

Scientific Rationality and Spirit Experience

The battle between science and religion has waged for centuries, yet the whole subject still lacks clarity for most people. There is no conflict between good science and good religion, but we cannot see how that is true if we do not clarify what we mean by “good science” and “good religion.”

Some of the reconciliations between science and religion have been achieved by perverting the purity of good science, and others have been achieved by watering down the meaning of good religion. I will give some examples of that later, but first let me attempt to define “good science.” Many of our difficulties begin here. We tend to honor, perhaps even crave, the technological results of science without understanding the essence of the scientific method, its importance in the quest for truth, and its limitations as a means of knowledge.

Good Science

In using the word “good” we must always ask, “Good with respect to what?” By “good science” I mean, first of all, “good” with respect to the scientific method itself. I also believe that the scientific method is itself “good” with respect to having a realistic approach to life. I am convinced that science is, in the final analysis, nothing more nor less than one essential aspect of thoughtful human living honed to a highly sophisticated level of discipline.

Strictly speaking, a dog does not think scientifically, but the mental processes of a dog are scientific in the sense of embodying the predictive nature of all objective thinking. If a dog approaches a porcupine unaware of the danger of its quills, he may have an experience of pain from which he learns to either avoid porcupines or approach them more carefully. All scientific knowledge is rooted in experience and is predictive of the future. The dog learns from quill pain to use different approaches in his future behavior toward porcupines. His learned knowledge of porcupines is predictive and based on experience.

Human science is rooted in this primal mammalian intelligence. Human science as a uniquely human process begins in the most primitive beginnings of our species. Whenever it was that our symbol-using intelligence was first used to predict future events in the objective world, that was the birth of science in the human sense. Perhaps our symbol-using intelligence was first used to express our feelings. It may have taken a few generations to discover how useful symbol-using intelligence was for predicting the future and handling our practical needs.

Since these dim beginnings of science, humanity has passed through many stages of sophistication in scientific thinking. Our contemporary “scientific method” is simply a sophisticated development by the human species of a method of truth-finding that is embedded in the mental processes of the human animal. Objective knowledge is that knowledge which we acquired through our past experience and with which we predict our future. When these predictions are in error, we learn to predict better. This is the essence of scientific truth. We can no more do away with the method of scientific truth than we can do away with our own brains. Humans have always been scientists, and we always will be scientists. Modern science is merely a sophisticated development of a rational process inherent in human reason itself.

Modern science has applied experimental predictive thinking to the process of

experimental predictive thinking itself. We have achieved a level of lucidity about objective thinking that is unique in the history of our species. It has caused us to rethink thinking itself.

Now many of us have been reluctant to do disciplined thinking of any sort, much less disciplined thinking about thinking. So only a few of us have been fascinated as well as filled with dread at the prospect of probing into the nature of scientific thinking.

For example, when fundamentalist Christians say that biological evolution is “only a theory,” they reveal a thoroughgoing ignorance of the nature of scientific thinking. “Only a theory,” as they are using this phrase, implies that somewhere there is a type of objective truth that is not “just a theory.” They do indeed claim that their creationist view of human origins has, in addition to its possible factual verification, biblical authority to back it up. The aware scientist knows that biological evolution is a theory, a theory that is still being altered in the light of further learning. Furthermore, the theory of evolution will never have a final form that stands forever as the absolute truth about biological origins. This is the nature of scientific truth. It is approximate. And it is progressive.

The creationist pseudo-scientists are arguing for an objective knowledge of a different sort--a knowledge that is absolutely certain. Their desire is for a “revealed knowledge” that is placed in the human mind by supernatural means. This is nothing more noble than an egoistic lust for certainty. These pseudo-scientists have their “answer” already; then they go in search of factual support for their “revealed” answer. They also deny the relevance of factual evidence that does not correspond with their already accepted answer. This is the very opposite of the scientific method. In good scientific practice even one fact that contradicts a theory calls that theory into question. Creationist pseudo-scientists do not operate in this strict way.

