this idea of intelligent design implies an Intelligent Designer, and the advent of complex molecular "machines" in "one fell swoop" creates an important role for God in explaining the universe and especially in explaining the advent of life and attacking the fundamental concept of natural selection identified with Darwin.

Behe's approach has been, I think correctly, criticized by fellow Catholic scientists like Kenneth Miller in *Finding Darwin's God* (Miller recently visited Manhattan) and Behe's personal friend Denis Lamoureux in *A Black Box or a Black Hole* as published in the July 1999 issue of *The Canadian Catholic Review.* To make a long story short, Lamoureux argues that the gap perceived by Behe in the evolutionary process is actually a gap in our scientific knowledge. To believe in Divine Providence does not require one to believe in Divine Intervention to fill the gaps in our knowledge. And to lay such stress on design threatens the reality of freedom and novelty that we experience in everyday life and which our concept of God demands.
Miller's criticism of the intelligent design approach is that once you introduce design into the process you need to posit design for every twist and turn in the evolutionary process. It may seem a simple and logical step to substitute design for blind chance, but when

followed to its logical consequences the system falls of its own weight. A designer God must also be a rational God and it is literally impossible to impose rationality or any kind of rational design on what we know of the history of the development of the natural world.

The concept of an all powerful God with a "divine plan" for the universe also leaves us with some difficult explanations in the face of evil. For example, what about the malfunction of genes that produce deformed children or sickle-cell anemia? Whose fault is it that these things happen? Is our designer God unable to correct such flaws in His design or if able, why does He allow them to take place? If our designer God can produce the "irreducibly complex" molecular basis for the evolutionary process (a la Behe), why the problem with the not-so-complex genetic flaw? The presence of evil in the world is certainly a profound mystery, and the positing of a designer God is no answer. (For a complete criticism consult Miller's book - "Finding Darwin's God")

The major problem with the Intelligent Design position is its focus on order and design. This does not reflect life, which is also so obviously characterized by novelty and change. With a designer God we are back to a form of lifeless determinism, albeit divine determinism. This only magnifies the theological problem of evil and given the facts of evolutionary history raises the question of the "competence" of the designer of such a system with its blind alleys, struggle, pain and waste. *We do not have to hold on to the necessity of design to support our belief in the creator-God of the Bible.*

Another important writer who has supported the thesis that evolutionary theory is inseparable from scientific materialism, is the "born again" Berkely law professor Phillip Johnson. While not exactly a creationist or a biblical literialist he is certainly an anti-evolutionist. Johnson (rightly) sees a cultural war going on between theists and atheists, with atheists using scientific materialism as its chief weapon. For Johnson, evolutionary theory is one powerful tool used by scientific materialists in its cultural war. Johnson is not a scientist, but his writings are very popular. He argues for the "micro not macro" scenario and adopts a form of the intelligent design approach, thereby leaving himself open to criticism on the same grounds as Behe.

4) Confirmation

This approach goes even further that the Contact Position. It is in its early stages of development by theologians and as such has not provided a general position that could be adopted or rejected by the official Catholic Church. The Confirmation Position is firmly grounded in a belief in the God of the Judeo-Christian Tradition. It rejects scientific materialism, fundamentalism, concordism and intelligent design approaches. It envisions a joining together of religion and science, with religion "confirming" the scientific (evolutionary) picture of nature, by providing a unique view of God and His relationship to all creation.

The argument that religion can confirm science begins in the Scriptures. The Old

Testament understands time as a straight line, unlike the cyclical concept of time in other ancient religions. Thus the God of the Old Testament (Yahweh) was seen as calling His people to look to a new future when the Rule (Kingdom) of God would be established. Jesus also spoke of the Kingdom as a living reality growing like a mustard seed. St. Paul also speaks of a new heaven and a new earth. Thus the idea of novelty, change and a future fulfillment was introduced into biblical history. Fr.Teilhard de Chardin saw all of creation heading toward an Omega point which was Christ. This idea of novelty and change certainly coincides with Darwin's analysis of the workings of nature. So some theologians feel that religion and science are actually on the "same page" and can join together in their efforts to understand the universe given and sustained our Creator.

