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Meaningful Meaning Changing relations between science and religion

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Introduction

The rise of science has made life difficult for the intellectual standing of religion. We now know that the universe started with the Big Bang, that life evolved on earth in a very long process which started over 3.5 billion years ago, and that humans have a recognizable evolutionary history of about 4 to 5 million years, where our recorded history only touches the thinnest outer layer of this extended period. In this picture, there is no place for anything supernatural like a creating God, a holy trinity, miracles, or a life after death; ideas that are standardly related to religious belief. As there is no scientific basis for the supernatural, from a scientific perspective, one would have expected all such ‘nonsense’ to have been discarded.

As we all know, this is not the case. Worldwide, the number of outspoken atheists remains extremely small, and though European churches are in decline, worldwide, religion and religious beliefs remain widespread and extremely influential. The current rise and impact of fundamentalism is a clear example of the tendency of religion *not* disappearing quietly from the scene. As another example, just think about the efforts now being made by Christian fundamentalists and evangelicals to promote the idea of Intelligent Design (ID) as a scientific theory. From a scientific perspective, ID is clearly a non-explanation that one does not take seriously given the availability of other, much better explanations for the same phenomena. Nevertheless, scientists now have to wage defensive battles to ward off such religious beliefs that try to pose as scientific ones. How can it be that the rise of science, which seemingly ought to have led to the universal discrediting of these religious beliefs, did not have this effect?

Currently, a number of related explanations are being developed in the cognitive and evolutionary study of religion.¹ The general argument here is that our evolutionary developed cognitive make-up predisposes us to certain religious beliefs. For example, the finding that we incorporate a trigger-happy agency detection system, which makes us prone to perceive agents even when they are not there, is brought forward as part of an explanation for the wide-spread belief in supernatural agents.² Despite the differences between the various authors, there is a common tendency to interpret religion as a *by-product* of the human cognitive system;³ something where it’s functioning goes wrong because of the cognitive system’s particular make-

¹ For example, Atran (2002), Atran and Norenzayan (2004a), Barrett (2004), Bloom (2007), Boyer (2003) and Keleman (2004).

² Barrett (2004).

³ Boyer, (2003).

up. In this view, the case of religion could be compared to the current epidemic of overweight in the richer parts of the world. For evolutionary reasons we are much better equipped to deal with food scarcity than food abundance, leaving us ill-equipped to deal with the current abundance. Similarly, specific characteristics of our minds which have had generally an evolutionary beneficial function make us susceptible to particular religious thoughts and behaviors even in the face of scientific evidence to the contrary. Thus, the general aim of these explanations is to explain why so many people have the particular religious beliefs that they happen to have – such as a belief in God as a supernatural agent – while being neutral or negative concerning the possible positive role that religion may play in our cognitive functioning.

In this chapter, I will formulate the outlines of a different and complementary analysis that provides an account in which religion – admittedly more broadly conceived than often is done – happens to have a beneficial role to play in our cognitive and behavioral functioning. In this view, religion is not a counterproductive cultural phenomenon, a glitch that we just cannot get rid of. Religious beliefs and behaviors perform a cognitively important motivational function, which adds to, rather than competes with the cognitive function of factual beliefs as science provides.

The analysis that I will present in this chapter derives from developments in both embedded cognition and evolutionary studies of cognition. At heart it is a simple and straightforward idea: Science and religion are cultural phenomena that tend to serve two different cognitive functions. Science has developed into a cultural practice aimed to develop and articulate *beliefs* in the sense of factual descriptions of the world. Religion, in contrast, is a long standing cultural practice which, at least in modern Western and Eastern societies, has developed to articulate *desires*, in the sense of providing motivational handholds that allow us to give long-term direction to our lives and enable us to make decisions concerning how to act. From an embedded cognition perspective, both beliefs and desires are necessary for a cognitive system. One needs knowledge to guide one's actions, but one also needs desires to specify goals that make this knowledge relevant. Hence one can make a very general analysis according to which science has now become primarily a provider of (factual) beliefs, but leaving ample space for the ongoing existence of religion as primarily a source of values and motivation.⁴

The problem that I want to stress when it comes to the relation between science and religion is then not why religious beliefs are still so common, given science. The particular religious beliefs that we are familiar with are deeply entrenched and connected to the motivations of many individuals in a way that mere factual science-based beliefs are not. Of course these religious beliefs will not just disappear. In addition, when it comes to filling in the current content of the religious 'belief and behavior box,' it seems to me that the evolutionary by-product theories are plausible enough, considering the evidence they give. However, the particular characteristics of these beliefs – such as a belief in the supernatural and gods or God – should not be taken as defining the religious domain. There is no *intrinsic* reason why the religious belief and behavior box must be filled with ideas concerning the supernatural or depend on claims that do not square with basic facts as taught by science.⁵ On the contrary, in the following, I will develop the claim that the two ought to be reconciled in order to perform their different cognitive functions in a mutually beneficial way. Humans require a religious belief box – which can of

⁴ This is a fairly common idea. See for example von Weizsäcker (1976, 1987) and Midgley (2002), discussed below.

