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Reply



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Introduction

We thank the commentators for their generous discussions and insights on *Religion Evolving: Cultural, Cognitive, and Ecological Dynamics* (Purzycki & Sosis, 2022). It has been a delight to engage with their diverse perspectives and we appreciate their participation in the journey upon which we've embarked. They've given us plenty to consider. Given the wide range of topics covered in the commentaries, we organize our response along a general line of response types. We first address commentators' suggestions, recommendations, reminders, and ideas for further consideration. This section is thematically organized into four sub-discussions. The first addresses the more pointed challenges to our book as situated in its greater academic milieu. The subsequent sub-section addresses *emic* versus *etic* perspectives and religion's function. This is followed by a more general discussion of systems theory as applied to religion, followed by further candidate mechanisms and building blocks that the book neglected. The subsequent section considers the case studies offered by several commentators that employ our systemic approach.

Developments and further considerations

Religions as evolving systems

All the commentators who focused on the religion-as-system thesis endorsed the view that religions are best viewed as systems. However, some (Fuentes, Lanman, Willard) questioned what we drew from evolutionary theory. In particular, while Lanman endorsed the systemic view to make better sense of religion, he took issue with our grounding of *the* religious system in human biology. From our view, grounding an adaptive trait in this way is not controversial. We don't have genes or evolved cognition exclusively devoted to making dinner, domiciles, or dry dung fuel, but these creations most certainly increase individual survivorship and reproduction. And it takes *many* biological traits to make such obviously cultural phenomena possible. No one feels compelled to make cases for "the adaptive value of fuel" or "the adaptive domicile system" largely because it is so obvious. As recognized by Kiper, viewing religion as a complex adaptive system means it is "necessarily an extension of adaptations at multiple levels of the system." While focusing on the mechanics of other adaptations at lower levels (e.g., memory, foresight, teleological thinking) is important, attending to returns at the individual- and inter-individual levels is essential.

While we grant that considering religion as an adaptation might be less obvious than examples like houses, fishhooks, and medicines, dismissing this possibility without evaluation forgoes the insights that can be learned from adaptationist analyses, even if those analyses reveal that traits are not adaptive in their current environment. Yet, for decades the by-product accounts of religion offered by CSR proponents did just this (see Sosis, 2009). Some have even maintained this anti-functional stance with neither revision nor consideration of

empirical evidence (e.g., Boyer, 2018; cf. Wood, 2020). This by-product position echoes—and may derive from—the arguments of evolutionary psychologists in the dated debates with human behavioral ecologists in the 1990s on the current adaptiveness of behavioral traits (see Smith, 2000; Sosis & Bulbulia, 2011; Symons, 1992). Construing religion primarily as catchy beliefs and/or uni-directional extensions of innate cognition will never fully account for inter- and intra-cultural variation because such research ignores the ecological dynamics and fitness consequences of participating in religious traditions.

Regardless, in some of these accounts religious beliefs and practices might—at best—contribute incidentally to cooperation, but they are not functionally designed to do so. Our adaptive systems approach, however, anticipated subsequent research showing that religious systems exhibit functional design and are therefore unlikely to be a mere by-product of human cognition and social learning (Bendixen et al., *in press*). Yet, it also anticipated that beliefs about gods' concerns were best framed as *appeals* to other people (cf. Cronk, 1994; Fitouchi & Singh, 2022) that bring attention to threats in sociality rather than catchy concepts or motivations driving behavior. This too has been supported cross-culturally (Bendixen et al., 2023, *in press*; Purzycki, 2011). Demonstrating the feedback between perturbations in the social order and religion, our subsequent naturalistic and lab experiments show that religious appeals appropriately change in content and structure, and religious commitment increases after exposure to costly threats (Henrich et al., 2019; Purzycki et al., 2020).

In *Religion Evolving*, we emphasized that hyper-focusing on transmission will not satisfactorily explain inter- and intra-cultural variation in religions. In our view, recognizing that manifestations of religion are more than the result of cultural learning processes is one of the main contributions of CSR. Rather than engage in the still-common posturing that exclusively emphasizes evolved cognition or cultural learning, we sought to unify cognition, social learning, *and* ecology. By attending to these dimensions equally, religious traditions don't seem like mere extensions of evolved minds or shallow cultural artifacts at all. From this vantage point religions appear to be *plausibly* adaptive. Rather than deny this observation—as was common in the first few decades of CSR—we examined this plausibility.