The Nobel prize-winning physicist Richard Feynman illustrated for us the nature of the scientific method in his somewhat humorous description of how one discovers a new “natural law.” It takes place, he says, in this manner: (1) On the basis of the objective knowledge you already know and don’t know, you make a guess, (2) then on the basis of this guess, you construct an experimental test that can support or contradict your guess, (3) then you test your guess by performing this experiment--a public experiment that the scientific community can observe and repeat if they choose, and (4) if the experiment does not contradict your guess, you have a new “natural law”--that is, a new bit of “objective knowledge.”¹ Such knowledge is “only a theory” in the sense that further experiments may contradict this guess; but if many experiments support it and no experiments contradict it, the new theory grows in importance and becomes the operating consensus of the scientific community on what is the “objective truth” concerning this matter.

So when the community of biological scientists hold the theory that human life evolved over a four-million-year period from other primate stock, they do so because no tests have yet contradicted that guess. Furthermore, this is a very stable piece of objective knowledge because a huge body of tests have not contradicted this guess. Such support does not exist for the story of human origins as told in the book of Genesis. To view this story as the objective truth is also a theory; but in this case, there is a vast amount of experimental evidence for rejecting this theory. In the pristine practice of the scientific method, it takes only one contradiction to invalidate a theory. And such contradictions are not seen as evil intrusions, but merely challenges to the scientist to create a better guess, one that will meet the test of all experiments that can be constructed to test this guess.

¹ Richard Feynman, *The Character of Physical Law* (The MIT Press: 1993) especially page 156

This realization that all our objective knowledge is approximate and progressive does not mean that there is no such thing as objective knowledge. It only means that there is no such thing as *absolute* objective knowledge. Our objective experience supports some of our intellectual guesses and rejects others. So it is not true that Aristotelian physics or Newtonian physics is just as good as Einsteinian physics. These earlier human theories are true only to a certain extent. Human experience now exists that contradicts them as universal theories for the physical aspects of our lives. So far, the general patterns of post-Einsteinian physics are meeting the tests. This may not always be true, but until that time when our experience necessitates a new theoretical system, we must live within the consensus that has been constructed by our post-Einsteinian physicists.

And we lay readers of modern physics must learn to be precise in our grasp of these new breakthroughs. For example, the theory of relativity does not mean that all truth is relative, that anyone's opinion about things is just as good as any other person's opinion. The theory of relativity means that we must always ask about the objective truth in relation to a given observer who is objectively enmeshed in the natural world at some particular place and moving in some particular way. The theory of relativity rejects the notion that there is a viewpoint on objective truth that entails standing somewhere outside the entire natural realm. There is no separate "world of reason" in which we can stand and from which perspective two events are always simultaneous or from which perspective each object always has the same length or the same mass. The need to reject the notion of "an absolute place" from which we can view physical reality and to prefer the alternative view that one must always consider the location of the observer doing the viewing is **the objective truth** as claimed by post-Einsteinian physics. The earlier view has been contradicted by the evidence. By "evidence" I mean very plain observations like the increase in mass of a proton as it approaches the speed of light or the explosion of a nuclear device. If we are not willing to be obedient to the post-Einsteinian body of objective truth (until such time as this body of approximate truth progresses further), we are not thinking scientifically, we are being opinionated rebels against the scientific method of truth. And such rebellion is a rebellion against an essential aspect of human rationality.

Highly sophisticated scientific philosophers do not understand clearly what I have just said about objective truth. James B. Miller, a senior program associate for the Dialogue on Science, Ethics and Religion of the American Association for the Advancement of Science, makes this statement at the end of a very thoughtful article: "Knowledge is neither objective nor subjective but *personal*, acquired within the context of some community in which we place our trust."² Now this statement is both true and untrue. It is true that our scientific knowledge is communal--that it always develops in a community of scientists who are part of the larger community and its practical issues. It is also true that scientific knowledge is personal in the sense that such knowledge always assumes a personal observer of whatever is being known. And it is true that scientific knowledge is not the same thing as subjective opinion. But it is not true that scientific knowledge is not "objective." Scientific knowledge is objective in this sense: our scientific knowledge is the result of encounters we the human community have had with our surroundings. Our knowledge has increased because these encounters have violated our previous views of reality. Scientific knowledge is not based on trusting some scientific community, but on trusting those members of the scientific community who are willing to be honest about their actual encounters with reality and to forgo their previous theories when those theories have been contradicted by encounters with reality. For the lucid scientist, reality has the last word. And "reality" in this sentence does not mean some kind of mental thought or design. "Reality" is that Mysterious

