

Transmissive Frequency, Ritual, and Exegesis

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ABSTRACT

Certain aspects of the relations between ritual action and ritual meaning are determined by socially regulated cycles of transmissive frequency, via the highly structured operations of human memory. Evidence is presented in this article that: (i) the relative scarcity of spontaneous exegetical reflection and the relatively wide dissemination of standard official exegesis in routinized traditions, may be explained by the dynamics of implicit procedural memory and the opportunities afforded by repetition for the spread of stable theological/exegetical representations encoded in semantic memory; (ii) the relative scarcity or restricted distribution of official exegesis and the relatively high degree of elaboration of spontaneous exegetical reflection in rare and climactic rituals, may be explained by the dynamics of episodic memory. These arguments are shown to have potentially significant implications for epidemiological perspectives on cognition and religion.

Religious rituals around the world assume a bewildering variety of forms and are attributed an even greater diversity of meanings. Increasingly, however, we have reason to believe that there are quite precisely specifiable cognitive constraints on what counts as a well-formed ritual and on what sorts of meanings of ritual actions are likely to become widely accepted. For instance, Lawson and McCauley (1990) have argued persuasively that, lurking beneath the apparent plasticity of religious rituals in different cultures, lies a limited repertoire of relations between natural and supernatural agents, actions, and patients. Barrett and Keil (1996), Boyer (1994), Guthrie (1993), and Sperber (1996), among others (see Barrett 2000 for a review), have meanwhile argued that many basic religious representations, and consequently much of the meaning attributed to religious rituals, result from cognitive susceptibilities to particular kinds

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of concepts. In short, ritual actions and ritual meanings are not as plastic as they might seem. They are directly constrained and shaped by universal properties of human cognition, deriving from evolved neural architecture.

Thus, the general thrust of some recent research suggests that the acquisition of certain aspects of religious knowledge is as natural as (for instance) the acquisition of language. Human cognitive architecture has evolved in such a way that, regardless of cultural and other contextual variation, certain kinds of religious representations occur, rather than *all* the sorts which are theoretically possible. This paper is concerned to show that such an approach may be enriched by attending to the context dependency of certain cognitive operations, specifically those concerned with memory. The first part of this article sets out the general case for viewing cognitive operations as context-dependent. The second part presents a particular epidemiological model that focuses on the contextual variable of transmissive frequency. The claims of universality for the model presented here are in no way weakened by the determination to take into account transmissive context. On the contrary, the effects on memory of variations in transmissive frequency, insofar as these are relevant to my model, are the same for all cognitively normal humans everywhere. But instead of trying to show that a context-free cognitive apparatus sets the parameters of *all* religions, it will be argued that the differential activation of universal memory systems explains a good deal of the *variation* among particular religions over time and space.

First Principles for Explaining Religion

Many aspects of culture are materially constrained. For instance, it is obvious that economic systems of production, exchange, barter, and consumption are constrained by states of technological development and that patterns of kinship and marriage are constrained by the nature of sexual reproduction and infant dependency in our species. The precise nature of the constraints is a matter of contention, but the claim that constraints exist is scarcely debatable. By contrast, it is quite common for religion to be envisaged as relatively free from material constraints. We now have a vast profusion of labels to characterize various aspects of religious thinking, such as: revivalist, messianic, prophetic, nativistic, cargoist, salvationist, millenarian, separatist, revolutionary, activist, syncretic, independent, and so

on. From these sorts of catalogues it might seem that there are as many diverse strands to religious thinking as to the untethered human imagination. Typologies of religious phenomena, of course, often have their origins in the concerns of religious communities themselves, and in the discourses of politicians and bureaucrats. These concerns and discourses are, however, of little explanatory value. It may matter a great deal to colonial authorities whether a particular religious movement is millenarian, nationalistic, and revolutionary, rather than congregationalist, passivist, and ecumenical. But for the purposes of a scientific theory of religion, that is to say a theory of the *causes* of religious phenomena and the variations among them, we require a rather different method of carving up our subject matter.

