A NEW LOOK AT THE SCIENCE-AND-RELIGION DIALOGUE

by E. Thomas Lawson

Abstract. Cognitive science is beginning to make a contribution to the science-and-religion dialogue by its claims about the nature of both scientific and religious knowledge and the practices such knowledge informs. Of particular importance is the distinction between folk knowledge and abstract theoretical knowledge leading to a distinction between folk science and folk religion on the one hand and the reflective, theoretical, abstract form of thought that characterizes both advanced scientific thought and sophisticated theological reasoning on the other. Both folk science and folk religion emerge from commonsense reasoning about the world, a form of reasoning bequeathed to us by the processes of natural selection. Suggestions are made about what scientists and theologians can do if they accept these claims.

Keywords: cognitive science of religion; cognitive science of science; commonsense reasoning; creationism; evolutionary psychology; folk biology; folk physics; folk psychology; folk science; off-line reasoning; on-line reasoning.

The relationship between scientific and religious knowledge has a checkered history. Although it has found moments of genuine illumination as the dialogue between scientists and the intellectual representatives of the religions of humankind (many of these theologians in Western traditions), it also has precipitated much that not only trivializes both science and religion but also encourages hostility to either science or religion or both. Furthermore, if John Caiazza is right, we are at a stage of the dialogue between science and religion when religion is in the process of being confined to ever narrower or more constricted frames of reference by some

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scientists. He is certainly correct to identify Stephen Gould's notion of non-overlapping magisteria (NOMA) as an invitation to being "duped" (Caiazza 2005, 11).

Caiazza also is correct to point out that the sources of "secular" knowledge thought to be capable of providing the intellectual tools to shore up the problematic claims of religious knowledge have changed from their earlier philosophical roots. At least on the face of it, modern empirical science certainly appears to have provided a more immediate and direct challenge to certain fundamental claims about both the origin and structure of the world. When religious thinkers lay claim to theories that compete with these claims, the religious ones inevitably suffer. Small comfort can be taken from the fact that, while some religiously motivated physicists have grasped at opportunities provided by the discovery of the strange features of physical reality which they see as "making room for God," their views are hardly representative of our provisional but scientifically based conclusions about the origin and structure of the world.

Part of the problem lies in who the participants in the dialogue have been and the perspectives they bring to bear on the issues raised by the relationship between these different kinds of knowledge. When John Polkinghorne, for example, sees no opposition between science and religion, and Steven Weinberg asserts that religion is an insult to human dignity, we should not forget that this is one physicist talking to another. What is often missed is that their statements should not be taken as scientific but as attitudes informed by views generated by their (philosophical and moral) reflections and what they take to be at the heart of both science and religion. As any introductory course in the philosophy of science almost immediately makes clear to budding philosophers of science, statements *about* science are not scientific statements. Judgments about either science or religion are philosophical.

Part of the problem also is that it has been primarily theologians, or physicists turned theologians, who have felt called upon to develop a significant knowledge of the sciences, particularly physics, and even more particularly the arcane features of cosmological speculation, in order to engage physicists in conversation about the truth and relevance of religion for our understanding of the way the world goes. More recently, of course, the controversies about the teaching of evolution have encouraged some theologians not only to develop an understanding of evolutionary biology but also to show that this form of scientific knowledge is compatible, given certain restrictions, with at least some forms of religious knowledge.

Because of my deep commitment to science in a free society and my worry about the strident postmodernist critique of science found in the very centers of academic power, which I take to be more dangerous than the "religious right's" dismay about evolution, I think that we urgently need to clarify not only the dimensions of the dialogue between science and religion but also what scientific inquiry is.

What is being missed by both those who posit NOMA and those who see hostility between science and religion, as well as those who find scientific and religious knowledge compatible, is that scientists are making very interesting discoveries about the nature of religious thought and practice when such thought and practice is viewed on a global scale and when it is seen as a perfectly natural outcome of ordinary natural processes.

Before I discuss these discoveries, however, I want to make two points. First, I do not agree with Caiazza's claim (or perhaps it is Cardinal John Newman's) that science is atheistic (Caiazza 2005, 12). In fact, science cannot be either atheistic or theistic, because these are philosophical and not scientific claims, as I have already asserted. If anything, science is simply agnostic about anything that transcends the methodological but eminently useful constraints imposed by materialism. Caiazza contrasts "religious" and "secular" knowledge, but the important contrast really is between commonsense and reflective knowledge and the complex relationships that religious reasoning has with both. From a philosophical point of view, both scientific and theological reasoning are essentially reflective, "off-line," forms of reasoning operating at high levels of abstraction. I leave it to the theologians to say what substantiates their reflections, but surely they do not conceive of their enterprise as pure speculation. What clearly makes scientific knowledge virtuous is its deep dedication to formulating theories (always acknowledging their provisional nature) and to devising experiments to test these theories experimentally or, where that is not possible, to at least marshal empirical evidence for the hypotheses under consideration.