Building on this, Lanman also asks why we don't push our engagement toward other by-product views, “building blocks” approaches, or group selectionist models. Although we did not in *Religion Evolving*, we have addressed these and other alternatives elsewhere (Purzycki, 2020; Sosis, 2015; Sosis & Alcorta, 2003; Sosis & Swartwout, 2008). Lanman suggests that “the by-product approach and minimally counter-intuitive concepts in particular ... [are] still very much alive and kicking ... which one would not necessarily gather from reading this book” and that “the book focuses almost exclusively on older accounts of the hypothesized mnemonic advantages of minimally counterintuitive concepts.” We certainly never suggested that the by-product perspectives or MCI theory are dead. Indeed, we believe otherwise, which was one of our motivations for producing *Religion Evolving*. Nonetheless, we do think the tide has turned, and said as much in the Preface. But note that the examples Lanman cites in his commentary do not address the by-product view one way or the other as they are memory studies of counterintuitive concepts. We recognize that there have been some modest shifts in this area, but by our accounting, the critiques one of us has leveled against this body of work remain relevant and unaddressed (see Purzycki & Willard, 2016).

One particularly troublesome problem MCI theory and traditional CSR more broadly face is the fact that our explicit cultural representations can be (in)consistent with deeper and subtler cognitions. Studies that rely on this distinction have yet to empirically delineate between them in any clear and convincing way. This point renders Lanman's reading all the more curious as *Religion Evolving* far from “focuses almost exclusively” on MCI theory. If we did overemphasize MCI theory, it is likely due to Purzycki's earlier work in this area that aimed to balance CSR's focus on innate modular inferences with culturally mediated schemas that were central to traditional cognitive anthropology (e.g., D'Andrade, 1981), a field that remains largely bypassed by CSR (Sosis, 2017).

Religion Evolving engaged with influential models of agency-detection because we were striving to account for cultural variation in how spiritual agency cognition is manifest, as well as variation in the kinds of beliefs we have about gods. In other words, we focused on the more general type of which MCI theory and HADD are tokens and we did so when discussing issues of schematic and modular inferences, questions of omniscience, biased responses, and theological (in)correctness. The primary theoretical orientation that defined traditional CSR emphasized evolved cognition to explain aspects of religion. A recent textbook about the field says as much (White, 2021). Our work has sought to push CSR to seriously engage with culture and ecology. Specifically, employing cultural schemas fundamentally challenged CSR's commitments to modularity. It is not enough to say that X belief stems from Y cognitive faculty without assessing whether Z cultural schema is really what's at work, yet this has been CSR's *modus operandi* for far too long. MCI theory and HADD aren't the only CSR approaches that are guilty of conflating cultural schematic representations with deeper cognitive processes. Our critical discussion of these literatures in *Religion Evolving* was intended to serve as examples of a much broader and richer critique of canonical CSR.

Lanman also suggests we take on "a different main opponent entirely," namely, perspectives he calls "group selection accounts," such as Big Gods and Modes theories. There are three immediate points to address here. First, the goals of these theories differ from ours. The Big Gods account is aimed at explaining the rise of large-scale societies and religious complexes assumed to be associated with them. In addition to testing its core hypothesis (Bendixen et al., 2023; Lang et al., 2019; Purzycki et al., 2016, 2018), one of us has critically assessed some of the core assumptions of this approach throughout his career (see Purzycki, 2011 for evidence of beliefs in local spirits that care about morality; see Lightner et al., 2022; Purzycki & McKay, 2023 for more contemporary discussions using the historical and ethnographic records). Modes theory does attend to cross-cultural variation in ritual (Whitehouse, 2021), but is not specifically about variation in religious beliefs and all the other myriad forms of practices done in the name of the gods. Unlike our goals, these approaches do not aspire to account for much of the variation in religious expression that exists in the world.