What we must look for are direct material constraints on religion, no less significant than the technological and reproductive constraints upon economic and kinship organization. There *are* such constraints and at least some of these are derived from human cognition. Indeed, patterns of mental activity, rooted in the biology of brain functions and their developmental contexts, have direct effects on the elaboration of all domains of human culture — not only the religious. As long ago as the 1960s, it was shown that the variety of kinship systems is constrained as much by the limitations of short-term memory for genealogical categories as it is by the so-called ‘facts of life’ mentioned above (see D’Andrade 1995: 42-44). More recent work in psychology on cheater-detection, altruism, cooperation, theory of mind, and other aspects of cognition is showing with increasing precision that technologies of mind, at least as much as exterior technologies, constrain the patterns of economic and political activity found within our species (see Boyer, forthcoming). And so it is with religion. What we believe about gods, spirits, and ancestors is firmly constrained by what we can encode, process, and recall. And what we consider to be efficacious and necessary rituals is shaped by deep intuitions concerning the fundamental relations between agents, instruments, and patients. Only once we begin to understand all this can we begin to disassemble and *explain* the constituents of religion.

Religion, like any cultural domain, is a distributed phenomenon. That is to say, it consists not merely of the thoughts and feelings of an individual devotee, but of the recognizably similar or complementary thoughts and feelings of a population of religious adherents. Indeed, some

of those thoughts and feelings presuppose that religion is distributed. For instance, the doctrine that only ordained priests can perform efficacious rites of baptism *presupposes* that religion encompasses different categories of participants, such as priests and candidates for baptism. Moreover, if specialist knowledge is possessed by different categories of officiant, the reproduction of the religious tradition will depend upon cooperation. The problem of explaining religion is therefore a problem of explaining a particular type of *distributed cognition* (cf. Hutchins 1996).

According to Dan Sperber (1996), the challenge is to explain the spread and persistence of cultural (including religious) representations in much the same way as some medical researchers seek to explain the spread and persistence of diseases. The latter project falls to the medical field known as ‘epidemiology’. What we require, then, is an ‘epidemiology of representations’ (Sperber 1985). Sperber, however, reminds us that the analogy between the spread of religion (or culture in general) and the spread of disease should not be taken too far. Obviously, diseases are damaging to the organisms they infect, whereas this is not (necessarily) true of religions. But there are other respects in which processes of viral transmission, for instance, differ from processes of religious transmission. Germs are transmitted directly from one body to another, and reproduce by means of replication. Religious thoughts and feelings are transmitted indirectly and are seldom exactly replicated. Even the most persuasive preacher cannot ‘implant’ his or her thoughts in my head. All the evangelist can do is to alter my cognitive environment in such a way as to encourage me to process the inputs in ways that *resemble* his or her representations of the world. Whereas in viral contagion, replication is normal and mutation rare, in religious transmission mutation is normal and replication extraordinary (cf. Sperber 1985). In Sperber’s view, cultural transmission is successful to the extent that mutation can be minimized with the result that ideas and sentiments are sufficiently similar as to seem to be ‘shared’ among members of a cultural tradition. According to this approach, our first step is to identify the mechanisms that reduce cultural mutation.

But Sperber’s argument requires slight modification. Culture in general, and religion in particular, does not consist simply of shared representations. What is important in some (but not all) forms of religious activity is the ‘sharing’ of types of experience which are similar in terms of *the ways they*

are processed, rather than in terms of representational content. For instance, certain forms of religious activity encourage revelations that are idiosyncratic and heterogeneous rather than widely known and standardized. The vision quests of North American Plains Indians, the drug-induced hallucinations of Amazonian shamanic rites, the out-of-body states encouraged by lengthy abstinences and meditation in certain Buddhist monasteries, to mention but a few examples, encourage and positively value the production of religious representations that are intensely and uniquely personal. What people in these situations regard as being 'shared' is not a common corpus of religious representations, but a set of salient experiences and the procedures (primarily analogical reasoning) for their interpretation. Thus, rather than looking merely for the causes of low representational mutation, we are looking for the causes of various types of cognitive and experiential matching within populations, of which uniformity of representational content may be an especially important type but which may also take the form of recognizably similar and/or complementary patterns of processing. Matching, of this sort, is what enables us to imagine discrete cultural and religious forms, as apparently 'shared' entities or so-called *traditions*.

