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Science and Religion, Natural and Unnatural

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Recent years have seen the publication of a number of books and articles offering specifically "cognitive" and "evolutionary" accounts of the origins of religious beliefs (see e.g. Lawson and McCauley 1990, Boyer 2001, Atran 2002, Dennett 2006). These accounts have considerable intellectual interest, but questions can be raised about their key assumptions, claims and methods and also about how those pursuing and promoting them—anthropologists, philosophers, psychologists and others--unfold their broader social and intellectual implications. I have dealt elsewhere with an array of theoretical and methodological problems presented by current cognitive-evolutionary explanations of religion.[1] Here I shall focus on the enlistment of these explanations in the service of sharp but dubious contrasts between religion and science.

In the final chapter of his book *Religion Explained*, anthropologist Pascal Boyer begins a discussion of the relation between religion and science by rejecting a simple opposition between the two. "It is by no means clear," he writes, "that there is such a thing as 'religion' in the abstract." Rather, he continues, invoking the "cognitivist" (mentalist, computationalist) account detailed elsewhere in his book,"[t]here are many mental representations entertained by people, many acts of communication that make them more or less plausible, many inferences produced in many contexts." He goes on to make parallel observations of science: "Science too is a cultural thing, that is, a domain of mental representations that happen to be entertained by a number of human minds. There is no science as such but rather a large set of people with particular activities, a

particular database that is stored in a particular literature, and a particular way of adding to or modifying that database" (Boyer 2001: 320).

The religion-science symmetry soon dissolves, however, in favor of a familiar story of triumph and routing. In the West, Boyer writes, a "monopolistic doctrinal religion" (evidently Roman Catholicism) "made the crucial mistake of meddling in empirical statements of fact . . . In every instance where the Church has tried to offer its own description of what happens in the world *and* there was some scientific alternative on the very same topic, the latter has proved better. Every battle has been lost and conclusively so." The apparent nominalism also dissolves in favor a familiar generalized and essentialized concept of "science" and, with it, the assertion of its fundamental epistemic opposition to "religion," similarly generalized and essentialized: "Science showed not only that some stories about the formation of planets were decidedly below par but also that there was something dramatically flawed *in principle* about religion as a way of knowing things and that there was a better way of gathering reliable information about the world." Boyer concludes his discussion by reframing the religion-science relation as a contrast between the inherent attractiveness of religious concepts to the human mind and the unnaturalness of scientific thinking. Given our evolved mental dispositions, he writes, religious concepts are "a *likely* thing" for humans whereas scientific thought, being cognitively "unnatural," is an "*unlikely*" thing statistically and in fact quite rare among humans (Boyer 2001: 320-321; see also Boyer 1994).

To support the terms of this dichotomy, Boyer cites an essay by philosopher Robert McCauley titled "The Naturalness of Religion and the Unnaturalness of Science," which itself echoes the arguments (and title) of a book by biologist Lewis Wolpert, *The*

Unnatural Nature of Science. These shared accounts and duplicated arguments are routinely cited by those promoting cognitive-evolutionary accounts of religion and recur in public debates over the relation between religion and science. The cogency of the natural-unnatural *topos* is, accordingly, worth some attention. I examine it here primarily in the version presented by Robert McCauley in the essay just mentioned but I also note its relation to more general contrasts between science and religion.

At the beginning of his essay, McCauley remarks that it is provoked by scholars in the field of religious studies who maintain that, because religion is not—or not simply—a natural phenomenon, its study requires methods other than those of the natural sciences. Seeking to turn the tables on such arguments, his intention, he writes, is to demonstrate that religion is, on the contrary, something supremely natural while it is actually science that is unnatural. As is often the case with polemical table-turnings, however, the reversal here does not come off altogether smoothly.

McCauley's demonstration, as he lays it out, consists of a series of strongly contrastive characterizations appealing to apparently straightforward observations supplemented by references to historical and experimental evidence. Thus he maintains that, from the fact that religion is found in all times and cultures, we may conclude that religious beliefs require nothing but the universals of human nature to spring up while, conversely, given the rarity of science, we may conclude that scientific thinking is essentially contrary to human nature. Or, he observes, inasmuch as science requires literacy, complex social arrangements, educated elites and technical means for preserving and transmitting knowledge, it is fundamentally "cultural" while, conversely, since religion requires nothing but basic cognitive abilities, it is "natural." Or again, the fact

that religious concepts are easy to learn and remember and are quickly acquired even by young children indicates that such concepts conform to innate intuitions, while the fact that scientific concepts are hard to learn and take specialists years to master is evidence that they are counterintuitive and demand exceptional forms of cognitive discipline (McCauley 2000: 266, 77 and 80).[2]

