

# Religionswissenschaft

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## Religion im Wandel der Kosmologien



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das der Fall ist, kann man vielleicht am eindrucklichsten am Beispiel der politischen Religion des Nationalsozialismus ablesen: Die Fahne der Religion, um mit dem Hitlerjungen Quex zu sprechen, ist mehr als der Tod, was soviel bedeutet, daß das Weltbild „Tod“ von der Religion ausgeschaltet wird.<sup>16</sup> Dieser Angriff der Religion auf das Weltbild aber ist zugleich eine unaustilgbare Verkettung der beiden miteinander. Nur zusammen können Weltbild und Religion sich behaupten; und zusammen werden Weltbild und Religion untergehen.

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<sup>16</sup> In dem 1933 gedrehten Film *Hitlerjunge Quex*. Zum Schluß des Filmes liegt der Hitlerjunge Quex totgeschlagen von den Kommunisten auf dem Straßenpflaster, während Reihen von neuen Hitlerjungen, die Hakenkreuzfahne schwingend, über seine Leiche hinwegmarschieren. Im Hintergrund ertönt die von Baldur von Schirach verfaßte Hitlerjugendhymne mit dem Schlußwort: "Ja, die Fahne ist mehr als der Tod!" Vgl. hierzu meine Studie *Hitler's National Socialism as a Religious Movement*, in: G. Lease, 'Odd Fellows' in the Politics of Religion. Modernism, National Socialism, and German Judaism, Berlin: Mouton de Gruyter, 1995, 153-178.

## The Cognitive Foundations of Religion and Science

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### 1. Introduction<sup>1</sup>

Gradual but inevitable retreat is a common way of characterizing the reaction of religion to the continued success and increasing influence of modern science. From heliocentrism, the evolution of species, and the Big Bang to the Roman Church's recent exoneration of Galileo, Western Christianity, at least, and religion generally have appeared mostly on the defensive throughout the modern era.

Such appearances, however, are misleading for at least two reasons. First, many religious systems have demonstrated considerable creativity in *accommodating* both specific scientific developments and conceptions of scientific rationality. Compatibilist theologies abound. (A less frequent but no less interesting alternative is not to accommodate the authority and findings of science so much as to try to *co-opt* them. Christian Science and Scientology are two examples that come readily to mind.) The second reason is that although long-standing, institutionalized forms of Christianity have faced diminished power and popularity (particularly in Western Europe) during this period, little evidence exists of any overall decrease in religious practice or participation.

I will focus on this second consideration. *No development in science nor any resulting implications for scientific cosmology will ever seriously threaten the persistence of religion or the emergence of new religions.* (I strongly suspect that science will never seriously threaten the persistence of particular religions either, but I only aim to defend the weaker, collective claim here.) I shall devote the second half of this paper to defending a central premise for that conclusion, namely, that religion is a *natural* outgrowth of the character and content of human association and cognition. In the first half I will explore a subsidiary thesis that science, by contrast, does not come naturally to humans at all. Consequently, threats to the life of science - its cultural prestige in this century notwithstanding - should probably worry us far more than threats to religion.

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## 2. The Apparent Unnaturalness of Religion

Describing some aspect of human mental life or conduct as „natural“ can support a variety of possible meanings. I will focus on two. We say that a belief or action is „natural“ when it is familiar, obvious, self-evident, or held or done without reflection, when it seems part of the normal course of events. Closing the window is the „natural“ thing to do when sitting in a cold draft; expecting a salesperson on the other end of the line is the „natural“ thing to think when your telephone rings during dinner.

Thoughts or acts are also said to be „natural“ in a more restrictive sense, if they have features that rest on *noncultural* foundations. The qualifications for the thoughts and acts deemed natural in this sense are usually controversial. Neonates' rooting behaviors, children's proclivity to acquire a language, and all human beings' wariness of snakes, knowledge of geometry, and facility at recognizing faces, have been some favorite candidates.

