

GENEWATCH

CAN FAITH BROADEN REASON?

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The question "Can faith broaden reason?" is of such great intrinsic importance, and the risk implied by the possibility that the answer is "no" is so great, that simply to explain why the answer is "yes" is well worth the time and effort. Because this question lies at the boundary of the knowable and the unknowable, it challenges both my faith and my science.

The unknowable as a notion does not come easily to the scientifically-minded. Science works at the boundary of the known and the unknown, a different place entirely. Dealing with the unknowable is a project full of paradox, requiring that one talk about the inarticulable and anatomize the unmeasurable. I have chosen to work at this boundary nevertheless, because I have the habits of thought of a scientist.

As soon as the notion of the unknowable as distinct from the unknown placed itself before me, the shock changed both my career and the way I see the world. The unknown was the raw material of my career, and the notion that it might be bounded in this way seemed to me deeply subversive of the entire enterprise.

Science proceeds by the testing of hypotheses, that is, ideas subject to disproof by testing of the natural world. A hypothesis that can stand up to testing expands the territory of the known, but the testability presents a problem: scientific hypotheses about the unknowable are by definition not meaningful.

Put another way, it is not worth a moment of anyone's time to seek the proof through science of any religious belief. So, I need first to provide some working terminology for the unknowable, without calling upon the tools of scientific hypothesis- testing.

Ask any scientist what lies at the core of her work, you will learn that it is not the experimental test of the hypothesis - although that is where most of the time and money of science go. It is the idea, the mechanism, the insight that justifies all the rest of the work of science. The moment of insight that reveals the new idea, where an instant before there was just fog, is the moment when the unknown first retreats before the creativity of the scientist.

Here, then, is the first door into the unknowable: where does scientific insight come from? Surely from someplace currently unknown. Let us consider the possibility that scientific insight, like religious revelation, comes from an intrinsically unknowable place.

It is a safe bet that working scientists would agree to the notion that there is a lot we don't know yet, and that the boundary between the known and unknown which science pushes back is the shoreline of a small island floating in a vast sea of the unknown. Let us say - make the further hypotheses - that the sea of unknown is not the edge of everything, and that the unknown itself is wholly bounded, blurring into an intrinsically inaccessible and immeasurable unknowability.

Then science would still be increasing the territory available to the world of the understood. As the length and complexity of the shoreline with the unknown grew in step with every discovery, there would still be no edge to the unknown except the unknowable. The enterprise of science would be assured of a limitless future of successes, none of them ever bringing the unknowable any closer.

Can these hypotheses - that the unknowable exists, and that it will remain unknowable - be tested through the methods of science? Certainly not, as they posit notions that resist testability. But they are nevertheless a fair representation of world- wide human experience outside of science. More to the point today, they are, as well, consistent with the actual experience of scientists, if not the institutional ideology of organized science.

I can anticipate the response of some to what I have said so far: to beg the question. The unknowable is not a category that gives itself easily to demonstration of its existence. If it were a mental quirk only, a fantasy not worth worrying about, an idea of something that cannot be, then that would be a sufficient answer: No unknowable, no problem. The problem with that glib answer is that science itself depends on the periodic emergence of the unknowable for its own progress.

There is no way to think through a good idea in advance; insight is not a phenomenon subject to prior scientific analysis. At every instant of insight, every moment of Aha!, what had not been conceivable, becomes clear. Where was the idea before it was thought? Only afterward, once it was thought, can science begin the determination of the known from the unknown, using the idea as a guide. But before it was thought, there were no tasks, no path, no idea that there was even a question to ask.

The unknowable is worth a scientist's attention if for no other reason than that it is the source of insight, the irrational part of science that has no chance of being brought under rational control. Moments of insight in science are not reproducible, nor is their occurrence modeled by any hypothesis of its own.

As scientific insight cannot be harnessed to the engine of experimental testing, each occurrence may as well be a gift from an unknowable source. Good ideas emerge in the mind of a scientist as gifts of the Unknowable. They are not, as data are, simply trophies of a struggle with the unknown.

The essence of the disprovable is reproducibility; insight is by definition not a reproducible thing. Recall how few such ideas have come to any of us in the hundreds of years we have been trying to understand the world and ourselves through science. Yet without moments of insight that emerge from nowhere, science bogs down in mindless repetition of acts that look serious but cannot be in the service of anything except confirmation of what is already known.

