The Ritual Origins of Humanity

Abstract: This paper argues that ritual played a central role in making us human. The argument is based on four premises: (1) Humanity is defined by cooperative communities, (2) cooperative communities are defined by shared values, (3) shared values are defined by ritual, and (4) religious ritual elevates shared values to sacred status. Ritual solved a communication problem: that of effectively displaying, transmitting, and honestly committing to group values. Over the course of our evolutionary history, those communities with sacred shared values out-competed others, thus making religion a human universal.

[1] Humanity Defined by Cooperative Communities

For most of our history, we have seen ourselves as distinct from other animals by virtue of our rationality. More recently, however, science has shifted the focus of human uniqueness from rationality to social skills. Humans have been described as an ultra-social or hyper-social species.1 Tomasello and colleagues have amassed considerable evidence supporting the notion that humans have evolved unique cooperative capacities.2 To understand how we became ultra-social, Tomasello

Uniquely Human Cooperative Abilities

Chimpanzees and bonobos have fairly well-developed cooperative abilities, suggesting that our earliest hominin ancestors were similarly endowed. Both wild chimpanzees and bonobos hunt cooperatively. In the case of chimpanzees, a group of males will often work together to capture monkeys. However, there is little evidence that this hunting is truly cooperative in the sense of different individuals understanding and coordinating distinct roles in achieving a shared goal. Instead, chimpanzees seem to operate by a "follow-the-leader" strategy. That is, one chimp will spot and chase a monkey and others will join in. Monkeys are quick, so it is nearly impossible for a chimpanzee to capture it alone. Thus, collaboration among chimpanzee hunters is essential if anyone is to get anything. Furthermore, making the kill oneself or being near to the kill when it happens generally increases an individual's portion of the spoils. All of this suggests that the hunt is more of a collective action arising from separate self-interests than a truly cooperative activity.

By contrast, human children as young as 18 months show surprising cooperative abilities exceeding that of adult chimpanzees. This has been shown using social games where players work jointly to achieve a goal. For example, in the trampoline game, players hold different ends of a large fabric in an attempt to keep a ball from rolling off. Chimpanzees fail miserably at the game, and unlike human children, show no evidence of understanding the importance of complementary roles in attaining the joint objective. By two years of age, however, human children are skilled game players, readily coordinating activities to achieve a common goal. Unlike chimpanzees, children appear to understand the different roles from an objective, "bird's eye" perspective, thus allowing them to easily engage in role reversal. Furthermore, if a partner quits his or her role, the child will often take active action to re-engage the partner, something chimpanzees never do.

Further evidence of this cooperative advantage can be seen in the fact that children recognize that embarking on a joint venture implies a commitment to both one's partners and the shared goal. Unlike chimpanzees, young children almost always communicate with partners before pursuing the goal. This pre-venture communication is used to solidify joint commitment, which in turn, leads to the expectation of continued effort until the goal is achieved. Furthermore, if the child must disengage from the activity, he or she nearly always asks permission. This suggests that implicit norms guide cooperative action; partners must be committed and disengagement requires permission. Nothing comparable has been found with chimpanzees.

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Importantly, chimpanzee’s cooperative failings are not due to a lack of cognitive ability. Chimpanzees can identify intentional behaviors and infer goals and thus understand that someone reaching for an object intends to possess the object. This allows them to offer simple “helping” behaviors such as retrieving an object for another or assisting another in obtaining food. Chimpanzees can also work with a partner to achieve a goal, although it is quite possible that they simply regard the partner as a tool for achieving a reward.

What is lacking in chimpanzees is the motivation that makes achieving joint goals inherently rewarding, as it is with human children. For chimpanzees, joint endeavors, such as those found in social games, are generally treated with disinterest. They prefer to solve problems alone and will disengage when tasks become too challenging. This motivational deficit also contributes to their limitations in intentional instruction and simple information sharing (i.e. pointing things out to one another); activities that even very young children engage in readily.

Further studies have pinpointed the source of this lack of motivation. For a chimpanzee, it often does not pay to cooperate because a more dominant chimp will monopolize the rewards. In a pair of studies, chimpanzees and three-year-old children engaged in cooperative tasks potentially leading to desirable rewards. For example, partners could work together by pulling on a rope which brought a food reward within reach. The food was either pre-divided into equal piles or was presented in one big pile. Both chimps and children successfully cooperated when the food reward was pre-divided. But only the children were successful when the reward was in one pile, readily dividing the pile equally between them. For the chimps, however, cooperation broke down in the one pile condition because the food was always taken by the more dominant chimp.