The form of theorizing and experimentation that I find particularly relevant is that set of scientific investigations now rapidly and productively developing in the framework of the cognitive sciences abetted by evolutionary psychology. Within cognitive science a subdiscipline already nearly fifteen years in the making has become known as the cognitive science of religion (Atran 2002; Boyer 2001; Lawson and McCauley 1990; McCauley and Lawson 2002; Pyysiäinen 2004; Whitehouse 2004). This field of inquiry numbers among its participants cognitive neuroscientists, cognitive anthropologists, cognitive psychologists, evolutionary psychologists, philosophers, comparative religionists, and theologians. My purpose here is to show that the inquiries of this interdisciplinary venture promise to shed significant light not only on the relationships between science and religion (thus opening up new avenues of discourse in the dialogue by pointing to new ways of understanding the natures of both science and religion) but also on the very complex nature of scientific knowledge itself. There is not only a cognitive science of religion but also a cognitive science of science, and both provide us with fascinating clues about the workings of the human mind and the forms of knowledge that it generates and is uniquely equipped to acquire.

The Cognitive Science of Science

The natural and social sciences are human attempts to develop a deeper explanatory understanding of the world in which we live, a world that includes ourselves. The cognitive science of science is an attempt to theorize about, and devise empirical and experimental means for, disclosing and describing the cognitive processes that lead to such explanatory understanding. Until late in the history of Western thought this type of inquiry was regarded as the exclusive province of philosophy. This picture changed with the slow emergence of the psychological and behavioral sciences. While philosophers of mind as well as those who have argued for naturalizing epistemology have joined forces with the psychological and behavioral sciences in pursuing the goal of a deeper understanding of cognition, philosophers no longer "own" knowledge. What now counts as knowledge is distributed among the various disciplines and in the interstices between them in intriguing and quite complicated ways.

A fundamental turn in the inquiry about cognition has been to make a clear distinction between commonsense and reflective knowledge, or, as they are sometimes referred to, on-line and off-line reasoning. The difference between these forms of knowledge is the distinction between what we naturally and typically expect the world to be like as a consequence of our biological endowment, and the slow but important development of more abstract forms of reasoning sometimes requiring artificial means to test their relevance to the complex nature of the world. Cognitive and developmental psychologists as well as evolutionary psychologists argue, with important experiments to back them up, that commonsense knowledge is either what we bring with us into the world or that which very rapidly develops in the earliest years of our lives.

Common sense is a very useful tool for navigating our way through a complex environment. It tells us that we cannot walk through walls, that if an object is moving rapidly toward us we should duck, that the gaze of a leopard directed toward us discloses the culinary desires of that leopard, and that when our friend screws up her face she is telling us that we have just said something stupid. This common sense is, of course, not a simple relationship between a "mind" and an "environment" but a set of processes each of which acts as an inference engine responding to different features of the environment. Some cognitive scientists go so far as to say that the particular commonsense judgments we make about the various properties of the world are domain specific, in the sense that each process of inference is uniquely responsive to the specific cues provided by the specific features of the domain in question. These inference engines have been bequeathed to us by the forces of natural selection and equip us to traffic with the world in the special way in which we so efficiently do. Psychologists talk about these aspects of common sense as *folk physics*, *folk biology*, and *folk psychology*.

From a domain-specific perspective, folk physics is our commonsense way of dealing with the physical world, a world in which we perceive surfaces, angles, solid objects, motion, and so on. We would be hard pressed to make our way in the world without such commonsense notions. But folk physics, while useful and essential for our ordinary relationships with the world, is also wrong from the point of view of the science of physics. For example, common sense tells us that if we roll a ball down an incline it will eventually stop. That is, the natural state of any object is to stay in the same place unless moved, and once it has been moved it will again come to rest. But this is only apparently the case. An object at rest, according to the discoveries of science, is moving all of the time—because it is resting on the earth, and the earth is spinning on its axis; the earth is moving around the sun; the sun is moving around the center of the galaxy; and the galaxy is moving to who knows where! In fact, motion is the fundamental fact—and we have only begun to describe things at the middle level of description.