On many fronts, including these, it is religion that *seems* unnatural. Religious presumptions about superhuman agents who both possess extraordinary properties and do extraordinary things contribute to that intuition. Allegedly miraculous events conflict with almost everyone's common sense. Even the most experienced and sensitive scholars of religion periodically confront some alien religious beliefs that strike them as bizarre.

The apparent disutility of rituals also contributes to the impression that religion is unnatural. To the external observer rituals often seem like empty forms at best or, at worst, like utterly pointless activities. A common, popular complaint about the rituals of institutionalized religion is that participants repeat them „mindlessly,“ i.e., without reflection or understanding. Many scholars concur. For example, scholars of religion typically maintain that religious rituals have underlying meanings - even if most participants are unaware of them. But this position only adds to our sense that religion is at least unusual (if not unnatural), since as Dan Sperber notes „it would have to admit that the mass of humanity obsessively manipulates tools whose usage it does not know, and reiterates messages whose sense it is ignorant of.“<sup>2</sup>

Nothing, though, promotes the notion that religion is unnatural any more than the pervasive practice throughout religious studies (including the history of religions) of insisting (1) that religion, in general, and religious experience, in particular, are unique and therefore, (2) that religion requires special methods of study. A presumption that the object of study *determines* the appropriate method

<sup>2</sup> D. Sperber, *Rethinking Symbolism*, Cambridge 1975, 22.

of study unifies an assortment of methodological recommendations in the study of religion. This assumption is usually explicit in the work of theologians, phenomenologists, and hermeneuticists<sup>3</sup> but only implicit in the work of post-modernists. From that assumption advocates of each of these methodological orientations draw one further conclusion in common. They all maintain that the special status religion is accorded sets a unique constraint on the effectiveness of proposals to explain it that arise within the natural or social sciences. They all *deny* that customary forms of explanation in the natural and social sciences will yield *telling* accounts of religious phenomena - holding, in effect, that the modes of study deemed *most* worthwhile in the investigation of the *natural world* are especially limited or inadequate when it comes to religious phenomena. Apparently, these limitations result from assuming that at least some aspects of religion involve matters that are *not* part of the natural world - in short, they result from the assumption that religion is unnatural or that it deals with the non-natural.<sup>4</sup>

My goal in this paper is to shake that impression of religion's unnaturalness by providing (in the final section) evidence of how some of the features noted above and other features of religion as well can be fairly described as *natural* and, therefore, evidence that religion will submit to studies employing the methods of the social and cognitive sciences. In the next section I will point to considerations that indicate respects in which science may be described as unnatural. I do not intend to portray the comparative naturalness of religion and science as a stark or obvious contrast, but only to suggest that it is religion and not science that, quite literally, has the greater natural appeal.

## 3. The Unnatural Nature of Science

Probably the best evidence of science's unnaturalness is its rarity. This is more easily appreciated when we realize that science should not be confused with technology. The practical orientation of technology (which has mostly been *unrelated* to science until the last two centuries) and the abstract interest in *under-*

<sup>3</sup> See, respectively, W. Farley, *The Fragility of Knowledge*, Philadelphia 1988, 68-69; D. Cannon, *Six Ways of Being Religious*, Belmont 1996, 43; W. Paden, *Interpreting the Sacred*, Boston 1992, 10.

<sup>4</sup> Such claims are regularly asserted and rarely (if ever) argued! How they can be filled in without assuming that religion (as opposed, for example, to other sociocultural phenomena) deals with matters *beyond the natural realm* is difficult to see. But it is just *that assumption* that has led critics such as Lawson and myself to worry that religious studies itself often includes covert religious (or „theological“) presumptions. E. T. Lawson - R. N. McCauley, *Rethinking Religion*, Cambridge 1990 and E. T. Lawson - R. N. McCauley, *Crisis of Conscience, Riddle of Identity: Making Space for a Cognitive Approach to Religious Phenomena*, in: *Journal of the American Academy of Religion* 61 (1993) 201-223.