These contrasts are in some ways plausible-sounding, draw on familiar observations and are presented by McCauley with a string of references to the psychological literature. The distinctions and alignments on which they are based, however, involve crucial conceptual oversimplification and historical obliteration. For one thing, it is not clear that comparable matters are being compared here, or that the comparisons are as impartial as they could be. Thus, at the simplest level, we may ask what exactly it is in "religion" that children acquire so easily and in "science" that most people never come to master. To be sure, while many children can recite their prayers with ease and conviction, few could explain Einstein's Unified Field Theory. But many children who can recite the multiplication table at the drop of a hat would have considerable difficulty explaining the Doctrine of the Trinity. The fact, stretched here in the service of an exaggerated contrast, is that certain types of ideas and verbal routines--religious, scientific and other--are acquired readily while others (again, from any and all domains of thought) require a highly specialized education and relatively long apprenticeship for their mastery. The existence of such differences is not in question. What is dubious is the clear alignment of the first type with what are identified as specifically "religious" ideas and the second with what are identified as specifically "scientific" concepts.

Second and more fundamentally, in McCauley's essay as also in Boyer's and Wolpert's books, the sharp contrasts between a cognitively unnatural "science" and a cognitively natural "religion" require the usage of these terms in vague, shifting, overly broad, overly restrictive and otherwise tendentious ways. For example, while natural religious beliefs evidently include, for McCauley, everything from ancient sun-gods to the contents of parish catechisms, he insists on a historically, culturally and epistemically quite narrow understanding of science--which, of course, begs the question of the alleged primitiveness and ubiquity of the former and the alleged unnaturalness and rarity of the latter. Commenting on these objections in his recent book, *Why Religion is Natural and Science is Not*, McCauley writes that his (and Wolpert's) narrow definition of science as, in effect, the body of established Western scientific concepts and explanations is justified because "*that* is the science that most participants compare with (usually, modern Western) religion" (McCauley 2011: 89). Assuming that what McCauley means by "participants" here are scholars and laypersons participating in controversies over science and religion, then, to maintain due parity of reasoning, he should be identifying *religion* not with the naïve beliefs of children and other unsophisticated folk but with what participants in these controversies--including scholars of religion, theologians and educated churchgoers—typically mean by the term when they compare it in various ways to (usually, modern, Western) *science* (see e.g. Hart 2006). If he did so, he would have to include some conceptually quite subtle and complex ideas--not to mention practices, institutions and intellectual and cultural elaborations, from Greek dramas and Gothic cathedrals to *Paradise Lost* and the sonnets of Gerard Manley Hopkins--that are no more

common, spontaneous, easily produced or easily acquired than those generally associated with modern Western science.

In McCauley's essay as elsewhere in contemporary writings on these issues, sharp contrasts between science and religion also require the forgetting of quite a bit of recorded human history, notably the extensive historical overlaps and continuities between ideas, practices and institutions that are properly and reasonably included in the reference of each of the two terms. Among other things forgotten are the close intellectual as well as institutional ties between Western science and the Catholic Church for the better part of the past millennium. Historians of the subject remind us that much of what we now call science—pursued in the past as "natural philosophy"—was developed in medieval universities originally based in monastic orders and that recognizably scientific pursuits remained theologically oriented long afterward (see Olson 2004, Harrison 2006). As late as the eighteenth century, nature was studied systematically and empirically--by, among others, Isaac Newton--on the assumption that it embodied divine purpose and with the aim of revealing just how it did so. Historians also note that a number of familiar ideals and ideologies of modern Western science, such as the unity, progress and perfectibility of knowledge, are the fairly direct heritage of Christian doctrine, initially transmitted through the medieval universities and extended later by Enlightenment and evolutionary narratives of human rationality and development (see Noble 1992). These and other ideals and ideologies shared by Western science and monotheistic religions--including asceticism and patriarchy--seem to reflect more general human tendencies: for example, the inclination of people everywhere to construct

teleological, meliorist narratives or to suppose that a strong male presence is required for important works of the mind or spirit.

A continuity of cognitive processes in the practices of religion, science and everyday life--along with observations on the generality of cognitive tendencies among humans--is both affirmed and denied by those proposing the natural-unnatural dichotomy that concerns us here. Thus, while Boyer emphasizes that religious persons are not essentially different from nonreligious ones in essential cognitive functions, he also maintains the exceptional cognitive and motivational character of scientists. The crucial point, he argues, is that, because of their special training, disciplined individual efforts and the unique normative system that defines their community, scientists come to act in ways that supersede their species-characteristic cognitive dispositions and impulses (Boyer 2001: 311). That may be true. But the same could be said of, among others, Buddhist monks, classical scholars and Oxford-educated analytic philosophers, each of whom, given their special training, disciplined individual efforts and the distinctive normative systems that define their respective communities, could (and often do) make the same claims about their transcendence of ordinary human limits, cognitive and other. Scientists as a group may be unusual in these ways, but so also, it seems, are various other sets of people, in which case the claim of unnaturalness for scientific thinking would have to be extended more broadly. But if the cognitive activities of a good portion of humanity are species-transcendent, then species-transcendence would have to be counted as more or less natural to humans—something that, in fact, a good many humanistic thinkers have maintained.

