

tionally nonviable (perhaps because individuals resistant to religious commitment might also be rendered resistant to other, clearly beneficial kinds of sociality). These would be reasonable arguments, worth exploring – but A&N do not make them.

One of the intriguing aspects of the memetic approach is that it obviates the need to argue for dubious fitness benefits of cultural behaviors like religion. Instead, memeticists posit an interaction between two distinct sets of replicators, genes and memes, with the spectacular variation observed in human cultures due in part to their co-evolutionary relationship (Durham 1991). In theory, this model would be less vulnerable to standard objections against group-selectionism because the evolution of the second, cultural replicator could easily stay ahead of so-called selfish adaptations rooted in genes. A&N minimize the potential for memetics to illuminate the selective factors responsible for acquisition of religious concepts, but their own data on the mnemonic advantages of minimally impossible stories are easily accommodated by the memetic approach and would illuminate such factors. In the end, there seems little advantage to preferring a modularist, developmentally improbable “black box” psychology to memes.

## Religion is neither costly nor beneficial

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**Abstract:** Some forms of religion may in some cases alleviate existential anxieties and help maintain morality; yet religion can also persist without serving any such functions. Atran & Norenzayan (A&N) are unclear about the importance of these functions for a theory of the recurrence of religious beliefs and behaviors.

Atran & Norenzayan (A&N) want to avoid anthropological functionalism; yet they try to differentiate religion from mere fiction by emphasizing that only religion involves a ritually expressed and strengthened passionate commitment to the group interests that may also benefit individuals in the long run. Religion creates social cohesion, enhances mental health in individuals, and alleviates existential anxieties related to death and deception (see also Atran 2002a). Yet such functions do not cause the cultural recurrence of religion. Religion is an inevitable by-product of our evolved cognitive structure, a parasite of natural cognitive mechanisms (as also argued by Boyer 1994; 2001). Counterintuitive representations that typify religion (Boyer 1994) are bound to arise because of the fluidity that characterizes human cognition. It is their specific social use that makes them religious.

In the background of A&N's argument is Atran's (2002a, p. 169) tentative suggestion that “the more traditionally and continuously religious the person, the less likely to suffer depression and anxiety in the long run.” Yet many extensive literature reviews have shown that results from studies on religion and mental health are mixed and even contradictory. Bergin (1983), for example, found that in 23% of the reviewed studies, there was a negative relationship between religion and mental health, in 47% of the studies the relation was positive, and in 30% there was no relationship. This is close to what one would expect by chance. Another alternative is that the results are skewed because of methodological difficulties. Almost all studies of so-called conversions, for example, suffer from various kinds of methodological shortcomings, such as near total reliance on measures of self-perceived change (Emmons & Paloutzian 2003). Gartner (2002) is suspicious of the existence of such difficulties, yet acknowledges the fact that the very idea of “religious concept” has no generally accepted definition. Krymkowski and Martin (1998) found that in the papers published in the *Journal for the Scientific Study of Religion*, beginning from 1986, religion was prominently taken to be an independent causal

factor, affecting things such as abortion attitudes, alcohol consumption, and so on. Such explanations are highly problematic because no sufficient attention has been paid to the mechanisms by which religion supposedly exercises influence, the direction of causality is not always clearly established, and controls are not always used. Often it is not clear what is meant by “religion.”

Gartner (2002) claims that much of the discrepancy in the findings may be explained by differences in the ways mental health is measured. It is therefore very difficult to find unequivocal causal relationships. Gartner (2002) argues that the studies that found a negative relationship between religion and mental health typically employed personality tests with only limited reliability and validity, whereas the studies that found a positive correlation were based on real-life observations concerning drug abuse, delinquency, and the like. However, it is not clear what it is in religion that contributes to mental health: professing certain counterintuitive beliefs, performing rituals, the social relationships among believers, or what? (Cf. Levin & Chatters 1998.) Thus, George et al. (2002) conclude that “we are far from understanding the mechanisms by which religious involvement promotes health.” Pargament (2002) remarks accordingly that, even when significant results are obtained, they provide only little insight into how religion works.