⁵ Of course, one can simply define religion in these terms, but in the present analysis this would provide an arbitrary division for the religious domain. It might turn out that the requirements for the generation and transmission of religious beliefs and behaviour do make humans prone to incorporate supernatural or other specific entities (Whitehouse, 2004), but by itself this does not force the conclusion of this being necessary. The same proneness once applied to science and here this tendency has been overcome to a significant degree.

course be filled in with atheistic practices and ideas – as a part of the functioning of their motivational cognitive make-up. In this view, it is an important cultural project to work on and change religious beliefs and practices in order to help us deal with humanity’s vastly increased scientific knowledge and possibilities for action at a global scale. It will be unsafe and unsound to treat religion as a relic from the past rather than a part of our ongoing lives.

The reasons for stressing the necessity and complementarity of both factual belief and motivating desire come from embodied and embedded as well as evolutionary notions of cognition, as currently developed within the cognitive sciences. In contrast to so-called classical cognitive science, which focused primarily on knowledge representation, it is now increasingly acknowledged that humans, as embodied and environmentally embedded cognitive systems, do not only require a knowledge base—a set of beliefs—to guide their actions, but also a set of motivations—desires—as well as values that specify which actions they think worthwhile to undertake. The crucial point here is that it is essential to link knowledge to an agent and the use it might have for future action.⁶ In this embodied and embedded view, having beliefs and desires are closely intertwined cognitive functions that should operate in smooth conjunction.

A lot of work in embedded cognition stresses the importance of direct hands-on action for cognition. In this chapter, I want to make a jump from this work on basic cognitive processes to the cultural acquisition of beliefs and desires, and the role played by science and religion therein. The background assumption will be that we, as individuals, acquire many and maybe most of our beliefs and desires from particular cultural sources, such as science and religion. Science plays a clear role in generating the content of our factual beliefs concerning what is out there in the world, such as that matter is made up of atoms, that we live on planet Earth or any of the other facts that we have learned at school. One might quibble whether science really discovers what is out there, and there are definite philosophical problems with a straightforward realistic interpretation of science,⁷ but science definitely remains our major source of knowledge concerning the world. However, while science is well suited to deliver a sound set of beliefs, it is not well equipped to deal with our set of desires. While factual beliefs are intended to reflect a domain in a way which is not tied to any particular agent, desires are strictly tied to particular agents. The latter are not only mere preferences but also involve deeply felt, personal motivating states that help one choose what to do during the course of life. Desires are intrinsically value-laden while science deals in factual beliefs, which are meant to be intrinsically value-free.

Science not only is ill-equipped to deliver articulated desires, it is emphatically kept out of any role as a source of culturally articulated desires. That is, science is denied to play any role in formulating motivations, meaning or values. There are sound reasons for this prohibition, coming from both in and outside of science. On the one hand, science itself should be kept pure and is not to be used for purposes external to it, as for example often occurs in New Age thinking.⁸ On the other hand, philosophical warnings abound that science ought not to become *scientism*, which trespasses beyond its factual domain into the domain of values where it does not belong.⁹ The mistaken use of IQ-tests for questionable racial policies comes to mind here. Anyway, the upshot is clear, science deals and ought to deal in factual beliefs, not in what we do with these beliefs.

In this context, it becomes possible to position religion in a way that does give credence to its ongoing existence and influence. Given that the human cognitive system needs both suitable

⁶E.g. Merker (2003) argues that consciousness arose comparatively early during evolution as part of a mechanism that relates factual knowledge to motivational factors.

⁷ See for example Devitt (1984), Feyerabend ((1975), Goodman (1978), Latour (1987), Van Fraassen (1980).

⁸ Vanheste (1996).

⁹ Midgley (2002).

beliefs and desires, it seems that there is a clear and distinct niche for cultural domains that help individual humans to articulate a sense of meaning and to develop their personal motivations. While science is emphatically precluded from filling in this role, religion clearly is not. On the contrary, it is precisely in the business of articulating and developing coherent cultural sets of desires, or motivational beliefs. In this view, religion is not a bad form of science, but is tied to a different cognitive function altogether. Religion aims foremost to do justice to our need to make choices and initiate some actions rather than others. To do so, religious thinking interprets the world in specific ways and makes specific claims concerning its nature and origins. In the course of historical development, this motivational enterprise has worldwide resulted in several different cultural sets of factual belief claims concerning the state of the world and the existence of supernatural deities or forces. However, under the present interpretation, the core issue of religion is not those particular beliefs, but rather the motivational context that they provide. The proper function of religion is to make the world meaningful, and the latter is something that we cannot do without.

In this chapter, I will only give a very rough sketch of the general idea and its possible implications. First, I describe how embedded and evolutionary approaches to the study of cognition make it plausible to draw the analysis sketched above. I will in particular build on Sterelny's notion of a preference structure,¹⁰ which provides the key step in my argument. Second, I will sketch how Sterelny's preference structures can be brought to bear on religion, casting religion as a source of high-level, culturally determined preference structures. Third and final, I will lay out some implications of this scientific belief versus religious desire analysis.