In another study, children and chimps could either work independently or as partners pulling on ropes (or a single rope) to bring in a food reward. When they worked independently, neither chimps nor children shared their rewards (even if, just by ”chance,” one individual received considerably more than another). However, when they worked together, children almost always shared equally, chimps almost never did. From these studies, Tomasello has concluded that young children have a ”sense of distributed justice that is closely tied to collaborative activities” — something utterly lacking in chimpanzees. Chimpanzees, of course, will protest when another tries to take food or other desirable from them, but they do not seem to connect effort with reward.

Something happened over the course human evolutionary history that forced our ancestors to make the connection between cooperation and justice. Tomasello (2014) argues that the key selective event was “obligate cooperative foraging.” For our ancestors, the most basic survival activity, getting food, required cooperative effort. Chimpanzees and other apes largely forage alone, with the only notable exception being the collaborative hunting discussed earlier.

Over time, however, lone foraging became exceedingly perilous for our ancestors. Upright and hairless, hominin mothers were forced to carry infants or “park” them on the ground or in a tree while gathering food. Lone mothers would have been at a severe disadvantage compared to pairs or groups of mothers who worked together
to minimize risks while maximizing returns. Mammalian brains and bodies grew, meat increasingly became a critical component of the diet. This put hominins in competition with a large, highly efficient predator guild of felids and hyenas. A lone male hunter was unable to defend both in making a kill and in protecting it from other hominins. Grouped hunting by hominins was necessary. Under these conditions, those who were able to form cooperative relationships were at risk of starvation or death. Natural selection for group hunting not only explains small-scale cooperative-hunting strategies but also a larger community achieved a joint goal. Expanding the group's competitive success to a larger community required a second evolutionary step—group competition where more cooperative groups replace less.

### From Partnership to Cooperative Communities

Around 100,000 yBP (years before present) the first evidence of the ritual use of pigment emerges in the human archaeological record.22 Around 100,000 yBP, beads and body ornaments emerge along with remains indicating intentional use of specialized hunting weapons. Collectively, these remains suggest important social changes: (1) increased personal and tribal identification and (2) increased group role specialization.23 Different groups and individuals


### Cooperative Communities Defined by Shared Values

For many archaeologists, beads, body ornaments, and pigment use indicate an understanding of symbolism.24 Thus, it is likely that around this time, the ritualized behaviors common to all primate groups were transforming into more human-like rituals with cultural and symbolic significance. These rituals would have done more than just mark social roles (such as dominants from subordinates); they would have placed that role into a larger symbolic communal framework. An initiation marked one's transition into an abstract state called "adulthood." A mating ritual bound a couple in something akin to "marriage." This would have served the same social roles and duties associated with the other shared reality about the group, its history, identity, and the place of individuals within that context. True human cultures were emerging. In a competitive environment, the most successful groups would have been those able to compel individuals to form strong commitments to their cultures.

Group competition molded the human motivation to cooperate into a unique form of primate tribalism. Humans were not just motivated to be good cooperators but to be loyal tribe members. Displaying loyalty required costly displays of commitment to group norms and values. This heightened level of group commitment can once again be seen empirically through comparisons of children and chimpanzees.

Both chimpanzees and children allow the majority to influence their behavior. For example, suppose there are three options to select from (A, B, or C), where only one leads to a reward. Both children and chimps watch a single demonstrator pick one option (say B) three times or they watch three different demonstrators pick a different option (say A) once each (so both options were selected three times, but A was selected three times by three different demonstrators). Under these circumstances, Haun, Rekers, and Tomasello (2012) found that both chimps and children would select option A — the one picked by more. But what if prior to this,
both chimps and children had been allowed to select another option (C) which led to a reward? Would they later switch their decision to the majority choice even if it contradicted their personal past experience? For chimps the answer was no, but for children it was yes.\textsuperscript{28} For children, but not for chimps, it’s more important to demonstrate group commitment than to be certain of an individual reward.

