The New Scientific Study of Religion Moving On

with Lluís Oviedo, "Challenges, Opportunities, and Suggestions for a Renewed Program in the Scientific Study of Religion"; Robert N. McCauley, "Recent Trends in the Cognitive Science of Religion: Neuroscience, Religious Experience, and the Confluence of Cognitive and Evolutionary Research"; Connor Wood, "Antistructure and the Roots of Religious Experience"; Konrad Szocik, "Critical Remarks on the Cognitive Science of Religion"; Hans Van Eyghen, "Religious Belief as Acquired Second Nature"; and Léon Turner, "Isolating the Individual: Theology, the Evolution of Religion, and the Problem of Abstract Individualism."

ANTISTRUCTURE AND THE ROOTS OF RELIGIOUS EXPERIENCE

by Connor Wood

Abstract. The cognitive and evolutionary sciences of religion offer a standard model of religious representations, but no equivalent paradigm for investigating religiously interpreted altered states of consciousness (religious ASCs). Here, I describe a neo-Durkheimian framework for studying religious ASCs that centralizes social predictive cognition. Within a processual model of ritual, ritual behaviors toggle between reinforcing normative social structures and downplaying them. Specifically, antistructural ritual shifts cognitive focus away from conventional affordances, collective intentionality, and social prediction, and toward physical affordances and behavioral motivations that make few references to others' intentional states. Using synchrony and dance as paradigmatic examples of antistructural ritual that stimulate religious ASCs, I assemble literature from anthropology, cognitive neuroscience, and philosophy of language to offer fruitful empirical predictions and opportunities for testing based on this framework. Among the empirical predictions is that antistructural ritual may provide for cultural change in religions when religions are construed as complex adaptive systems.

Keywords: antistructure; collective intentions; conventional affordance; *homo duplex*; religious experience; ritual; social structure; status functions; synchrony; trance

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Antistructure and Religious Experience

In the cognitive and evolutionary sciences of religion (CESR), neuroscientists, cognitive scientists, evolutionary biologists, and behavioral ecologists study religious representations and practices using varying methods and levels of analysis. Despite this diversity, the past two decades have gelled a collection of assumptions that drives much, though not all, research in CESR, indicating some progress toward field-wide coherence (e.g., Norenzayan et al. 2016; Sosis et al. 2017). However, numerous writers (e.g., Barrett 2011; Taves and Asprem 2017) have observed that CESR researchers have yet to agree on how to investigate religious *experience*, or specifically what I will call *religiously interpreted altered states of consciousness* ("religious ASCs" for short) (cf. Taves 2009).[1]

To be sure, researchers have mounted numerous attempts to deploy cognitive and evolutionary frameworks to investigate religious experiences and ASCs (McNamara 2009; Shantz 2009; Taves 2009; Wildman 2011; Schjødt & Anderson 2017; van Elk and Aleman 2017). Nevertheless, mainstream CESR and the scientific study of religious ASCs have largely proceeded along independent lines, with CESR typically paying closer attention to cognitive representations and ritual actions than to unusual experiences or ASCs (Barret 2011; Lang and Kundt 2019; Taves and Asprem 2017). This divergence is partly due to the fact that religious ASCs are not readily expressible in symbolic language (James [1902] 1982), and so, while they might be triggered by social factors (Bourguignon 1973; Winkelman 2015), they do not seem to be directly *transmissible* between minds in the way that reflective religious doctrines are (Boyer 2001; Martin 2005). For these reasons, leading thinkers, such as Justin Barrett (2011, 231), have even concluded that "religious experiences currently fall outside the purview of" CESR.

Against this pessimistic claim, I argue that a neo-Durkheimian model of ritual as a social *process* (Turner [1969] 1996) offers a promising framework for productively linking CESR and the scientific study of religious ASCs. The proposed framework generates empirically tractable hypotheses and sheds fruitful light on current research questions, offering a useful paradigm for investigating distinct aspects of religion under a common theoretical scaffolding. It specifically highlights what Victor Turner ([1969] 1996) called "antistructure." This term refers to settings in which (1) normal social roles and rules are temporarily voided; (2) structural hierarchies are flattened or inverted; and/or (3) symbolic or socially constructed boundaries are abrogated (see Turner [1969] 1996, 1975; Olaveson 2001). Extrapolating on Turner, I will claim that the framework of antistructure generates critical insights and counterintuitive, nonobvious predictions regarding the nature and etiologies of religious ASCs for explanatory research.

Ecstatic rituals such as shamanic trances are examples of antistructural religious expression, and in this article I will focus on trances produced via synchrony (drumming and dance) as a paradigmatic example of both antistructure and religious ASCs. However, antistructure also implicates social marginality, low social status, and "liminality," or positions between fixed social roles, such as during initiation rites. Turner's theory of antistructure thus posits a dialectic between (1) the culturally contingent norms, institutions, and conventions of formal social structure, and (2) the spontaneous or immediate experiences of antistructure that relativize those conventions and norms. My central claim is that antistructure shifts participants' cognitive and perceptual focus away from the *conventional affordances* that define everyday interactions and which depend on collective intentionality and norms (Ramstead, Veissière, and Kirmayer 2016; Tomasello 2016), and toward physical affordances or data that are not conventional and which therefore motivate behavior directly—that is, without explicit reference to the intentional states of co-actors.

A brief example will help illustrate this typology. In highly structured Korean Confucian society, an everyday interaction between a woman and her father-in-law is likely to be heavily templated. The normative behaviors differ by role, so that actors' motor sequences are complementary rather than identical (cf. Sartori, Betti, and Castiello 2013). The wife might, for instance, turn away slightly from her father-in-law when drinking from a cup to indicate respect. The majority of goal-directed motor acts during such interactions thus reflect mutually recognized norms of Confucian social structure and so make extensive reference to intentional mental states. In Tomasello's (2016) terms, the young wife and her father-in-law *collectively intend* to act with due propriety. This entails deploying theory of mind (ToM) to predict co-actors' behavior by imputing intentions and tracking mutual knowledge of norms—such as consequences for missteps—with the result that culturally conventional categories such as "father-in-law" become salient.

In contrast, during a Korean shamanistic ceremony or *kut*, loud, rhythmically banging drums and perhaps alcohol downregulate complex social prediction while sometimes producing trance and/or spirit possession (Kendall 1987; Kim 2003). During rhythm-induced trance and consequent ASCs, then, participants' behavioral motives transition from (1) conventional templates that centralize others' intentional mental states to (2) immediate motivational sources such as intrinsic urges to move in time with socially produced auditory rhythms (Kornysheva et al. 2010). Behavior thus becomes coordinated, if at all, through basic physiological channels, reducing the salience of collective intentions. On a continuum from entirely social to entirely asocial motivational profiles, then, the motivational, perceptual, and behavioral profiles of religious ASCs could be accurately described as *less social* than everyday behaviors—or

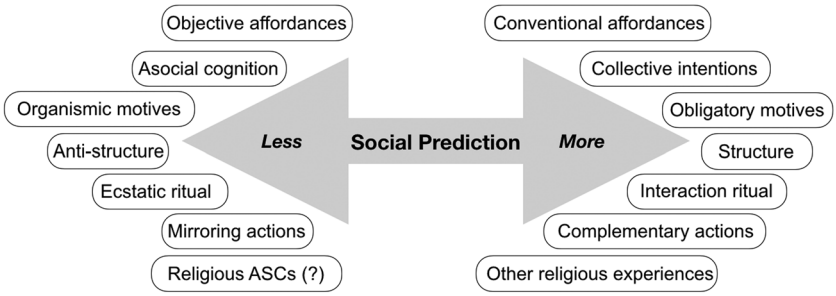

Figure 1. Continuum between structure and antistructure, with associated variables clustered at extremes. The intensity of social cognition/prediction anchors the sliding scale between poles.

even rituals——that require collective intentionality and norms (see Figure 1).