² Science and Spirit Magazine: November/December 1999, page 45

Otherness that contradicts our mental designs and provokes us to create better ones.

The lucid scientist knows that he or she is an adventurer into the unknown, the real unknown, the unknown unknown. The lucid scientist knows that the objective knowledge which decades of scientists have painfully acquired does not explain everything but merely opens up new vistas of mystery to be explored. The lucid scientist knows that the more we know the more we know we don't know. And this is objectively true. This is not a subjective opinion. This is not a personal truth acquired within the context of some community in which we place our trust. What we scientifically know and what we scientifically know we don't know is objective in the sense that we have come to our current place of knowledge by looking toward REALITY to tell us what is true.

Now it is true that this REALITY toward which we are looking is not some form of absolute knowledge. Rather REALITY, objectively speaking, is Mystery--not knowledge. Knowledge is a finite human construction. REALITY is Infinite--Infinite in the sense of being beyond any and all finite human constructions. I have written a poem that expresses this awareness.

ODE TO WITTGENSTEIN³

Words cannot say how words say anything
Words can only point to REALITY beyond words.
"Reality" is itself a word--
a word which points to what is not a word.

And yet, since the word "reality" is itself
part of REALITY,
there has to be a relationship between
"reality" the word
and REALITY which is not a word.

"Can this relationship," the philosopher asks,
"be expressed in words?"
"NO!" is the answer.

In other words, REALITY is a MYSTERY
not reducible to words,
And the relationship between words and MYSTERY
is itself a mystery beyond words.

The logic of words is not, no, never,
the "LOGIC"
of MYSTERIOUS REALITY.
"Logic," when applied to REALITY,
is a metaphor
stolen from the experience of
human languages and mathematics.

The world of rational understanding
is a world of made not a world of born.

³ Ludwig Wittgenstein was a philosopher who dealt extensively with the relationship between words and reality.

Trees, squirrels, birds, rainfall, grass
are a world of born gleaming there
quite beyond our mind-made world of words.

So thinkers, let us think
about these matters that humble all thinkers
and make us children who play
who play with words
who play with REALITY
who play with the relationship between
words and REALITY.

I asked REALITY, this morning,
if what I am saying in words is correct,
and SHE said it was very close.

Good science is a conversation with the Objective Mysteriousness of REALITY. The scientist guesses, and REALITY refutes or supports the guess. REALITY is not order. And REALITY is not chaos. REALITY is both order and chaos, and REALITY is neither order nor chaos. Order and chaos are experiences of the ordering mind of humanity. Order is what the ordering mind has ordered, and chaos is what the ordering mind has not yet ordered or is not capable of ordering. No actual piece of REALITY is so completely random (or chaotic) that the human mind cannot find some order within it. And no actual piece of REALITY is so completely orderly that the human mind can completely understand it. The ways of the human mind and the WAYS of REALITY are not synonymous, but there is enough correspondence between the ways of the human mind and the WAYS of REALITY that a limited or finite quantity of objective knowledge can take place.

Since the human species evolved within REALITY having to relate to REALITY in order to survive, it is quite understandable that the human mind evolved this limited ability to objectively predict the workings of REALITY. But this amazing capacity for knowledge which has evolved in the human species does not tell us that REALITY is rational in the human sense. When we talk about the Order or Laws of REALITY, we are speaking metaphorically, for the human mind does not now know nor will it ever know this so-called "Final Order."

