

RELIGION IN MIND: A REVIEW ARTICLE OF THE COGNITIVE SCIENCE OF RELIGION

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Introduction

In recent years, the cognitive approach to the study of culture in general and of religious phenomena in particular has gained increasing support in the academic study of religion. From being an approach championed by few, though important scholars, it now has its own dedicated journal (*Journal of Cognition and Culture*), a dedicated academic institute (Institute of Cognition and Culture, Queen's University Belfast), and soon we will see the emergence of an International Association of the Cognitive Science of Religion (to be inaugurated in Aarhus, January 2006).¹

But what is all the fuss about? What is so attractive about the cognitive approach to religion? Is it really a genuinely new approach that can yield new results and solve persistent problems? Or is it just the most recent academic fad taking over where semiotics, post-structuralism and cultural studies have left off? This paper will argue that cognitive science does in fact present a genuinely new and very promising approach to explaining religious phenomena. By addressing both old and new problems by means of new theories and methods, cognitive science offers an opportunity for the scientific study of religion to break free of the inertia imposed by postmodernist solipsism. Further, the cognitive approach is not a fad. Even though it is a newcomer to the scientific study of

¹ ICC's website: www.qub.ac.uk/icc/. Website for four-year project on Religion, Cognition and Culture at University of Aarhus, Denmark: www.teo.au.dk/en/research/current/cognition. Website for the IACSR: <http://www.iacsr.com/>

religion, cognitive science is an established, cross-disciplinary program with distinctive methodological and theoretical traditions.

In what follows I will first address two basic problems and state some meta-theoretical principles. I will thereafter review work done within two broad areas: the nature of religious concepts and the nature of religious behaviour. Unfortunately (for a reviewer), the field of cognitive science of religion is already vast, addressing numerous problems through a growing number of methods. This means that much important and relevant work has to be omitted and other positions do not get the in-depth treatment they deserve. A regrettable example of omission is the growing literature on the developmental aspects of religion, i.e. how children's cognitive development affects the transmission of both religious concepts and religious practice.² This field deserves its own thorough review as the role of developmental factors has played a far too limited role in traditional theories of religion.

Two Problems and Five Principles

Many of the problems first addressed by the cognitive science of religion have long been recognised in the comparative study of religion: Why do we find religion in all human cultures and why the apparent recurrence of specific religious phenomena? Whether we are going back in history by means of textual and archaeological evidence or roaming the farthest regions of the globe we find religions and equivalent ideas and practices keep appearing: the existence of superhuman agents (e.g. gods, spirits or ancestors, with knowledge about and power over human affairs); narratives of how the world was created by these superhuman agents; evil spirits or witches seeking to harm people by disease or misfortune; the power of religious specialists to deal with both benevolent and

² E.g. Bering (2005); Bering and Björklund (2004); Bering and Shackelford (2004); Kelemen (1999 and 2004); Kelemen and DiYanna (2005); Rosengren et al. (2000).

malevolent superhuman agents; specific types of actions, such as sacrifice or spirit-possession, involving superhuman agents; ideas that a part of a person lives on after the body is dead. These are but a small sample of a possible list of cross-cultural recurrences of religious phenomena.

The questions of (a) the universality of religion and (b) recurrence of religious phenomena have been central to the study of religion ever since its origin in the 19th century, and numerous attempts have been made to answer them. The methods and theories used by the cognitive approach to tackle these questions are, however, rather different, largely as a result of the meta-theoretical principles underlying the formation of specific theories. These meta-theoretical principles can be formulated in five points upon which there is broad agreement in the cognitive science of religion.

First, in order to understand religion we need *explanatory* theories. Even if attempting to understand religious phenomena in their localised cultural and historical context is a laudable endeavour, this cannot be the sole purpose of the scientific study of religion. We need to address the universal questions raised above and this cannot be done by means of localised interpretations. Further, explanatory theories not only enable us to address such general questions but also to fertilise local interpretations by supplying a more solid terminological grounding and presenting new potential lines of enquiry. All interpretations are theory-dependent and the more explicit the theories are, the better. Thus the cognitive science of religion does not reject the role of interpretation in the academic study of religion, but merely attempts to right an unbalance by insisting on the necessity of explanatory theories.³

Second, the concept of religion must be “*refractioned*” into its constitutive parts in order to be amenable to scientific investigation.

³ For a discussion of the relation between interpretation and explanation see Bloch (1998); Jensen (2002); Lawson and McCauley (1990); Pyysiäinen (2004); Sperber (1996).