A&N actually warn: “All of this isn't to say that *the* function of religion is to promise resolution of all outstanding existential anxieties any more than *the* function of religion is to neutralize moral relativity and establish social order” (sect. 7, last para.). But they are unclear about the other functions religion might have, and ultimately leave the role of functional explanations unspecified. It is not clear, for example, whether they wish to explain the persistence of religion by its functions, or only want to distinguish religion from mere fiction by its functions.

It is more likely that religion persists because in everyday thinking there is little reason to try to eliminate it; this would require the kind of reflective thinking that typifies science, and which is cognitively costly and of little relevance in everyday life (see Barrett 2004; McCauley 2000; Pyysiäinen 2003a; 2004; Sperber & Wilson 1986). Religion persists because it is plausible in the context of everyday thought. This in no way necessitates that religion is useful in the sense of providing an antidote against anxiety or other fears. Some forms of religion may do this in some instances, but this is not a necessary characteristic of religion. A&N's experiments, for example, only show that a death prime activates religious beliefs, not that they necessarily alleviate anxiety in the face of death. Religious beliefs differ from fictional ones in that only religious beliefs are believed to be capable of guiding actual motor interaction with real objects (see Cruse 2003). It could be speculated that ritual action enhances this belief, irrespective of whether it helps alleviate anxiety. All that is needed is that persons believe that neglecting the ritual duties could be dangerous. This belief arises when people combine randomly generated counterintuitive representations with social practices such as baptisms, weddings, and so forth (see Pyysiäinen 2003b). Religion also does not always have to be in any sense “costly”; nonreligion often is more costly.

## Does commitment theory explain non-kin altruism in religious contexts?

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**Abstract:** Atran & Norenzayan (A&N) fail to address several problems with commitment theory as it relates to non-kin altruism in religious contexts. They (1) provide little support for the contention that religious sacrifices function as signals, (2) do not distinguish between religious specialists and lay believers, and (3) conflate definitions of cooperation and sacrifice.

I have no problem with Atran & Norenzayan's (A&N's) fundamental proposition that religion is a by-product of interacting, evolved psychological adaptations. I also agree that altruistic behavior in non-kin contexts is a ubiquitous characteristic of religion and central to its understanding. However, A&N's argument that exploitation of psychological adaptations related to indirect reciprocity and costly signals of commitment (hereafter *commitment theory*) helps explain non-kin altruism in religious contexts is, in my view, unpersuasive and problematic for several reasons.

First, the manner in which A&N characterize the universality of sacrificial behavior (as "hard-to-fake expressions of material sacrifice"; sect. 1.2, para. 3) prematurely steers interpretation in the direction of commitment theory. Religious institutions do often make demands of goods, property, energy, time, reproduction, or even life of their members in non-kin contexts. This is easily supported by a look at Christian, Buddhist, and Hindu monastic orders. However, establishing that the demands these institutions make on members and recruits – demands that include labor, forfeiture of wealth, and lifelong vows of celibacy – are hard-to-fake expressions of commitment is much more difficult. It is easy to imagine sacrifice occurring in private or anonymous contexts where signaling motivation, as well as institutional manipulation, is unlikely to be relevant. One example is the early Christian semi-anchorite, who lived alone yet sacrificed resources and labor (Timko 1990, pp. 110–11). More generally, consider the myriad individuals who anonymously fill congregation plates and church coffers every day.

Further, A&N do not discuss several distinctions that are potentially critical to evaluating the relevance of commitment theory to religious behavior. The most important is that between a religious specialist, such as a monk or nun, and a lay believer. Is commitment theory equally relevant to these fundamentally different roles? Probably not. In many cases believers are not sacrificing at all, but simply (and rationally) exchanging goods or labor for desired services. In some cases these are relatively mundane services, such as children's schooling or officiating at marriages and funerals. In others, they are what might be called future considerations, like blessings or salvation. But they are viewed as essential all the same; and although the costs may sometimes be severe, as in central Thailand, where a son's ordination can keep a family in debt for many years (Sharp & Hanks 1978), the benefits are perceived to far outweigh them: in both Hinduism and Buddhism, merit earned in this manner promises salvation for not only individual contributors but also generations of their ancestors and descendants (Oman 1973). Additionally, because in many cases believer and specialist relations occur in kin contexts, inclusive fitness theory may well directly apply. Researchers in many settings, including in Tibet (Durham 1991), Ireland (Messenger 1993), and medieval Europe (Hager 1992), have established the long-term benefits to families that place or cloister members in religious institutions. There is more to the story of believer sacrifice than this, of course – Barrett et al. (2001, vol. 1, p. 5) estimate that 70 million Christians alone have been killed because of their religious beliefs – but to call this typically unwilling martyrdom a signal of commitment is also problematic.