From syntax to meaning to meaningfulness

Cognitive science has now been around for fifty years or so. In this period, there have been a number of changes in the outlook on cognition. Initially, cognitive science envisioned cognition and intelligence as a process of manipulating internal representations. These representations provided a cognitive system with a knowledge base, which could be used to make predictions concerning possible behavioral outcomes and thus enabled the system to choose the best course of action. It did not really matter whether this cognitive processing occurred within a computer or a human or animal brain, as long as it involved the systematic manipulation of representational entities. In this computational paradigm, the means that enabled the manipulation of these representations were purely syntactic. Roughly, it was the physical form and not their semantic meaning which guided the processing of these representations, and the issue arose how these syntactic symbols acquired meaning in the first place. The best known phrasing of this problem comes from Steven Harnad who baptized this lack of a proper semantics as the symbol grounding problem.¹¹ The problem was thought to be solved by linking a cognitive system to the world by means of perceptual relations in which neural networks could play an important role.

Starting in the late eighties, however, an even stronger criticism of the classical cognitive paradigm gave rise to a field that I will here refer to as embedded cognition.¹² Embedded cognition has roots in robotics,¹³ developmental psychology,¹⁴ self-organization¹⁵ and dynamical

¹⁰ Sterelny (2001, 2003).

¹¹ Harnad (1990).

¹² Clark (1997), Keijzer (2001).

¹³ Brooks (1999).

¹⁴ Thelen and Smith (1994).

¹⁵ Kelso (1995).

systems,¹⁶ and is now a serious component of cognitive research in general.¹⁷ The general upshot of embedded cognition is that cognition is not best exemplified by inner thought but by dealing with an environment. A cognitive system is paradigmatically an agent with a particular kind of body that is embedded in an environment. Perception and action become central, and inner thought turns into an additional capacity that enables human agents to deal with more distal and abstract features of their environment.

In the embedded view, a key issue becomes: What exactly are representations for? Classical cognitive science focused on knowledge in an abstracted sense which could be articulated independently of a particular agent. Embedded cognition stresses that representations must be useful for an acting agent. Rather than simply having meaning, in the sense of being a truthful reflection of the external world, such representations must be foremost *meaningful*. They must enable an agent to guide its actions. While it is meaningful knowledge for most of us to have access to the address of the nearest food store, it is much less relevant, and in this sense less meaningful, for most of us to have access to all astronomical data sent to Earth over the years by the Pioneer probe. In addition, it is not necessarily the case that a more truthful representation of aspects within the environment is also the most useful one. If a crude representational scheme does the trick, there is no need for a more complex and costly representational scheme.

In this context, work on the evolution of cognition by Godfrey-Smith¹⁸ and Sterelny¹⁹ becomes relevant. They react to the embedded cognition claim that agents can operate with minimal cognitive, that is representational, resources. Godfrey-Smith's environmental complexity thesis stresses that such minimal resources would leave such agents extremely vulnerable to biological threats like predators and parasites. Both Godfrey-Smith and Sterelny claim that the evolutionary reason for the development of cognition or intelligence comes from the need to overcome the dangers and difficulties of dealing with a natural environment, which includes all kinds of threats. Within complex environments, organisms with more complex cognitive abilities are at an advantage because they are less easily fooled. Such organisms rely on multiple environmental cues to guide their behavior. For example, a deer may be visually fooled by the tiger's stripes, but still be sufficiently warned by its smell. I do not think that embedded cognition and the environmental complexity thesis necessarily bite one another. The first can be cast as giving an indication of what the foundation of cognition might look like, while the second provides an evolutionary account why cognition did not stay that simple. I will not go into these matters here, but rather turn to a key idea that I draw from Sterelny's discussion of these issues and which allows a fruitful combination of the two.

Sterelny argues that animals with more complex cognitive abilities are not only sensitive to multiple environmental cues, but also would benefit from what he calls a preference structure,²⁰ which *represents* their needs rather than having a fixed set of internal drives.²¹ Agents with a relatively limited set of behavioral options can do with a standard set of primary motivations or drives (e.g. pain, thirst, hunger, fear), which are triggered by a fairly specific set of stimuli. Such agents make their behavioral choices on the basis of the current urgency of the

¹⁶ Beer (1995), and Port and Van Gelder (1995).

¹⁷ Anderson (2003).

¹⁸ Godfrey-Smith (1996, 2001).

¹⁹ Sterelny (2001, 2003).

²⁰ The notion of preference structure is used more widely within decision theory and economics as a way to order behavioral options (e.g. Bufardi, 1999; Weber, 1987). I will use it here only in Sterelny's more specific motivational interpretation.

²¹ Sterelny (2001, p.248 ff., 2003, p.92 ff.)

available set of drives. However, decision problems become increasingly difficult when the animal can discriminate between many different situations. “For only then does the problem ‘What do I do now?’ get tough”.²² For such agents it would be beneficial to bring their motivations under cognitive control. That is: “It brings motivation under the control of representations of the external world, representations of the way the world would be, if the goal were achieved. Moreover, the evolution of preference liberates motivation from its dependence on immediate affect, and hence frees the animal from phylogenetic constraints on its menu of distinct sensations and drives”.²³ According to Sterelny, a rat can learn to associate new stimuli with internal rewards but the internal rewards themselves can only be assembled in evolutionary time. However, an “animal that forms and acts on goals can build new motivators in ontogenetic time; to learn new things to want, rather than just new ways of getting things the animal has always wanted. We can want, and act on wanting, an extraordinary wide range of states of affairs. In doing so, many of our actions are no longer under immediate affective control”²⁴ (ibid.). To conclude, by becoming representational, motivation can be wrestled free from basic drives and become itself formulated in terms relating to the world.