CESR and Scientific Approaches to Religious Experience

The CESR standard model of religion posits that religious beliefs and practices hinge on culturally improvised concepts in domains that are the targets of species-typical cognitive biases, such as folk psychology and anthropomorphism (Guthrie 1995; Atran 2002; Powell and Clarke 2012; Jong 2019). Myths that evoke but minimally violate these biases are thought to disproportionately spread due to their heightened cognitive salience (Atran and Henrich 2010; cf. Purzycki and Willard 2016). Some recent versions of this model have suggested that rituals aim at confirmatory bias: myths that may be rooted in cognitive biases in turn cause people to seek out experiences that leverage those very biases to corroborate the myths (Van Leeuwen and van Elk 2019; cf. Luhrmann 2012). Iterations of the standard model have additionally become the foundation and sometime foil for broader programs that investigate the social and group-level effects of religious beliefs and practices on cooperation (Atran and Henrich 2010; Norenzayan et al. 2016; Purzycki et al. 2018) and study the functions and cognitive foundations of ritual as a signaling system (Irons 2001; Sosis 2003; Xygalatas et al. 2013; Power 2017); a byproduct of intrinsic drives for predictability and threat avoidance (Boyer and Liénard 2006); or the consequence of innate tendencies to imitate conventional actions (Kapitány and Nielsen 2015).

By contrast, CESR has no equivalently accepted framework for interpreting or investigating religious ASCs that could produce commensurable models for producing testable hypotheses. Antistructural moments, such as initiation rites, are ubiquitously featured in religions the world over (Olaveson 2001; Van Gennep 1961), yet CESR largely has not addressed

antistructural phenomena, for example, in its attempts to "fractionate" the folk category of religion into discrete, scientifically tractable constituents (McKay and Whitehouse 2015). Instead, treatments of antistructure have been largely limited to (1) theories of divergent *modes* or *forms* of ritual (Whitehouse 1995, 2004; McCauley and Lawson 2002), which describe ecstatic versus formalized rites in terms of attractor positions in the landscape of cultural possibility; and (2) empirical investigations of rhythmic motor synchrony, such as collective drumming or dancing—particularly its effects on social bonding (Mogan, Fischer, and Bulbulia 2017). Neither of these research programs treats ritual primarily in terms of the negotiation of social structure, in contradistinction to most ritual theory (Smith 1992; Bell [1992] 2009). Empirical studies of synchrony or rhythmic dance, for example, have emphasized rhythmic synchrony's effects on direct interpersonal bonding, not how it impacts participants' social-structural roles (although see Lang et al. 2016; Wood, Caldwell-Harris, and Stopa 2018). CESR has thus tended to overlook what Turner called the "ritual process."

CESR researchers instead often approach religious ASCs (or religious experience more broadly) using *de novo* frameworks that define their targets in varying ways. McNamara (2009) offered an important neurological model of religious experience that emphasizes the "decentering" or temporary deactivation of self-relevant executive cognitive functions. However, this theory encompasses ordinary experiences of routinized religious ritual as well as ecstatic practices, and so is not a theory of religious ASCs specifically (e.g., McNamara 2009, 219). By contrast, Wildman (2011) described a biocultural basis for "intense experiences" distinct from ordinary perceptual and cognitive states that also decenter the self and which evolutionarily postdate human behavioral modernity. Wildman's approach does not heavily emphasize the social or conventional dimensions of ritual, but instead offers an interdisciplinary philosophical account of the epistemic and existential affordances of such experiences. Richly informative for distinct purposes, these frameworks do not define their target phenomena in commensurate ways, and neither schema links the capacity for intense or religious experiences directly to symbolic language or collective intentionality—strong candidates for the most distinctive of behaviorally modern human traits (Deacon 1998; Bloch 2008; Tomasello 2016).

Similarly, Whitehouse's (1995, 2004) theory of divergent religious modes addresses aspects of religious experience, but primarily aims to identify complementary mechanisms for social bonding. Specifically, expressive or "imagistic" forms of ritual—associated with religious ASCs—are described as grounded in episodic memory encoding, while routinized or "doctrinal" rituals recruit semantic memory. Social bonding is described mostly in terms of affective commitments or group identification, not

conventional obligations that enable reliable prediction of behavior (cf. Tomasello 2019). The theory thus sits somewhat in tension with an increasing focus within human evolutionary biology on differentiated social structure (Smaldino 2014; Tomasello 2016, 2019).

Other attempts to address ASCs in cognitive and evolutionary terms have left unintegrated different levels of scientific analysis. Newberg and D'Aquili's well-known neuroimaging studies of meditative and absorptive states (e.g., Newberg, D'Aquili, and Rause 2002; Newberg et al. 2003) have illuminated important aspects of the neurological bases for religious ASCs, but they largely lack social-scientific interpretation that could place their findings in the context of social dynamics or feedback relationships between individuals and groups (cf. Wildman 2011). An important exception is Taves and Asprem's (2017) treatment of religious experience using an event cognition framework that emphasizes the segmentation of basic temporal units of experience. Taves and Asprem's framework hinges on a predictive coding model in which the brain operates as a Bayesian inference machine for updating predictive models of the world. "Events" are identified with spikes in prediction error when environmental stimuli are unexpected. Under this rubric, unusual experiences may result, for example, when unexpected bottom-up perceptual input receives a culturally informed top-down interpretation (cf. Schjødt and Andersen 2017; van Elk and Aleman 2017). Like McNamara (2009), Taves and Asprem do not focus exclusively on religious ASCs, but instead are interested in all forms of religious experience from normal petitionary prayer to out-of-body experiences (OBEs). However, their framework demonstrates the promise of a predictive coding model of brain function for unifying discrete levels of analysis in CESR. In what follows, I will refer to predictive coding models to map the relationship between religious ASCs and conventional affordances, specifically suggesting that one criterial trait of religious ASCs is a *reduced* emphasis on social prediction.