Religious specialists, on the other hand, typically make much greater and consistent sacrifices of time, energy, material resources, even reproduction and life, for the benefit of the institutions to which they belong. (Although there are also material, status, and fitness benefits associated with their religious affiliation, these tend to accrue primarily to the highest-ranking members, who are often political appointees from outside the institutions; see, e.g., Betzig 1995.) It may be that A&N have specialists in mind when they say that religion "passionately rouses hearts and minds to break out of this viciously rational cycle of self-interest" (sect. 6, para. 8). Commitment theory seems more relevant here, but only to a point. Where the sacrifice is terminal, involving the loss of reproduction or life, the cost seems too high: There will be no subsequent opportunity for signalers to gain the fitness benefits upon which commitment theory is predicated. Other models

more easily overcome this objection. More plausible than the exploitation of adaptive mechanisms associated with indirect reciprocity is that of those associated with inclusive fitness, as only kin contexts should engender such dramatic sacrifice. One possibility, suggested by the work of Gary Johnson (1986) and explored in the context of institutionalized celibacy (Qirko 2002; 2004), is that manipulation of kin-recognition cues via institutional practices can reinforce altruistic behavior in non-kin contexts. These practices include the separation of young recruits from kin, the institutional replication of kin roles and terms, and the promotion of phenotypic similarity via uniforms and the like. They are consistently present in religious, military, terrorist, and other organizations that demand terminal altruism from members. While A&N do make mention of fictive kinship, they do not discuss specific adaptive mechanisms that might be involved in kin (mis)identification.

Finally, A&N interchange the terms cooperation and sacrifice in their discussion of altruism, sometimes in the same sentence. The relationship between these two concepts is, at best, complicated (e.g., Rachlin 2002 and commentaries), so that conflating them risks overlooking important theoretical implications. To whatever extent cooperation entails individual gain (e.g., Tuomela 2000, pp. 17–18), it fundamentally differs from some of the previously mentioned terminal categories of sacrificial behavior found in non-kin, religious contexts, and probably does not require commitment or any other special theory as an explanation.

While there is little doubt that religious behavior involves a strong component of non-kin altruism, or that this must be adequately explained in any robust Darwinian interpretation of religious behavior, it is premature to focus on commitment theory. A&N have made a good start at addressing this problem, but there is a need for more empirical testing of alternative models.

#### ACKNOWLEDGMENTS

Thank you to Gordon Burghardt, Sarah Sherwood, and Bruce Tomaso.

## Religion's evolutionary landscape needs pruning with Ockham's razor

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**Abstract:** Atran & Norenzayan (A&N) have not adequately supported the epistemic component of their proposal, namely, that God does not exist. A weaker, more probable hypothesis, not requiring that component – that the benefits of religious belief outweigh those of disbelief, even though we do not know whether or not God exists – is available. I counsel them to use Ockham's razor, eliminate their negative epistemic thesis, and accept the weaker hypothesis.

Why do people continue to believe in God, even though God does not exist? Atran & Norenzayan (A&N) suggest that religion is a by-product of our evolutionarily based emotional, cognitive, and social capacities. Believing in and committing oneself to a supernatural being, even though it does not exist, reduces existential anxiety and promotes social solidarity. Their proposal involves three key elements. First, they offer an unsupported, speculative cost/benefit estimate: The advantages accruing to being religious, despite the falsity of religious belief, outweigh those of being non-religious though possessing true belief. Second, they support the cognitive component of their explanation by experimental findings concerning the ease of learning and remembering such beliefs and their role in alleviating existential anxiety. Third, they argue for their hypothesis that religious beliefs lack epistemic merit. The cognitive component of their proposal – along with their suggestion about the role of ritual in promoting social solidarity – is independent of the cost/benefit component and the epistemic