Moreover, it’s children, and not chimps, who are especially concerned with in-group reputational status. When being watched, chimps are equally likely to behave selfishly or cooperatively. Five-year-old children, on the other hand, are far more likely to behave cooperatively when watched – especially if the observers are in-group members.\textsuperscript{29}

What these studies show is that from a very early age children are motivated to exhibit behaviors that identify them as good group members. An important aspect of this motivation is demonstrating commitment to group values. For example, even very young children will swiftly acquire and vigorously enforce social rules. Edwards (1987) analyzed more than 100 naturalistic observations of Oyogis (Luo-speaking native Kenyans) children and concluded that by age 2.5 years they were already active enforcers of social rules. This was true even though the children were only taught the rules themselves and never specifically instructed to enforce the rules on others.

The same has been found in laboratory settings. Rakoczy and colleagues (Rakoczy, Brosche, Warneken, & Tomasello, 2009; Rakoczy, Warneken, & Tomasello, 2008) taught preschoolers the rules of simple games. Once having learned the rules, children rigorously protested rule violations. Significantly, the rules being enforced were often simply arbitrary in nature. In other words, they did not affect the instrumental goals of the game. However, the children understood them as “normative” – the “right” way to do things. The “right” way to do things – to dress, eat, mate, speak, worship, etc. – is exactly what defines one cultural group from another. They are a group’s shared values.

Thus, the selective effect of group competition was to mold cooperative motivation into a powerful form of group commitment. Group commitment, however, is problematic. For group members to commit to group values they must know what those values are and they must have a clear means of displaying their personal commitment to them. At a very practical level, group commitment becomes a communication problem. How can groups effectively communicate values to members? How can members effectively display commitment to those values? Language is not a solution to this problem because language can too easily be used deceptively.\textsuperscript{30} Groups can lie about their values and individuals can lie about their commitment. Fortunately, this communication problem is nothing new. Evolution had grappled with it eons ago (long before language) and derived a solution: ritual.

\section{Shared Values Defined by Ritual}

The use of ritualized behaviors as a means of regulating social life is widespread across the animal kingdom. For example, male elk (other large male ungulates) use a “low stretch” ritual to gain access to an estrous female without frightening her.\textsuperscript{31} The stretch position emulates that of a calf wanting to nurse and puts the female at ease while allowing the male to better detect estrus odors. Similarly, among many waterfowl, ritualized mating dances are used both for selecting mates and building social bonds between them.\textsuperscript{32} Finally, many dog owners are familiar with the “play bow” ritual often seen at the opening of a rough-house play session. The dog lowers its head to the ground between its front paws with its hind end raised and tail wagging. The bow conveys the important message that seemingly aggressive acts (growling, chasing, biting, etc.) are not to be misconstrued as real aggression – they’re for play.

As highly social creatures our primate cousins have an array of ritualized behaviors for regulating their social lives. For example, when chimpanzee, bonobo, and spider monkey foraging parties reunite, they engage in ritualized acts of welcoming and social re-affirmation including mutual embracing, kissing, group pant-hooting, and grooming.\textsuperscript{33} Gelada baboons use rhythmic back-and-forth approach vocalizations to signal benign intent during close-quarter feeding sessions. These vocalizations allow two baboons to peaceful feed near one another without threat.\textsuperscript{34} Finally among chimpanzees, reconciliation between combatants is signaled by submissive bows, plaintiff vocalizations, and the hand-out begging gesture (on

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\textsuperscript{29} Guthrie, R. Dale: The Nature of Paleolithic Art, Chicago 2005, p. 68.


\textsuperscript{31} Goodall, Jane: The Chimpanzees of Gombe. Cambridge/Massachusetts 1986.

the part of the loser) followed by embraces and kisses (from the winner). Given their primate heritage, our ancestors were pre-adapted with a rich repertoire of ritualized behaviors for regulating social life.

### 3.1 What is Ritual?

A ritualized gesture differs from an instrumental one in that it has become emancipated and formalized. Take, for example, ritual washing. To wash a table or other object we use a series of elemental gestures. We get some cleaner. We get a rag. We hold the cleaner in one hand, rag in the other. We spray the cleaner. We wipe the table with the rag and so forth. Ritualization begins when we emancipate or separate a single gesture from this sequence, say, the wiping gesture, and then formalize it or execute it in a more dramatic, exaggerated, stylized way. So now I don’t just wipe the table in any old way. I do it in a very deliberate, dramatic, attention-getting way. Think of the way a military bugler raises and lowers the horn to his mouth in that very distinctive, disciplined manner.

Often this formalization includes repetition, so that the dramatic, stylized action is repeated again and again in order to attract and hold someone’s attention. Ritual washings, baptisms, and anointings often involve repeated gestures. I baptize you in the name of the Father (pour). Son (pour again) and Holy Spirit (pour a third time). Often the emancipated, formalized, repeated gesture itself becomes part of a rigidly ordered sequence that must be completed for the ritualized act to be done properly.