Religion as "Culture"

In a neo-Durkheimian processual framework, "religion" and "culture" both impose roles and norms, establish collective identities, and depend on ritual to transform conventional or arbitrary states of affairs into seemingly "natural" ones (Douglas [1970] 1996; Rappaport 1999; Taves, Asprem, and Ihm 2018). In other words, both religion and culture are equivalent catchall terms for the myriad ways human collectives establish—and lead agents to internalize—institutional reality and conventional affordances (Bloch 2008; Ramstead, Veissière, and Kirmayer 2016; Wood and Shaver 2018). Below, I will draw on several research lines in cognitive anthropology and the philosophy of institutions to establish an analytic framework for investigating social institutions, conventional affordances, and the

normative social roles that come along with them. This will lead to a discussion of specific features of ritual—particularly its nonpragmatic, repetitive, stereotyped, conventionalized, and formalized character (Goody 1961; Rappaport 1999; Kapitány and Nielsen 2015; Lang et al. 2015; Legare and Nielsen 2015). I will argue that ritualization is necessary to establish *meta-represented* or *socially subjunctive* propositions (Sperber 1997; Boyer and Bergstrom 2008; Seligman et al. 2008). Both religious beliefs and institutional are examples of meta-represented propositions: their contents are not straightforward factual beliefs, but are buffered within cognitive frames that limit their range of applicability (Bulbulia 2008; Van Leeuwen 2014; Wood and Shaver 2018).

In my account, social structure is constituted by meta-represented institutional facts, such as "Jung Min is Mr. Kim's daughter-in-law." In many cultures, religious norms and transcendental social structure are deeply integrated (Luckmann 1967; Bloch 2008). But transcendental social structure is not all there is to social or cognitive life. Jung Min may be a daughter-in-law, but she is also a unique agent. Sometimes her structural role aids her personal goals, sometimes not. In times of crisis, structure may need to be renegotiated and new institutional equilibria identified. Grievances may need to be redressed that have no formal institutional channel for expression (Lewis 1971). This is often where antistructure and religious ASCs come in. These experiences are typically characterized by relaxation of cultural schemas and, I argue, a redirection of agents' focus toward data whose sources are objective or physiological, not cultural. Ecstatic rhythmic dance, as in shamanic or possession-cult rites, provides a paradigmatic case of the ways in which this antistructural transition can stimulate ASCs. Below, a brief discussion of the neurocognitive dynamics of rhythmic social synchrony will help make this case.

This framework is capable of making sense of several important, cross-culturally recurring features of profound religious experiences—particularly their apparent undeniability (James [1902] 1982), their association with gross physiological states (Bakhtin [1984] 2009), and their susceptibility to manipulative interventions such as drug use or rhythmic music (Olaveson 2001). It also points the way to a rigorous framework for understanding how large-scale religious phenomena such as outbreaks of iconoclasm or eras of ideological antiritualism might emerge from the social-cognitive processes of individual minds (Douglas [1970] 1996; Seligman et al. 2008). By taking a processual view of ritual as toggling back and forth between (1) ritualized social constructions, such as institutional facts or conventional affordances, and (2) objective stimuli or states of affairs, we can expand the range of CESR analyses to include domains of religious phenomena that have typically been overlooked in, or left unintegrated with, the bulk of explanatory research in religion.

Institutions and Transcendental Roles

Maurice Bloch (2008) has argued that religion is conceptually identical with the "transcendental social" (I will call this the *transcendental social structure* for clarity), or all the possible roles that are recognized by members of a given society (see Box 1 for terminological definitions). "Elder," "daughter-in-law," and "shaman" are examples, but—importantly—so are "ancestor" and "god" or "spirit master" (cf. Graeber and Sahlins 2017). Bloch points out that, like gods and spirits, transcendental roles are inherently invisible—you can see your daughter-in-law's face, but her *daughter-in-lawness* is just an abstraction—and so requires conceptual imagination to be mentally represented. In the language of the philosophy of belief (Davidson [1984] 2001; Van Leeuwen 2014), the perception of a dynamic human form tends to lead intuitively and mandatorily to the fixation of the belief "There's a person in front of me." But that person's *status*, her role, is not directly perceptible in a way that leads to the same intuitive belief fixation. It takes additional, symbolically conveyed information to acquire beliefs about her role status—yet only these beliefs can produce the conventional knowledge that will accurately predict her behavior.

Box 1. Terminological definitions

Transcendental social structure	Social structure as composed of norms and statuses, not concrete individuals. For example, different physical people may inherit the role of "king," but the role itself remains distinct from those incumbents. Gods and spirits are high-status roles that lack physical incumbents.
Social subjunctive	A claim that is made in an as-if mood, not objectively verifiable on the basis of physical facts. For example: "Let's pretend that the living-room carpet is lava."
Institutional fact	A social subjunctive that confers agreed-upon rights and obligations. For example: "Jung Min is now married."
Status function	John Searle's formula for how institutional facts are created within context-defining social frames: "Collectively, we agree that Jung Min *counts as* a wife in [KOREAN SOCIETY]."
Reflective belief	A propositional belief that includes meta-represented information about where one got the belief and how valid it is.

Continued

Frame	The social context within which a social subjunctive or institutional fact is considered valid, and outside of which it becomes inactive. Within the Catholic frame holy water "counts as" sacred, but within the secular frame it is just water.
Conventional affordances	Possibilities for action that are made possible by status functions, not by any objective or physical features. A wedding license affords the possibility of getting married. Conventional affordances typically call for complementary motor actions, not mimicry.
Semiotic motivation	A motive that causes someone to act within social frames according to status functions. When sitting with her father-in-law, Jung Min turns her head away to drink in order to perform her role as daughter-in-law, thus avoiding giving offense.
Efficient-causal motivation	A motive that causes someone to act to satisfy an immediate appetitive urge or because the action itself is intrinsically rewarding. Jung Min shouts expressively during the *kut* because she is excited and upset.
Homo duplex	Émile Durkheim's term for the unavoidable conflict between semiotic (social) and efficient-causal ("organismic") motives.

Transcendental social structure, then, depends on language. Only animals with the capacity for symbolic communication can tell each other about the past, the future, abstractions, or distant things. This category includes *social subjunctives*, or as-if propositions that are not derived from physical features of the world (Seligman et al. 2008), such as "Jung Min is my daughter-in-law." We may treat this proposition as a fact, but really it is a collective agreement, based on abstract mental representations that are decoupled from Jung Min, the concrete individual, and made to seem real through ritualized behavior—such as Jung Min's turning away from her father-in-law to drink from a cup.

Transcendental social roles can, then, be seen as a species of what John Searle calls "institutional fact" (Searle 1995). Searle's formula for the logic of institutional facts is "X counts as Y in context C." This formula produces a *status function*, or an assigned value or role that, again, does not reduce to physical facts and is not directly perceptible. For example, Jung Min (X) *counts as* Mr. Kim's daughter-in-law (Y), in the context of Korean family (C). The very concept of "daughter-in-law" only exists within a

conventional frame (cf. Huizinga [1955] 2014; Leslie 1987; Bateson 2000) and so a proposition like "Jung Min is Mr. Kim's daughter-in-law" cannot be objectively assessed outside any social context (Thomasson 2003; Tomasello 2016). Institutional facts and conventional affordances are therefore *deontic* and *performative* (Searle 1995). In a Korean context, one owes certain obligations of familial piety to one's elders, and a daughter-in-law can either do a good or a poor job of living up to them.