Second, Lanman demurs our "extra genomic support for the creation of these systems," as though this is in contrast to the Big Gods and Modes accounts. But these views all share the same commitment as they reside in dual-inheritance approaches to religion. Our view also fits nicely in a more encompassing dual-inheritance view, inasmuch as we emphasized cognition, cultural sharedness, and fitness outcomes throughout *Religion Evolving*. But we also focus on the interrelationship between ecology and religious practice. Beyond social complexity, this interrelationship is not stressed much in the Big Gods account, and while recognized by Modes theory in its various forms, is not fully explored.

Third, as for so-called group selection accounts (presumably *cultural* group selection here), they do not all rely on the same selective processes and thus we find the term confusing or misleading, unless its use is accompanied by explicit mathematical models. In fact, much of our work can be construed, according to some models, as group selectionist (see Boyd, 2018, pp. 100–102) to the extent that we've always considered aggregate individual-level benefits for religious engagement. Religious systems function to increase the probability of cooperating and increasing the probability that cooperating individuals interact with each other. To the extent that the benefits accrued from cooperation mean that on average, cooperators will out-compete defectors and that cooperators are a "group," then so be it. Of course, "group selection" is also sometimes used to refer to individuals literally selecting groups of which to be a part (Richerson & Boyd, 2005, pp. 203–211). To the extent that individuals join groups where they are willing to pay expenses to reap the benefits of religious participation, calling this "group selection" might be a little misleading and unhelpful, but there's nothing intrinsically special about "groupishness" above and beyond what we would call "aggregate individuals." Our treatment of religion as a phenotype that works best when it's shared suggests as much.

Emics, etics, and function

Fuentes is not satisfied with our ultimate-level account of the religious system for a different reason, suggesting that it fails to offer “a sufficiently holistic answer to what religion is ‘for’ or sufficiently reflects the entirety of the work religion does evolutionarily.” In other words, it doesn’t look broadly enough at what religion does. Religious systems do all sorts of things that lie beyond the scope of what we view their ultimate (*sensu* Tinbergen, 1963) functions to be. Willard suggests that in many cases, rituals are “maintained because of their perceived instrumental value; people kept doing them because they thought they worked.” We don’t doubt that people perform rituals because they think they work, but we are compelled to consider why the story would or should stop there. In fact, we don’t see these considerations as pointing to alternatives to our portrait of religion. A stronger position we might adopt is one that suggests that the things Fuentes and Willard highlight are made possible—and indeed more likely—if our account is correct. In other words, religious practices *feel* good, correct, relevant, and/or useful because there *are* important returns associated with doing them (for a related discussion on the utility of illusions see McKay & Dennett, 2009).

In a way, Fuentes pursues this possibility and contends that shifts in a particular religious system (see below) “redoubled the community’s sense of place, relations, and belonging in regard to a specific practice.” However, while he entertains the possibility that this redoubling could have fed into the more functional effects of the tradition, he suggests that the “Changes ... did not offer fitness benefits or long-term evolutionary stability.” The former remains an empirical question. As for the latter, it might be too early to tell, though we are unsure if this is ever realistic in ethnographic research. Like Fuentes, we see that supporting a sense of identity as potential evidence of the flexibility of religion coping with problems that stem from cooperation and coordination. We too caution against limiting a theory’s breadth to just *etically* construed system dynamics, but we need more work to define precisely at which points *emic* views and data matter to assess ultimate-level explanations. We’ll return to this point below. But we also see this example as consistent with the functional view. This is not to lazily extol the virtues of the ultimate perspective and commit one of the documented sins of functionalism’s forefathers, namely, finding utility wherever one looks (see Kiper’s commentary and, for example, Bloch, 1983, pp. 133–134 on Harris’ (1966) approach to sacred cows). As we discuss below, we readily accept that there are many aspects of religion that might change in ways that don’t appear functional. We just need an account of which features do and don’t matter.