Like Boyer, McCauley is equivocal on the question of the exceptional nature of scientific thinking, both acknowledging that scientists "exhibit the same cognitive biases and limitations that other human beings do" but also arguing that, unlike other human beings, they "get around" such biases and limitations. This, McCauley maintains, is because scientists have special "tools (such as literacy and mathematical description)" and because institutionally established norms encourage them to "seiz[e] opportunities to criticize and correct each other's work" (McCauley 2000: 66-67). The tools and norms that McCauley invokes are certainly significant in limiting the negative effects of scientists' cognitive liabilities. Their operation, however, is not as simple as he implies, nor their effectiveness as decisively differentiating. Among other epistemically significant cognitive tendencies that scientists share with religionists and humans more generally are animism, anthropomorphism, overgeneralization, essentialism, reification, hypertrophy, binary thinking, hierarchical thinking, linear-causal thinking, teleological thinking and a tendency to divide the social or intellectual world into communities of good/right/noble *us* and bad/wrong/ignoble *them*. One of the most significant of these shared cognitive tendencies is so-called confirmation bias, our tendency to notice and remember what confirms our established beliefs and to overlook or forget what contradicts them. Thus scientists may rationalize experimental anomalies and failed predictions in regard to current scientific theories in ways that resemble the belief-preserving rationalizations of religionists in regard to articles of faith and supposed biblical prophecies (see Smith 2010, de Cruz and de Smedt 2007). Also, while it is true that epistemically beneficial communal norms, such as accurate observation, precise statement or mutual criticism, are established and sustained among groups of scientists, it

is also true that groups of scientists tend to share more intellectually dubious theoretical assumptions and related communal habits--or, in effect, biases--of perception and classification. The belief-preserving, dissonance-avoiding, innovation-discouraging, paradigm-hardening operations of these tendencies among scientists have been documented and theorized by historians and sociologists of science for close to a century, and most contemporary scholars of science reject the idea that scientific norms and methods effectively overcome—as opposed to check or limit—various types of human cognitive bias (see e.g. Fleck 1979 [1935], Lightman and Gingerich 1992, Henrich et al 2011).

At a central point in his argument for the unnaturalness of scientific thinking, McCauley--closely following Lewis Wolpert here--insists that, to appreciate the "rarity" of science, we must not "confuse" it with "technology." "The crucial point," he writes, "is that the practical orientation of technology and the abstract theoretical interest in understanding nature that characterizes science are not the same aims . . . Science is finally concerned with understanding nature for its own sake and not merely for its effects on us" (McCauley 2000: 68, 71). But the admonition not to confuse science and technology, though familiar, is not so easy to heed. On the contrary, distinguishing them at all requires some significant retrospective tinkering. Most of the specialized pursuits we now associate with Western science, including anatomy, botany, chemistry and physics, developed in close conjunction with technical problem-solving in such perennial human activities as healing, agriculture, navigation and warfare. A tradition and image of gentlemen investigators interested in understanding the workings of nature "for its own sake" emerged in the seventeenth century, largely in the science academies of England

and Europe, but the conjunction of epistemic pursuits with practical activities has continued unabated. Indeed, with the increased dominance of large-scale scientific ventures funded mainly by governmental, industrial and commercial agencies, any effort to mark off a realm of scientific thinking pursued independent of "a practical orientation toward technology" can only be arbitrary and artificial.[3]

The separation of science from technology required to sustain the unnatural/natural contrast with religion is not only conceptually strained and historically dubious but poses a considerable technical puzzle for the evolutionary-cognitive theorists promoting it. For, given the identification of science with a cognitively unnatural "abstract theoretical interest in understanding nature" "for its own sake," the question arises as to how, from an evolutionary perspective, such an enterprise—that is, one with no material advantages or connection to individual interests—could have arisen in the first place and why it has survived at all among humans. Indeed, McCauley seems to be led by just such considerations to represent science (as he defines it) as something quite fragile in competition with religion (as he defines it). He writes:

> In the global marketplace of ideas . . . some views have natural disadvantages. Science, with its esoteric interests, its counterintuitive claims, and its specialized forms of thinking, certainly seems to qualify. [Some scholars] . . . hold that science was once lost and had to be reinvented. One consequence of my view is that nothing about human nature would ever prevent its loss again (McCauley 2000: 82).[4]

This sounds rather ominous. There is, however, good reason to doubt that the survival of science, non-tendentiously defined, is so precarious as this suggests. Certainly the idea

that the West might always return to the Dark Ages is exaggerated, forgetting the immense practical benefits, individual and communal, attached to existing scientific ideas, models and explanations and ignoring the continuously accelerated secularizing trends throughout the Western world. Indeed, the major movement in mainstream theologies, Eastern as well as Western, is toward religion-science compatibilism, not a rejection of scientific knowledge, much less the extinction of scientific activity suggested by McCauley's grim vision.