Earlier attempts to explain religion struggled to find a “magic bullet,” i.e. one theory that would explain all religious phenomena. Whether seeing religion substantively (e.g. as explaining the world) or functionally (e.g. as alleviating anxieties), it was never hard to find empirical counterexamples (e.g. religious concepts that produce more questions than they answer, or religious actions that generate anxiety). Instead, we should recognise the historical and non-scientific origin of the term “religion” — not in order to get rid of it, but in order to recognise that it is a synthetic category that covers a broad range of phenomena. These must all be addressed separately in order to construct explanatory theories and can only subsequently be related in order to investigate their possible mutual relations.⁴

Third, the refraction of religion into its constitutive parts means that religious phenomena can be studied by *methods used to study non-religious phenomena*. Thus, religious concepts are a kind of concept, ritual behaviour is a kind of behaviour, religious group formation is a kind of group formation etc. In investigating what is special, if anything, about religious concepts we need to understand what characterises concepts in general: how they are remembered, transmitted, produced, systematised etc. So, in contrast to calls for a special methodology or hermeneutics of religious studies, the cognitive science of religion places the study of religion within the broader scientific community and emphasises that religious phenomena are underpinned by the same cognitive mechanisms responsible for other types of human phenomena.⁵

Fourth, the cognitive science of religion is concerned with finding the causal *mechanisms* or *processes* underlying visible manifestations of religion. In order to prevent the cross-cultural and

⁴ For a discussion on the refracted concept of religion, see: Atran (2002); Boyer (1996, 2001); Hinde (1999). For critical assessment of older theories see: Boyer (1993a, 2001); Lawson and McCauley (1990).

⁵ Atran (2002); Boyer (1994, 2001); Lawson and McCauley (1990).

comparative study of religious phenomena from becoming a barren and shallow list of observed phenomena, classifications must be grounded in explanatory theories outlining underlying causal processes. This may solve the problem of universality (that some phenomena, even though widespread, are not found everywhere). Only the underlying mechanisms and processes are universal, whereas the emergence of a specific phenomenon at a particular time and place depends on other, contextual factors. By analogy, the possible sound-patterns in human language can be explained by appealing to underlying neural, cognitive and physiological mechanisms. But when appropriating the sounds of a specific language the individual will manifest only some of these possibilities whereas others will become almost impossible to learn at a later stage. Thus, even if mechanisms are universal, phenomena need not be. Further, by addressing the underlying causal mechanisms it becomes possible to construct more refined and consistent scientific classifications. Phenomena now divided into different categories can be seen as products of the same mechanisms, and phenomena grouped together based on superficial similarity will be understood as produced by very different mechanisms.⁶

Fifth, all scholars involved in the cognitive science of religion agree, not surprisingly, that the human cognitive system is a good place to start in order to explain religion, even if there is heated debate concerning whether it is the only causally relevant factor. Religion refers to certain types of behaviour and ideas entertained by people, and the human cognitive system is a necessary (if not sufficient) element in any explanation of religion. As with any other cultural phenomenon, there is *no religion without human cognition*, and it is therefore rather puzzling that the construction of adequate theories of its role has been neglected for so long.

⁶ Boyer (1992, 1994, 2001).

The Cognitive Study of Religious Beliefs

Religious traditions are commonly defined by the beliefs that so-called “believers” purportedly hold. Even if this focus on the conceptual side of religion might represent a distortion and that behaviour is more important than recognised so far, there is no question that specific types of ideas characterise religion. Since Tylor’s famous minimum definition of religion as “the belief in supernatural beings,” most definitions have focused on the fact that religions contain references to special beings that are not part of the natural, empirical world. In line with its focus on underlying mechanisms, the cognitive science of religion has attempted to explain how religious ideas are distinct from other ideas, and how this distinction may affect memory and transmission.

In a series of seminal articles in the 1980s and 1990s, the French anthropologist Dan Sperber framed an approach that focuses on the differential transmission of ideas. This *epidemiology of representations* follows three steps: First, we need to distinguish between public and mental representations in an act of communication. Whereas mental representations are mental states entertained by persons involved in communication, public representations are the externally accessible part of the communication (sounds, pictures, ink on a paper). Sperber argues that no deterministic relation can be found between the public and the mental representation and therefore the meaning of the message cannot be deduced from the public representation. Instead, meaning is constructed through a cognitive process in which a receiver infers a maximum amount of relevant meaning based on minimal input. Second, this constructive process takes place by activating a range of mental mechanisms that produce specific types of inferences when triggered. Thus successful communication uses public representations with the ability to trigger the production of inferences in the receiver’s cognitive system that potentially lead to a mental state more or less similar to that of the sender. Third, as the role of public representations is to activate mental processes, it is feasible to study the cultural suc-

cess of individual representations as a function of their ability to produce relevant inferences in individuals. Thus, representations can be studied as an epidemiological phenomenon, i.e. as the differential spread of specific representations through a population. Representations that trigger our cognitive system are more likely to be remembered and transmitted and will therefore be widely distributed.⁷

Taking the epidemiological approach to the study of religious concepts, anthropologist Pascal Boyer argues that only by understanding our cognitive system will we be able to understand the origin and recurrence of religious phenomena. What traditional scholars of religion are studying are the public representations involved in transmission. Failure to recognise the importance of underlying cognitive processing has led to an over-emphasis on the “exotic” nature of religion. Religions abound with witches acting from a distance, omnipresent gods, and listening statues, but as in the case of other public representation, explicit religious ideas underdetermine the mental representations they give rise to. Thus, receivers will enrich the information given through inferences supplied by specific cognitive devices. Boyer therefore argues that religious representations are a special case of representations that combine explicit *minimally counterintuitive* aspects that are easy to remember with implicit intuitive aspects that are good to reason with.