Scientific insight is not the only example of such a gift from the unknowable. Other events - also occurring rarely, inexplicably, unpredictably - can give meaning to our lives, just as scientific insights can explain the world outside ourselves. By meaning, in this context, I mean a new understanding drawn from the internal, emotional content of the experience, not the intellectual understanding which may follow as it does when experimentation proves a scientific insight to be useful. Meaning, purpose, teleology, the end of things: these are not notions that we naturally associate with science. Such experiences are commonly called religious.

Yet the central event in science - the sudden insight through which we see clearly to a corner of what had been unknown - is so similar to these religious experiences, that I see only a semantic difference between scientific insight and what is called, in religious terms, revelation. That difference remains small, whether one says that insight or revelation both come from nowhere interesting, or that they come from the unknowable which surrounds all that can be known, or that they come from God.

The differences between science and religion which have crystallized and reified into a wall that separates the two do not lie in the semantic difference between insight and revelation. Whether prepared for or not, prophetic experiences and scientific insights will occur with similar rarity, irrationality and unpredictability. The real differences grow from the different uses made of scientific and revelatory insight.

In both, insight takes the form of a vision of an invisible and hidden mechanism. In science such insights are made into guides for learning how nature works, thereby reducing our ignorance of the world around us. Guiding the formation of religious obligation, revelatory insights are prerequisite to the rituals and

observances of a religion, which ease the burden of living by lifting a felt ignorance of the purpose and meaning of our mortal lives.

In all organized religions I am aware of, revelation takes the form of a sense of being overwhelmed by sheer feeling, arising within without reason nor cause. Just as a scientist prepares for insight by deep immersion in the study of what has been dragged out of the unknown by her predecessors, a person adept at religious insight - a holy person, a prophetic person - may prepare by study of earlier revelation and prophesy, and by trying to be alert to the moral or lesson taught through what might be - to an unfeeling observer - just a coincidence.

Though both science and religion presume that the territory of the unknown is vast, most religions are far more comfortable with the notion of a residue of unknowability than are most sciences. Many practicing scientists instead believe - they would say they know - that what is not known today must and will be known tomorrow, or the next day, and that this will go on until everything is known.

The notion that nothing exists except what is knowable is wholly unprovable. Holding on to this belief in the absence of any way to test it through experimentation, and despite the counter-evidence of scientific insight itself, puts science at the risk of trapping itself in dogma. Like the worst of religious dogmas, the insistence that everything is knowable, is an unprovable position taken in the face of the evidence of the natural world. In this case, the evidence includes the fact of uncontrollable insight as the wellspring of scientific discovery.

Some scientists will argue that the reproducibility of scientific experiments assures that science as an enterprise can always be brought to internal consistency, while religions, free to call upon individual revelation and unreproducible, miraculous events, necessarily fall into contradiction with one another and thereby cancel any reason for a sensible person to take any of them as seriously.

In a negative template of this position, many people of faith will argue that science is a fragmented enterprise unable to paint a coherent picture of the natural world, limited by conflicting and inconsistent models and the finite limits of a mortal mind.

Though many scientists cannot really accept that anyone could believe in a way around mortality, and though many religious persons cannot really believe that any serious person could fail to experience these feelings, some people - I am one of them - choose to carry both sets of thoughts at once.

In my 1999 book *The Missing Moment* I concluded that current scientific studies of the brain and the mind required us to acknowledge that science has an irrational component, and that scientists are likely to experience this irrationality as the same waves of awe, joy, fear or wonder that can overtake a religious person, or even the "oceanic experience" of a shared, external, unknowable presence which Freud protested too much that he could not feel.

The barrier erected by scientists who push aside, deny or ignore these irrational states of mind is an artificial, unnecessary one, built on denial of the reality that their own work depends upon uncontrollable and unpredictable moments of insight. The same artificial barrier is maintained from the other side with equal futility, each time the resultant discoveries of science are denied, ignored or pushed aside by people anxious to protect the same irrational states of mind so precious to them in their religious faith.

To dismantle the wall from both sides, both camps will have to admit what they must already know: the reality of irrational inward experience. They both will have to acknowledge it as the source of the unexpected and unpredictable insight upon which both organized science and organized religion depend. Such admissions will not come easily. Characters like me are not at all used to putting religious feelings in the foreground, and rather have the habit of pushing our feelings away, repressing them into unconscious reservoirs from which they may emerge, but where they do not interfere with the dream of lucid rationality.

This makes speaking about religious feelings in an academic setting particularly tricky. Scientists and others who use their powers of repression to avoid accepting the reality of religious feeling or even its origin in the natural world, tend to have great difficulty accounting for such feelings even in themselves. Not just moments of insight and revelation but other feelings as well - emotional states that overtake one, unbidden and unplanned by conscious rational anticipation - seem to be a different order of phenomena than those easily studied under reproducible conditions; it is extremely difficult to do a controlled experiment on feelings.