But philosophers of science are very often unclear about what I have just said. Here is a statement from William A. Dembski who is making a case for reintroducing the concept of design into modern scientific inquiry: "What is wrong with explaining something as designed by an intelligent agent? Certainly there are many everyday occurrences which we explain by appealing to design. Moreover, in our workaday lives it is absolutely crucial to distinguish accident from design. . . . To reintroduce design within science is to liberate science, freeing it from restrictions that were always arbitrary, and now have become intolerable."⁴

What Dembski does not see clearly is that both "accident" and "design" are no more than useful human concepts. These concepts are indeed useful when applied to whether or not a person was killed by accident or by the design of some intelligent murderer. But when we apply the concept of "design" to REALITY, we are talking metaphorically. Furthermore, we are assuming a two-story universe, and we are assuming the actuality of some sort of cosmic DESIGNER who dwells in that second story. This is religious myth, not

⁴ Science and Spirit Magazine: November/December 1999, page 32 and 42

science. Factually speaking, there is no design except those constructed by the human mind. And there is no DESIGNER except as a metaphor in some humanly invented myth. Our real experience of REALITY can never prove the theory of a cosmic DESIGNER. It is also true that our real experience of REALITY can never prove the theory of a cosmic RANDOMNESS. Rather, we confront a MYSTERIOUSNESS which is neither accidental nor designed in any humanly intelligible sense. Human intelligence is simply baffled by the OVERALL MYSTERIOUSNESS. In order to function, human intelligence has to break down the whole of everything to some describable parts, and then deal with some very practical issues having to do with predicting very specific futures. In this limited scope, scientific knowledge is competent to give us approximate answers. And for most of our practical purposes, approximate is quite good enough to meet the practical ends involved. But absolute knowledge is beyond the scope of scientific knowledge or any other form of rational knowledge. Absolute knowledge does not exist as a product contained within the human mind.

We might speak of our experience of INFINITE MYSTERIOUSNESS as a kind of absolute knowledge, but this experience is not actually knowledge at all. It is transrational experience. MYSTERY is both an objective OTHERNESS and the experience of finitude in the knowledge department of our being. To “know” MYSTERY is an awareness that we don’t know. With these insights about good science in our minds, let us turn to the other half of this science and religion dialogue: What is good religion?

Good Religion

Good religion is a finite expression of our inexpressible relationship with Infinite Mysteriousness. Good religion, like good science, must be humble in its claims to any sort of absolute knowledge. Good religion does, however, claim a secure grounding in actual experiences of the Infinite Mysteriousness. This groundedness is what makes the confident sounding assertions of good religion possible. “We speak of what we know,” is an assertion that has been made by all honest religious communities. The blind man in the Fourth Gospel of the New Testament, when asked by the religious authorities how it was that he came to see, said that all he knew was this, “I was blind but now I see.” The authorities could not stomach such self-validating authority by an untutored peasant, so they called his parents to see if he was indeed born blind. Religious truth is like that. We speak of what we know because it has happened to us. For example, I know that my despair is produced by my rebellion from REALITY because I have experienced this. Similarly, I know that trusting REALITY’s “welcome home” issues in compassion for all beings. I know these things with the same confidence that the man born blind knows that he now sees.

If we are lucid, however, we also know that our religious expressions of what we know are finite in form. What we know of our relatedness to INFINITE REALITY cannot be contained within finite rational forms. Our faltering religious expressions are understandable only to someone who has had or is open to having the very same experiences we are trying to express. For example, the author of the Fourth Gospel knew he was expressing religious truth through a fictitious story about a man born blind who came to see. If we take that story as literal fact, we see no religious truth. Only when you or I have actually experienced being the one born blind and being the one who now sees does this story speak to me or to you as a vehicle of religious truth.

So if good religion is speaking of what we know about our experience of our actual relatedness to INFINITE REALITY, what is bad religion? Bad religion is simply any religion that assists humans to flee from this Infinite relatedness rather than affirm it. We might

group all bad religion into these two categories: materialistic and supernatural.