This distinction between intuitive and counter-intuitive representations is based on meticulous studies in developmental and cross-cultural psychology supporting the hypothesis that human cognitive architecture is “domain-specific.” Thus, instead of an all-purpose mechanism that treats all types of information and problems by means of the same general methods, human cognition is more realistically described as a number of more or less separate mecha-

⁷ The essays on epidemiology of representations are collected in Sperber (1996). The importance of cognitive relevance in a theory of communication is argued in Sperber and Wilson (1995).

nisms dedicated to processing specific types of information. Domain-specific accounts of human cognition support the argument that our implicit understanding of the world is divided into a number of ontological domains. We have specific expectations for individual phenomena because we subsume them into broad ontological domains. When hearing that the invented word “huchit” is an ANIMAL, one automatically has a number of expectations: it has a physical body; it is born from other “huchits”; it can move by itself; it will grow old and die, etc. None of this information needs to be made explicit. In a similar way we have intuitive expectations about domains such as OBJECT, ARTEFACT, PLANT and PERSON, as this makes our everyday interaction with the world both faster and more predictable. Thus the intuitive ontology is not scientifically based knowledge, but a result of evolutionary developed heuristic devices.⁸

Boyer argues that successful religious concepts are characterised by involving either a breach of domain-specific intuitive inferences or a transfer of a restricted number of inferences from another ontological domain. Representations of ancestors, ghosts and spirits are examples of an ontological breach. All violate the intuitive expectation that a PERSON has a physical body and this makes them attention grabbing, if not downright uncanny. All of them, however, retain a large number of intuitive properties. They are expected to perceive the world, to have beliefs, and to act motivated by these beliefs. Thus ancestors, ghosts and spirits can be persuaded, coerced, or tricked. In short, they can be interacted with in a manner that is strikingly similar to how we interact with other human beings. Examples of transfer from another ontological domain are numerous. Just think of statues that hear what they are told or magical medicines addressed vocally. In these cases aspects of agency is transferred to entities ordinarily categorised as not having agency

⁸ The literature on domain-specific cognition is vast, but helpful anthologies including discussions of culture and religion are Hirschfeld and Gelman (1994), and Sperber, Premack and Premack (1995).

(OBJECT, ARTEFACT, and PLANT). In most cases, however, the breach or transfer is minimal and what guides our interactions is almost exclusively based on intuitive assumptions.

This does not mean that people cannot come up with religious concepts not following these rules. It merely means that concepts that are minimally counterintuitive are *cognitively optimal* and therefore, all else being equal, more likely to be successfully transmitted. The theory of minimally counterintuitive religious concepts thus explains the recurrence of specific types of religious concepts in all religious traditions as a result of a selective process. Religious traditions end up as they do because the transmission process effectively weeds out or transforms concepts that are not cognitively optimal.⁹

If being minimally counterintuitive is what characterises religious concepts, what distinguish them from concepts such as Mickey Mouse? Mickey Mouse combines intuitive elements with attention demanding breaches or transfers, but even for the most casual observer Mickey Mouse is not a religious agent. Why is this so? One hypothesis seeks the answer in the role of *agents*. Humans have a well-documented tendency to search for agents in the perceptible environment, whether as faces in the clouds or traces in the sand. But not all agents are equally important. We are especially prone to imagine agents that are either anthropomorphic or have a human-like mind. Even if the gods, spirits and ancestors need not look like us, they always have a mind like us. This is important because representations of another human mind trigger a wealth of possible inferences due to the social nature of *Homo sapiens*. An important part of such social cognition are the so-called “theory of mind” mechanisms that make us see other people as a “mirror image” of our own self: as an agent with (limited) perceptual

⁹ Besides Boyer (1994, 2001, 2002), Pyysiäinen (2001, 2002, 2004) places great emphasis on the counterintuitive aspects of religious concepts. For cross-cultural experimental studies confirming the positive selection of counterintuitive concepts, see Boyer and Ramble (2001).

access to the environment, based on which it forms (potentially flawed) beliefs that motivate actions. We constantly seek out information that will help us understand what other people have perceived, know and believe, because it helps us understand and predict their behaviour.