For now, we can address a connection between Fuentes and Willard’s focus on *emic* aspects of religious systems and Galbraith’s concern with decolonizing the understanding of religious traditions. As an ethnographic enterprise, our pursuit almost necessarily requires that individuals can see themselves and their sentiments in the data. Religious appeals have unquestionably *emic* content, just as *emic* models of perceived costs of not participating in religious behaviors, ritual requirements, and so forth have content. While our theoretical motivations might be exogenous to actual religious worldviews, we certainly see our account as focusing on a part of a much richer, more complicated phenomenon. Religious worldviews are often astoundingly rich and complex, pregnant with symbols, narratives, and meta-narratives that speak to some of the most profound questions of the human experience. All in all, this is what Geertz (1973, p. 125) was after when he called for attending to both cultural systems’ meaningful interconnections as well as their links to human psychology and other facets of social life. He lamented anthropology’s failure to address the former and we readily admit to perpetuating the source of his disappointment as our book hardly touched upon issues of meaning at all. Some of our current work is addressing this lacunae (Sosis, 2020a; Sosis & Kiper, 2022).

Fuentes and Galbraith do raise an interesting point here however, namely, that religious content and traditions’ components probably have to be somewhat sensible to a population. Ritual performers know they’re engaging in practices *because* the gods like these particular practices, and religious postulates make sense of otherwise mysterious phenomena for adherents (see Lightner &

Hagen, 2022). If constituent elements of religious systems provide adaptive responses to otherwise deleterious problems, we expect individuals to recognize those benefits and teach those traditions to their children and peers. The extent to which the recognition of a cultural logic contributes to the perpetuation of this cycle is an important question, but we suspect that it will be highly individual-specific. Given within-group variation, we expect that religion's constituent elements have extra-individual properties, so *emic* models will also necessarily have to have missing components. Some of our favorite ethnographic works are profound and rich portraits of cultural traditions (e.g., Pelton, 1980), but they are almost guaranteed to be syntheses of ethnographers' interactions with local communities (Rosaldo, 1993).

Potential pitfalls of systems theory

Kiper anticipates some resistance to our arguments and provides some important questions for further development. Answering these questions with the attention they deserve lies beyond the scope of the present response, but we can at least try to address a few of the problems Kiper anticipates as they relate to other commentaries. Some of these problems surface when we adopt a particular analytical perspective. The stock problem, for example, emerges if we emphasize higher-order categories like membership (e.g., if "a Muslim moves from ... Detroit to Cameroon, would they now be in a different system?"¹) while relaxing emphasis on other important factors of systems (e.g., if we restrict systems to those with significant energetic flows, individuals on opposite sides of the globe with negligible to no resources flows are indeed in different systems). Other problems Kiper points to comprise a cluster of issues related to operationally and theoretically defining "religion" and how such a system would exist among the myriad of other overlapping and even inter-penetrating systems. Viewing religion as a "sacred coupling," we believe, avoids most of these problems. Despite some claims of spiritual support, sports and other "quasi-religious" cultural phenomena are not religions because they are not shrouded in appeals to gods (Sosis & Kiper, 2022). Gods might be appealed to by athletes, political devotees, artists, and others, but this coupling is measurably clearer between, say, religious rituals than sport rituals. As cultural models, religious appeals certainly point to a fairly narrow class of behaviors in societies, none of which include things like sports and the arts (Bendixen et al., [in press](#)). As Kiper recognizes, religious systems are not closed, but their constituent parts should have stronger informational and energetic flows between them than domains where supernatural appeals are scarce.

The "disadvantaged problem" that Kiper raises is also important to consider. We'll revisit this with an example below, but as a quick response here, we would again encourage anyone considering this issue to examine energetic flows within and beyond a religious system. Of course, the "cooperation" Kiper refers to means costly investments in other individuals rather than the normative sense of someone being nice and helpful to someone else. Sending one's child to a monastery, submitting one's daughter to a public sacrifice, attacking witches and other targets of religiously-inspired acts of hate are all examples of various forms of imposing costly disadvantages on others. All of these practices entail imposing costs on particular sectors and/or individuals in societies, but all might contribute to bolstering the cooperative order of communities and bring measurable benefits to those engaging in them. For example, imposing a lifetime of celibate asceticism on small boys can bring important benefits to their families (Micheletti et al., 2022; Zhou et al., 2022). In such cases, the disadvantaged problem isn't as apparent when we actually examine the redistribution of energy that results from the practice. By contrast, in the case of witch-hunts and other forms of violent zealotry, religious acts really do disadvantage others without any clear benefits to the victims. The *religious system* and its constituents remain cooperative, but this cooperation exists deplorably at victims' expense. But there are less-clear cases where marginalization might be beneficial if the contrast is the absence of the system. Of course, this doesn't justify or legitimate marginalization, but rather suggests that clades within communities might be marginalized in ways that benefit the core while still contributing to the periphery.