By “materialistic religion” I mean the very common view that humanity is no more than a biological process, more complex than a worm perhaps, but of the same essence. On the finite level this is true. But humanity is a MYSTERY experienter. Humanity is capable of AWE. Humanity is capable of a despairing wickedness unknown among the rest of the animal life. Humanity is capable of a freedom and a compassion also unprecedented in the rest of biological life. To deny these truths is what I mean by a “materialistic religion.” Materialists admit that humans are more intelligent in certain ways than other species, but they deny the qualitative difference I am pointing to. We are told by materialists that their materialism is not a religion at all. The adherents of this “religion” see it as plain common sense rather than as a dogmatic position which denies the grandeur of being human--the grandeur of our possibilities as well as the grandeur of our potentialities for depravity. This “religious position” is taken by many competent scientists as well as a broad swath of the middle-class educated population.

By “supernatural religion” I mean another very common form of bad religion. Adherents of this form of delusion take the position that the human being has two parts: a material part and a spiritual part--where “the spiritual part” is like another substance belonging to another universe. The spiritual part is seen to be trapped in this cruddy living-and-dying earth-suit, and it longs to be released and fly away to its proper home in the universe next door. Or perhaps this spiritual “substance” is trapped in a wheel of fate through which it is reincarnated in biological bodies until it gets it right, so to speak. These forms of religion are bad because they do not fully affirm the wholesomeness of our natural, biological, living-and-dying lives. This type of “religious position” amounts to a denial of death and a denial of that glorious human life that is capable of self-conscious dying and living.

Good religion, by contrast, is not a “position” of any sort, but a witness to experience. Good religion describes what it is actually like to be a human being. When all this describing is boiled down, this is what we have: a human being is not a spiritual substance nor a material substance nor a combination of the two. A human being is a self-aware relationship between the finite realities of living/dying and the Infinite Source of all our living and dying. This self-aware relationship can relate to itself in despair over being itself, or in trust that this strange grandeur is what one is supposed to be.

If we understand good religion and good science as outlined above, there is indeed no contradiction between them. Good science even witnesses to that Infinite Mysteriousness that good religion explores. And good religion has nothing to say about the validity or invalidity of good science. In fact, good religion will use the knowledge of good science to assist it to correct the inadequacies of its own expressions and will also use the metaphors of good science to assist it in reconstructing the power of its witnessing.

For example, some have claimed that there is religious significance in the new cosmology that has been developed by our natural sciences. I myself certainly experience Awe when I read words like these from physicist and cosmologist, Brian Swimme:

The universe flared forth fifteen billion years ago in a trillion degree blaze of energy, constellated into a hundred billion galaxies, forged the elements deep in the cores of stars, refashioned its matter into living seas, spouted into advanced organic beings, and spilled over into a conscious self-awareness that now ponders and shapes the evolutionary dynamics of earth.⁵

⁵ Brian Swimme, “Cosmogenesis” *Worldviews and Ecology* (Orbis Books: 1994) page 238

After sharing his sense of the deep significance of this overview, Swimme, in this quite revealing essay on cosmology, tells how he has noticed that some people do not share in his enthusiasm for the new cosmology. Swimme quotes James Hillman who responded to one of Swimme's speeches on the human significance of the new cosmology with these words: "I don't give a hill of beans about the Big Bang. In fact, I care more about beans than I do about the Big Bang." Swimme also cites a fellow physicist, Steven Weinberg, who finds our cosmological knowledge basically pointless. Swimme then ponders the disparity of these responses from his own enthusiasm for the new cosmology. He asks, "What is it that happens that leads a person to regard cosmogenesis as not just a scientific theory, or a string of empirical facts, but as a way of life, as a religious attitude that enables a fresh, and creative, and cosmological orientation within the world?" As Swimme goes on to give his own personal answer to this, he moves beyond his role as objective scientist and confesses his own personal experience of being a fragile creature within this huge wild wholeness, a creature who is united with other life forms but who, nevertheless, differs from them in being conscious of this magnificent drama of which he is a part.