Two things distinguish religious agents from Mickey Mouse. First, ancestors, spirits and gods are interested in socially relevant information. The gods we interact with the most (the “popular gods”) are those interested in what their “followers” do and think. Second, contrary to ordinary people, superhuman agents have more or less unrestricted access to social strategic information. In contrast to Mickey Mouse, the gods know if we cheat on our spouses or steal from our neighbour, even if no one else does. Because of this they become highly relevant social partners and not just aesthetic figures.¹⁰

A second hypothesis argues that the difference between Mickey Mouse and religious agents lies in their respective meta-representational content. Meta-representations are representations about representations or beliefs about beliefs. Whereas Mickey Mouse has the meta-representation ‘Mickey Mouse is a cartoon figure’ as a background to all other representations, superhuman agents have meta-representations that somehow indicate their reality. Ancestors can for instance be meta-represented in mythical narratives as ‘what we become when we die’ which naturally gives them a different status than Mickey Mouse. But the status of a meta-representation is not self-evident. When religious figures are transformed into characters of cultural legend (as in the case of the Nordic gods) this can be explained as a transformation of the validating meta-representation from that of truth to that of legend. This points

¹⁰ A theory of religion based on the cognitive importance of animism and anthropomorphism was first developed by Guthrie (1993, 2002). The importance of agency detection for religion is further argued by Barrett (2000, 2004). The theory of superhuman agents with unlimited access to strategic information is developed by Boyer (2001).

to the fact that meta-representations are intimately related to structures of authority and, in the case of religion, to religious authority whether found in a holy book, in a religious institution, or in a specific person.¹¹

A third hypothesis focuses on the role of actions in general and ritual actions in particular in validating superhuman agents. In short, Mickey Mouse is not a religious agent because there are no validating actions in which he is represented as interfering with the world. Accordingly the most efficient way of validating the existence of a superhuman agent is creating social situations in which he or she is understood as acting or being acted upon. Testing cases that illustrate this point are concepts such as Santa Claus or the Tooth Fairy. Based on the preceding argument it is predicted that children whose family perform actions involving these agents (bringing presents etc.) will be more likely to ascribe these a validating meta-representation than children from families that do not engage in such practices.¹²

These three hypotheses are potentially complementary. Superhuman agents will typically be socially interested parties with unrestricted access to knowledge; they will be meta-represented as real and important agents; and this meta-representation is most efficiently created through socially orchestrated actions with superhuman agents as either agents or patients.

Religion, Tradition and Conceptual Systems

Some readers might wonder to what extent the mechanisms described above can explain the apparent systematicity of some religions and the historical construction of elaborate theologies. In

¹¹ The role of meta-representations are emphasised by Pyysiäinen (2004) as well as Atran (2002).

¹² The importance of the role of superhuman agency in ritual action is emphasised by Lawson and McCauley (1990) and McCauley and Lawson (2002). The importance of ritual performance in validating belief in specific superhuman agents is argued in Sørensen (2000b, and forthcoming (a)).

short, are religious traditions really nothing but more or less coincidental conglomerates of cognitively optimal concepts or do we find a cultural “ratchet effect” that ensures that religious innovations stabilise and enables the cumulative construction of a religious tradition?¹³

There is no agreement about this question. Some argue that culture in general and religion as a tradition is an epiphenomena that has no causal effect. Supporting this view, psychologist Justin Barrett has demonstrated that, when performing under pressure, people tend to make inferences that are often in sharp contrast to their explicitly held theological convictions, and instead fall back on intuitive ideas. This distinction between explicitly held theological ideas and implicit theological incorrectness highlights the question whether we can understand behaviour by reference to the teachings of religious systems. Alternatively, the formation of religious traditions can be understood as a result of the creation of a guild of religious specialists in specific historical circumstances. In order to create a privileged position, a priestly class must protect itself from competition and ensure control. By streamlining orthodoxy it becomes possible to control access to the group (only people with the right training will be admitted); to distinguish persons legitimately wielding authority (ensuring religious authority); and to control the uniformity of teachings in different geographical areas (policing a larger social group). Accordingly, the formation of religious doctrines has more to do with the cognitive systems underlying the formation of social groups than with the semantic content of the doctrines.¹⁴

Still, two objections can be raised to the argument presented above. First, is the intuitive character of inferences produced under

¹³ Tomasello (1999) uses the term “ratchet-effect” to describe a cultural development that (a) cannot be undone without serious consequences, and (b) leads to cumulative development.

¹⁴ Barrett (1999, 2004). Theological Incorrectness is also discussed in Boyer (2001) and Slone (2004). Boyer (2001) discusses the formation of religious guilds.

stress really an adequate indication of the importance of doctrinal systems? Second, should we really contrast intuitive knowledge with theologically elaborate systems, or should we instead look for the importance of religious traditions in less consistent and more widely distributed cultural conceptual systems?