In terms of the expected behavior of scientists, strong feelings as such are also in bad taste. Data have to be examined in terms of the model they test, and models as well as data have to be able to stand on their own in the eyes of other scientists. This situation too has its mirror image in organized religion, where a spontaneous feeling of disbelief or doubt in the face of incomprehensible evil or simple bad luck may not be easily squared with the presumption that we are moral beings in a moral universe. Nor can all of the unwanted strong feelings associated with love, aggression, nor of course death, be fitted into most religious frameworks of expected right conduct. Too much doubt is as much in bad taste from a religious person as is too much enthusiasm from an overeager experimenter.

And yet we find ourselves free to make these choices, awkward as we may feel in doing so. Judaism places a high value on the reality of such uses of free will. The entire framework of Jewish understanding of our place in the world, our responsibilities to God, and to each other, is built upon the unique human capacity to make irrational choices as well as calculated decisions. Decisions may be made by many species, and the selective advantage of a brain wired for logic is plain, but only a person can make a choice despite calculation, rather than because of it.

In the Jewish tradition the God who has existed before time and the universe began, created both time and the universe in order to have, in time, creatures - the word means things created - with free will, who could then choose to say thanks for their and the world's existence. For thanks to be proper and meaningful - the proper form of thanks is to bless God - these creatures would need absolute free will to choose whether or not to do so.

Hence the unavoidability of randomness, accidents, and for that matter evil in religious terms: all must be allowed to result, whether by the wrong human choice or by truly random occurrence, because to allow any to be preventable by pre-determining human choice, would be to gut the purpose of the creation. The absolute requirement of human free will in this religious vision shifts human choice into the foreground, and mechanisms of natural selection which yield a person who can make the unexpected choice into the background.

This set of unprovable assumptions - so bizarre in their distance from anything reproducibly known through science and yet so familiar in their high regard for the critical step of insight in science - validates meaning and purpose in a living world which is the product of the uncaring, ever-changing, always-imperfect processes of natural selection.

This line of argument is articulated beautifully in Adin Steinsaltz's book *The Strife of the Spirit*, in the essay "Fate, Destiny and Free Will." I had not yet read his essay when he and I first talked about these matters. I had just read an earlier article by Richard Dawkins, and was quite astounded by his capacity to reduce religious thought to an especially successful kind of ideational parasite. Rabbi Steinsaltz's answer was to give me a reference to his essay, with the passing remark: "God says, 'Get Me a thinking creature, I don't care how.'"

In specifically Jewish terms, then, it is the God-given, inexplicable reality of free will that allows us to act well - or not. That choice - available not just to Jews but to all people as their birthright - makes us all the active determiners of our fate. Pain, suffering, unreasonable maldistribution of good and bad fate: these are the very stuff of the natural world, the visible expression of the random genetic variation which provides natural selection with the eerie capacity to produce some living thing that will survive any contingency.

It is my faith that informs me of my obligation as a scientist to use my own free will to work against these deepest mechanisms of the natural world, and thereby to work against the meaningless of these mechanisms.

To restate this answer to the question before us in concrete and current terms, I argue that scientists of faith have the obligation to "broaden reason" by working together to assure that their science is put to the amelioration of injustice, and to the creation and protection of those freedoms prerequisite to the free-will choice to treat one another with love.

Dr. Martin Luther King taught this in a speech delivered on April 4, 1967 at a meeting of "Clergy and Laity Concerned" at Riverside Church:

"We must rapidly begin...we must rapidly begin the shift from a thing-oriented society to a person-oriented society. When machines and computers, profit motives and property rights, are considered more important than people, the giant triplets of racism, extreme materialism, and militarism are incapable of being conquered.

"A true revolution of values will soon cause us to question the fairness and justice of many of our past and present policies. On the one hand, we are called to play the Good Samaritan on life's roadside, but that will be only an initial act. One day we must come to see that the whole Jericho Road must be transformed so that men and women will not be constantly beaten and robbed as they make their journey on life's highway. True compassion is more than flinging a coin to a beggar. It comes to see that an edifice which produces beggars needs restructuring."

Note: This paper is adapted from my book The Faith of Biology and the Biology of Faith, published by Columbia University Press in 2000, and re-issued in paperback in 2013. It was presented as a talk to Communion and Liberation in 2008.

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