Components, building blocks, and mechanisms

Several commentators (Fuentes, Galbraith, Mercado and Cronk) suggested we dig deeper into other components of religious systems. Fuentes emphasizes the important roles of emotion, imagination, and religious experience in the evolution of religions. We agree that each of these are important in linking individuals with their greater communities. Indeed, we believe emotions are pivotal for understanding religious systems, and both of us have independently emphasized the role of emotions in religious experience and the evolution of religion (Alcorta & Sosis, 2005) and retention of religious-like ideas (Purzycki, 2010). The other two areas suggested by Fuentes—imagination and religious experience—also deserved greater attention in our book.

Galbraith wants more “description of the particular cognitive mechanisms that have coalesced ... to produce the system we call religion across multiple cultures.” CSR has done a decent job of this already. The standard gamut in CSR includes agency cognition, folk-dualism, counterintuitiveness, and so forth. These domain-specific mechanisms might be important, but as discussed above, even if we assume such mechanisms undergird religious thought, there are other, more domain-general mechanisms at work (e.g., memory, cultural scripts, and schemas). For our purposes, we asked why these particular mechanisms are engaged in activities related to gods and spirits and why those activities appear to redirect resources in important ways. If gods *are* perceived minds, why is it the case that they are perceived in specific contexts and threats to human sociality? In other words, why is agency detection (or the imagination, or appeals to counterintuitive entities, etc.) concentrated when people face threats to the kinds of relationships that keep them together? CSR provides the details of these mechanisms but largely fails to contextualize their functioning. Our job, as we saw it, was to account for why these mechanisms might work in predictable ways. They are not unconstrained and freely being triggered and engaged. Rather, perhaps outside of ascetic contexts where individuals are expected to reflect upon the sacred at all times, religious cognition is *harnessed* in particular situations and contexts. Our conclusion is that these make gods compelling, intuitive, and excellent targets of human appeals.

While traditional CSR endorsed modular models of the mind, there are many, many other options available on the menu (Geertz, 2020). If CSR pioneers had more directly engaged in religious context, they might have asked: *why are particular cognitive systems triggered so often in religious contexts? What is it about the social and natural environment that engages such mechanisms* (cf. Barrett et al., 2019; Purzycki, 2013)? Armed with more contemporary models of the mind, they might have alternatively asked: *What are the cognitive processes that come to associate aspects of this context with spiritual agency* (e.g., Andersen et al., 2019)? and *How does untutored and tutored cognition stabilize to produce religious systems?* The primary difference between these classes of questions effectively lies in contemporary approaches that interweave our general propensity to predict the way the world works with layered, ontogenetic associations that effectively make whatever prior facultative states indistinguishable from culturally mediated associations. In terms of spiritual agent perception, predictive coding is one emerging alternative to cognitive modularity (Andersen, 2019; Purzycki & Schjoedt, 2023). Rather than a particular context “triggering” the perception of agency, our perception of agency is weighted by the interaction between prior knowledge of the context and any stimulus (or lack thereof). How this process—or any other cognitive process—helps us in anything remains ethnographically underexplored in our view. In *Religion Evolving*, we appealed to “habit” as a gloss for this process, but could have incorporated contemporary cognitive models to characterize the ontogenetic development of religious beliefs in a more technical manner (for a recent summary of views on the ontogeny of religious beliefs see Burdett, 2023).