How can we interpret for ourselves the meaning of Swimme's witness? Apparently, some of us simply do experience Awe in the midst of learning certain scientific truths. If we do, we are experiencing the Infinite. Another person, however, can learn the same scientific truths and not experience any Awe. Awe, which is the sign of our confrontation with the Infinite, is experienced by the whole being of a human person, not by that person's scientific mind. We experience no Awe if we do not approach the truth of science with our whole being--that is, with our whole minds, our whole emotions, our whole will, and our whole capacity to be undone in our basic ego construction and challenged to be a new self. When the basic ego construction is rocked by some new perception of reality, the fragility of human life and of human knowledge about life is revealed. In the midst of this experience of fragility, we also experience the Infinite. And when we experience the Infinite, we are in a state of being that I am calling "Awe."

Awe can be described, not scientifically, but phenomenologically. Awe is not an objective reality that can be broken down and put back together in accordance with scientific investigation. Awe can, however, be broken down by describing our actual experiences of Awe. And Awe can be put back together by formulating the elements of our personal Awe experiences into an overall picture of Awe. Such description is the role of constructive religion (that is, good religion).

I am doing constructive religion as I put together my various pictures of Awe. For example, the following sentence is a religious witness not a scientific statement: Every Awe experience contains elements of dread, elements of fascination, and the courage to embrace and remain present to these intensities. This is phenomenological description. Such description clarifies what Awe is and what Awe is not. I am also doing phenomenological description when I make the following statements: Awe is an experience of the Infinite shining through the ordinary finite realm of my living. Awe is like a Great Think breaking through our ordinary thoughts. Awe is like a Great Feel breaking through our ordinary feelings. Awe is like a Great Resolve of courageous living breaking through our ordinary commitments. Now the scientist within us cannot locate this Infinite Mysteriousness for the Infinite does not exist in the scientific sense. Also the scientist cannot look within the human brain and find the place where the Mystery-experiencing Self resides. That Self which can experience Awe in confrontation with the Infinite is not locatable by scientific means. This Spirit-Self, in the scientific sense, does not exist. What exists, in the scientific sense, is an extremely complex interchange of electrical energies between some one hundred billion

brain cells having the capacity for trillions and trillions of possible combinations of interchange. This factual external complexity can be and is being investigated scientifically. But interior consciousness is not known to the scientific investigator in his or her role as a scientist. Interior consciousness is only known to the scientist, or to any person, in his or her role as a human being.

So when the physicist Brian Swimme describes his interior appropriation of cosmogenesis, he is describing a moment of Awe. He has actually left the realm of science and entered into his ever-present relationship with the Infinite. From this perspective, he can see that the reality of cosmogenesis has significance for the whole of human life. He can see a DEMAND to obey cosmogenesis by making its interior meanings foundational for our entire cultural and educational processes. But he sees this, not because he is a scientist, but because he has religious sensitivity.

Being in Awe over cosmogenesis is an example of how the ordered knowledge of science can be an encounter with the Infinite. The gaps in our scientific knowledge can also be an encounter with the Infinite and thus put us in Awe. When I consider the question of how life emerged from matter, I am in Awe over the utter complexity of this question. Perhaps one day scientists will be able not only to break down the parts of a living cell, but to understand how to reassemble them and have something living as a result. But whether they do or whether they never do, I am still Awed. Why do we have on our hands a cosmos which is capable of assembling something so unbelievably complex as a living cell? And the assembling of a self-aware human being is millions upon millions of times more complex than assembling a living cell! "Why is this so?" I ask. "How did this come to be so?" "What for?" When I ask such unanswerable questions, I see a dream image arising in my mind's eye. I see an enigmatic Face standing just behind each and every amazing finite thing and just beneath each and every question I pose about these amazing finite things. In my dream, that Face is grinning at my curiosity and at my ignorance, and I----I am grinning back. The scientist can see my grin, but the grin of the Infinite can only be seen by a human being with religious sensitivity and a poetic imagination.

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