Folk biology is our commonsense set of notions about the difference between organisms and nonorganic objects. This is a very useful distinction for many purposes and leads us to understand that that rock over there will never jump at us of its own accord. So in our intuitive ontologies we find it useful to distinguish between living things and nonliving things and, among living things, between plants, animals, and people. Again from the point of view of the biological sciences this intuitive ontology leaves much to be desired as we delve ever deeper into the biochemical bases of the organism.

Folk psychology, however, is where it really gets interesting, because from the perspective of common sense not only we but also other people and even animals have minds. We attribute desires, beliefs, and even sophisticated thoughts to others. Folk psychology is a theory that others have minds and is therefore known as "theory of mind." Folk psychology is thoroughly intentional and even involves the important concept that my thoughts can control my limbs: If I want to walk over there and decide to walk over there, I walk over there. Such folk-psychological ideas are basic to our everyday reasoning about things.

Folk physics, folk biology, and folk psychology all deliver the truth about the world until we begin to engage in scientific theorizing and move away from commonsense theorizing. Let no one forget that common sense is a low-level theory about what the world is like. It is because of the deeply ingrained features of this commonsense theory (or, more accurately, set of theories) that we are so surprised, annoyed, and even angry when scientists tell us about the world in ways that we have failed to imagine and that sometimes are almost impossible to comprehend using our ordinary cognitive resources. So, when physicists talk about black holes and neutrinos, when biologists talk about natural selection as being able to account for

design, when psychologists tell us about the mind consisting of many inference engines all being triggered to act by different environmental cues, we feel a deep conflict between what we take to be true and what scientists tell us is true.

We also, however, begin to realize that we are not just playing philosophical games here. We are beginning to face the fact that the world delivered by our senses is hiding a world far more complex and interesting than we ever imagined. The appearance/reality distinction recognized already by the Greek philosophers has again reared its head.

The point of all this is that, if we are to believe these scientists about the utilitarian but inadequate knowledge delivered by common sense, it is perfectly natural to think about and relate to the world by the techniques bequeathed to us by the processes of natural selection. It is science that is unnatural, because it requires us to abandon something as useful as common sense and, by employing the strategies of highly abstract theorizing, to engage in the scientific task of designing experiments and learning the language of mathematics, to move forward into a world that on the face of it has some of the marks of the supernatural. Action at a distance, entanglement, hidden processes of inference, neurons firing to produce conscious awareness, DNA generating complex phenotypic structures, singularities, event horizons—what kinds of worlds are these strange imaginings encouraged by methodologically abandoning such a useful tool as common sense for negotiating our way in the world?

The Cognitive Science of Religion

Now we turn to the cognitive science of religion. Here too, things are not as they seem. The realities take us deeper than the appearances, even though the appearances play such an important role in our everyday lives.

Let us begin with the idea of theological correctness. Every theologian thinks that the parishioners in the pew have it wrong. Theologians hope to succeed, by whatever subtle means is available, in getting their hearers to abandon their superstitions and realize that their anthropomorphism comes nowhere near the theological sophistications that they are capable of introducing if only the flock would pay attention! So God is not a being but the ground of being, even Being-Itself. Nirvana is not any kind of psychological state but the negation of all states. Furthermore (thinks the theologian), if only these common folk would realize that scientific theories about natural selection, about the Big Bang, about whatever, are not inimical to a deep theological understanding but compatible with it. The folk, however, are not paying attention. Why? Because religious ideas about the gods, about salvation, and about the invisible spiritual realm populated by spiritual beings make perfect sense in terms of folk physics, folk biology, and folk psychology with only minor tweaking here and there. This does not mean that people do not in their reflective moments engage

in theological thinking. They do listen when they are told that God is omnipotent, omniscient, and omnipresent. They can even recite these notions during catechism class or when fighting with atheists. But they find it difficult to think that way in their everyday religious reasoning. Psychological experiments have shown that, when having to make judgments about stories they have been told about God acting in the world, people systematically misremember what they have heard in these stories. Omniscience, omnipotence, and omnipresence fly out the window, and people actually think of God as not knowing everything, not being all-powerful, and not being everywhere at once. Our intuitive ontologies reflect our difficulties in handling such concepts by the inference engines that work so well in the world delivered to us by common sense.

Part of the problem with the religion-and-science dialogue is that both theologians and physicists who have been rigorously trained in highly abstract forms of reasoning and, therefore, when good will is present, are able to communicate with each other about important matters, have lost sight of both the distinction between on-line religious reasoning dependent upon theory of mind and the distinction between the folk sciences and the reflective sciences. Scientists and theologians need to realize that the religion-science dialogue can only succeed, that is, become contagious and spread throughout human societies, when we understand the differences between these forms of reasoning and when we grasp their implications for the way religious ideas are transmitted from generation to generation as well as for the reasons that some ideas are more appealing than others.