Mercado and Cronk emphasize coalitional psychology, another important component of religious systems. The authors rightly acknowledge that the coalitions themselves are highly variable. We see this in the many cases of within-group demographic structuring of ritual. Despite a group having some collective cohesion, there are nevertheless plenty of rituals replete with sensible symbols and actual dramatizations of internal conflict (recall the “disadvantaged problem” raised by

Kiper). Take the case of the *maitolepeme* complex among the Hadza of Tanzania. In this case, the gendered moon and the sun are perpetually chasing each other (see Apicella, 2018), rites of transition involved girls chasing and whipping boys with switches, and rituals conducted on new moons separate men and women (Power, 2015; Skaanes, 2015). Here, then, gender-framed coalitional psychology plays a critical role on the internal dynamics of Hadza social life. But between-camp relations are also bolstered by the bonds between initiated *epeme* men (Hill et al., 2014), suggesting that such coalitional psychology—even when dynamically interacting with various ritual orders—is content-sensitive and context-dependent. Mercado and Cronk crucially ask when coalitional psychology becomes especially salient in religious contexts. As they point out, there’s usually a material gain lurking beneath whatever ideological differences there might be between coalitions (Alcorta & Sosis, 2022; Purzycki & Gibson, 2011). In the case of female circumcision among the Hadza, Power (2015) speculates that “The severity of the measures women need to take to maintain gender solidarity may reflect the degree of threat posed by male ritual power” (p. 353). Put more psychologically, parochialism likely increases as a function of a collective threat, and rituals will ratchet up costs through time in order to more reliably convey and bolster the kind of solidarity required to address that threat. This partly answers the question, but a remaining issue concerns what psychological and other socioecological processes are involved (Pisor & Ross, 2023; Soler et al., 2014). Surely, the threat to one’s autonomy is intuitive enough to our nervous systems that the detection of a threat is not difficult. Yet, to go from detecting a threat, conveying that threat to your peers, and creating enough of a shared response to have that boost the socially expected cost requirements for ritual remains to be seen. We suspect that the *sustained* nature of some threats is crucial here. Social dilemmas that stem from the ways societies procure food linger and the constant pressure of their presence need to be met with solutions. Why religious systems flock to particular problems remains a central problem (Bendixen & Purzycki, 2020), but unlike synchronic perturbations in one’s economy that might increase religious commitment (Henrich et al., 2019; Sibley & Bulbulia, 2012), we speculate that they are not likely to contribute to deeper changes in religious systems without significantly altering the general way resources are distributed (Purzycki & McNamara, 2015).

Religious imagination is woefully underexplored in CSR, but perhaps with good reason (see Fuentes, 2017). There are some discussions, however. For example, Bloch (2008, 2016) and De Cruz (2013) explore religious imagination, but these explorations revolve around the *production*, *incorporation*, and *engagement* with such ideas (cf. van Mulukom, 2020). The imagination facilitates the introduction of new ideas and experiences into extant religious worldviews, and in turn, makes it possible to entertain the religious experiences and insights of other individuals. More centrally, imagination captures the human ability to think about beings and places that we can’t necessarily directly engage. The *process* by which this happens remains mysterious and capturing data at the wellspring of fantastical ideas eludes us. As a work with empirical aspirations, *Religion Evolving* was obviously geared toward expanding the ethnographic science of religion. *Appealing* to abstractions like the imagination might be useful for theory-building, but as much as we would like to see the “imagination” studied, we don’t quite see the field ready for that in any disciplined and formal way, although the discussion and case studies offered by Green and Avery-Peck and Glucklich in their commentaries suggest that religious studies scholars may be well-positioned to initiate a path forward.

Engagement

Religious systems and the two cultures problem

Some of the commentators (Galbraith, Lang) recognized the potential our view offers for consilience between the “two cultures.” As Galbraith recognized, while we spoke to defining religion’s core and its more dynamic components, we entirely avoided defending its utility in comparison

to, say, definitions deriving from religious studies. Our immediate audience was our peers, and aside from the first chapter, we avoided much about competing definitions, as Galbraith correctly observed. If we can indulge a bit, we might return some praise to Galbraith for doing a little of the work for us. Ultimately—and this is something neither of us are yet willing to shake—our pursuits have to be firmly rooted in the empirical. As such, we use theoretical and operational definitions, doing our best to not lose sight of the measurable properties of that thing we call “religion.” So, it certainly exists, scare quotes notwithstanding. We remain perplexed why anyone would dismiss “religion” as a primarily Western construct or reject it as a notion lacking scientific value (Boyer, 2018, p. 121), while simultaneously expending considerable effort to explain it. Our religious studies colleagues are certainly not the only scholars engaged in this curious activity (see Sosis, 2009, 2016). That said, we do think the humanities offer a lot that social scientists ignore (see Glucklich, Green and Avery-Peck) and virtually all the ideas we work with have deep intellectual histories that are all too often ignored and/or misconstrued.