Finally, and uniquely with humans, ritualized actions also exhibit the quality of goal demotion, where executing the elemental gesture correctly becomes the goal in and of itself. So a meditator clears everything else from the mind and concentrates on the mere act of breathing. The mental discipline required to remain focused on proper gestural execution despite discomfort or distraction is the foundation upon which costly ritual acts of endurance and pain tolerance are built.

The end result then is an attention-getting, unambiguous social signal. But what is it signaling? With nonhuman animals, this signal indicates something about the sender’s intentions: The “bowing” dog wants to play, the “stretching” elk wants to mate, etc. But with humans, the message often goes beyond this. The sender is not just communicating intentions, but also values. Ritual washing is about much more than just hygiene. It’s about the sacredness of the object. The bugler is showing us much more than just proper bugle playing posture. He’s showing us respect for the dead. Ritualized actions embody values. Saluting the flag, shaking another’s hand, rising when the judge enters court, tossing dirt on the grave—all of these acts embody or physically express the shared values of a community.

### 3.2 Ritual Transmission of Group Values

Ritual solves the first part of the “values communication problem” by clearly displaying the value (the sacred object, respect for the dead) through embodied action (ritual washing, the military-style bugling). But displaying is not enough. The value must also be effectively transmitted to others—especially children. Ritualized gestures address this problem as well. It is through ritualized gestures that we transmit normative values to others, especially to infants and children. Indeed, ritualized behaviors are the means by which we draw infants increasingly into the adult social world and its normative standards.

The earliest “turn-taking” interactions between infants and their caregivers are ritualized interactions. These interactions typically begin with some exaggerated attention-getting signal, such as coo or call from the infant or cheery “hellooo” from mom. Once engaged, these interactions involve repetitive, stylized, strictly sequenced, rule-governed gestures. These gestures follow the same general script as adult conversational turn-taking, which one reason why mother-infant interactions are often called “proto-conversations.”

The exaggerated, stylized, attention-getting gestures (“motionese”) and vocalizations (infant-directed speech or “motherese”) present in “turn taking” are especially effective in transmitting social and motor skills. For example, ritualized infant-caregiver interactions teach infants the rules of adult conversational turn-tak

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But ritualized gestures do more than just teach children how things can be done; they teach them how things are supposed to be done. Children don’t just imitate, they over-imitate — that is, they faithfully replicate actions that are obviously intentional yet causally irrelevant (in other words, ritualized actions). For example, Lyons, Young, and Keil (2007) found that 3- to 5-year-olds would readily imitate stroking a feather on the side of a jar before removing the lid to retrieve an object. Similarly, Nielsen and Tomaselli (2010) found that 2 to 3-year-olds imitated rotating a stick three times on the top of a box or wiping a stick three times from front to back over a box before opening the box. Imitation of these actions persisted even after children understood that they were not causally necessary for opening the boxes.

Other studies have confirmed that children do not see over-imitated acts as causally necessary, but instead understand them as normatively necessary. Kenward:48 has found that young children’s over-imitation is based on a flexible declarative belief (not a behavioral procedure) and this belief is normative in nature. Children demonstrate that normativity by spontaneously objecting when others fail to follow the “correct” sequence of actions when performing a task. Thus, when observing an adult’s clearly intentional acts (the intentionality being evidenced by the ritualized nature of the acts) children adopt a normative rule about the “correct” way in which certain tasks are to be accomplished. We don’t have to open boxes this way, but this how we (our culture) are supposed to open boxes.


his potential “friend to be” to momentarily handle his genitals. The gesture is especially risky since grabbing and ripping at the genitals is common when primates fight. By taking the risk of literally putting his reproductive success in another’s hands, the baboon honestly displays his trustworthiness to the other.

Using cost as a means of assuring honest commitment in social communication can be found in many species. Indeed, for reliable signals to evolve those signals must be hard to fake otherwise recipients will ignore them. For example, a male frog wishing to signal his robustness to local females might do so using a loud long croak. However, if loud long croaks can be easily produced by weakening males, then there is no reason why females should evolve to accept such a signal as informative of the male’s health status. As it turns out though, a loud long croak is metabolically expensive for such a small bodied creature and weakening males generally cannot produce croaks with the same intensity as healthy males. Thus, loud long croaks effectively serve as reliable signals of robustness specifically because they are costly to produce.