Meta-Representation and Religion

This pivotal role of language means that status functions or transcendental social roles are what Sperber (1997) calls *reflective* beliefs. They are *meta-represented*, or embedded within a cognitive frame that insulates them from normal inferential processes and includes "commentary" about their validity (Boyer and Bergstrom 2008). Unlike *intuitive* beliefs, meta-represented beliefs are not taken directly at face value. The intuitive belief "it is raining" is mandatorily fixated when we get wet while standing outside, and leads directly to logical actions like opening an umbrella. But when we hear the weather reporter say "It is going to rain tomorrow at 7 pm," we do not automatically accept that proposition as a fact and cancel the following day's afternoon plans. What we factually believe (Van Leeuwen 2014) is instead the *meta-represented* proposition "The claim 'It's going to rain tomorrow at 7 pm' was [*made by the weather reporter*]." In other words, we only entertain the idea that it might rain within a limited cognitive frame, to consider what actions it might call for if true.

My claim is that meta-representation is necessary for conventional affordances. Again, status functions and transcendental roles are not straightforwardly visible constituents of the physical world. At some level, when we represent an institutional claim like "a wedding requires an officiant," we are actually embedding it within a meta-representational frame (Leslie 1987; Bateson 2000), tagging it mentally as [*legitimate*; *claimed to be true by government authorities*; and so on]. The same is true, then, of propositions about transcendental roles, such as "Mr. Kim is now Jung Min's father-in-law." Transcendental social structures are built on meta-represented statements about people's roles. They enable the prediction of normative behavior by referencing information about the relevant social frame: we predict that Jung Min will turn her head away to drink because she is Mr. Kim's daughter-in-law *within the frame* KOREAN FAMILY.

Boyer and Bergstrom (2008) argue that religious beliefs are also a kind of meta-represented or reflective belief. For example, the reflective belief "Muhammad is the Seal of the Prophets [*is declared to be true in the Holy Quran*]" is valid for predicting people's behavior within the frame ISLAM. This cognitive equivalence between institutional and religious propositions is why Bloch claims that, ethnologically speaking, the domain of

transcendental social roles *is* the domain of "religion." Consider that, in many societies, the rituals used to venerate the ancestors or the gods are identical to those used to defer to social superiors (cf. Whitehouse 1995; Bloch 2008). That is, how people treat kings bears significant resemblance to how people treat deities, and indeed in many contexts monarchs are literally considered gods (Bellah 2011; Graeber and Sahlins 2017). To operate within the transcendental social structure, one needs to treat its inhabitants—whether humans or spirits—according to the proper protocols, such as ritualized deference. Notably, such obligations often have little to do with how one would prefer to behave, all things being equal (Wood and Shaver 2018).

Efficient and Semiotic Causation in Homo Duplex

We can thus think of institutional facts within social frames—including transcendental social roles—as defined by *desire-independent motives for action* (Searle 1995). If your Korean father-in-law dies, you have to attend his funeral in mourning garb, even if you'd really rather not. This does not mean people always actually fulfill their transcendental role obligations—obviously, they often do not (Brown 2017). But when they do not, the legitimacy of their roles comes into question. If someone fails to *act* like an X, then soon other people will not treat him or her as an X anymore, which reinforces that "so-and-so is an X" was only a meta-represented claim all along. This is Émile Durkheim's classic *homo duplex*—the individual organism with its intrinsic drives and motives, juxtaposed with a social entity straining to meet its externally imposed obligations (Durkheim 2005).

Following Carsten Herrmann-Pillath (2016), we can describe the *homo duplex* in terms of two types of, or "channels" for, motivating behavior: the "efficient-causal" channel and the "semiotic" channel. In the efficient-causal channel, people act on the basis of intrinsic motives such as hunger, pain avoidance, sleepiness, and so on. These things are physiological "brute facts" in Searle's terminology, not social subjunctives. If I am hungry, I do not meta-represent the proposition "I am hungry" within a social frame, and being hungry is not a performance. I just *am* hungry. The belief that I am hungry is automatically fixated and integrated with the rest of my inferential belief network, such as factual beliefs about where I can get food.

By contrast, in the semiotic channel, our motives stem from collective meta-representations that impose desire-independent reasons for action, such as status functions. These motivations would be impossible without symbolic communication between agents: a proposition such as "This ceremony transforms you into a wife and daughter-in-law" could have no practical meaning if multiple agents did not agree on it. Such

propositions do not motivate our behavior in an immediate or instinctive way. Instead, they force us to abstractly represent a sequence of distal consequences, obligations, desired or feared outcomes, and so on, all of which are ultimately social. The semiotic channel, then, motivates us to *perform* actions that match other agents' predictions based on our role and status, independently of intrinsic (efficient-causal) motives.

Ritual

This emphasis on performative behavior helps explain why ritualized actions are so widespread in religion and the transcendental social world (Purzycki and Sosis 2010). Many writers have cited some combination of stereotypy, formalization, repetitiveness, exaggeration, and "goal demotion," or a de-emphasis on practical objectives, as core features of ritualized behavior (Erikson 1966; Rappaport 1999; Bell [1992] 2009; Kapitány and Nielsen 2015). These features have in common a functional capacity to highlight, mark off, and draw attention to their targets without being limited by those targets' utilitarian or practical features (Smith 1992). They are thus ideally suited for *establishing redundancy and clarity in signaling*—that is, for reinforcing messages whose contents may not be intrinsically clear (Leach 1966). Simply put, we do not need to ritualize propositions that can be easily derived from physical facts, such as "water is good for boiling food." Instead, we ritualize claims that cannot be empirically evaluated, such as "today is Buddha's birthday" or "daughters-in-law must show respect."

In other words, propositions about status functions and transcendental social roles are not reducible to objective facts, and so could always be other than how they are. Someone else could have married Mr. Kim's son. Marriage could come with X set of obligations instead of Y. Without objective constraints on institutional propositions, what is needed instead is *reinforcement*. Thus, much everyday interaction ritual (Collins 2005) uses conspicuous, formalized, often repetitive motor and speech acts to emphasize messages that would remain ambiguous if we focused only on physical-causal facts. That is to say, goal-demoted and ritualized actions—such as conspicuously turning away to drink from a cup in front of an elder, an action that is not at all causally relevant to the practical goal of getting liquid into one's mouth—*generate social structure*.

We arrive, then, at a hierarchically structured social and cognitive environment, populated with complementary (not identical) roles, in which a significant proportion of our behavior results from semiotic causation, not efficient-causal motives. This is a "religious" world, in the sense that it is richly structured by ritual and filled with invisible, often revered, entities. Behavior is relatively predictable based on mutual knowledge of role templates and status functions, and differing roles produce conventional

affordances, such as the obligations that members of a hierarchical family owe each other. But a processual understanding of ritual shows us that this is only one-half of the story. The other half is composed of behaviors and cognitions that are, paradoxically, more tightly coupled to objective facts and immediate motivations, yet often experienced as more "transcendent" (not "transcendental") than everyday status functions and roles. So while the imagined social world is "our [near-] permanent perceptual state" (Fuentes 2015, 180), it is in *departing* from the subjunctive world—that is, halting the rituals that sustain transcendental social structure—that people catalyze many of the most phenomenologically arresting dimensions of human religiosity, such as religious ASCs. To achieve this aim, a different kind of ritual is called for: ritual of antistructure.