*standing* nature that characterizes science are not the same aims. Moreover, unlike technology (and religion, for that matter), science arose *within* human history.

Rejecting this strong distinction between science and technology will not help, since it still leaves the problem of explaining two important, discontinuous episodes in the growth of human thought - episodes that initiated traditions of inquiry that seem quite different from all the rest. According to most historians and philosophers of science, science has arisen no more than twice - once among the ancient Greeks and (if it is not best understood as continuous with that Greek legacy) a second time in early modern Europe.<sup>5</sup>

Among scientists' activities, two deserve particular attention: (1) scientists develop explanatory theories that challenge received views about empirical matters and (2) their critical assessment of those theories highly values evidence born of empirical tests. Neither the *contents* of theories that dispute received views nor the *forms* of thought required for such critical assessment come to human beings very readily. Let me explain.

The contents of newer, unassimilated scientific theories cohere with common sense no more than do the most unusual religious beliefs. Science and religion concur that the empirical world is not always the way it appears, and both supply proposals about the realities behind the appearances. Moreover, we sometimes have no better accounts of the underlying forces and factors science champions than we do for the entities religious systems proffer. The accomplishments of Newton and Darwin are examples. Both advanced theories that depended upon mechanisms (gravity and inheritance respectively) for which they had no satisfactory accounts and, apparently, in Newton's case not even any hypotheses.

Science challenges our intuitions and common-sense in another way. It challenges them *repeatedly*. With the triumph of new theories, scientists and sometimes even the general public must readjust their thinking.<sup>6</sup> *When first advanced*, the suggestions that the earth moves, that microscopic organisms can kill human beings, and that solid objects are mostly empty space were no less contrary to intuition and common sense than the most puzzling features of quantum mechanics have proved for us in the twentieth century. Although science and relig-

<sup>5</sup> Compare K. Popper, *Conjecture and Refutations*, London 1992, 136-165, who opts for two points of origination for science in history, with L. Wolpert, *The Unnatural Nature of Science*, London 1992, 35, who opts for one.

<sup>6</sup> See P. Thagard, *Conceptual Revolutions*, Princeton 1993.

ion both change, this is the respect in which scientific change is special, since the very *aim* of science is, in part, to arrive at more penetrating explanatory theories that correct and - sooner or later - supplant currently prevailing views.<sup>7</sup>

When compared to the history of religion the cumulative effect of scientific change seems unnatural on another count. In contrast to religious accounts of nature, science has marked a history of increasing restriction on the range of phenomena for which agent causality constitutes an appropriate explanation. In one domain after another, science has gradually replaced allegedly *exhaustive* explanations of natural processes and events in terms of agents' decisions and actions with narrower, more detailed accounts of phenomena in terms of (mostly probabilistic) mechanisms. More generally, scientific theories often wield categories that differ considerably from the everyday concepts employed in our ordinary descriptions of the phenomena to be explained. Contrast our everyday talk of the weather with the technical vocabulary of meteorology or our talk of moods with the biochemical accounts of the underlying neural mechanisms. Science, in short, pursues explanations of increasing *theoretical depth*. It searches for ever-more deeply penetrating accounts of reality.

This is because, unlike religion, science is finally concerned with understanding nature *for its own sake* and not merely for its effects on us. Lewis Wolpert argues that the scarcity in human history of inquiries committed to the *intrinsic value of understanding* nature constitutes evidence not only of the comparative unnaturalness of such interests but of the limits of humans' natural curiosity.