Sterelny’s notion of a preference structure is helpful to further articulate a key idea from embedded cognition already mentioned above; to be of use, representations must be foremost meaningful and enable an agent to guide its actions. At the same time, the meaning of representations is generally considered to involve an objective reflection of external states of affairs, irrespective of any particular agent or its use of those representations. The point may seem that knowledge should not remain pure, but also be turned to use, a distinction that for example plays between the pure and applied sciences. However, the issue is a different one. It is not how to apply abstract knowledge and how to develop suitable *subgoals* to instantiate a chosen policy, but rather how to develop new ‘*supergoals*’, as one might call them, that built upon a new knowledge situation and relate the latter to possible actions for the individual. To repeat Sterelny, it is about developing *new wants*, not new means.

The notion of a preference structure brings to the fore the need to think about the issue how high-level, meaningless meaning can become meaningful to an agent. A representationally articulated preference state links—either positively or negatively—those semantic states to motivational states of the animal or agent. Of course, this is not a recipe about *how* this linking is accomplished, merely claiming that it is highly plausible that it must occur given the makeup of cognitive agents. To summarize, the notion of a preference structure stresses the cognitive need to provide bridges between general semantic meaning, which can be seen as a general cognitive resource, and motivational states thereby making a subset of the semantic domain meaningful to the agent.

Religion as a cultural source of preference structures²⁵

The discussion of embedded cognition and preference structures has now finally set the stage for a discussion of science and religion from this perspective. From here on, I will work with the assumption that there is an evolutionary and cognitive need for well-developed and cognitively

²² Sterelny (2003, p.93).

²³ Ibid., p.92.

²⁴ Ibid.

²⁵ I will argue that religion can be interpreted as a source of higher-level preference structures. This does of course not imply that all preference structures derive from religion. I will take it for granted that the preference structures talked about are merely a subset even when this is not said explicitly.

articulated preference structures in complex agents like human beings. In addition, I will hold that such preference structures can be developed and changed in cultural, as well as ontogenetic time: New wants can be introduced and developed as a part of cultural changes (in addition to genetic changes) and these changes can be incorporated within individuals during their lifetime.²⁶

The core idea is that religious belief—desire—can be cast as the cultural articulation of high-level preference structures for human groups or societies. Generally, it is self-evident that culturally determined preference structures are important for human groups. Fashion, trends and music are highly visible examples of culturally determined preferences. They strongly influence what we value at a certain time and do so in a way that is extremely fleeting, thus clearly showing their dependence on similarly fleeting cultural conditions. It seems also evident that at a deeper level societies and groups shape the preferences of their members in ways that are both pervasive and relatively difficult to pin down. It seems undisputable that the society that we belong to determines to a large extent the things that we value at a level that goes beyond basic drives and strict individual preferences. Getting a good education, becoming wealthy, being honest or patriotic are all possible examples of components within culturally determined preference structures. The point to focus on here though is whether it is plausible to cast religion as a cultural enterprise which has the effect of modifying or developing preference structures that allow human beings to deal with new, extended knowledge structures.

The first thing to ask then is, of course: What is religion? And also, which aspects of religion would provide or constitute such structures? In their recent evolutionary study of religion Scot Atran and Ara Norenzayan refer to religion as: ‘passionate communal displays of costly commitments to counterintuitive worlds governed by supernatural agents.’²⁷ This description they take to be the convergence of four different aspects present in all societies: One, a widespread belief in supernatural agents, such as gods and spirits. Two, costly actions and offerings to such supernatural agents. Three, mastering by supernatural agents of people’s existential anxieties, such as death, disease and pain. Four, the ritualized sensory coordination of these three aspects in groups.²⁸

As will become apparent, I have serious doubts about this stress on the ‘supernatural’ as a key factor in characterizing religion. One reason is that it remains unclear what supernatural might mean. Interpreting supernatural in terms of counterintuitiveness, as is often done in the cognitive science of religion²⁹ does not suffice. What is counterintuitive depends very much on context and is changing all the time. Talking to someone on the other side of the Earth was counterintuitive and seemingly ‘supernatural’ hundred and fifty years ago, but not anymore. In addition, something which is definitely counterintuitive can be considered perfectly natural like Einstein’s insights on what happens to time when one travels extremely fast. Science fiction author Arthur C. Clarke’s famous and often repeated saying was that ‘Any sufficiently advanced technology is indistinguishable from magic.’³⁰ Rather than making claims that go explicitly beyond the natural, the point seems to be that religion often relates to powers or beings which have options way beyond those available to the believer. Just think about the cartoon and movie

²⁶ I will not develop this point here but merely refer to work by Tomasello (1999, see also Sterelny, 2003) as a good illustration of the importance of cultural learning.