Given the evolutionary dynamics of what McCauley and various other Darwinian theorists invoke as "human nature," the cognitive springs of science--even at its most esoteric and abstract--do not appear all that unnatural or even especially remote from the springs of religion, non-tendentiously defined. On the contrary, it seems clear that the array of distinctively—but also characteristically--human practices and techniques that we now call science arose in the course of efforts by our ancestors to solve practical problems of survival and that such practices and techniques (for example, abstract reasoning, measurement and standardized notational systems) were shaped cognitively, as well as culturally and materially, by their effectiveness in serving those ends. Rather than technology being, as McCauley and Wolpert typically represent it, a byproduct of science, the reverse seems closer to the truth. That is, what they frame as the essence of science, "the abstract theoretical interest in understanding nature" "for its own sake," appears to be an offshoot of technology, a byproduct of cognitive capacities and tendencies that evolved for more practically oriented activities.

Thus McCauley and Wolpert's "science" or "scientific thinking" is what Pascal Boyer calls, in regard to religious concepts and practices, "parasitic": that is (as Boyer

explains it), a type of activity that emerges and persists among humans not because it confers any fitness benefits itself but because it recruits cognitive and other faculties or impulses that conferred such benefits in the course of human evolution. It appears, in other words, that, like other such activities (for example, performing music, playing chess or having sex for its own sake), the pursuit of pure knowledge for its own sake employs cognitive faculties and responds to bodily impulses that may have no fitness-related functions but the exercise and satisfaction of which are pleasurable in themselves. As a number of scientists have themselves observed, a scientist can derive deep pleasure just from his or her construction of a conceptually elegant, empirically confirmed explanatory model, quite apart from any practical applications that such a model might yield.

As it happens, developmental-cognitive psychologist Alison Gopnik has advanced a view of science as cognitively "parasitic" in just this way. "Science is successful," she writes, citing recent experimental findings, "because it capitalizes on a more basic human cognitive capacity," what she calls "the theory formation system drive." The fulfillment of that drive, Gopnik maintains, yields the deep satisfaction that humans, including young children, characteristically experience in the production of good explanations. She remarks: "Science is thus a kind of epiphenomenon of cognitive development. It is not that children are little scientists [a view that Gopnik advances elsewhere] but that scientists are big children," getting, in effect, a rush or a high from the fulfillment of an elementary drive; she compares it explicitly to sexual pleasure (Gopnik 2000: 300, 301).

Much in Gopnik's account can be disputed. It is rather heavy on dubiously postulated drives and mental systems, and the orgasmic high that she claims is produced specifically by the generation of a good scientific or proto-scientific explanation is not

clearly distinguishable from the satisfaction elicited by the successful completion of any strenuous intellectual (or creative or performative) venture or, indeed, from the successful execution of difficult physical (for example, athletic) feats. But her observations make clear that not all cognitive scientists are persuaded that scientific thinking is cognitively unnatural; and her account of scientific explanations suggests that what McCauley calls "the cognitive foundations" of pure science may be no more unnatural for humans than the cognitive foundations of writing poetry, playing the flute or solving cryptograms.

The differences between "science" and "religion," each duly historically defined and duly comprehensively indicated, remain both profound and important; and, of course, the political and intellectual stakes in distinguishing them appropriately are sometimes very high. But here as elsewhere the better way to go—better in both the political short run and the intellectual long run--is careful delineation and discrimination, not tendentious characterization, dubious dichotomy or exaggerated contrast.

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NOTES

[1] See Smith 2010. The present essay draws on sections of this book.

[2] Some of these arguments are significantly elaborated, modified and nuanced in McCauley 2011. The central contrastive claim remains, however, and some of the key modifications, such as the replacement of the idea of "natural" cognitive processes with the idea of cognitive activities that are "*maturationally* natural" versus culturally acquired, evade important objections without overcoming them.

[3] McCauley's defense of the crucial distinction (McCauley 2011: 88-100) is equivocal: he acknowledges the extensive connections, overlaps and inextricabilities noted above but does not acknowledge (or does not recognize) their force for his and Wolpert's definitions of "science" and thereby also for their central claim concerning the "rarity" and "unnaturalness" of science relative to human cognitive processes and products.

[4] These observations appear, dramatically enough, as the closing sentences of McCauley 2011.