The idea that man is innately curious is partial myth: man's curiosity extends only to what affects his conduct.<sup>8</sup>

In their pursuits scientists are not uninterested in our practical or everyday relations with nature, but such interests are not necessary for doing science. Many scientists devote their entire careers to highly *esoteric, impractical* studies of nature's narrowest corners. Their interests in appraising comparatively detailed, low-level proposals insure that those theories remain empirically responsible.<sup>9</sup>

In addition to the persistent unnaturalness of scientific proposals, science also involves forms of thought that human beings find extremely difficult to master. The acquisition of scientific knowledge is a painstaking and laborious process. To become a professional scientist requires a decade of focussed education and

<sup>7</sup> See R. N. McCauley, *Intertheoretic Relations and the Future of Psychology*, in: *Philosophy of Science* 53 (1986) 179-199.

<sup>8</sup> Wolpert (s. n. 5) 54.

<sup>9</sup> See I. Barbour, *Paradigms in Science and Religion*, in: G. Gutting (ed.), *Paradigms and Revolutions*, Notre Dame 1980, 242.



training at a minimum, and even then scientists have usually only gained command of one sub-field within a single scientific discipline. Science is not something that human beings acquire naturally! After four centuries of astonishing accomplishment, science remains a largely unfamiliar activity to most of the public, even in those cultures where its influence is substantial.

The more felicitous analogy here is with the study of theology. The pursuit of theology involves many of the same forms of thought (e.g., deductive and abductive inference) in which science engages. Unlike science, though, such sophisticated forms of thought are not necessary for either the occurrence or persistence of religion. Religion, in short, can and does thrive without theology. For example, in his classic discussion of Baktaman religion, Fredrik Barth insists that the Baktaman are completely unconcerned with theology and that they do not even carry out *unsystematic* theological reflection.<sup>10</sup>

One consequence of my thesis, then, is that religion and science as systems of cultural practices work in exactly opposite ways. Loosely speaking, as cultural systems religion originates from the bottom up, whereas science originates from the top down. Throughout its history science would not have existed without the higher order forms of reflection and the resulting practices of a small subset of the human population that characterize what we now call „cutting edge“ research. By contrast, theology as systematic study by either individuals or institutions, although often influential where it does arise, is not at all necessary to the existence or persistence of religion. Religious knowledge and practices in a culture are reliable by-products of garden variety features of human cognition and association. On the other hand, whatever currency scientific knowledge gains within a culture is always the result of (among other things) determined effort and prolonged reflection of the most esoteric sorts by a (comparative) intellectual elite.

Evidence suggesting that producing science does not come naturally to humans either is consonant with this analysis. Experimental psychologists have revealed that even experienced researchers often fail to exhibit the forms of judgment and inference appropriate for the rational assessment of scientific theories.<sup>11</sup> Scientists' abilities to use the pertinent intellectual tools effectively seem to turn, in part, on their familiarity with specific domains (which, by virtue of years of intensive study, have become areas where the materials, problems, and practices have come to *seem* natural to these experts).

<sup>10</sup> F. Barth, *Ritual and Knowledge Among the Baktaman*, New Haven 1975.

<sup>11</sup> D. Kahneman - P. Slovic - A. Tversky (eds.), *Judgement Under Uncertainty: Heuristics and Biases*, Cambridge 1982; R. Tweney, M. Doherty - C. Mynatt (eds.), *On Scientific Thinking*, New York 1981.

These sorts of findings suggest that it is the comparatively narrow *community* of research scientists that is primarily responsible for maintaining science's critical traditions. Scientific standards do not depend on the particular activities of individual scientists in the short run but on the evolution of the expert scientific community's collective judgment in the long run. Individual scientists are far too prone to such problems as errors in statistical reasoning, flawed heuristics, and confirmation bias.

The difficulties for both individual scientists and the scientific community associated with reasoning properly and judging reliably - as well as with comprehending scientific concepts so distant from ordinary views of the world - go some way toward explaining how slowly science progresses most of the time. These difficulties are also excellent indications of just how unnatural doing science is.