At the end of the day, what we call “religion” or the “religious system” is shorthand for *the theoretically important elements of that abstract thing some of us might call “religion.”* Spiritual agent concepts and their theoretically important properties are measurable. The behaviors that very real people link to those spiritual agent concepts also have properties that are measurable. If we treat—as we have—these measurable components as the interesting aspects of that abstraction we call “religion,” we have operationally defined a useful set of measurable phenomena while acknowledging the manifold and endless definitional debates. As our target *explanandum*, religion as construed in this minimal fashion is very much a real thing. As religion is found in all known human societies, it is not merely a vestigial “Western construct.” All of this is a recapitulation of Galbraith’s sentiments, but he also follows these observations to the other conclusions we share: the thing we call religion predates its Western conceptual (see Rossano, 2007, 2023) and colonial apparatus, religion is a fuzzy category, variable, and highly susceptible to change on the surface, yet its core features appear to remain a stubbornly stable part of our inheritance. It follows, then, that studying the *evolution*—and hence *selection*—of the central, measurable components of that thing we call “religion” is both feasible and scientifically respectable (cf. Atran, 2002). It is a thing and we can study it, and we are delighted that even commentators from religious studies (Glucklich, Green and Avery-Peck) agree.

Lang pushes us on the historical dimension of our approach in a different way. In recognizing the importance of pursuing the kind of work we envision, he homes in on a major methodological challenge, namely, that of accounting for variation using fine-tuned, empirical methods. In doing so, he draws our attention to issues of equifinality or convergence (i.e., when two phenomena arrive at a common state by different means; Barrett, 2019; von Bertalanffy, 1968), perturbations in religious traditions (e.g., the novel introduction of new variations of elements) and their systemic repercussions, and so forth. In a way, this resonates with Fuentes’ highlighting of non-fitness related factors that contribute to the evolution of religious systems. We agree that historical contingencies are important when trying to make sense of variation within and between cultural systems (Sosis, 2020b). But we shouldn’t confuse historical contingencies with ultimate explanations. Alas, beyond suggesting that hyper-focusing on transmission won’t answer the question of religion’s adaptive value, we offered no typology that points to which religious traits might have no ultimate function and therefore might actually only be limited to historical contingencies. For example, beyond how it fits into a greater cultural logic, we see no obvious ultimate explanation for variation in, say, whether people believe one regional version of a deity lives on the steppe versus the mountains. We do, however, see it as likely important that rituals devoted to them are conducted in solitude versus in visible, wide-open spaces. These are indeed issues we wish we had explored further in our book, but some of our work points in the direction Lang is looking (Purzycki & Watts, 2018; Sosis, 2020a; Watts et al., 2022). Such issues befuddle *all* evolutionary or historical studies and their discussion.

More pragmatically, we all have to use what we have. As Lang knows, we don’t have that much to work with! Basic cross-cultural, individual-level studies from small populations are woefully all too

recent and linking data from such societies to other contextual data is quite rare (see Caluori et al., 2020; Wormley et al., 2023 for examples from state societies). Things are clearly changing in positive ways, however. For example, the *Evolution of Religion and Morality* (Purzycki et al., 2022), the *Evolutionary Demography of Religion* (Shaver, 2023), and the *Culture of Schooling* (Legare, 2023) projects of which we are a part are all working towards making these kinds of data available with the benefits of a cross-cultural perspective. For the time being, we have to resign ourselves to linking disparate data sets together or haphazardly making inferences with little more than fuzzy theory to guide our thinking. In our view, this is grounds for nothing but optimism as there's considerable progress to be made.

