by a majority of those researching religion from a cognitive approach, e.g., Lawson and McCauley (1990, pp. 5, 61), Guthrie (1993, p. 3), Boyer (2001, p. 144); Atran (2002a, p. 15) and Pyysiäinen (2001, p. 23).

3. For Durkheim (1915), religion "always presupposes that the worshipper gives some of his substance or his goods to the gods" (p. 385); see Atran (2002a, pp. 4, 264) and Whitehouse (2004).

4. In addition to Atran (2002a), see Barrett (2000), Boyer (1994; 2001), Guthrie (1980; 1993), Lawson and McCauley (1990), McCauley and Lawson (2002), Pyysiäinen (2001), Whitehouse (1995; 2000; 2004), and a series – *Cognitive Science of Religion* – recently announced by AltaMira Press <www.altamirapress.com>.

Who is mind blind?

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Abstract: The authors attempt to explain the ubiquity and persistence of human religion by invoking innate, domain-specific cognitive furniture, while dismissing the potential of other approaches, such as memetics, to produce "mindful" understandings of religion. This commentary challenges the explanatory adequacy of cognitive nativism, suggesting that memetics has as much claim to utility and "mindfulness" as innate mental modules do.

And why beholdest thou the mote that is in thy brother's eye, but considerest not the beam that is in thine own eye?
– Matthew 7:3

Most of the easy explanations for religion's ubiquity and persistence in human societies are inadequate (Boyer 2001). Religion does not clearly rationalize the universe, nor consistently assuage existential anxieties, nor ensure the survival of committed groups in any way distinct from secular collectivities. (In the words of authors Atran & Norenzayan [A&N], such explanations fail to differentiate "Moses from Mickey Mouse"). Any satisfying account of religion will need to have the command of both the relevant cognitive and cultural data the authors impressively display.

A&N do not consider religion to be an adaptation. Instead, they view it as a consistent by-product of interaction between the world and "modularized (*innate and universal*) conceptual and mnemonic processing" (target article, sect. 7, last para., emphasis added). An example might be humans' penchant to attribute intentionalities to the world around them, even in circumstances where such agency may be implausible. Religion, A&N suggest, may function to help us self-stimulate behavioral responses that were adaptive in our evolutionary past – the pervasiveness of gods, demons, spirits, and the like, is a consequence of the hair-triggering of innate intentionality-detection faculties by cultural constructs that might be collectively understood as *agency porn* (my phrase, not theirs!). On the way to arguing this innate modularist view, A&N explicitly question the utility of what they call functional approaches such as memetics, group selection, and connectionism, asserting that the latter cannot explain the "cognitive peculiarities of religion" (sect. 1.5). This perceived shortcoming leads the authors to call such approaches "mind-blind."

A&N do little justice to these alternatives. Indeed, the empirical evidence they present is entirely consistent with the memetic model. Moreover, they fail to acknowledge long-standing objections to the kind of cognitive science that purports to explain anything by positing innate, isolated mental faculties, which, according to their most widely recognized theorizer (Fodor 1983), are largely impenetrable. Just who is "mind blind" here?

To be sure, approaches that lean on the slender reeds of memes or group selection still have far to go in explaining much of interest to social scientists or humanists (Runciman 1999). Yet the empirical bases for the innate mental modules are also in dispute (e.g., Berthier et al. 2000; Elman et al. 1996; Karmiloff-Smith 1992;Wakeley et al. 2000). Simply put, although it is widely accepted that modularized functions emerge in brain development, that these functions are prespecified is not. Though a few have tried (e.g., Marcus & Fisher 2003), no one has convincingly accounted for the genetic preformation of specific knowledge, whether it be universal grammar, "folkbiology," or "folkmechanics." Assertions of the existence of what in the developmental literature goes as "core knowledge" or "central origins" (Spelke 1988; 1992) seems to occupy a similar status in cognitive science as "instinct" used to in ethology – a term that stands for explanation more than it actually explains.

This is not the place to rehearse the ongoing dispute between proponents of domain-specific innate knowledge and general learning mechanisms in development (Nicastro, under review). What should be acknowledged, however, is that explaining religion by positing innate releasing mechanisms rooted in ancient adaptive imperatives hardly seems like a cognitively rich, *mindful* alternative to the so-called mind-blind approaches A&N decry.

With respect to memetics, the authors are bothered by the lack of a clear definition of a meme. Establishing the nature of the replicator in memetic evolution has indeed been a matter of great dispute in this nascent field. Some argue, however, that the discipline no more requires a strict definition of the meme than the gene did at the dawn of evolutionary biology (Blackmore 1999; Hull 2000). In any case, A&N seem unfamiliar with developments that help define memes in more empirically useful ways (Aunger 2002; Dawkins 1982). Dawkins's view of the meme has substantially evolved since his original, somewhat loose conception (Dawkins 1976). As early as 20 years ago he took to calling a meme "a unit of information residing in a brain" (Dawkins 1982). That view has been subsequently developed by Aunger, who limits what he calls a neuromeme to "a configuration in one node of a neuronal network that is able to induce the replication of its state in other nodes" (Aunger 2002; cf. Heylighen 1991, who likens memes to simple "*if condition, then action*" production rules in artificial intelligence). If we follow A&N in making no conceptual distinction between "mind" and "brain," then exactly what is so "mind-blind" about the meme, so defined?

A&N supply empirical evidence of the mnemonic advantages of "minimally impossible" stories. This material nicely complements a number of Boyer's observations about how religious beliefs tend to violate normal conceptual categories in consistent ways. Yet mnemonic advantage can also be adduced to support a memetic model of religion – that is, a model that posits a "selfish" cultural replicator that propagates from mind to mind. Obviously, belief sets that are easier to recall are more likely to persist for retransmission between individuals. Indeed, depending on where one lays the emphasis, A&N's conclusion that "the way natural and non-natural beliefs are combined is crucial to the survival of a cultural ensemble of beliefs, such as those that form the core of any religious tradition" (sect. 4, para. 11) could be a statement right out of Susan Blackmore's (1999) *The Meme Machine.*

Although the authors endeavor to bring a new perspective to bear on the question of religion, in at least one sense their account is just the same old vintage in a new wineskin. Speculations on how fictive kinship or omniscient beings function to protect committed groups against cheaters and freeloaders surely match our intuitive (dare we say "folkpsychological"?) feelings for how religions work. But they are still vulnerable to a fundamental objection: The more successful such tricks might be in subordinating the individual's fitness to the common cause (e.g. modern suicide terrorism), the more profound the (genetic) selective pressure ought to be against the kind of sociality that makes people likely to join such groups in the first place (Krebs & Dawkins 1984). One response A&N might have made to this point is that ideologies that provoke religious commitment can usually override asocial proclivities rooted in genes because they can evolve much faster. Another might be that adaptations necessary to produce humans resistant to religious ideologies are either developmentally implausible (because genes have little direct influence on relative degrees of sociality, religious or otherwise) or func-

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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.

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