#### 4. Religion: Doing What Comes Naturally

In making the case for the relative unnaturalness of science, I looked briefly at both the modes of thinking characteristic of science and the contents of the resulting scientific products. A survey of the same considerations - as they pertain to religion - will suggest just how *natural* religion is in these respects. On both counts cognitive analyses of religious phenomena will prove especially helpful.

In contrast to science, religion relies far more fundamentally on our standard, i.e., our *natural*, cognitive equipment. Much about the contents of religious claims and the modes of religious thought are natural in both of the senses I discussed. Compared to science, religion frequently involves assumptions that are more common, materials that are more familiar, and judgments that are more intuitive. Correspondingly, some considerations even hint that aspects of „religious cognition“ rely far less on cultural foundations than is typically presumed.<sup>12</sup>

On the various large scale measures of some pattern's naturalness, religion also differs significantly from science. Religion's beginnings are less rarified, its scope more broad, and its changes less substantial than is the case with science. I will discuss each in turn.

First, the birth of religion is less exceptional. Religion dates from our prehistoric past. Both the archeological evidence and the anthropological evidence indicate

<sup>12</sup> This includes my and Lawson's presumptions too: s. Lawson - McCauley (s. n. 4) 1990, 77-83.) Still, to look to cognitive foundations for many features of cultural knowledge does *not* require presumptions about the innateness of the mechanisms in question.



that human religious activities do not depend on keeping chronicles or on inventing writing or even on establishing fixed settlements. If burial of the dead constitutes sufficient evidence of religious activity, then Neanderthal burial practices confirm that religion was not even always confined to a single species.

Second, religion is pervasive among humans. Although not every human being is religious, religion, in contrast to science, occurs in every human culture. Particular religious systems may become extinct, but, even when this happens, religion does not disappear. Some other religious system has won the allegiance of the earlier practitioners' descendants.<sup>13</sup> It is an interesting historical question whether suppressing religious systems by political means only has ever driven any of them out of business.

Finally, many religious ideas and forms have recurred throughout history across a wide array of physical and cultural settings. That interest in syncretism has never flagged in the study of religion turns on this fact.<sup>14</sup> Although a few prominent scientific ideas (atomism, heliocentrism, continental drift) had to receive serious, extended consideration in more than one era before they eventually prospered, at least so far in the history of science, this seems the exception and not the rule. Moreover, science has not experienced the sort of conservative revolutions that some religious groups have where the explicit rhetoric is not only about overthrowing prevailing states of affairs but about resuscitating earlier - often more *familiar* - forms of religiosity and religious practice *in all of their details* (even when those goals are transparently implausible). Revolutionary religion regularly relies on reactionary rhetoric.

These three „macroscopic“ considerations suggest that some roots of religious systems may descend deeply into the rich earth of humans' natural dispositions.<sup>15</sup> Alone, however, they hardly require that hypothesis. Cognitive analyses of the sort that I (and others) have advocated elsewhere point to additional evidence for such a proposal.

Humans certainly come by the modes of thought religion utilizes far more readily than they come by those that science employs. With the exception of a few extraordinary individuals (Faraday comes to mind), becoming a scientific participant virtually always requires extensive formal education. Considerable education is often a prerequisite for various forms of religious activity too, however, again this is true only about some religious systems, not all.

<sup>13</sup> D. Sperber, *Explaining Culture: A Naturalistic Approach*, Oxford 1996.

<sup>14</sup> C. Colpe, Syncretism, in: M. Eliade (ed.), *Encyclopedia of Religion*, New York 1987, XIV 218-227; L. Martin, Syncretism, Historicism, and Cognition: A Response to Michael Pye, in: *Method and Theory in the Study of Religion* 8 (1996) 215-224.

<sup>15</sup> P. Boyer, *The Naturalness of Religious Ideas*, Berkeley 1994, 3.