Similarly, Thompson’s gazelles will often jump high into the air or “stot” as a predator approaches the herd. Stotting is both attention-getting and energetically expensive and as such seems odd in the presence of a predator—why expend so much energy trying to attract the attention of someone who wants to eat you? The answer is that by obviously demonstrating its strength and agility, the stotting gazelle sends an honest message about its physical fitness. A slower, weaker gazelle cannot afford such a display and thus becomes a more desirable victim in the eyes of the approaching predator.

Our hominin ancestors faced the same problem of trying to identify trustworthy group members. They solved it in the same way as other species: by imposing costly ritual displays. Furthermore, it appears that the most successful way of elevating the cost of hominin ritual displays was to include the supernatural in the ritual—in other words, to “supernaturalize” the ritual.

people extended greater trust to others identified as religious, while non-religious people were equally trusting (or mistrusting) of others regardless of religious identity. The greater trust extended to religious partners was actually well-placed as religious partners proved to be more generous than non-religious partners.

To outsiders, some religious rituals can seem peculiar and onerous. Having to stop everything five times a day to pray, as devout Muslims do, or praying in the hot sun wearing a heavy dark coat and hat, as Orthodox Jews do, hardly seem worth the bother. Moreover, some religious rituals, such as the snake handling practices of Appalachian Pentecostals, are downright dangerous. But the costly religious rituals are highly effective in building strong community commitment. Yxgalat et al. (2013) found that both participants in and witnesses to high ordeal rituals (such as those involving body piercing with needles, hooks, and skewers) contributed significantly more to a public fund and showed stronger emotional attachment to their national identity than low ordeal ritual participants. Furthermore, rituals that incorporate greater degrees of synchronous movement, such as chanting, praying, or dancing together, have been found to instill a greater sense of shared sacred values among participants leading to significant increases in in-group generosity.

Considerable research supports the notion that group competition played a significant role in our evolutionary past. In this competition, the advantage would have gone to the best organized, most cohesive groups. What the research just reviewed indicates is that those groups would have been the ones where costly supernatural rituals were used to ensure trust among group members. That religious groups out-competed non-religious ones in our prehistory provides a good explanation for the universality of religion among humans.

The Ritually Defined Person

Human uniqueness finds its origins in ritually-organized cooperativeness. However, ritual’s importance in shaping humanity goes even deeper. It is at the very heart of human "personhood." As far back as Boethius, Western philosophy has tried in

abstraction defined by some elusive trait. It was an adaptive function. Specifically, a “person” was a cooperative partner in a fitness-enhancing relationship. Ritual was the means by which trustworthy cooperative partners could be identified.

As the world has modernized, however, the need to ritualistically identify trustworthy partners has largely been supplanted by laws, governments, and market forces that oversee the more-or-less proper fulfillment of our social roles. I don’t need to cooperatively hunt with my fellow tribe-member anymore; I simply need the farmer, trucker, and grocer to do their jobs. Communities don’t need to instill supernatural fear in their members to compel them to follow norms of cooperation. The police, along with an array of governmental and professional regulatory agencies, can largely keep us all in line.

Sacrificing intimate quality for instrumental quantity has served our material desires well – developed societies provide most of their citizens with an unprecedented degree of stability and comfort. But it has also had an important effect on our understanding of personhood: it has elevated the function of the relationship over the psycho/emotional sharing of the relationship. This increasing de-personalization may help explain the growing frequency of depression and anomic in wealthy nations. Indeed, a recent survey found that individuals in wealthier, less religious nations have significantly lower levels of “meaning” in life compared to those in poorer, more religious ones.¹⁶

The Future of Ritual

The paper has argued that ritual played a critical role in making us human. It seems, however, that ritual’s role in modern society is becoming increasingly marginalized. Will something of our very humanity be sacrificed if this continues? Can we truly be human without some form of religious ritual? The answer to this is unclear. However, the very fact that the question emerges suggests that ritual’s future is not a trivial issue. Addressing this question and others will require a broad interdisciplinary approach, with different disciplines approaching the issue from their own unique perspectives.