The principal selective mechanism responsible for this sort of matching is *memory*. Matchings become widespread, and thus 'cultural', because they are capable of being successfully stored and recalled by populations. Representational and experiential forms that are not memorable are simply selected out, and do not create matchings (or not at a cultural level of distribution). If we are to explain religion, we therefore need to explain what makes its matchings memorable.

One possibility, cogently presented by Pascal Boyer (e.g. 1990, 1993, 1994, 1996), is that memorability is a function of universal features of cognitive organization. Boyer argues that the invariable development of domain-specific intuitive ontological knowledge has the effect of making certain concepts of extranatural agency easier to generate, encode, store, and recall than a range of alternatives. The more memorable concepts correspond to the catalogue of supernatural representations actually found in religions, whereas hypothetical concepts predicted to fall below this cognitive optimum are found to be rare or non-existent in real-world conditions. This argument finds extensive empirical support, both

psychological and ethnographic (e.g. Boyer 1990, 2001; Boyer and Ramble forthcoming).

The model presented here, however, entails a slight refinement of Boyer's approach. It is clear that universal features of cognitive organization set limits on the memorability of would-be cultural phenomena. But we should not confine ourselves to a view of the cognitive apparatus in isolation from the contexts in which it is activated. Indeed, it is impossible to differentiate the major types of memory system without reference to context. To take a simple example, whereas singular experiences (context 1) may allow the formation of episodic memories, repetition of a task (context 2) is necessary for the development of implicit procedural memory. Transmissive frequency is thus an important contextual variable affecting the operations of memory and must be relevant to all processes of matching and cultural selection.

To illustrate briefly, consider the recurrence of the concept 'witch'. Witch concepts are evidently more extensively transmitted in some populations than in others. Frequency theory may be able to account for this, whereas standard epidemiological models cannot. Following Boyer's account, the 'catchiness' of the witch concept is to be explained with reference to invariable intuitive assumptions entailed by naïve physics, which are violated by the notion of persons capable of acting at a distance. Anybody can stab another person with a sharp instrument but only special persons, such as witches, can stab somebody by inserting pins into a doll. This specialness amounts to a counter-intuitive property that is both attention-grabbing and memorable. Nevertheless, while Boyer's account shows that the witch concept is capable of being represented by any normal person in normal developmental circumstances, regardless of cultural peculiarities, it does not set out to predict whether such concepts will be imported into *particular* cultural settings. For instance, beliefs in witchcraft have been described as extremely virulent among the Azande of southern Sudan, where witches are implicated in unfortunate happenings on an everyday basis (Evans-Pritchard 1937: 63-4). By contrast, the clergy of the Church of England are (on the whole) much less likely to attribute their daily misfortunes to witchcraft. Such a mode of explanation would seldom be entertained in the first place but, were it raised at all, would tend to be scorned by most vicars and bishops, if not by all members

of their congregations. How are we to explain such differences between English and Zande populations? The key cannot be found in the cognitive apparatus taken out of its context of operation because variables cannot be explained in terms of constants. But a solution may emerge if we take into consideration variations in transmissive frequency.

Highly routinized religious regimes, including many varieties of Christianity, provide optimal conditions for the rehearsal and learning of complex theology, with a 'heavy' conceptual load. In such conditions, religious orthodoxies may develop somewhat snobbish views on 'simple superstition', to the exclusion of the sorts of concepts (such as 'witch') that require little repetition to acquire and spread. By contrast, the conditions of transmissive frequency applying in witch-infested African societies may encourage the inclusion of ghostly concepts in the religious field on a more stable basis. These are, of course, empirical questions. The present study is concerned above all with demonstrating the empirical productivity of a cognitive explanation of religion that takes transmissive frequency into account (see also Whitehouse 2001).