Scientific analysis depends on such intellectual processes and accomplishments as inference to the best explanation, null hypothesis testing, and mathematical modeling. Science has never arisen in nonliterate cultures. Its practice and appreciation demands developed intellectual skills, of which the most fundamental are literacy and mathematical fluency. (The Baktaman, for example, are neither literate nor mathematically fluent. They do not have words for any number above twenty-seven.) Possessing such forms of intellectual expertise - especially with systems of external symbols<sup>16</sup> - is a key to discerning, retaining, and engaging scientific materials. Canonical scientific works - like theological and ecclesiastical works but quite unlike most other religious works - typically appear in relatively dry, antiseptic prose.

Typically, religion (in contrast to both science and theology) relies primarily on theater and narrative. (This is not to suggest either that rituals are simply plays nor that myths are simply stories, but only that the *cognitive* processes that the members of each pair engage are mostly the same.) It is not a coincidence that ritual and myth have attracted so much attention. Neither comprehension nor retention of the most fundamental religious materials turns on the development or possession of any specialized intellectual skills.

Not all religious texts are myths but nearly all of the most memorable ones are. (Even scientists remember stories more readily than they remember theoretical or analytical treatises!) Extensive research in cognitive psychology has demonstrated how narratives manipulate a host of variables that activate the natural propensities of human memory.<sup>17</sup> These include action, imagery, and verse as well as basic narrative structures.

Sometimes rituals coordinate all of these with music and bodily movement. Religions throughout the world all enlist the same fundamental mnemonic aids to insure participants' command of these cultural representations. Repeated rituals, such as sacrifices, count on sheer frequency effects to enhance their memorability. Non-repeated rituals, such as the standard rites of passage, exploit many of the same variables that underlie so-called „flashbulb memories.“<sup>18</sup> These rituals reliably include sensory pageantry in order to excite participants' emotions in order to focus their cognitive attention in order to define these events as particularly worthy of recollection.<sup>19</sup>

<sup>16</sup> See W. Bechtel, What Should a Connectionist Philosophy of Science Look Like? in: R. McCauley (ed.), *The Churchlands and Their Critics*, Oxford 1996, 121-144.

<sup>17</sup> D. Rubin, *Memory in Oral Tradition: The Cognitive Psychology of Epic, Ballads, and Counting-Out Rhymes*, New York 1995.

<sup>18</sup> E. Winograd - U. Neisser (eds.), *Affect and Accuracy in Recall*, New York 1992.

<sup>19</sup> R. McCauley, *Bringing Ritual to Mind*, in: E. Winograd - R. Fivush - W. Hirst (eds.), *Ecological Approaches to Perception and Cognition (Essays in Honor of Ulric Neisser)* Hillsdale 1998.



Each of these considerations imposes constraints on the contents and forms of religious materials - both rituals and myths. This is particularly important in non-literate societies (where religion had its beginnings). The joint force of these constraints can substantially limit the range of viable variation.

Primarily, religious truths are to be retained and transmitted not reflected upon and challenged. This is not to say that religious activities never involve criticism or reflection but only that, finally, neither is necessary for nor important to the persistence of a religious system. Religion rests on far more basic cognitive dynamics.

Tom Lawson and I discussed some of these dynamics in our book. One is the ability to detect agents. Agents are entities in our environments who merit very different treatment from everything else in the world. Their detection is critical to humans' physical and social survival. Research in developmental psychology affirms that very young children possess this ability in their first year of life.<sup>20</sup> Actions (which involve agent causality) require crucially different representations than events that do not. The cognitive representation of ritual actions depends upon a basic action representation system that is „in place“ quite early in human development. Lawson and I maintain that the basic action structures of religious rituals differ not one whit from those of other actions. Therefore, we have every reason to think that this action representation system handles the representation of religious ritual as well. Except for introducing into action representations extraordinary agents from a religious conceptual scheme, nothing about the cognitive representation of religious rituals differs from the representation of any other action.