The Brute Facts about Ecstasy

Rhythmic synchrony—dancing in time to a heavy beat, clapping to a shared rhythm, hearing a good "groove" in a musical jam (Fitch 2016)—is pleasurable. More importantly: it is *intrinsically* pleasurable. Listening to music stimulates activity in brain regions dedicated to processing rewards (Zatorre and Salimpoor 2013; Mavridis 2015), and musical pleasure is specifically associated with increased functional connectivity between these reward-processing regions and other cortical networks focused on motor control and prediction (Salimpoor et al. 2013). Drumming in rhythmic synchrony with others also stimulates the brain's reward regions, provided that the rhythm is simple enough to master (Kokal et al. 2011). Our emotional responses to music thus seem to bypass reflective cognition, generating an immediate affective experience in roughly the same way the sight of a beautiful sunset or the smell of a rose might.

Rhythm and music also stimulate motor responses directly. The sound of a pleasurable rhythm automatically activates the premotor cortex, preparing the brain to orchestrate rhythmic motor actions—foot-tapping, nodding, dancing—in time with the beat without conscious planning (Chen, Penhune, and Zatorre 2008; Kornysheva et al. 2010). This automatic priming of the motor system to respond in sync with the perception of auditory rhythm may reflect the remarkable phenomenon of "motor contagion"—our innate predilection for unconsciously simulating and mimicking others' actions (Chartrand and Bargh 1999). For example, if told to move their arms along a single plane, subjects who simultaneously see a model moving his or her arm along an orthogonal plane will typically deviate their own motion quite unconsciously in the direction of the model's (Blakemore and Frith 2005; Roberts et al. 2016). Again, this is not a reflective cognitive response. It is a prereflective result of functional integration within the brain's sensorimotor system (Stephan et al. 2002; Molinari et al. 2003).

In fact, our tendency to unconsciously mimic others' actions is so powerful that we need to actively *suppress* it in order to carry out complementary actions or refrain from inappropriately imitating others (Baldissera et al. 2001; Brass, Ruby, and Spengler 2009). This suppression of automatic motor mimicry helps enable "self–other control," or the ability to discriminate between one's own mental states and bodily schemas and those of others (Sowden and Catmur 2015). In turn, self–other control appears to be critical to social cognition more generally (Spengler, von Cramon, and Brass 2009). To a significant extent, then, social cognition is about effortfully *minimizing* our similarities to one another—for example, resisting our efficient-causal urges to mimic, fall into sync, and groove. Thus, when a group of people moves in synchrony, as in collective dance, they are inherently allowing a certain powerful prepotent response—the spontaneous urge to imitate—to finally express itself unimpeded.

In other words, music and rhythmic dance—which is to say mutual, relatively disinhibited, periodic motor mimicry across multiple human agents—*activates behavioral motives largely along efficient-causal, not semiotic, lines*. When we are wildly dancing to a techno beat or rapturously lost in hand drum rhythms, we are not performing the obligations of a normative transcendental role. The institutional world, with all its iterated status functions and nested conventional affordances, has been left behind, or at least relegated to the background. We have entered antistructure.

Let us transfer this framework into the realm of religion, spirits, and gods. During everyday life, a Korean woman might be expected to act in accordance with the various norms that appertain to her Confucian roles as a wife, daughter-in-law, office worker, and so on (Kim 2003). Her behavior in these roles is largely templated or scripted according to abstract meta-representations of normative status functions: how a good wife *ought* to treat her father-in-law, what proper filial piety *ought* to look like, and so forth. She thus structures her behavior according to motivations that are sourced semiotically, and whose consequences are social and often distal. But during a Korean shamanic *kut* ceremony, rhythmic percussion and alcohol might induce a profound trance state. During this kind of rhythm-induced trance, the brain's networks for generating internal states such as daydreams are activated, and incoming sensory data streams are decoupled from conscious processing while continuing to inform motor behavior (Hove et al. 2016).

As the shaman's client, then, the woman's behavior comes to be shaped by intrinsic physiological drivers—motor excitation due to the rhythmic banging of drums, spontaneous emotional responses—and so *transiently decouples from her normative, meta-represented social roles and their status functions.* Again, institutional statuses—including social roles—semiotically constitute "desire-independent" motives for action. But during a shamanic ceremony, desire-*dependent* motives take over. One participant feels like

dancing and throwing her head back, so she does so. Another feels an uncontrollable urge to shout at her father-in-law, who has been siphoning family money away to support a mistress in Seoul. A low-ranked Confucian daughter-in-law normally lacks any legitimate way to express righteous fury at an elder male relative. But here, she can—even if the offending relative is present—since spirit possession provides a plausible alibi for behavior that would otherwise be wildly counter-schematic for her normative role (Kim 2003). The internally sourced motivation can be allowed to play itself out.

In some key ways, then, such religious trance ceremonies are, more or less by definition, settings of disinhibition, including the expression of otherwise inexpressible social tensions or normatively forbidden emotions (Lewis 1971; Bourguignon 1973; Alexander 1989). However, note that these trance events are also carefully orchestrated, generally led by expert specialists, and tightly constrained to particular places and times. They are not free-for-alls. In addition, possession cults call for performance of normative templates, inasmuch as possessed dancers behave like the gods that possess them (Bourguignon, Ember, and Ember 2003). In possession cults, participants undergo a transitory *shift* of status functions, not necessarily a departure from them altogether.

I am not arguing, therefore, that religious ASCs or antistructural rituals are always a straightforward departure from inhibition-heavy, hierarchically obtrusive social structure to pure spontaneous self-expression. Religious ASCs such as shamanic trances instead often comprise both spontaneous and sociocultural elements, including specialized expert leadership and local hierarchies (Seligman and Kirmayer 2008). What I am arguing is instead just Turner's ([1969] 1996) point: that certain kinds of rituals are tools of antistructure in a cyclic process of toggling between *homeostatically maintaining* versus *reconfiguring* or *relativizing* normative social structure. Antistructure does not necessarily mean no structure (although it sometimes can). It means, instead, *the departure from the normal modes of structure*. In antistructure, whatever role you play in the workaday world is temporarily voided. Another structure may arise, but your status in it might have zero correlation with your everyday status.

A Korean *kut* ritual involves a dose of social subjunctives, as the normal transcendental social structure does. Yet if structure and antistructure form a continuum (as in Figure 1), these antistructural rituals or contexts unquestionably shift the emphasis toward objective stimuli or the efficient-causal pole. Synchrony—rhythm, dancing, and music—is an ideal-typical case of this principle. Hearing a groovy beat or watching a drummer bang away on a goatskin does not require meta-representation of a proposition such as "There is a great rhythm." It is just an intuitive and mandatory belief, fixated directly by auditory and visual stimuli. When someone dances, rolls back his eyes, or nods his head along to a beat, he is not performing the obligations of a transcendental role that complements other roles to

produce conventional affordances.[2] It is not the case that Person A *counts as* a Disinhibited Dancer *in the context of* Ecstatic Ritual. Disinhibited dancing is not a matter of status functions or conventional affordances, by definition. It does not implicate obligations, duties, or rights. In ecstatic religious trance—at first blush the most wild-and-wooly expression of human sociality—participants are paradoxically closest to the organismic, not the social, pole of Durkheim's *homo duplex* (Olaveson 2001).