Memory, Frequency, and Religious Rituals

The ethnographic record suggests that the relationship between ritual action and ritual meaning (exegesis) in any given cultural tradition is closely connected to frequency of performance (see Whitehouse 2000). Rituals that are performed on a very regular basis, such as liturgical rites in Christianity, tend to be associated with some form of widely-known exegesis, maintained through the supervisory prominence of a religious hierarchy. Exceptional cases are sometimes presented by religious traditions that place a low premium on ritual in general, stressing instead the importance of internal states and personal enlightenment. Jainism is one such tradition — an offshoot of Hinduism prevalent in various parts of the Indian subcontinent. Jain versions of the *pūja*, a daily ritual in which idols are worshipped, are not attributed a stable authoritative exegesis (Humphrey and Laidlaw 1994). Nevertheless, cases such as these are rare. The general rule of thumb is that frequent rituals have orthodox, widely-disseminated meanings. An equally recurrent principle is that highly repetitive rituals do not attract independent reflection on their possible meanings. Both Christians *and* Jains, for instance, tend not to cogitate reflexively on the meanings of their

liturgical rites. They may readily do so, when urged on by ethnographers, but their answers tend to be highly tentative, slow to formulate, and simple. In short, if people hazard opinions at all, they generally have to make them up on the spot.

A very different state of affairs is apparent in cases of rarely-performed rituals. Unless these are variants of more frequent forms of worship, infrequent rituals tend not to be associated with widely shared, stable exegesis. In many cases, ethnographers have concluded that no tradition of exegesis exists in the cultural traditions sustaining such rituals (e.g. Gell 1975; Tuzin 1992). In other cases, exegesis appears to exist, but is restricted to a small group of religious experts (usually elders). Even then, the esoteric knowledge may be poorly shared and highly cryptic (e.g. Juillerat 1980, 1992). Major rituals, performed in cycles that have to be counted in years rather than months/weeks/days, are not accorded meaning *in the same way* as routinized rites. Not only is official exegesis lacking or restricted, but personal exegetical reflection appears to be much more intense and widespread. People who participate in rare initiation rites, installation ceremonies, climactic millenarian rituals, and so on, tend to reflect deeply on the meanings of their activities, producing elaborate exegetical knowledge that is intensely personal and often hard to communicate verbally. Detailed ethnographic studies of this syndrome have been carried out in Papua New Guinea, focusing mainly on rare fertility rites (e.g. Herdt 1981; Barth 1975, 1987) and sporadic outbursts of cargo cult activity (e.g. Schwartz 1962; Whitehouse 1995, 2000), but similar data have been gathered also in Africa (e.g. Lewis 1971; Turner 1974), Amazonia (e.g. Hugh-Jones 1979; Verswijver 1992), aboriginal Australia (e.g. Strehlow 1947; Munn 1973), and many other parts of the world. Wherever the syndrome is documented, however, we find that the rituals in question are not only rare, but also profoundly stimulating occasions (both emotionally and sensually). These rituals are replete with what Lawson and McCauley (forthcoming) have dubbed 'sensory pageantry' (or SP).

We are dealing here with a continuum, rather than with absolute categories. Some rituals are neither very frequent nor very rare, or entail neither high SP nor dull repetition. What we have, however, is a general pattern: very frequent rituals attract plenty of widely-known and stable exegesis and very little spontaneous exegetical reflection. By contrast, very

rare and climactic rituals tend to attract very little official exegesis (or only very restricted esoteric meanings) but a great deal of independently-generated exegetical reflection.

A cognitive explanation of these findings is presented below. This will focus on the role of transmissive frequency in the formation of gross features of explicit and implicit memory, and consider the effects of this on the way rituals are represented, not only as actions but as *meaningful* actions.