Our theory emphasizes the fundamental role that these culturally postulated superhuman *agents* („CPS agents“ hereafter) play in religious ritual systems. Human facility at representing agents and their actions renders religious stories, beliefs, and rituals materials that human beings are particularly well prepared to generate, comprehend, recollect, and transmit. Where scientific explanations provide progressively more detailed analyses of systematic processes and mechanisms, religion summons CPS agents and their actions for explanatory purposes.

On at least three fronts, the latter approach is more natural. First, social psychologists have discovered deep biases in human social judgment.<sup>21</sup> Human be-

<sup>20</sup> See, for example, R. M. Golinkoff, The Preverbal Negotiation of Failed Messages, in: R. Golinkoff (ed.), The Transition from Prelinguistic to Linguistic Communication, Hillsdale 1983, 57-78; R. M. Golinkoff, „I Beg Your Pardon“: The Preverbal Negotiation of Failed Messages, in: Journal of Child Language 13 (1986) 455-476.

<sup>21</sup> See, for example, D. T. Gilbert - D. T. and P. S. Malone, The Correspondence Bias, in: Psychological Bulletin 117 (1995) 21-38; C. A. Anderson - D. S. Krull - B. Weiner, Explana-

ings are overwhelmingly predisposed to give accounts of their own and others' behaviors in terms of socially shared theories about agents and their states of mind. Even when experimenters *openly* manipulate the independent variables that account for the variance in subjects' responses, those subjects typically remain not only unaware of these variables' influence but convinced of the critical role of agents' actions and mental states in determining the outcomes. Second, the prominence religious systems accord CPS agents and their actions is of a piece with the central role that narratives play in religious thought and practice. Narratives go nowhere without agents. Agents' actions and states of mind are the fundamental ingredients of all narratives. Finally, as Pascal Boyer has emphasized, by appropriating such fundamental notions as 'agent' (and the conception of causality that accompanies it) for the purposes of characterizing the invisible forces of the cosmos, religious systems obtain a huge amount of information for free. This third point deserves some elaboration.

Boyer<sup>22</sup> argues that religious categories are parasitic on a host of natural ontological categories, which even young children readily deploy.<sup>23</sup> Accompanying each of these categories is a set of non-demonstrative inferences that provides an army of default assumptions concerning these categories' instances. Knowing, then, that a toaster is an *artifact* immediately entitles us to assume that it has a determinate size, shape, and weight, but that it does not respire, copulate, or contemplate. Similarly, knowing that CPS agents are *agents* licenses inferences about their values, preferences, and intentions. What distinguishes religious ontologies, according to Boyer, is either the *transfer* or the *violation* of some group of properties associated with one of the entailed superordinate categories. So, for example, if something is an agent, then normally it is also a physical object and possesses all of the associated physical properties. CPS agents may differ from normal agents in that they *violate* the constraints this superordinate category, 'physical object,' imposes. Thus, they may pass through solid objects or be everywhere at once. Boyer maintains that more of what is usually regarded as *cultural* knowledge is built into *natural* conceptual development than many anthropologists recognize. (They appeal, instead, to participants' proficiencies with elaborate cultural models to explain the transmission of such knowledge.)

tions: Processes and Consequences, in: E. T. Higgins - A. W. Kruglanski (eds.), Social Psychology: Handbook of Basic Principles, New York 1996, 271-296.

<sup>22</sup> op. cit. Also see P. Boyer, Religious Ontologies and the Bounds of Sense: A Cognitive Catalogue of the Supernatural, in: American Anthropologist (forthcoming).

<sup>23</sup> F. Keil, Semantic and Conceptual Development, Cambridge 1979 and F. Keil, Concepts, Kinds, and Conceptual Development, Cambridge 1989.



Compared with scientific categories, those in religion lack what I called „theoretical depth.“ Contrary to first impressions, religious accounts of things do not differ so much on many fronts from our everyday views. Religious systems import all of our familiar, common sense psychology about agents' intentions, beliefs, and desires. Whether applied to other drivers on the road or to the rulers of the cosmos, this system performs quite nicely most of the time for understanding and anticipating agents' mental states and actions. An explanation of someone's illness on the basis of an ancestor's displeasure is as readily comprehensible to children as it is to the most experienced religious official.