The Neural Architecture of Antistructure

It may be helpful to briefly go a little deeper into the neurocognitive scaffolding of antistructural ritual. The temporoparietal junction (TPJ), linking the brain's inferior parietal and superior temporal cortices, is implicated in sustaining a basic sense of personal identity—including self–other distinctions and bodily location in space (Blanke et al. 2005; Ionta et al. 2011). This cortical region also turns out to be a central node for social cognition, including imitation inhibition, discriminating between self and others, and ToM (Santiesteban et al. 2015; Igelström and Graziano 2017). Artificial stimulation of the right TPJ leads to maladaptively low levels of mimicry, even in social situations where mutual imitation would be socially helpful (Duffy et al. 2019; although see Hogeveen et al. 2015).

It is therefore not surprising that performing complementary motor actions—that is, watching other agents perform actions that differ from the ego's—appears to preferentially activate portions of the TPJ, whereas performing convergent, or identical, actions downregulates it (Newman-Norlund et al. 2007). Accordingly, synchronous entrainment to a highly predictable, shared rhythm appears to be associated with *quiescence* in the TPJ and related areas of the social cognition network, especially when synchrony leads to positive social rapport (Fairhurst, Janata, and Keller 2013; Cacioppo et al. 2014). This network also includes the dorsal medial prefrontal cortex (dmPFC), which assists top-down modulation of imitation (Kühn, Haggard, and Brass 2009; Wang and Hamilton 2012; Schurz et al. 2014). During synchrony with an optimally adaptive partner, the dmPFC is downregulated, but when struggling to adapt to an asynchronous or out-of-step rhythm it becomes active (Fairhurst, Janata, and Keller 2013; Cacioppo et al. 2014). Within a predictive processing framework, this quiescence of the social-cognitive network is likely due to a reduced need for complex social prediction during rhythmic synchrony, since synchronic actions are highly stable and repetitive (Fairhurst, Janata, and Keller 2013).

The networks of the brain that are most heavily involved in social cognition and predicting social behavior, then, appear to be preferentially *downregulated* during the sorts of rhythmic synchrony that generate trances or religious ASCs during ecstatic religious rites—and which catalyze Turnerian antistructure. Indeed, the TPJ is also recruited for sustaining in-group

parochialism and out-group discrimination—establishing higher level, subjunctive "self-other" social boundaries that are often delineated by symbolic markers (Baumgartner et al. 2014), implying that symbolic group identities and boundaries may become less salient as this brain region goes dormant. Accordingly, participants in interpersonal synchrony become more generous and cooperative toward members of in-groups and out-groups alike, suggesting that group-level distinctions are cognitively minimized by synchronous rhythm (Reddish, Bulbulia, and Fischer 2014). At multiple levels, rhythmic synchrony thus literally blurs self and other (Hove 2008), but also reduces the salience of symbolic boundaries. Self-transcendence in ecstatic dance thus appears to be transcendence over our institutional selves.

Other "Religious" Experiences

Other types of experiences that are often included within the bucket category of "religious" phenomena exhibit certain convergent features. OBEs, for example, involve a strong sense of dislocation from one's physical body, sometimes including autoscopy, or the experience of seeing one's own body at a distance. Blanke and Arzy (2005) and Blanke et al. (2005) found that OBEs were precipitated by disruption of the TPJ, leading to abnormal integration of low-level sensory data with processing of the self.

However, in many forms of meditation, recruitment of this cortical region is *intensified* compared to baseline, and long-term meditation may longitudinally increase TPJ gray matter density (Hölzel et al. 2011; Yang et al. 2016). These findings may reflect an enhanced focus on bodily and spatial awareness during forms of meditation that emphasize "open monitoring," or effortful, putatively detached focus on bodily sensations and environmental stimuli (Yang et al. 2016). Note, however, that here too the focus is not on conventional affordances or institutional status functions. If a Vipassana meditator hears a police siren in the distance, she is ideally meant to isolate that auditory stimulus from any conventional associations—which means screening out the institutional or normative implications of categories like "police" and "law." In other words, she treats the stimulus like a sound, not a symbolic reference to an institutional reality. To the extent that this form of meditation is a "self-transcendent" experience, it may be so not because it disorients the perception of the body in three-dimensional space, as an OBE does, but precisely because by rooting the self's experience of the body in tangible, exteroceptive sense experience it downgrades the importance of the symbolic institutional world (cf. van Elk and Aleman 2017).

Antistructure and Common Traits of Religious Experience

As Ann Taves (2009) has argued, the *attribution* of a transcendent or religious valence marks "religious" experiences off from others. To make this

attribution, agents must be embedded in a culture that offers such a category in the first place. Thus, Person A and Person B might have qualitatively identical experiences during a collective, rhythmic dance, but Person A might have the conceptual framework to call that experience "religious," while for Person B it was just a good time. However, a number of traits have often been associated with ecstatic experiences that are tagged by many subjects as religious or transcendent. A processual view of ritual—in which ritual practice toggles between reinforcing transcendental social structure and relativizing it through antistructure—can usefully account for these traits. I will specifically focus here on undeniability (James [1902] 1982), association with extreme or base physiological states (Bakhtin [1984] 2009), and susceptibility to intentional manipulation (Olaveson 2001).[3]

Undeniability, according to William James ([1902] 1982), is the sense that a religious experience is mandatorily self-evident. One can entertain doubt about institutional facts, for instance, cynically ("Is this river *really* the border between our two countries, or are borders just oppressive social constructs?"). But one cannot entertain doubts about the sensory features of a profound experience. The phenomenology seems to be tautologically self-evidencing. This putative dimension of religious or transcendent experience matches well with antistructure's characteristic downplaying of cultural meta-representations. As we have seen, during rhythmic synchrony, the urge to dance and the rhythmic unison between bodies are something like what Searle (1995) calls "brute facts." They are not status functions, and they do not influence our behavior through the semiotic channel. They signify group unity indexically: that is, they refer to group unity by *being* it (Peirce 1998; Rappaport 1999). Antistructure by its nature emphasizes that which is undeniable, *and so relativizes that which is not*—particularly conventional affordances, institutional status functions, and transcendental roles.

It seems fitting, then, that many ecstatic or expressive religious experiences are accompanied by gross physiological motifs. By this I mean roughly the highlighting of bodily processes, which are about as undeniable, in terms of possible objects of experience, as it gets. In many carnivalesque ritual settings, thematic emphasis is commonly placed on bodily functions, including sexuality and eating (Bakhtin [1984] 2009). These appetitive functions motivate behavior along the efficient-causal channel, not the semiotic one. The phenomenon of carnival, then, is antistructural precisely in its redirection of participants' shared focus away from normative, invisible status functions ("This man counts as a king!") to brute bodily facts ("This man has genitals and eats food, like the rest of us!"). In general, then, we should (maybe paradoxically) expect a positive association between heightened salience of the body *qua body* (not the body *qua* incumbent of a social role) and ASCs tagged as spiritual, religious, or transcendent.