Let us look at all of this from another perspective by paying attention to the problem of religious rituals—human ceremonies that occur all over the world and throughout recorded history the purpose of which is not at all clear from a scientific point of view but which makes complete sense to the participants in the religious-ritual system. Social scientists have made all kinds of claims about what these peculiar forms of action are and why people perform them. To the credit of the social sciences, most of these theories have been judged to be not only incomplete but faulty and sometimes just plain wrong, partly because the question should have been why such practices are successfully transmitted culturally rather than why people perform them when they seem to have no practical value.

Scientists engaged in developing the cognitive science of religion argue that developing an explanatory understanding of such ritual behavior involves at least identifying the ways in which human beings marshal and employ their ordinary, everyday cognitive resources about agents and action in deeply intuitive ways such that these practices have a vitality that encourages their transmission from generation to generation. The rituals make sense to the participants because they are attuned by their folk psychology (or, if you prefer, their theory of mind) not only to what agents and patients are and how they differ from everything else in the world but

also to why some agents have very special qualities that set them apart. Says the skeptic: You can't see God, so how do you know God is there? But, as any psychologist can tell you, we decouple our references to others all the time by not requiring their physical presence in order to think of them as real. I can think of my friend, or enemy for that matter, even if I cannot see him; he might be on a trip to the moon and out of reach of any device that I might have to communicate with him. We certainly do not require the presence, or even the visibility, of an object to consider that object real. So the reality of the gods for the religious-ritual participant does not depend upon abstract theorizing for establishing either their relevance or existence. Our cognitive mechanisms are well equipped to handle our intuitions about agency. To the extent that theologians move beyond such theory-of-mind considerations their problem is to establish the referents for their concepts in the same way that scientists, whether physicists, biologists, or psychologists, establish the referents for their concepts. Many theologians have taken such a project very seriously indeed. If they have made any mistake it is to think that science will provide them such referents. Certainly they ought to model their inquiries at their level of abstraction in ways similar to the ways that scientists engage in such modeling, but the history of such an "empirical" theology does not appear to me to have been particularly successful, although no level of inquiry should ever be discouraged.

Permit me to assume, therefore, that theologians are responsive to what I have argued for and that scientists not yet knowledgeable about the findings of cognitive scientists are willing to listen as well. Their challenge to me is: What should we do?

I happily accept the challenge. First, theologians should accept the findings of the sciences, at least when such discoveries are well supported by the evidence. (Many have done so.) Second, both scientists and theologians should recognize why the religious people who concern them are constituted to operate according to the constraints of common sense. They should understand that it is natural for the common folk to be dualistic (Bloom 2004) and creationist (Evans 2001). Intuitive thought—what I have been referring to variously as common sense and folk science—clearly supports the ready spread of creationist thinking, because people are primed, and cognitively equipped, to think of the world in terms of agents acting on something to bring about a new thing (McCauley and Lawson 2002). Talk about God creating the world is easy to comprehend because it is easy to represent cognitively. No one has any difficulty understanding the artisan or the artist involved in the act of creation, that is, making something. Third, people can override but never completely eliminate the products of intuitive thought. Overriding such intuitive cognitive processes takes work, and there are many blind alleys. They can be led to understand why creationism comes so easily but that there is an even more interesting story to

tell. Fourth, both theologians and scientists need to understand that people are also essentialists (Gelman and Wellman 1991). Things are thought to have essences. From an essentialist point of view, giraffes and leopards differ in fundamental ways. In fact, philosophers of science have argued that one of the reasons that the theory of evolution has been so difficult to swallow was not simply that it seems to contradict the biblical and other stories of creation but because it implies that one kind of essence can be transformed into another, contradicting the deliveries of common sense. Theologians who have accepted the findings of science need to help the religious folk understand that there is another story to tell besides one of static and unchanging essences, and scientists need to develop empathy to the essentialism typical of our ordinary modes of perception. They need to realize that adopting a scientific approach is not the result of ignorance or obdurateness. They are up against properties of the human brain that work very well for most ordinary purposes.

Fifth, although theologians who accept the findings of science should be empathetic to the products of intuitive thought, they should not encourage people to operate primarily at that level. This means paying a lot more attention to education in the context of religious practice, where that education focuses not purely on hermeneutic forays into religious texts but on the importance of reflective thought for understanding the hidden reasons why we typically think and behave in the ways we do. Successful communication at such a level promises to inaugurate a new era in the dialogue between science and religion.

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