Addressing the first concern, anthropologist Harvey Whitehouse has emphasised the important role of explicit religious concepts in human behaviour in general and in the ability to acquire new concepts in particular. Even if humans tend to resort to intuitive reasoning when put under pressure, most of the time humans do not reason under cognitive pressure. In contrast they have time to ruminate about religious ideas and think about future lines of action in light of these. Further, as most existing cultural knowledge is distributed between different kinds of people (some are nuclear physicists, others carpenters), people do not acquire new concepts with equal readiness. Even though minimally counterintuitive concepts may form part of the optimal bedrock of religious transmission, acquiring new religious concepts often requires a considerable amount of cognitive effort and a high level of motivation. Based on fieldwork experience in Papua New Guinea and theories of human memory Whitehouse argues that the transmission of such cognitively costly religious ideas will be likely to take one of two forms. In the “doctrinal mode of religiosity” complex religious representations are transmitted through a process of continual ritual repetition that enables the teachings to become part of participants’ semantic memory. Semantic memory terms de-contextualised and explicit schematic knowledge, and Whitehouse argues that the transmission of this kind of religious knowledge has several implications: (a) it is dependent on frequent reiteration and therefore runs the risk of a “tedium-effect” in which people lose motivation due to redundancy and familiarity effects. Methods must be found to counter this tendency; (b) successful transmission of explicit doctrinal ideas is dependent on skilled orators, which in turn strengthens representations of religious leadership; (c) the intimate relation between religious leadership and religious teaching necessitates

frequent “orthodoxy checks” ensuring that believers are adhering to the right doctrine and the creation of adequate centralised bodies to police it; (d) frequent repetition will render memory of ritual performance implicit which in turn enhances the survival potential for the teaching by inhibiting individual interpretation; (e) being based on decontextualised semantic memory, the doctrinal mode facilitates the construction of anonymous religious communities and are easily spread through proselytising.

In the “imagistic mode of religiosity” transmission of religious knowledge exploits more heavily the episodic memory system. Episodic memory is highly context-dependent as it relates to the specific experience of the subject. Whitehouse argues that transmission based on this memory system results in an altogether different religious morphology: (a) episodic memory is activated by infrequent and emotionally arousing ritual performance; (b) this encourages participants to interpret the ritual actions through Spontaneous Exegetical Reflection (SER); (c) no orthodoxy is formed since SER tends to be highly idiosyncratic; (d) due to the emphasis on transmission via group action, dynamic religious leadership based on verbally-transmitted revelatory knowledge is difficult to establish, no orthodoxy checks are needed, and there can be no proselytising; (e) instead of widespread anonymous communities, the high emotional arousal in infrequent rituals effect the creation of small social groups with strong cohesion based on shared experience of highly arousing ritual ordeals.¹⁵

It is important to recognise that Whitehouse does not argue that individual religions belong to either one or the other mode. Rather, the theory of modes of religiosity specifies two attractor positions in cultural transmission each with specific consequences for social morphology. A single religious tradition will most likely contain both, but one or the other may be the prevalent mode of transmit-

¹⁵ The mode of religiosity theory is most systematically explained in Whitehouse (2000, 2004a, and 2004b).

ting religious ideas. The theory merits discussion by scholars of religion, as it not only seeks to explain the transmission of ‘non-optimal’ religious ideas and concepts, but also because it makes predictions about the relation of religious ideas to both social morphology (group size, type of leadership etc.) and to likely historical trajectories.¹⁶

Addressing the question of the relation between intuitive representations and widely distributed concepts highlights the contentious role the concept of “culture” plays in studies of human cognition. Whereas the agenda purported in the epidemiological approach largely regards culture as an epiphenomenon without any causal effect, other writers have been less willing to discard this explanatory level and have instead focused on the intimate interaction between stable conceptual, semiotic and social structures on the one hand and universal cognitive abilities on the other. Sørensen has named this project an “immunology of cultural systems” supplementing the epidemiological project with an attempt to describe how pre-established conceptual models impose a selective pressure on the distribution of novel concepts. Thus, cognitive systems and pragmatic encounters are not sufficient to explain why some counter-intuitive representations are culturally successful (i.e. are widely distributed) where others fail.¹⁷

While the general discussion of the relation between culture and cognition is rather extensive — incorporating anthropology, linguistics and psychology — the application of this to the study of religious concepts has been more limited. Taking inspiration from linguistic studies of categorisation, metaphor and conceptual blending, some scholars have focused on the importance of underlying schematic

¹⁶ The theory of modes of religiosity has been subjected to criticisms and elaborations in numerous publications: in relation to anthropology: *Journal of Ritual Studies* 16(2), Whitehouse and Laidlaw (2004); in relation to history: Alles (2004), Ketola (2004), Paden (2004), Vial (2004), Whitehouse and Martin (2004), Wiebe (2004); and in relation to cognitive science: Whitehouse and McCauley (2005).