To see what this approach might look like theologically, we will briefly review the thoughts of two Catholic theologians, John Haught of Georgetown University and Sister Elizabeth Johnson of Fordam University. Each of these theologians is trying to understand how religion and science can relate in view of Darwin's theory of evolution.

John Haught -- John Haught has recently published a new book entitled *God after Darwin.* In this book he begins to spell out his view of how religion, in this case Catholicism, can relate to Darwin's theory of evolution. Haught sees the universe not so much in terms of order and design, but an unfinished saga of creation, of a world still coming into being. He speaks of a God who has a vision rather than a design for His world, a world that participates in its own creation.

Haught believes that our Catholic Tradition gives us two images that can lay a foundation for a theology of evolution. First is the image of God revealed in Jesus, a God of humility, self-giving and suffering love. This is the mystery of the Cross, the mystery of a God who pours himself out into the world in unrestrained and vulnerable love. A God intimately involved in the changing universe. A God who suffers with us in our often chaotic and non-rational world. This God revealed in Jesus is in contrast to the transcendent all-powerful, all-knowing designer of the universe we often find in Catholic theology.

A second image is of the Biblical God who makes promises rather than exerting control, One Who invites rather than forces. A God who is less Alpha than Omega. A God who calls us into new ways of living. A God of the future.

Haught also focuses in on the most troubling aspect of Darwin's theory -- a picture of a world formed by chance events within the impersonal process of natural selection so that the world seems to have no direction or meaning. In response, Haught argues that the notion of divine love as found in the Scriptures demands a genuine independence of creation from its Creator. Logically this requires that God leaves room in nature for accidents and chance. In the 13th century, St. Thomas Aquinas held that a world so rigidly controlled by God as to be devoid of accidents is theologically inconceivable. Without freedom and the uncertainty it guarantees we could not be human. We could not have a loving relationship with our God. Randomness, chance and freedom are of the essence of God's creation. A Dominican named Raymond Nogar once wrote a book

entitled *The Lord of the Absurd* in which he defended evolution and the random events of life as the only way a loving God can relate to His creation.

In a January 28, 2000 article in *Commonweal* Haught made this statement:

> Consequently, if ultimate reality is essentially self-giving love, and if love in turn entails 'letting be', then, theologically speaking, both the world's original coming into being, and its indeterminate Darwinian transformation through vast periods of temporal duration, would be completely consistent with the Christian experience of God.

As a footnote, this conclusion of Haught is echoed by John Polkinghorne in his book *Belief in God in an Age of Science:*

> The gift of Love must be the gift of freedom, the gift of a degree of letting-be, and this can be expected to be true of all creatures to the extent that is appropriate to their proper character. It is in the nature of dense snow fields that they will sometimes slip with the destructive force of an avalanche. It is the nature of lions that they will seek their prey. It is the nature of cells that they will mutate, sometimes producing new forms of life, sometimes grievous disabilities, sometimes cancers. It is the nature of humankind that sometimes people will act with selfless generosity but sometimes with murderous selfishness.
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> That these things are so is not gratuitous or due to divine oversight or indifference. They are the necessary cost of a creation given by its Creator the freedom to be itself. (p. 13)

Elizabeth Johnson -- In 1966 Elizabeth Johnson authored an article entitled *Does God Play Dice? Divine Providence and Chance* appearing in *Theological Studies (vol.. 56, 1996).* In this article Johnson focuses in on the central controversial issue in Darwin's theory of natural selection -- chance.

Johnson quotes Einstein's famous remark found in letters which he wrote to Max Born in which he confessed that although quantum physics and indeterminism had made an impact on science, he could not believe "God plays dice with the universe". However, as time goes on Johnson admits that it becomes more and more apparent that "random events operating within a law-like framework" are inherent in the universe. The problem now is how to understand our Christian faith in the providence of God in ways that take into account this fundamental scientific insight.
For Johnson the days of viewing the world as the mechanical operation of Newton's laws must give way to a more "opened-ended view of the world in which some events are in principle unpredictable, although in retrospect they may make sense". For example, at the subatomic level, quantum mechanics functions by laws that have uncertainty built into them. This is demonstrated in the case where it may be predicted that a mass of

radioactive uranium will decompose at given rate, however, there is no way to predict which atom will decompose first, second, etc.. The overall event is highly predictable, but the quantum mechanics involved are not. This is an instance of what Johnson cited above: "random events operating within a law-like framework."