²⁷ Atran and Norenzayan (2004a, p.713).

²⁸ Ibid.

²⁹ E.g. Atran and Norenzayan (2004a) and Barrett (2000, 2003).

³⁰ Clarke formulated his ‘three laws’, of which this is the third in his nonfiction book ‘Profiles of the future’, published in 1962. Since then this saying has gained a life of its own, being often repeated as well as paraphrased in slightly different ways (Wikipedia contributors, 2006).

character Superman, and it will be evident that the line between beings with supernatural powers and beings with natural superpowers is extremely hazy. The notion of supernatural is unsuited to help demarcate the religious domain in a clear way. This conclusion is strengthened when the related ‘Micky Mouse problem’³¹ is taken into account. The problem is that many supernatural or fantasy beings like ghosts, Micky Mouse and Santa Claus have no clear connection with religion. This problem also solves itself when the link between the supernatural and religion is cast as a mere correlation rather than part of what defines religion. Thus, while it goes without question that many religious beliefs are counterintuitive to some extent, the additional claim that religion must also involve a commitment to supernatural events or entities is more difficult to defend and a source of problems and confusions, rather than clarifying.

The question whether religion must involve a supernatural component is a major issue for the analysis I am giving here. A commitment to non-natural entities as a pre-requisite would preclude a possible reconciliation with science, but also sets severe limits on religion as it could be. Considering the claim made here that religion constitutes a cultural practice that aims to articulate suitable relations between our knowledge of the world and suitable preference structures – or wants – this stress on the supernatural would imply that no religion could ever evolve that performs this function in a fully satisfactory way given a scientific worldview which denies supernatural entities.

Atran and Norenzayan’s characterization with its stress on the supernatural and costs seems typical for an evolutionary psychological approach. However, even though existential anxieties are mentioned, this typification remains rather short on the experiential and motivational side of religion, which would be the primary issue for casting religion as a source of preference structures.³² Mary Midgley provides a more direct handhold for present purposes. She cites the biologist Dobzhansky as follows: ‘science and religion deal with different aspects of existence. If one dares to overschematize for the sake of clarity, one may say that these are the aspect of fact and the aspect of meaning.’³³ This meaning, or what I call here meaningfulness to distinguish it from factual meaning, she further states: ‘is best thought of as the way in which facts connect to form what I have called world-pictures—that is the underlying systems of thought by which we order our experience.’³⁴ Midgley further acknowledges that people can find plenty of meaning in their day to day lives, but in addition: ‘If we ask for a wider context—which many of us do—we begin to build wider intellectual systems, either for greater completeness or to reconcile clashing elements within the system which we have already.’³⁵ She then brings the notion of faith to the fore:

A faith is not primarily a factual belief, the acceptance of a few extra propositions like ‘God exists’ or ‘there will be a revolution’. It is rather the sense of having one’s place within a whole greater than oneself, one whose larger aims so enclose one’s own and give them point that sacrifice for it may be proper. This sense need not involve any extra factual beliefs at all. Marxism does not, nor does Taoism. Both call centrally for changes

³¹ E.G. Atran (2002, p.14) and Whitehouse (2004, pp. 49-50).

³² Atran and Norenzayan (2004b, p.746) become more forceful on this point when challenged by Pyysiäinen (2004), who suggests that religion does not serve a clear cognitive function, even calling it ‘a parasite of natural cognitive mechanisms’.

³³ Midgley (2002, p.15)

³⁴ Ibid. (p.15)

³⁵ Ibid. (p.16)

in attitude to the facts that one already accepts. ... This kind of faith is plainly something widespread and very important in our lives.³⁶

Midgley further claims that such faiths provide the seedbed of religions, which can be fully secular in her view such as Marxism or what she calls evolutionism. The point is that such intellectual systems rest 'on their power to make sense of a threatening and chaotic world by dramatizing it.'³⁷ In her short history of myth, Karen Armstrong brings very similar ideas to the fore where she puts myths in the role of intellectual systems that enabled us to make sense of the world at a general level:

Mythology was therefore designed to help us to cope with the problematic human predicament. It helped people to find their place in the world and their true orientation. We all want to know where we came from, but because our earliest beginnings are lost in the mists of prehistory, we have created myths about our forefathers that are not historical but help to explain current attitudes about our environment, neighbours and customs. We also want to know where we are going, so we devised stories that speak of a posthumous existence.³⁸

The general story in which Armstrong brings this view on myth to the fore is the long³⁹ history of the human species, which has seen huge changes in its day to day living circumstances the last 20.000 years. In this period, some groups changed from a hunting life to shepherding, farming and ultimately city living and even empire building. Such changes brought about huge changes in the range of facts that these people were familiar with. Religion, and in particular myths enabled people to deal with these changes according to Armstrong.