Applications of our approach

Three of the commentaries (Glucklich, Fuentes, and Green and Avery-Peck) offered specific case studies to apply and critically engage with our approach. Glucklich uses the case of a blood libel cult as a test of our model and finds support for our approach. Indeed, his test case hits all of the notes that resonate with our theory. In the face of a particular threat—in this case death, disease, and high child mortality—people recognize a need for resolution. As is often the case, people band together to come to terms with the problem. Churches and other religious institutions offer such a forum for collective action (see Lansing, 1987). For better and for worse, as Mercado and Cronk emphasized, people are also quite parochial and, in some cases, quite xenophobic. This xenophobia is often useful for rallying people together, particularly under conditions where engagement brings disease and other costs (see discussion in Fincher & Thornhill, 2012). Scapegoating vulnerable and/or marginalized people is a relatively inexpensive way to bring people together (see Steadman & Palmer, 2009, pp. 163–184 on this argument as applied to witch-hunts) and thus provides a “solution” to problems of cooperation and coordination. The same applies to Glucklich's case of death and disease and engaging in rituals that revolve around children who might have still been alive. As despicable as scapegoating and xenophobia can be, one prediction that emerges from our approach is that the blood libel cult might very well have contributed to more internal stability and even potentially better conditions for locals—especially children—once rituals designed to commemorate their loss became a cultural touchstone in the community.

Fuentes discusses the case of practices in Padengtgal damaging the forest due to increased use of plastics in ritual conduct. As we noted above, his general contention is that our view focuses a bit too much on the functional effects of religious systems. In the case of the choking forest, Fuentes homes in on the issue of *relevance* for constituents. Rather than just banning the use of plastics at the site, refraining from using plastics needed to be linked with the local belief system, i.e., change had to “resonate” with the local mythos. Ultimately, they did, and Fuentes suggests that these changes “did not offer fitness benefits or long-term evolutionary stability, but rather redoubled the community's sense of place, relations, and belonging in regard to a specific practice.” If this change did not truly offer fitness benefits in the long-term, we would be surprised. In this case, a religious tradition adjusted to overcome a coordination problem. Just as some of the examples we discussed in the book did not immediately or obviously entail fitness payoffs, the newfound coordination—bolstered by a shared worldview—can entail such payoffs.

While our original intentions were to use this model to assess extant individuals' and communities' religious commitments, Green and Avery-Peck productively applied the components of the religious system to the historical-textual case of Torah/Pentateuch. They point to this body of text as an instantiation of an evolving system, complete with indices of the building blocks of religious systems and how they are and would have been relevant for readers of this literature and resonated with their lives. We think it's fantastic that Green and Avery-Peck applied the model to these texts and we are excited about the possibilities of traditional religious studies textual scholars using our approach to gain new understandings and raise novel questions about the dynamics of religion. We are immensely grateful that they have advanced the discussion in this direction.

One way to push the discussion further, we think, would be to expound upon the necessary gaps between the model as applied to people and the model as applied to texts. In other words, we expect that providing some meta-theoretical glue would be significant for historians and other students of religious texts. For example, the authors point out that the Torah/Pentateuch is explicit about the Judeans' ritual practice, an essential component of religious systems. Here, the authors point to the texts as *describing* elements of a lived component of the religious system. However, when discussing myth, the authors point to the Torah/Pentateuch *as* a myth. In this respect, then, the text *is* a component of the religious system rather than a report of these components. We don't see this as a mis-application. Rather, we would expect there to be some flexibility across components' applications to other kinds of data. Accounting for variation in how these components might be applied across different kinds of data—historical, ethnographic, sociological, etc.—would be a useful next step for broadening the relevance of our efforts.

Conclusion

Once again, we thank the commentators for their efforts. There is no greater honor in academic life than to have one's work considered seriously by colleagues, and we have been duly honored, and humbled, by our colleagues' engagement in this symposium. We have highlighted some of the more pressing issues that they have raised, areas of disagreement, and points of agreement we felt were especially worth emphasizing. We hope that this is just the beginning of a conversation and that similarly productive discussions continue to inspire subsequent research.

Note

1. The answer this question is an emphatic “yes.”

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