¹⁷ Sørensen (2004).

structures in a cultural conceptual systems, and how individual concepts are “embedded” in larger theory-like conceptual domains. It is argued that the meaning of concepts is not only defined by the intuitive inferences it generates but also by its, often hierarchical, relationship to other concepts. Thus the existing ecology of ideas in a given population will itself attain a degree of stability. Nor should religious concepts only be seen in relation to other religious concepts or explicit theological systems. Religious concepts form part of much larger and relatively stable clusters of mutually reinforcing concepts with basic schemata that inform a wide variety of concepts and behaviours. Thus the concept of sin in the Western world is not only defined relative to a Christian theological doctrine known to a select few, but permeates other cultural domains such as theatre, literature and the visual arts and forms part of ordinary everyday language. Further, specific concepts (e.g. sin, repentance, and redemption) are combined in stable narratives that not only structure religious myths but also supply a skeleton structure to organising and giving meaning to individual experience. Thus long-term autobiographical memory will tend to be presented through already existing narrative structures even though it is doubtful that memory itself is stored in a narrative format.¹⁸

When relating religion to overall conceptual structures, the role of basic schemas and entrenched conceptual mappings becomes highly relevant. Based on theories of conceptual metaphor developed by Lakoff and Johnson, some scholars have argued that it is possible to extract the fundamental conceptual structures that inform reasoning and religious innovation in a given cultural context. Religious

¹⁸ On the relation between cognition and culture defending the latter as an explanatory level see Jensen (2002). On religious concepts forming an ecology of representations, see Malley (1995, 1997). On the understanding of religious concepts as complex concepts related to cosmological ideas see Keller and Lehman (1993). On the relation between Long Term Memory and narrative structure see Bloch (1998). On narratives mediating between culture and cognition, see Jensen (2002) and Sørensen (2004).

conceptualisation is creative in its frequent blending of different ontological and conceptual domains, but the viability of newly constructed concepts seems to be strongly dependent on the degree to which it is adaptable to already entrenched conceptual metaphors and widely spread cultural schemas. Thus people understand new concepts in light of already existing conceptual structure. These basic metaphors and schemas are *sensitive* to cultural differences, but it should be emphasised that this is not a defence for cultural relativism. Our conceptual system is constrained by our bodily interaction with the surrounding environment. Thus, it is almost certain that individuals in all cultures have a cognitive schema of CONTAINMENT and it is very likely that such a basic schema is widely used to represent spatial relations both literally and metaphorically. The extent of such use will, however, vary considerably. While cultural conceptual systems vary, they are formed on the same basis using the same cognitive principles.¹⁹

So even if most scholars in the cognitive science of religion agree that the transmission of religious ideas is subject to a process of selection based on cognitive mechanism, there is disagreement about (a) the role of more systematised structures of religious concepts in the transmission ideas, (b) the impact on actual behaviour, and (c) the formation of social structures. One of the goals of the cognitive science of religion is to develop precise hypotheses that can be tested and thereby, hopefully, develop a more precise understanding of the relation between individual cognitive processes, the formation of cultural patterns of concepts and behaviour, and social structure.

¹⁹ On metaphor theory see Johnson (1987); Lakoff (1987); Lakoff and Johnson (1980). Application of metaphor and schema theory to the study of religion: Hanks (1990); Keesing (1993); Sørensen (2000a, 2000b, 2002), and forthcoming (a). The relation between the different cognitive approaches discussed is contentious. See Geertz (2004) for a discussion.

The Cognitive Study of Religious Behaviour

One might argue that the preceding argument has an intellectualist flavour. Is religion really all about ideas and not about actions and behaviour? When considering religious behaviour one must ask how it is possible to distinguish religious from non-religious behaviour. Is it behaviour that is explicitly or implicitly motivated by religious beliefs? Is it behaviour that somehow involves religious concepts, such as gods, spirits or ancestors? Or is there really no such thing as religious behaviour, but only behaviour that sometimes is coincidental with religious concepts?²⁰ These questions have been far from answered by the cognitive science of religion, and investigating these questions seems to be recalcitrant to traditional experimental methods. Further, there is a growing realisation that different types of behaviour have different cognitive underpinnings and effects and therefore must be explained by different theories. This work has barely begun, but in order to restrict the discussion, I shall discuss only recent cognitive theories of ritual. This is because ritual is a prototypical case of what is traditionally understood as religious behaviour and because several theories have been developed in order to explain this elusive phenomenon.