Going from the micro level to the macro level, Johnson gives the example of weather chaos theory where small changes in initial conditions bring about massive changes. She cites the famous example of a butterfly fluttering its wings in Beijing resulting in a massive storm in New York a week later. Weather is so unpredictable because of the massive number of random events that make up its initial conditions. Thus chaos theory also represents a form of "structured randomness" in the universe.

A third example is evolution. It is also an example of an *interaction of chance and law*. The novelty in life (chance) comes about precisely because of the inherent ability of matter to organize itself and bring about complex structures, including conscious human life, by a "long, complex sequence of self-ordering processes" (law).

Johnson also mentions Heisenberg's "uncertainty principle" which asserts that it is not possible to plot the position and the velocity of a subatomic particle, because when we attempt to chart one, we disturb the other. In order to locate the particle an observer must be able to bounce off it a photon of radiation. This very act relocates the particle in an unpredictable way so you can never know for sure the momentum and position of a particle. For example, imagine a totally dark room that contains a bowling ball. To determine its location you roll another bowling ball into the room. It may be possible to accurately plot where they collide, but after the collision the first ball is relocated at an undetermined position in the room. Again, uncertainty is found at the fundamental level of existence.

Commenting that indeed nature is a mystery, Johnson summarizes these observations of the interaction of chance and law in the nature of the universe:

> Taken together, scientific understandings of the indeterminism of physical systems at the quantum level, the unpredictability of chaotic systems at the macro level, and the random emergence of new forms through the evolutionary process itself undermine the idea that there is a detailed blueprint or unfolding plan according to which the world was designed and now operates. Rather, the stuff of the world has an innate creativity in virtue of which the new continuously emerges through the interplay of chance and law: "there is no detailed blueprint, only a set of laws with an inbuilt facility for making interesting things happen." (Paul Davis *The Cosmic Blueprint*). The genuinely random intersects with deep-rooted regularities, issuing in a new situation which, when regularized, becomes in turn the basis for a new play of chance. The world develops, then, neither according to anarchy nor according to teleology, but purposively if unpredictably. Physical phenomena are constrained in an orderly way, but themselves give rise to novelty due to the intrinsic indeterminism and

openness of physical processes.

For Johnson chance, ironically, might be called a law of nature. If matter is to explore its full potential and emerge to greater complexity - the mechanism is chance.

Having said all this, what happens to our classical understanding of a providential, creator God. If it is true that there are no "gaps" in the universe and its ability to unfold and develop, is it true that science has eliminated the need for God? Here Johnson makes a distinction between providence and intervention. The fact that God may not intervene in the universe does not eliminate Divine Providence.

Johnson calls on the vision of St. Thomas Aquinas who sees God as the creator and continuous sustainer of the universe. For Thomas, the universe exists through participation in the being of God. However, this participation does not mean that God is part of our essence (pantheism) but that God is the ongoing source of our ability to exist and to act. For Thomas, God, the first cause of all that is, only acts in the world through the secondary causes of His creation. All that exists is genuinely on it own.

The power of created forces, including man, to act and change the world is a created participation in the uncreated power of the One who is pure act. Quoting Johnson: "God is the primary cause of the world, the unfathomable Source of being who continuously creates and sustains it, while creatures are secondary causes, moved movers who receive from God their form and power to act with independence...God acts wholly through and in the finite agents that also act wholly in the event." Therefore, for Johnson the scientific observations concerning the interplay of chance and law expresses God's purposes. God leaves us and the world free to become. Without chance and freedom we would only be extensions of God, totally determined by Him. With chance and freedom we are able to truly be His creatures.