The use of somatic themes in carnival points to another important feature of such experiences: while many observers have argued that they cannot be mechanistically generated (James [1902] 1982), most cultures do in fact have standardized means of achieving—even carefully enabling—sanctioned religious ASCs (Schjødt and Andersen 2017). For example, Lakota Sioux have historically pursued visions by means of fasting, vigils, or sweat lodges (Powers 1977). Notably, these manipulations all increase the salience of physiological homeostatic drives by preventing their satisfaction. Emically, fasting, vigils, and sweat lodges are said to clarify the mind and so open it to spiritual influences. Etically, they are—at minimum—a means of reducing the salience of transcendental social roles and status functions, because, quite simply, it is hard to perform an institutional role when you are starving and exhausted. The Lakota vision quest is thus paradigmatic in centralizing antistructure by highlighting the body's core needs, and so shifting toward efficient-causal motives. Physical stressors may also overtax executive cognitive functions that have been found to downregulate religious ASCs (Cristofori et al. 2016). Other established means of activating culturally sanctioned religious ASCs, such as psychotropic drug use (Millière 2017) or repetitive drumming (Hove et al. 2016) operate along analogous lines.

Predictions and Research Agendas

An interpretive framework is only as useful as its ability to generate testable, empirical predictions. Several such predictions relevant to CESR emerge from the neurocognitive research reviewed above. Recall that interpersonal rhythmic synchrony may dampen activity in the brain's social cognition and social prediction networks. These circuits, in turn, are likely implicated in processing conventional affordances, because conventional affordances are inherently social (Fiebich 2014). If this is the case, then a number of consequences follow. First, synchrony ought to lead not only to enhanced intuitive cooperativeness due to heightened efficient-causal motives for social affiliation (e.g., Wiltermuth and Heath 2009), but also to *reduced* salience for cultural meta-representations, or claims that (1) require reflective cognitive processing and (2) influence behavior via semiotic motives. Transcendental social roles and institutional status functions are prime examples. So, for example, research subjects who engage in rhythmic synchrony might subsequently attribute less legitimacy to institutional propositions such as "wives owe their fathers-in-law filial piety," or may simply require longer processing times to assess such propositions.

Second, exposure to third-party rhythmic social stimuli has been shown to affect subjects' attributive ideas about the performers. For example, research subjects who witness groups of agents performing in synchrony attribute greater entitativity and coalition strength to those groups (Hagen

and Bryant 2003; Lakens 2010). We can thus predict that research subjects who witness agents performing in synchrony should attribute less salience to those agents' differentiated social roles. Moreover, since transcendental roles are typically arranged hierarchically (Graeber and Sahlins 2017), performing in synchrony should catalyze greater within-group egalitarianism among participants (cf. Olaveson 2001). Witnessing third-party synchrony should lead to greater attributions of a flat social structure among the agents (such as groups of animated stick figures; Lakens 2010) that are "performing" the synchronous rhythm.[4]

Third, social structure is thought to enable task-focused coordination and efficient division of labor (Turner [1969] 1996; Van Vugt, Hogan, and Kaiser 2008; Ronay et al. 2012), implying that antistructural ritual would be maladaptive in certain contexts. Put simply, if synchrony flattens social structure, it ought to also negatively impact coordination. Previous research has hinted that synchrony can indeed hamper interdependent coordination (Lang et al. 2016; Wood, Caldwell-Harris, and Stopa 2018), but more robust study designs are needed to test these hypotheses comprehensively.

Finally, many theorists have suggested that "ecstatic religion" introduces flexibility into, or facilitates adaptive change within, social hierarchies (Bourguignon 1973; Turner 1975; Whitehouse 2004). Phenomenologically, this claim seems accurate, but a neurocognitive perspective offers new avenues for its empirical evaluation. The transcendental social structure provides the basis for the formal stratification of the social world (Bloch 2008). This structure is sustained by the cognitive meta-representation of institutional facts and conventional affordances, calling for extensive social prediction within individual minds—the cortical networks for which may be dampened by motor synchrony. It now seems more than heuristic hand-waving, then, to suggest that people may wish to participate more in synchrony when their social structures chronically fail to provide utility. Iconoclasm and antiritualist ideology may thus emerge as a semi-coordinated reaction against conventional social structures precisely by refocusing people's attention onto objective, noncontingent facts that anyone from any culture could agree on, and by motivating behavior via efficient-causal instead of semiotic channels.

Some potential historical and ethnographic examples of this effect include the remarkable, apparently worldwide appeal of ecstatic possession cults to low-status or socially marginal people (Lewis 1971; Bourguignon 1973) and the sudden appearance of modern Pentecostalism among marginalized African Americans during the first Gilded Age (Wacker 2009). However, only rigorous operationalization of the relevant factors and sophisticated tests of cross-cultural datasets could assess this prediction across cultures and regions. Computational methods would also be well suited to exploring these sociocultural hypotheses (Tolk et al. 2018).

Open Research Questions

In addition to the foregoing hypotheses, a processual model of ritual and antistructure raises a number of broader research questions for CESR. Here, these questions are not formalized into discrete hypotheses, but are simply highlighted as avenues for future research:

- What is the social and cognitive difference between subdued or low-expressiveness synchrony (such as marching in cadence; McNeill 1995) and ecstatic synchrony (such as seen in rave dancers or religious trance rituals; Winkelman 2015)? Tarr et al. (2015) found that both synchrony and physical exertion independently stimulated social bonding and increased pain tolerance; what independent effects might be found for processing of institutional norms, roles, and status functions?
- Near-death experiences (NDEs) and other self-transcendent experiences, such as psilocybin trips, are often associated with subsequent expressions of universalistic spirituality and lessened interest in social-structural hierarchy (Griffiths et al. 2006; Greyson 2006). Do the brains of NDE survivors or experiencers of religious ASCs process contingent social norms or meta-represent status functions differently than others? To what extent is "spirituality" (as opposed to "religiousness") formally associable with an antistructural cognitive orientation?
- Newberg and D'Aquili found that certain kinds of meditation appear to downregulate a different cortical network than the social cognition circuit described above; specifically, they reported that superior parietal regions responsible for bodily orientation in three-dimensional space were downregulated during certain forms of meditation (Newberg, D'Aquili, and Rause 2002). What kinds of interventions lead to the downregulation of these different networks? In what ways can they both be said to produce the conditions for religious ASCs? Note that this question may afford the possibility for falsifying one of the central predictions of the proposed framework: that religious ASCs are made possible when the salience of conventional affordances is reduced and social prediction is deemphasized.
- Similarly, if social cognition is truly downregulated during religious ASCs, why do so many religious ASCs feature interactions with personal beings such as gods or spirits? In what way, if any, do the cognitive processes that enable prediction of other actors' role-based behavior differ from the representation of spiritual/nonphysical beings? How do religious ASCs—in comparison to more structured religious experiences (cf. Van Leeuwen and van Elk 2019)—relate to default cognitive biases for anthropomorphism, teleology, and so on?
- Are there neurocognitive differences between how human minds process mere conventions ("Walk on the left side of the sidewalk") and

how they process the ontology of institutional and transcendental social structures ("Seoul is the capital of Korea")? That is, how are institutional *ontologies* processed in the brain, as opposed to mere institutional rules?