For example, paleoanthropology has recently developed criteria for identifying ritual in the archaeological record. This can tell where and when ritual emerged in our evolutionary past. Cultural anthropology is critical for helping us better understand the social function of ritual both in our past and presently. Psychology has already begun to address the effects of ritual on the cognitive and emotional lives of the participants. Evolutionary biology and psychology can help us understand the potential adaptive function of ritual and the selection pressures that transformed the ritualized behaviors of nonhuman primates into human religious rituals. Philosophy (and possibly even theology) will undoubtedly inherit the formidable task of integrating findings across these disciplines to tackle the ultimate questions of human uniqueness, meaning, value, and purpose. If ritual made us human, then it is important to know if a de-ritualized world is a de-humanized one as well.

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Rituals are not always costly

Foreword | The article is highly interesting as it provides a new angle on rituals in the course of evolution. The role of rituals is seen with regard to their function of enhancing cooperation. However, not all rituals work in this way. Not all rituals serve a particular social function and not all are costly. In Catholicism rituals play a much greater role than in Protestantism.

On II | Cooperation is certainly a very important human trait and one which distinguishes humans from the animal kingdom. However, it seems to me an exaggeration to emphasize this particular social skill at the expense of others such as rationality. Animals are certainly not rational. Further, social insects are extremely cooperative but are certainly not human.

On I.1 | It seems to me a little too idealistic to say that only in the animal kingdom - especially with regard to chimpanzees - we find "follow-the-leader" and "self-interest" strategies as unique traits which distinguishes animals from humans. Everyday experience shows that this kind of atavistic "cooperation" is also found in human behaviour. The idea of commitment and permission to disengage as a means of ruling out self-interest for the sake of cooperation seems to me very important. Again, the question is what makes humans act in a way that really is cooperative. Again, we of course see that in everyday life that human beings cancel their commitments without asking for permission.

The author points to the very important connection between cooperation and justice as a means for eradicating the habit of monopolizing rewards. This merits comment from the perspective of OT studies. The idea of justice was applied already very early in the history of religion with the notion of God as the one who guarantees justice for human beings who acted in an appropriate (cooperative) way. For this kind of theological reasoning acting in an appropriate way should result in well-being and in a way of living which mirrors God's blessings and which avoids suffering. However, what happens when people suffer without having acted in an ethically questionable way? This is the question raised by the story of Job.
On [1.2] | Rule differentiation is an important step towards fostering cooperation. It is obviously connected with the "symbolic revolution", because it is expressed in various forms (as the author describes and elaborates in the subsequent chapter).

On [2] | In addition to looking at rituals, one also could argue that the physiological basis of adopting cooperative behavior lies in the emergence of mirror neurons. Commitment to a group, however, and the power of the group to enforce this commitment through rituals is ambivalent because it preserves the status quo of the group. There is thus the question of the way in which innovations that need to change rituals and group behavior can be realized. For example one can ask the question how can it be explained that the rule "eye for eye" (Exodus 21:23-25) was effectively introduced in social law as a substitute for atavistic blood vengeance. To introduce new rituals, they have to substitute old ones. How can this be explained if rituals exert such a compelling influence on humans towards social conformity? Thus, with regard to evolutionary progress, rituals are obviously ambivalent if they just work to maintain social homeostasis by commitment.

Besides, not all rituals have a social function. For example, sacrifices to the Gods are not necessarily social. For this reason they were criticised by the Old Testament prophets who demanded social justice (Hebrew: zdaqua) instead of sacrifices. Again the question arises: How can these changes in ritual behaviour be explained from a naturalistic evolutionary perspective? Rituals - in particular sacrifices - can become highly ineffective and non-adaptive from an evolutionary point of view when they wind up in the dead end of pure formalism. For example, sacrifices in the old Maltese religion ruined the environment almost completely such that the early inhabitants of Malta ran the risk of becoming extinct.

On [3] | I agree that formalization, repetition and goal demolition are important aspects of a ritual. I would add that rituals are based anthropologically either in a kind of genetic predisposition (if related to basic appetites) or are culturally determined.

On [3.1] | The connection between ritual and value seem to me unnecessary because rituals tend to become empty and attract hypocrites: a fact about which religious leaders and renovators often complain. For example, the Pharisees practiced an empty and ritualized religion. It is not by chance that Pharisees have become the symbol of hypocrisy. This is basically the general problem of religions which are based on the observation of laws: no one can guarantee that the believers really act from the centre of their personhood when they obey religious laws. This also applies, of course, to costly signals. I want to pose three questions with regard to rituals:

1. Not all rituals are social. For example morning and evening prayers in solitude are, by definition, certainly not social. How is this compatible with the costly signal theory of rituals?
2. Not all rituals are costly signals. For example praying - alone or in community - is certainly not costly. How is it compatible with the costly signal theory of rituals?
3. There are rituals in criminal circles which are socially destructive. How is this compatible with the costly signal theory of rituals?