In order to have implicit procedural memory, we must have procedural repetition. I cannot jump on a bicycle and ride it unless I have previously practised riding a bicycle. Various models are available describing the processes by which implicit procedural knowledge becomes established. One such model, offered by Anderson (1983), envisages procedural fluency as the conversion of initially explicit rules into unconscious habits via repeated rehearsal. I first have to learn that pulling on the brake levers will cause the bicycle to slow down *before* I reach the stage of being capable of stopping the bicycle as a reflex action, without having to represent consciously the location of brake levers and the correct way to use them. But once procedural fluency has been achieved, I not only do not have to represent certain things (such as the location of brake levers) at a conscious level, I actually do not do it, at least not when I am trying to avoid a crash.

Some religious rituals are very much like riding a bicycle in the respect that they are remembered by and large as procedural habits, encoded in implicit memory. Moreover, we find that such rituals have some rather distinctive characteristics. Firstly, they are always highly repetitive. Rituals that are only ever performed rarely or sporadically are never encoded in implicit procedural memory. In order for rituals to become habituated procedures, they have to be rehearsed a good deal. Examples are easy to find in all the world religions. For instance, Christian services involve various habituated sequences of sitting, standing, and kneeling, each associated with a distinctive activity (primarily listening, singing, and praying). During the liturgy, church-going Christians move between these bodily postures with considerable fluency, without having to think about it and in response to quite subtle cues in the environment. Secondly, these repetitive procedures commonly occur within doctrinally elaborate traditions, in which rituals are attributed standard meanings that are

verbally transmitted and widely shared. For instance, all Christians know that kneeling in church means that the person is communicating with God. Children socialized into Christian cultures initially learn this meaning at least partly through explicit instruction, just as missionaries in non-Christian countries have to explain to potential converts the meaning of prayer and the posture it requires. Thirdly, repetitive rituals such as these do not encourage spontaneous reflection on their possible meanings. In general, Christians do not waste time reflecting on whether a kneeling posture, in addition to having the meaning of praying, might also mean other things — such as, a way of seeing the church from a lower vantage point and thus through the eyes of an innocent child. Of course, kneeling down could conceivably mean many things, but few people would ever bother to think about that. So how are we to explain these three things?

Well, we know why rituals encoded in implicit memory are frequently repeated. Quite simply, it could not be otherwise: procedural fluency requires repeated rehearsal, if only during the learning phase. We also know why highly repetitive rituals occur in doctrinally elaborate traditions. Again, it has to be that way: complex doctrine and exegesis have to be regularly repeated if they are to be sustained intact. If not, doctrines are forgotten, or transformed beyond recognition. But why is it that people who engage in repetitive rituals tend not to reflect independently on their meaning? One possibility, requiring experimental investigation, is that exegetical thinking requires that procedural knowledge is represented explicitly. In other words, people will not reflect on the meaning of a procedure unless they represent that procedure consciously. But when, as a result of repetition, one no longer thinks about *how* to do a ritual, one becomes less likely to reflect upon *why* one performs it. Of course, even if people do reflect consciously on how to do a ritual, it does not automatically follow that they will engage in exegetical speculation. They must also regard the procedure as puzzling. But, in that case, the presence of official exegesis is likely to resolve the puzzle before any serious investigation gets underway. The point, however, is that the puzzle does not arise in the first place in the absence of explicit reflection on the procedure itself.

In summary, routinized rituals typically become ‘empty’ procedures — behavioural habits enacted unreflexively. This, however, creates a vacuum

for the transmission of official exegesis. Whatever religious authorities claim to be the meaning of a ritual (i.e. the widely rehearsed schemas of religious orthodoxy), will not be challenged to any great extent by competing (personal) exegetical reflection. And, as long as the official line is also well-rehearsed, it will remain quite stable in semantic memory, and relatively immune to interference.

We still have to explain, however, why rarely-performed rituals tend to generate considerable spontaneous exegetical reflection but very little (or very restricted) official exegesis. We may begin by dispensing with two rather obvious but unsatisfactory explanations. The first would be simply that the shortage of official exegesis results from a lack of religious authorities. That is, nobody is in a position to tell other people what the rituals mean. A version of this argument has been presented by Ron Brunton (1980), but it finds little ethnographic support (see Whitehouse 2000: Chapter 4). On the contrary, some of the most detailed studies available of rare, climactic rituals for which official exegesis is lacking (e.g. Barth 1975) show a heavy concentration of religious authority in the hands of elders. In the Baktaman society of inner New Guinea, on which Barth reports, elders enjoy absolute authority on matters of correct ritual procedure. The absence of an official body of exegesis cannot be explained by a lack of personnel with sufficient authority to assert and police it, but it can be explained in terms of the limitations of human memory.