Over this period, the increasingly sophisticated knowledge base and accompanying lifestyles, which resulted from cultural learning created new kinds of problems. Different ways of presenting the environment and one's own position in it changed the perceived relation between the individual and its environment. Existential issues like becoming aware that we are going to die, that the world will go on without us, and that within this huge world the actions of most of us are insignificant and will pass away without leaving a trace provide uncomfortable thoughts. One might shrink away from them, but at the same time they cannot be denied as they follow necessarily from practical knowledge which does not follow our wishes but the world itself, and which is so useful for that very reason. Such major changes in the factual circumstances pose problems for making this expanding domain *meaningful*: How does all this relate to me, or to us, the group that I belong to? According to Armstrong, myths provide guides that enable people to live with their factual circumstances: 'A myth, therefore, is true because it is effective, not because it gives us factual information.' For example, Armstrong discusses how in many different mythologies an initially all-powerful Sky God became too exalted and far away from human concerns with the result that he ultimately turned into 'a shadowy, powerless figure, marginal to the divine pantheon.'⁴⁰

³⁶ Ibid.

³⁷ Ibid. (p.17)

³⁸ Armstrong (2005, p.6), see also Armstrong (1993)

³⁹ Talking about a mere 20.000 years, the word 'short' would have been as appropriate compared to the 4 million years of human evolutionary history

⁴⁰ Ibid. (p.21)

The upshot of all this, it seems to me, is that religion can definitely be cast in the role of making the world meaningful to humans in a way that goes beyond the necessities of day to day living. Religion provides a way to connect the factual world in a meaningful way to the aims and motivations of the individual and group thereby providing a specific cast on this factual world. More specifically, from a historical perspective religion has been in the business of repeatedly generating *new* interpretations of the factual world – with new gods or claims – in order to accommodate and deal with changing ways of living, such as the shift from shepherding to farming and ultimately city-living. Religions of all times can be cast as cultural projects that aim to give a meaning to life that goes beyond immediate practicalities: What is the purpose of it all and what are the values by which anyone wants or rather should guide his or her life?

The general characteristics of religion as laid out by Atran and Norenzayan and discussed above can be cast as generally supporting a primarily existential and motivational view on religion. Linking a factual worldview to motivation in new ways is not merely adding new factual beliefs but finding ways of integrating such knowledge in one's motivational and emotional system. Rituals and costly actions both fit in as techniques that help to develop connections between arbitrary facts and motivational and emotional states. Even the stress on supernatural agents makes at least intuitive sense here. Such agents, being much more powerful and wise than any human individual is a natural way for humans of imbuing meaning where a mere mortal doesn't see any. In line with the argument given above, the supernaturalness of any such agent would be instrumental to religion's purpose rather than constitutive of the phenomenon of religion itself. Much more needs to be said here to make a solid case for these claims and interpretations, but for now my main aim is to develop the idea itself and how these other characteristics could be fitted in and even come to support the story developed here.

As a tentative conclusion then, religion can be cast as an important and even necessary component of human cultures, including modern Western society. Religion's aim is to link the factual knowledge and understanding that such a culture has acquired to the inner motivations of the individuals making up this culture, making the world meaningful to these individuals. However, several points seem to contest this conclusion. Foremost, has science not shown that there is no purpose in nature, that we live in a deterministic universe in which it makes no sense to introduce phrases like purpose and meaningfulness? Second, it seems that religion is facultative, something which we can choose but also reject and do without. In this view, myths may be effective for some people, but ultimately they are mere stories which are factually false and will have to be abandoned. Thus religion may serve this function of making meaning meaningful, but not for everyone. This last issue leads up to a third point, namely that religion has to work on an individual basis and connect with each individual's motivational structure. Armstrong states that a myth is true as long as it is effective, that is, connecting with someone's sense of meaningfulness. But of course this implies that there can be huge differences between people. One person may be deeply motivated and moved by the celebration of Mass, his neighbor may be merely bored, another finds it daft, and for yet another it is a sign of oppression. This situation is very different from the world of natural facts, which are—cutting all philosophical niceties short—the same for everyone. It is thus natural to think of such religious beliefs as arbitrary and something that one may, or even must, do without.

However, the point that follows from an embedded perspective on cognition and in particular this notion of preference structures is that there is not much choice in the matter. As the scientific belief versus religious desire slogan indicates, we, as human cognitive systems, require not only facts but also ways to integrate such otherwise meaningless facts with our values and motivations. We may balk at the label 'religion', and think that it does not apply to us, but the

function that, historically at least, is performed by cultural practices under this label remains the same whether we change the label or not. One way or other, every human being must make sense of his or her environment and his or her own position in the larger scale of things. The fact that one may choose to do so in a strictly secular and naturalistic way, such as in Marxism, evolutionism or humanism, does not matter in this view. Thus, one may discard many religious images or myths as unreal or hollow, but this means only that one uses others, even if only implicitly and in a secular form, to guide one's behavior and make sense of 'it all'. The point then is not whether to choose a religion or not, but rather the issue: how does each individual build up his or her preference structure, using what worldview and which cultural practices support and structure this process in each individual?

A functional interpretation of religion as proposed here is not generally accepted. Instead, and as discussed above, religion tends to be interpreted in terms of those specific contents and practices that are labeled 'religious' because these are the forms by means of which this function has been filled in in the past. For this reason also, it seems, many would hesitate to agree with Midgley and call Marxism or evolutionism squarely a religion. At the same time, it is also because of the equation of religion with particular kinds of ideas and practices – such as a stress on supernatural agents – that the whole notion of religion itself is often dismissed from a scientific or modern perspective. As a result, our current scientific worldview does not readily support or even easily acknowledge the need for systematic cultural practices that enable individuals or groups to develop new and different worldviews and preference structures that give us a meaningful place in the larger world as described by science.