To review: religion occurs in every culture and it predates history. On most fronts religious materials embody assumptions that are either commonplace, intuitive, or a normal part of cognitive development. The modes of thought that religious systems exploit are often familiar and uncomplicated. Moreover, religious systems depend fundamentally upon an array of cognitive resources that arise early in human development. All of these considerations show that religion is more natural than science with respect to its familiarity. They also suggest that religion taps cognitive traits that are more widespread and readily available than those science requires. So, too, does the fact that participants acquire religion more easily than science.

Acquiring the knowledge necessary to participate in a religious system is much more like acquiring a natural language than it is like mastering the knowledge and skills necessary to participate in a scientific community. In contrast to science, which requires years of education and training, many religious systems require little, if any, explicit instruction. Humans are born into religions and natural languages. Like natural language, religion exploits cognitive dispositions with which human beings seem to come naturally equipped. Because so many pivotal religious conceptions have so little theoretical depth, possessing everyday concepts prepares children for the acquisition of religion in a way that it does not for science.

Since some human beings are not religious, the suggestion that religion involves a task-specific cognitive mechanism is, not surprisingly, implausible. The evidence I have been summarizing, though, is consonant with the proposal that the possession of dedicated cognitive mechanisms that arise naturally in human development - concerned with such things as the discrimination of actions, the recognition of agents, and the imposition of natural kinds<sup>24</sup> - are necessary for the acquisition of a religious system.

<sup>24</sup> L. A. Hirschfeld - S. A. Gelman, *Mapping the Mind*, Cambridge 1994.

Hypotheses of this type have at least two obvious consequences. With respect to the mechanisms listed above whose mastery I and others have suggested is necessary for the acquisition of religion, neither consequence is completely far-fetched and the first seems plausible enough.

First, if this conjecture about cognitive mechanisms is true, then the acquisition of the knowledge necessary for participating in a religious system should be largely independent of differences in intelligence, and so it seems to be. The acquisition of and participation in a religious system seems to turn no more (and, perhaps, even less) on intelligence than does the acquisition and use of natural language.

Second, that conjecture's truth would also imply that these singular mechanisms might get disconnected in a small fraction of the population, i.e., some persons, who might have most other cognitive capacities intact, may, for example, prove severely impaired with respect to the recognition of agents. In fact, such impairments occur, as this seems to characterize severe autism accurately.<sup>25</sup> The abilities of these people to recognize agents and to distinguish actions from other events seem substantially impaired. It follows on the view I am advancing here that they would also be incapable of acquiring the knowledge necessary for actively participating in a religious system.

If religion is as natural and science is as unnatural as I have argued, then in the long term science poses no significant challenge to religion. Whether religious systems pursue accommodationist approaches to science or not, science will never drive religion to extinction. Conflicts between religious and scientific conceptions of the cosmos will never jeopardize the future of religion.

Indeed, if my analysis is correct, it is the preservation of science that should concern us - its current prominence notwithstanding. Those historians and philosophers of science who point to *two* critical episodes in the history of the West (see footnote 6 above) hold that science was once lost and had to be reinvented. Nothing about human nature would ever prevent its loss again. In the marketplace of ideas, some views have natural *disadvantages*. Science, with its esoteric interests, its counter-intuitive claims, and its specialized forms of thought, would seem to qualify. It is the survival of science, not religion, that depends upon our protection and support.

<sup>25</sup> See S. Baron-Cohen, *Mindblindness: An Essay on Autism and Theory of Mind*, Cambridge 1995, and M. Tomasello, A. Kruger, H. H. Ratner, *Cultural Learning*, in: *Behavioral and Brain Sciences* 16 (1993) 495-552.