In conditions of rare transmission, such as those obtaining in the Baktaman initiation system (reproduced in ritual cycles of ten to fifteen years), official exegesis would stand very little chance of being remembered and thus reproduced. Experimental evidence is required to show precisely how much repetition is required for the effective learning of naturally-occurring ritual exegesis, and how much repetition is needed for its effective retrieval over time (i.e. without substantial distortion and decay). But it seems reasonable to assume that a single transmissive episode every ten to fifteen years will not suffice.

Following from this, a second obvious explanation for lack of official exegesis would be that external mnemonics necessary to store the exegesis (e.g. in the form of written texts) are lacking. The problem with the explanation is that external mnemonics are no substitute for mental rehearsal. In order to feature in people's religious experience, during the

long periods separating major transmissive episodes, official exegesis has to be mentally rehearsed, whether as a result of reading texts or through oral transmission. Either way, we are back to a scenario of regular repetition. In cases where religious transmission is extremely rare, official exegesis simply cannot be sustained. But spontaneous exegetical reflection is often rife, and that is what really needs to be explained.

Our starting point might be the fact that the action elements and sequences entailed in rarely performed rituals cannot be organized in implicit procedural memory. They have to be represented explicitly. In other words, in order to perform the ritual successfully, knowledge of *how* to do it has to be entertained at a conscious level. This appears to be the optimal situation for the production of spontaneous exegetical reflection. Barth, for instance, has described how Baktaman initiation rites have to be consciously reconstructed in memory in order to ensure that action elements are not omitted and action sequences are correctly reproduced. This process of conscious reflection in itself encourages cautious exegetical reflection which the Baktaman are officially proscribed from communicating but which, in any case, may be hard to put into words (Barth 1975, 1987).

But it is not only in preparing for rare performances that Baktaman initiated men reflect on their rituals. The surprising nature of novices' experiences in these rites, and the emotions and sensations they evoke, appear to foster enduring episodic memories for initiations, in some cases exhibiting all the features of classic 'flashbulb memory' (Brown and Kulik 1982; McCauley 1999). As such, these experiences are available to consciousness throughout life, and the recollection of them is triggered regularly in all kinds of ways. Barth, for instance, describes how even the routine activities associated with swidden horticulture can evoke intense episodic recollections of initiation rites, such that the layout of temples is mentally projected onto the layout of food gardens (Barth 1975).

In such conditions, it is not surprising that official exegesis is seldom, if ever, widely disseminated. On the one hand, transmissive frequency is too low to sustain in semantic memory a single authoritative exegetical system, even though ritual action elements and action sequences may be entirely sustainable in episodic memory. On the other hand, the rituals generate an abundance of spontaneous exegetical reflection among participants, so

that these would tend to compete with any official version and, in practice, constantly threaten to distort or displace it.

Conclusion

Epidemiological approaches to the study of cognition and culture have tended to assume that invariable features of cognitive processing make some religious representations inherently more likely to be remembered than others, and thus more likely to become culturally widespread. The frequency hypothesis, however, suggests that what makes something memorable is *always* a combination of cognitive capacities and socially regulated transmissive cycles. If, for instance, as Boyer's meticulous arguments and experimental findings suggest, some concepts of supernatural agency are more likely to become widespread than certain others, this must be because certain patterns of transmissive frequency necessary to sustain these concepts are also widespread. Thus, the patterns of transmissive frequency found in many large-scale religions favour the selection of elaborate and standardized theology, whereas the rare, climactic rites entailed in Baktaman initiations favour processes of spontaneous exegetical reflection. Epidemiological perspectives stand to benefit from further refinement, based on the principle that cognition is regulated by contextual variables, among which transmissive frequency stands out as particularly significant.

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