To summarize, the claim made here is on the one hand a rephrasing of a generally held view, such as exemplified by Armstrong and Midgley, which can easily stand on its own legs. What is added here is the injection of this line of thinking within a scientific perspective where the value part becomes tied to embedded cognitive systems like ourselves. Thus, rather than opposing the two main traditions of scientific facts and religious values, these two become united here within a single scientific context from which the invocation of values is not to be dislodged or discredited.

Scientific belief and religious desire

The major point of the present analysis is that science and religion are two cultural projects that cater for different cognitive functions. Science articulates what the world is like, while religion acts as a source of high-level preference structures that link this world-view to the motivational states of each individual, enabling the articulation of new and fitting high-level wants. Both projects make specific claims concerning the external world; that is, both articulate particular sets of beliefs concerning the world. Ideally, there would be a harmonious relation between the two, but alas, in practice this is not so.

In the West, Christianity has a long history of providing meaningful meaning, giving clear answers about who we are, why we are on Earth, and what will happen when we die. All this was achieved without disrupting practical knowledge concerning the world. A belief that God created the world did not impinge on practical crafts but was part of a story that gave meaning to the here and now. A lot of things changed in the last 500 years or so with the developments that have now led to modern science. Many beliefs held by the church were shown to be literally false, for example, the Earth is not at the center of the Universe, nor did a deity create the Earth or the life on it. Christianity has since been on the defensive when it comes to providing factual stories about ourselves and our place on this world. Eventually, these changes led to the notion of *pure*

science, the aim of which is *pure knowledge* that is describing the world as it is, independent of our own preconceptions and wishes. In comparison, religious thought seems impure, committed to unwarranted claims concerning supernatural entities and involving a good deal of wishful thinking rather than taking the world as it is. From this perspective, religion is merely bad science that we ought and will outgrow with time.

When religion is interpreted as the project of articulating preference structures, the image just given changes in a number of ways. First, religion remains bad science, but this is hardly relevant when its proper function as a motivational structure is brought forward. One can also observe here that in earlier times religion just didn't have much opposition when it threw in a trinity or two and simply used the factual freedom it then had in order to accomplish its motivational function. Another point is that the commitment to any particular belief (such as the existence of God or a life after death) is not the kernel of this enterprise. Religion consists of building beliefs that allows one to handle and to cope with knowledge that is not only meaningless in itself—separate from our individual motivations—but which can even actively threaten basic motivations themselves. The image of ourselves as mere chemical factories, tinkered together by a blind process of evolution is not a cheerful one, at first blush. To quote from a paper of the homeless, “We are all fucking enzymes anyway.” Under the current interpretation, the proper function of religion is to ward off such unwanted consequences: The kernel of religion is to develop ideas and practices that give meaning to the world as we find it. The kernel of religion is not the particular set of ideas by means of which this has been achieved in the past. Thus, as argued above, I would hold that the stress on supernatural entities in traditional religious thought easily reflects its particular and long history rather than any intrinsic connection or a limitation on what religion can be.

In addition, and thirdly, religion does require a strong connection with the world as we take it to be. Religion is about making factual meaning meaningful to us. Therefore, it cannot function properly when it is relegated to the sidelines of society as a kind of feel good thing, with its own set of beliefs disconnected from what we hold to be physically true. Religion is not only for those who cannot stomach the austerity of the modern world. Religion's proper function is to act as a bridge between what we deem genuine knowledge and our own personal lives. To do so, it ought to make close contact with any current best description of the world, science, and provide ideas and insights as to how we can live meaningful lives, given the world as it is. One can interpret work on Intelligent Design as an attempt to acquire such congruency by working the other way round and fiddle with the facts until they fit some specific religious beliefs.

Finally, religion, in some form or other, is here to stay. It is not something childish that we should outgrow or even a genetically entailed aberration to cloud our thoughts. Religion serves a clear function within our general cognitive makeup and will not go away now that we have science. At most it will go underground and surface in new forms at unexpected places. However, the current discussion around Intelligent Design suggests a darker scenario: One can envision a possible future where strong religious beliefs could again create problems for the scientific enterprise itself.

All this follows fairly straightforwardly from casting religion as the articulation of culturally determined preference structures. Within this analysis, the laudable development of pure science has also had a flip side. By systematically undercutting the validity of the factual claims of our own and other society's preference structures it detracts from the plausibility and strength of these preference structures; in this way it saps away strength from pre-existing religious efforts to link our knowledge to our selves and to make meaning meaningful. In itself this cannot be helped of course as it is a necessary consequence of the scientific enterprise.

Factual claims that are mistaken must be criticized as such. However, the problem seems to be an insensitivity or even a denial of the function of religion, which hampers definite and specific attempts at developing alternative, new suitable religious ideas that incorporate the new factual situation.