- If there really is an inextricable normative component to even basic institutional propositions, then there should be clear distinctions between the ways brains process neutral objective facts ("This apple is red") and institutional ones ("This man is a priest"). Or does internalization of normative, institutional claims (e.g., Berger and Luckmann 1966; Gintis 2003), if successful, render those claims simply part of the "cognitive background:" intuitive beliefs that are fully integrated into our inferential cognitive networks (Sperber 1997; Van Leeuwen 2014)?
- What role do cognitive content and context biases play in the development of transcendental social structure and in transitions to antistructure? It seems clear that prestige and conformity biases (Henrich and Boyd 1998; Henrich and Gil-White 2001) would constrain the learning and acceptance of institutional status functions. Neurocognitive networks for processing social hierarchy are likely also central; notably, Caroline Zink et al. (2008) showed that processing unstable social hierarchies recruits social-cognition brain networks. How, then, does the downregulation of these social-cognition networks during synchrony or other antistructural experiences affect the dynamics of cultural transmission or the epidemiology of representations, cross-sectionally or longitudinally (Sperber and Hirschfield 1999)?
- Bulbulia and Schjødt (2013) observed that the dorsal striatum mediates "second-order motivational mechanisms" that reflect delayed gratification for abstract goals, while the nucleus accumbens underlies more immediate rewards. The framework I have advanced here therefore seems to predict that antistructural rituals would shift the balance of reward activity from the striatum to the nucleus accumbens. Yet Schjødt et al. (2009) found that different types of prayer, respectively, activated the striatum and social-cognitive cortical networks, including the TPJ-mPFC. Can neuroimaging research identify a genuine natural-kind distinction between semiotic and efficient-causal motives (cf. Robinson 2017)?
- Ritual antistructure is not the only means of social transformation or resistance; in a multilevel perspective, how do the cognitive effects of antistructure and religious ASCs interact with other drivers of change, such as ecological or political pressures or the effects of technological advancement (Sosis 2016)?

The foregoing list is not exhaustive. A research framework that picks up where Turner ([1969] 1996; 1975) left off, supplemented by insights from CESR, offers manifold directions for productive research. In a processual

model, some rituals—constrained, inhibitory, and predictably parsed—proceed from semiotic motives to reinforce transcendental social structures, while others capitalize on efficient-causal motives to downplay those same structures and activate intrinsic motives. Such a model enjoys productive contact with a number of progressive research programs in the social and cognitive sciences, particularly in evolutionary anthropology and predictive coding models of cognition. It complements influential dichotomous theories of ritual in CESR (McCauley and Lawson 2002; Whitehouse 2004) by highlighting social prediction in conventional affordances and by linking ritual behavior to the cognitive processing of invisible social others (including gods), while remaining agnostic about the relative frequency of or memory-encoding processes for the two poles. Pursuing the research lines that emerge from these points of contact will enable CESR researchers to generate clarified understandings of social cognition, the interplay between cognitive constraints and cultural innovation, and the evolutionary relationship between religion and language.

Conclusion

I have conceptualized religion as a subset of or synonym for culture. This choice dovetails with recent efforts in CESR to situate the study of religion within the broader study of "worldviews," or webs of nonempirical cultural representations that provide models *for* behavior, rather than simply models *of* the objective world (Taves, Asprem, and Ihm 2018). Nation-state patriotism is a worldview, and so is—for example—Confucianism. Both imbue the "cognized environment" (Rappaport 1993) with a symbolic overlay of deontic propositions about how things *ought* to be. Religions and other species of committal worldview thus have much in common. They use ritualized actions to highlight social subjunctives whose basis is in collective intentions, not objective facts. They generate experiences of meaning by structuring the social environment into differentiated, sometimes opposed segments. And they make salient and legitimate a cognitive template in which different elements are, ideally, meaningfully related, enabling robust prediction of the behavior of other agents who share one's own cultural frame (Tomasello 2016, 2019).

Worldviews and religions have increasingly been construed as complex adaptive social systems (Purzycki and Sosis 2010; Sosis 2016; Lang and Kundt 2019). This framework addresses the question of what enables the "adaptive" aspect of putative complex adaptive social systems. Simply put, the answer is antistructure. This answer is not new, of course. Erika Bourguignon wrote,

> (W)hen we consider the relationship of religion to change, its double role as a bulwark against change on the one hand and as a mediator or even

> initiator of change on the other, we often find that key individuals in this process experience altered states of consciousness. (1973, 4)

Until recently, this claim has largely been the purview of the interpretive social sciences. It seems intuitively true, and anecdotal evidence seems to support it. However, as we have seen, we can now describe social structure and antistructure in ways that make excellent contact with social cognitive neuroscience, evolutionary anthropology, and social psychology in the study of religious ASCs.

A CESR research program building on this framework could shed important light on critical questions about human cognition and evolution in domains extending beyond religion. Jeffrey Saver and John Rabin (1997) point out that other complex animals do not appear to have clear analogs to religious experience; similarly, Harrison White (1992, 110) observes that "liminal formations . . . in which symmetric ties would replace the asymmetric dominance ties" are apparently absent in species other than humans. These observations, if accurate, may mutually imply one another. That is, the evolution of the capacity for religious or transcendent experience may have been first prepped by the prior evolution of the complex cognitive and social abilities that allow for transcendental social structure and status functions. Only creatures that could conceive of status functions, conventional affordances, and transcendental social structure could evolve the capacity for antistructure. To the extent that "religious" experiences are functions of cognitive antistructure, then, religious experience may *postdate* language and collective intentionality. In other words, conventional affordances and status functions may have been what made religious ASCs possible. This intriguing possibility merits wide-ranging further investigation in CESR and related fields. *Homo duplex* is, and should be, an object of formal and empirical research in the cognitive and evolutionary social sciences.

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Notes

1. The term "religiously interpreted ASC" reflects the fact that there is no *sui generis* category of religious experience; instead, individual people within cultural contexts attribute religious valence to some experiences rather than others (Taves 2009). "Religious ASC" is a shorthand for reading ease and clarity, but it carries over the assumption that religiousness is attributed, not found.

2. There are exceptions. Most obviously, if he is possessed by an ancestor or god as in many possession cults, then dancing might be part of the spirit's role template. More prosaically, consider an inhibited dancer—someone who is clearly self-conscious, unable to completely surrender to the beat while out on the dance floor. What this latter case illustrates is a *conflict* between intrinsic motives and some normative social scheme such as a role template. An inhibited dancer is probably one who is highly conscious of his or her everyday role or excessively aware of the potential for being evaluated. Yet if we are worried about evaluative judgment, we are already in the realm of normativity and inhibitory cognitive control—the same realm as institutions and transcendental social structure. The point remains that disinhibited dancing *tautologically* entails at least partial decoupling from the semiotic channel of motivation.

3. This list is not derived from a single author or a canonical source. It is not intended to be exhaustive or systematic. It reflects instead a set of superficially unrelated thematic elements that are nonetheless commonly found in clustered literatures on ecstatic or religious experience, and which offer useful proofs-of-concept for an antistructural reading of these experiences.

4. My lab is currently testing several of these predictions.

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