On [3.2] | The social transmission of rituals by imitation and gesture is ambivalent. They can lead to social exclusion (good guys, bad guys).

On [4] | The costly signal theory for explaining social coherence and the trustworthiness of commitment depends on a kind of cost benefit analysis by a member of a group. This utilitarian point of view is of course quite convincing. But there may also other factors such social pressure which might exceed the individualistic utilitarian considerations of a potential faker. This view is also based on the assumption that human beings are basically egoistic and that social commitment thus needs to be enforced by means that appeal to this egocentricity through costly signals. Altruism of course then needs to be explained by kin selection or reciprocal altruism. However, what of the thought that not all human beings are naturally egoists? Instead of thinking in terms of strict egocentricity one could also suppose that nature provides a continuum of social skills, ranging from brute egocentricity on the one hand and altruism on the other. This would reflect the fact that human beings have different capacities for self-transcendence (the egoist less, the altruist more).

Supernaturalization of rituals makes them operate effectively. This is confirmed by the well knows studies that the author quotes. However not all kinds of the supernaturalization of rituals make them effective. For example the Eucharist is certainly supernatural but it is not universally effective in keeping people in the Catholic Church. In addition these sacralised rituals can also be criticised, as happened in the Reformation when Martin Luther reduced the seven sacraments to two, which reduction actually lead to strong Protestant Churches. Another example is the abolishing of rituals of costly sacrifices in the temple of Jerusalem by Jesus.

On [5] | This is a highly interesting section. (1) A relational understanding of personhood is not only found in traditional cultures and religious groups. The whole of Karl Barth's theology is based on the idea of relatedness. Human relations, especially the relations between man and woman, should mirror the inner-Trinitarian relations of
Father, Son and Holy Spirit. In fact one can argue from purely philosophical reasons for an ontology of relation. (2) The considerations of depersonalization are very interesting because they show how those important relations that include psycho/emotional sharing instead of function in relationships are. It seems that the little hint the author gives is of utmost importance when he identifies the change from quality to quantity as the root of what he calls depersonalization. This merits far deeper consideration with regard to what went wrong in Western society. Rituals and in particular the lack of rituals in public life are certainly of significance here.

On [6] An interesting conclusion: “If ritual made us human, then it is important to know if a de-ritualized world is a de-humanized one as well.” This is an important issue to raise. It is often argued the Protestantism is very poor with regard to the use of rituals in its services or at least much poorer than Catholicism. It is often argued that rituals tend to become empty, to be “only” formalistic, devoid of any deeper meaning. It is also argued that it is more important to develop a religious personality in Protestantism. Thus ritual would become less important. However in Protestantism a religious person emerges through God given belief. I surmise from this that it would be worthwhile to consider the relation between ritual, belief, and person from an evolutionary point of view. In addition I would further add that the notion of religion as a form of functionality is highly ambivalent. One can argue, and argue with good grounds, that religion starts being religion when functionality ends.

Afterword | This is a highly interesting article that deserves further consideration and research. My points of comment are:

1. Rituals are not restricted to the domain the author convincingly describes.
2. Rituals tend to become empty.
3. Rituals can become dysfunctional (for example in sacrifices).
4. The relation between rituals and ethics deserve further consideration.
5. Rituals as enhancing social commitment on the basis of costly signals and social conformity can also become counterproductive if they only work adaptively and exclude the possibility of social change and innovation.

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Rituals and Human Capacities for Cooperation

Foreword | Matt Rossano uses pre-historical and paleo-anthropological data on past primate societies and he argues using results and theories from primatology, ethnology and psychology on contemporary individuals, populations and societies. He uses these insights in an argument from the viewpoint of an evolutionary informed psychology. My comment argues from a discipline primarily engaged with the study of contemporary human communities and societies. Cultural anthropology is primarily interested in collectives and less in individuals. Since this discipline is far removed from most of the data and some of the theoretical armaments used by Rossano, the comments may be regarded as coming from the position of an outsider to some degree. On the other hand cultural anthropology is quite close to one of the main methodological approaches used in this article. Cultural anthropologists study human groups in a naturalistic way. Anthropological fieldwork tries to capture human social interactions in an empiricist, real life, real-time and real-space manner.