In particular, the stress on knowledge as something which ought to remain independent of our needs and motivation, actively discourages attempts to draw new links between the hugely expanded knowledge domain and human motivation. The fact-value distinction, which operates here, sets up a wall between the two domains that must not be crossed. Is and ought are separate domains. The problem here is that this distinction makes a lot of sense when it comes to differentiating between beliefs and desires. However, the aim currently envisioned for religious thinking is the very formulation of a domain of values, and this should better be done in general congruency with the facts as we know them. When discussing the ways in which facts and values are connected in ideologies, roughly equivalent to religion as used here, Midgley says: ‘What is wrong with bad ideologies is not that they are trying to do something of this kind, but that they are doing it wrong.’⁴¹ In other words, it is not wrong to make connections between facts and values, but one should do this right. Of course, the difficulty here lies with deciding what is wrong as opposed to right, but this is exactly an issue that requires a lot of attention rather than a dismissive attitude. In any case, the claim remains that such a project, one might call it desire revision in analogy to belief revision,⁴² ought to be seen as a legitimate even necessary project of initiating changes in preference structures that allow us to deal with the new facts of life. It is unclear who or what instance could initiate a project of desire revision, but it seems safe to say that it would be the task of everyone and no one in particular to come up with good workable ideas. My aim here is limited to raising attention to this issue.

Thinking again about the discussion on Intelligent Design, some urgency seems to be required however when it comes to investigating the option of a project of desire revision. Nowadays, the situation has arisen in which science proceeds at its own pace, but without a clear or deep anchoring of these newly developing scientific ideas in accompanying preference structures, the domain of religion. What happens instead is a divergence between scientific knowledge and the sources of what gives meaning to our lives. The twentieth century did not bring us any cohering way to think about ourselves and the place we occupy within the world at large. The promise of progress has proven hollow in the eyes of many, where Auschwitz still remains an open wound. Increasing material wellbeing – for those who have it – cushions the effect, but at the same time makes science increasingly a facilitator of practical goals such as an increase in wealth and health. At the same time, science and material progress is held responsible for the increasing environmental problems and the bleak future that life on Earth now seems to face. All in all the scientific project seems to result in something that threatens to overwhelm us as human beings. Instead, science ought to remain a project by means of which we – individually and as a species – are fast expanding our knowledge about ourselves and how we might redefine ourselves to face the future. However, nowadays, it seems that the ways in which we cast ourselves can come from anywhere but science. Examples are traditional forms of religion, new age, rock and roll, sheer hedonism, literature, art, or anything else that enables us to formulate a meaningful existence in these modern times. To use Sterelny’s phrasing once more, the role that

⁴¹ Midgley (2002, p.22).

⁴² Belief revision is a common notion in epistemology and philosophy of science, referring to the systematic and, ideally, rational change of scientific belief (Levi, 1980). Desire revision would be a very different enterprise of which it is very difficult to envision what it might amount to.

science is now increasingly pushed into is not so much as an initiator of new wants, but at most as that of getting the things that we already want in new ways. An appropriate illustration might be the religious leader who thought that modern technology was a good thing because it enabled people to spend more time in prayer. In addition, Armstrong's case of the abandoned Sky God might also be brought to mind here. If science really develops into a cultural practice that becomes remote from our lives, it might be diminished to a merely practical way of dealing with technical, military and medical problems rather than a progressive project with the potential to transform and transcend our current existence in unexpected ways. Ironically, many of the current attempts to bring science closer to our lives are exactly of this practical and applied form. For example, teaching science at school now stresses the practical problems that can be solved by scientific approaches instead of taking scientific fields as having value in themselves. This is precisely the kind of science which is merely servile, a solicitor of new means to accomplish old wants. This role is a far cry from the image of science as the very project that taught us more about the world and ourselves in the last 200 years than everything put together before that. It is interest in science itself that brought about the vast changes in our views on the universe and our origins. It is also this big picture which would provide the source for new preference structures and new wants.

To conclude, while current science has become very good at developing knowledge, it has neglected the accompanying religious enterprise to link these new facts to new, inspiring and appropriate beliefs about our selves. This neglect has the consequence that this cultural niche is now being filled in by various other sources and the potential risk that science may in the long run undercut its own cultural backing.

Summarizing

This chapter aimed to highlight certain implications of embedded cognition and evolutionary studies of cognition for religion. In particular, it raised the question why science has not made an end to the continuing existence of religion. The explanation proposed here derives from a general distinction between knowledge and motivation: In addition to knowledge, cognitive systems also require preference structures, which organize their motivations in a way which uses and builds on available knowledge. As a consequence, religion can be cast as a cultural phenomenon which serves a clear cognitive function: We do not only need knowledge, as provided by science, our cognitive system also needs ways to relate and bind such knowledge to our motivations. Semantic meaning must be made meaningful to the cognitive system, and religion seems to be the way in which this is achieved at a very general, existential level. In this view, religion becomes something that we cannot do without. At the same time, religion might take forms that are very different from historical religious traditions and does not necessarily involve any reference to the supernatural. In this view, science and religion not only complement rather than bite one another, but they also ought to remain closely connected if they are to fulfill their respective roles.

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