One of the first and most influential theories of ritual is the Ritual Form Hypothesis developed by Tom Lawson and Robert McCauley. Inspired by Chomsky's transformational grammar, Lawson and McCauley argue that in order to understand the surface phenomena of actual ritual performance we need to unearth the "deep structures" that generate the rules on which performance is based. In the same way as grammar unconsciously structures language performance (we all speak a language without conscious knowledge of the grammatical rules), so will unconscious rules structure the performance of ritual action. People have a tacit "ritual competence" that guides the performance and evaluation of ritual per-

²⁰ See Bering (2004) for a discussion of the importance of religious concepts in explaining behaviour.

formance. This, however, is not a competence developed for the sake of performing ritual actions. First, Lawson and McCauley defend a stipulative definition of *religious* rituals as actions involving representations of more or less active participation of superhuman agents. Thus the theory does not say anything about the category of ritual in general. Second, the competence involved in performing and evaluating religious rituals is not just concerned with religious ritual, but is based on cognitive structures used to guide the performance and evaluation of actions in general. In line with theories of religious concepts, no special cognitive domain is postulated to explain religious ritual. Rather, ordinary cognitive architecture (the Action Representation System) is mobilised and constrains the form of religious ritual. In short, the Action Representation System ensures that humans have specific expectations to a number of structural roles whenever they understand an event or happening as an action. In its most simple form, these roles include an agent, and action and a patient. When processing information as an action we will automatically look for *who* is acting, *how* he/she is acting, and *on what* or *on whom* the action is performed. In religious ritual a superhuman agent will in varying degrees of proximity fill the role of either agent or patient. Either the ancestors, spirits or gods are seen as acting in the ritual (e.g. baptism), or the ritual is enacting upon them (e.g. sacrifice).²¹

Ritual action faces the peculiar problem that its purported effect is often not perceptible. Therefore, participants will judge its efficacy by its “well-formedness,” i.e. the extent to which it conforms to generative rules, and by relating it to embedded ritual actions. Thus, a priest can perform the act of baptism only by virtue of being ordained, and the bread in communion can infuse a state of grace in the communicant only due to the preceding rite of transubstantiation, which, in turn, depends on being performed by

²¹ The Ritual Form Hypothesis is presented in Lawson and McCauley (1990, 2002); McCauley (2001); McCauley and Lawson (2002).

an ordained priest. In both cases some element in the ritual has a special quality due to its role as a patient in an embedded ritual. This embedded structure, in which one ritual action is buttressed by another, stops with a ritual presumably performed by the superhuman agents themselves. In this manner, ritual performance is ultimately related to conceptual structures that halt the potential infinite regress involved in the search for legitimacy in prior ritual.

By focussing on the role of superhuman agents in the structural description of the ritual, i.e. whether it is the agent or the patient of the ritual action, it becomes possible to explain a number of facts. Lawson and McCauley argue that rituals with a superhuman agent acting are not repeated, can be reversed, and involve relatively higher levels of sensory pageantry (more pomp and circumstance). In contrast, when the superhuman agent is the patient, the ritual can be repeated, cannot be reversed, and will involve less sensory pageantry. So, baptism is performed only once, can be reversed (excommunication), and involves more sensory pageantry than other rituals in the same tradition. In contrast, the act of communion can be repeated, cannot be reversed, and will involve less sensory pageantry. The Ritual Form Hypothesis aims to explain some of the same phenomena as Whitehouse's Modes of Religiosity and this has spurred a debate between the two parties.²²

Whereas the Lawson and McCauley argument is built on a minimal difference between religious ritual action and ordinary action, other scholars are convinced that ritual behaviour has more distinguishing characteristics. Following ethological and anthropological theories of "ritualisation," several scholars argue that ritualised behaviour is distinct from ordinary behaviour on a number of points. First, the actions performed in the ritual are stipulated rather than specified by the intentions of the participants. The reason an agent performs a ritual does not determine the form of the ritual performed. The form of the ritual can instead be understood as

²² See McCauley and Lawson (2002), and Whitehouse (2004a:Ch. 8).

defined by the intentions of another, possibly superhuman agent. Second, there are no intuitive causal representations of how the actions performed in the ritual have their purported effect. Instead focus goes to either the perceptual features found in the ritual action (e.g. relations of similarity and contagion) or to established symbolic interpretations establishing such a connection. Again, the presence of superhuman agents solves a problem, namely why the ritual works. Thus rituals are actions removed from their instrumental domain, which result in specific cognitive responses aimed to relate the actions to intentional agents and to represent their causal efficacy.²³

Boyer and Lienard make a further investigation into the cognitive mechanisms triggered by the performance of ritual. They observe that a number of common characteristics are present in pathological ritualisation found in patients suffering from Obsessive Compulsive Disorder, in children's spontaneous ritualisation of everyday behaviour (e.g. bedtime rituals), in adults' preoccupations and specific behaviours appearing at particular life-stages, and in cultural ritual, including religious rituals. These characteristics include a compulsion to perform the action, an extreme focus on action details and adherence to rigidity of script, redundancy and iteration, goal-demotion where actions are devoid of any obvious instrumental effect, and a restricted number of recurrent themes, such as intrusion/protection, contamination/purification and danger/security.