So the providence of God is not intervention, but is expressed and comes to fruition by means of purposes inherent in creatures themselves. God providential guidance is accomplished in and through the free working of secondary causes. These secondary causes include rather than exclude chance, contingency and freedom of choice.

In the final analysis, Johnson states "the Creator God is neither a maker of clocks nor an instigator of anarchy, but the one ceaselessly at work bringing overall direction and order to the free play of the undetermined realms of matter and spirit, 'an Improviser of unsurpassed ingenuity' (Arthur Peacock *Imitations of Reality)*. In this evolutionary world, the essential role of genuine randomness does not contradict God's providential care but somehow illumines it."

Conclusion

If novelty is characteristic of evolution, then perhaps were are seeing a true evolution in the relationship between religion and science made possible by something which is novel in all human relationships -- humility. As a casual reader in the history of the

relationship of science and religion, it seems to me that both sides are less dogmatic and have assumed a more humble attitude toward the great mystery which is our universe.

Gone are the certainties of the world machine of Newton. Gone are the logical "proofs" of the existence of God from St. Thomas. Our mysterious world of matter is less "logical" and predictable than we once thought and our creator God continues to elude our logic and our efforts to "pin him in a formulated phrase". Our new-found humility has allowed us to regain our sense of awe.

John Polkinghorne, a scientist and a theologian, sums up this new humility in both intellectual communities in this remark:

> Once again the theistic conclusion is not logically coercive, but it can claim serious consideration as an intellectually satisfying understanding of what would otherwise be unintelligible good fortune. (*Belief in God in an Age of Science* p. 10)

A Final Thought

Perhaps it is time for us to give up on the concept of a Designer God. Certainly our God-given reason which we exercise in science is opening up to us a world that includes indeterminacy and freedom rather than the atheistic determinacy of scientific materialism or the theological determinacy of the Designer God. Underneath the rhythms which hold together our existence, there is also a fundamental disorder coupled with the chaos and chance which mark our universe and our personal lives. Finally, there is our human freedom and the terror of our irreversible decisions that change us and our world forever.

Into this world steps a man called Jesus, Whom we encounter as God among us. When Jesus confronts the disorder, destruction, extinction and chaos within His life He responds not with a stoic reminder that all of this is part of the Father's mysterious plan. No, He responds by confrontation -- feeding the hungry, healing the sick, comforting the outcasts, confronting the demons and exposing religious hypocrisy. But most importantly He tells all who will hear that the forces of chaos and death do not have the final word. He proclaims that the Creator of the universe offers an invitation to a Kingdom -- like a great wedding feast -- where every tear will be wiped away and all things will be made whole. The Kingdom is Paradise regained where peace is restored. The Kingdom is within us and it begins here and now -- the call is here and now and everything depends on our response.

This invitation is answered by those who abandon the wisdom of the world and empty themselves in the service of others. Those who respond to the invitation to the Kingdom are not identified in the Gospels by Jesus as those who go to church, tithe, read the Scriptures or adhere to certain doctrines. Those who respond are those who give food to the hungry, drink to the thirsty, clothes to the naked, a welcome to the stranger and comfort to the ill and imprisoned. He warned that no one is to bring their gifts to the altar unless they were at peace with their fellowman.

A life dedicated to the service of others and the world may seem absurd, but it is the same absurdity of the Cross which was the inevitable result of His life of service. It was the Cross which Jesus embraced and through which He proclaimed victory over the forces of chaos and death. For a humanity trying to make sense of the world and human existence certainly the Cross was bound to seem "a folly to the Greeks and a stumbling block to the Jews". *Jesus revealed Himself not as Lord of the "great design", but Lord of the "absurd".* He entered fully into the chaos of our world walking with us, laughing with us, suffering with us. He absorbed violence rather than reflect it back. He announced that the meek, the merciful, the peacemakers and the seekers of justice would inherit the Kingdom. That is why, in the final analysis, no human reasoning will lead us in His footsteps, only our God-given ability to have faith in Him -- the Lord of the Absurd.