To explain these commonalities, they claim that ritualised actions found in all the domains are the result of an interaction of two neuro-cognitive structures. The first is a Precaution System whose evolutionary role is to infer potential threats to fitness from specific cues

²³ On how ritual actions provoke a search for meaning, see Sperber (1975). The relation between ritual actions and representations of intentionality is discussed in Boyer (1994), Humphrey and Laidlaw (1994), and Whitehouse (2004a). On the relation between ritualisation and representations of ritual efficacy, see Sørensen (forthcoming (b)).

in the environment (e.g. smell indicates possible risk of contamination) and a repertoire of corresponding actions (e.g. avoidance/cleansing). Humans are thus hardwired to detect specific cues in the environment as a sign of potential danger and we have an innate repertoire of atavistic action-sequences aimed at reducing potential danger. The second system deals with parsing of actions into meaningful parts. Ordinary actions are parsed into sequences to which goals can be ascribed and where actions become more or less automatic (as in ordinary actions, such as getting dressed). Ritualised actions, by contrast, parse actions at the lower level of gesture (specific behavioural patterns), which entail that no direct goal can be ascribed and the action cannot be automatised. The performance of long sequences of gestures swamps the working memory and this will, for a time, reduce access to obsessive or intrusive thoughts produced by the activation of the Precaution System. At such a psychological level, ritualised action “works.” Ironically, however, in the longer perspective the very performance of such ritualised action will make the feeling of potential risks even more salient, and as such the short term remedy, ritualised actions, will make future activation of the Precaution System more likely.

Some might argue that even if this is a promising model to explain pathological ritualisation found in patients suffering from OCD, it is a long way from explaining cultural rituals. The model, however, does not suggest that cultural rituals are pathological, nor that it is all there is to say about them. It merely argues that successful cultural rituals, i.e. rituals that are transmitted successfully, are scripted social action-sequences acquired through social exchange, that mimic the potential hazards and atavistic action-sequences triggering the Precaution System. The existence of specific types of cultural ritual is thus a result of a selection process in the same way as religious concepts.²⁴

²⁴ Boyer and Lienhard (forthcoming) and Lienhard and Boyer (under review). See also Boyer (2001).

Some of the outstanding questions about ritual that need to be addressed by the cognitive science of religion is why certain types of activities, and not others, are related to ritual actions and to what extent the performance of ritual alters people's understanding of these activities. Even though there have been preliminary attempts to answer these questions, much more work has to be done.²⁵

Concluding Remarks

When presenting cognitive theories and hypotheses to scholars (and students) of religion a common reaction is the reasonable question: how can cognitive theories help me when dealing with concrete historical data? This is a complicated question that cannot be adequately dealt with in these concluding remarks.²⁶ In a more programmatic fashion, however, a few points arguing for the fundamental relevance of cognitive science for historical studies can be presented:

- Historical research is generally based on explicit public representations (text etc.). Theories that persuasively argue that public representations are only one side of the coin must therefore be taken seriously. Keeping universal cognitive mechanisms in mind can help historians avoid historical exoticism, in the same way as it helps anthropologists avoid cultural exoticism.
- Historical events involve acting subjects with cognitive systems. Knowledge of the constraints and mechanisms imposed by such systems can therefore help historians understand historical events.
- The cognitive science of religion attempts to construct universally valid explanatory theories of religious phenomena. Understanding

²⁵ Boyer (2001) and Pyysiäinen (2004) both address the relation between the performance of ritual action and change of social status.

²⁶ For a more thorough discussion see Martin (2004a, 2004b). For the application of cognitive theories to explain historical phenomena see Lisdorf (2004); Sjöblom (2000); Whitehouse and Martin (2004).

what constitutes religious concepts and religious behaviour can help historians construct their object of study. It is preferable that the construction of objects of study is performed by means of explicit rather than implicit theories.

- Cognitive theorising attempts to construct a precise scientific classification based on underlying causal principles. This will help creating more precise historical (and ethnographic) descriptions as well as facilitate comparative historiography.
- Precise and universally applicable theories of religious phenomena can help historians look for material that is not immediately accessible. Further, it will make it possible to systematise historical material in new ways.

Finally, it should also be emphasised that the scientific study of religion is much more than a historical study. As a discipline it addresses religion and religious phenomena wherever we find them and through numerous methods. In all cases, however, humans are involved and knowledge of how human psychology constrains the formation of religious phenomena is therefore a necessity for understanding such phenomena. Thus a conservative assessment of the role of the cognitive science of religion points to its role in resuscitating the psychology of religion and will result in adequate explanations of the role of psychology in the generation of religious phenomena. A less conservative assessment will see the cognitive science of religion as much more revolutionary by changing both the questions we pose and the methods we use to answer them.

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