This article is generally very stimulating and well-argued. My comments argue from the perspective of cultural anthropologist who is not a specialist in religion but in cognition, decision-making and rationality. Being an atypical anthropologist, I have a background in natural science, specifically in geology and paleontology and I am thus sympathetic to evolutionary arguments concerning human culture. Thus, the following critical comments and questions should not be regarded in any way as an anti-evolutionist stance, which latter is sadly pervasive in mainstream cultural anthropology today and not only in US-American anthropology. My comments are intended to make Rossano’s strong argument even stronger.

On the abstract and [1] | As the final sentence of the abstract implies, Tomasello seems to assume that human universals must be causally founded on selection.

Surely, human evolved nature is the prime motor for the development of universals on the level of individuals. We have to distinguish between (a) universals as traits shared by all human healthy individuals and (b) universals as traits shared by all known human societies or cultures (thus called "cultural universals"). Many universals on the level of collectives are based on universals as parts of human nature. Nevertheless as regards pan-cultural commonalities there are several other bases beyond biology. One principal of these other causes is independent invention and another factor is global diffusion from one or several centers to all or almost all societies worldwide.

Rossano is interested in human nature but he seems to equate human nature with human uniqueness. I would think that human uniqueness should not be confined to unique characteristics. Human nature as I see it is a combination of unique characteristics and traits shared with other primates (and others with mammals, others with all living beings). If the focus is on human uniqueness I would argue that the shift from rationality to social skills affirmatively mentioned by Rossano was primarily a reaction to the overly rational view of humans. Tomasello and others' insights into cooperative skills should not be taken as social intelligence outcompeting individual rationality as a main factor in human evolution.

On [1,1] Regarding the differences between chimpanzees and human children it should be emphasized that we simply do not know what chimps and other non-human primates think and feel. That simple fact is often underrepresented in traditional primatology. We can only make assumptions as regards their "self-interests" or "commitment" of non-human primates (and young human children as well). These concepts do not belong to the vocabulary of ethology or primatology proper. All we have to argue with is indirect data (behavior) and our (mainly functional) rationales. These cautionary comments also pertain to the arguments about cognitive abilities of chimpanzees. Rossano argues convincingly that chimps seem to lack motivation and not cognitive abilities. But I think it is simply too strong to say with Tomasello and others that "they can identify intentional behaviors and infer goals and thus understand that someone reaching for an object intends to possess the object".

In explaining the foundations of goal sharing and commitment Rossano rightly stresses the point the humans habitually communicate before entering into cooperative behavior. My question here is whether in this there might be some yet unmentioned non-verbal communication (or behavioral cues) among non-human primates indicating their inner state regarding commitment. In explaining the role of meat the article convincingly argues that lone foraging became perilous for our ancestors, especially for hairless, hominins in mothers. My question here is whether Rossano thinks that this decreased through natural and selection proper or through a pre-selection by rational cognizing by the individuals.

On [2]: Like part 1 this part shows how fruitful it is to combine data and insights from laboratory studies and studies of humans and other primates in their natural settings. Rossano's endeavor could benefit from an inclusion of more studies from comparative cultural anthropology. Why is that? Studies from cultural anthropology are especially useful to get a view into human psychic functioning beyond WEIRD (Western, Educated, Industrial, Rich, Democratic) people. Our current knowledge of the human psyche is based on a very limited and biased basis of studies almost all done by Western researchers with Western subjects. Where comparative data are available, WEIRD societies consistently occupy the extreme ends of distribution. This often makes WEIRD people the worst subpopulations one can study to generalize about humans.

Studies which might especially relevant for Rossano's project are studies on conformity and especially rituals in establishing conformity in Western and non-Western cultures. Regarding rituals of initiation from an anthropological view it should be emphasized that these initiations are public rituals. Thus an initiation has functions for the individual but also for the community. Being public, every participant as well as bystanders is reminded of common shared values. The initiation introduces the person to the society (enculturation) but it also contributes to the life-long socialization of adults by restating a shared world-view.
On [3.1] and [3.2] | In these paragraphs, the relation between the concepts of ritualization in evolutionary approaches on the other hand and in terms of cultural anthropology on the other might be more clearly stated. Rosano argues that rituals are used as means of regulating social life in the animal kingdom. To strengthen this functional argument it may be advisable to be more precise about what is meant by "regulating social life". This might be e.g., the use in making communication easy by making it unambiguous or the function of avoiding conflict by making a hierarchy unmistakable. For a clarification of these issues, the argument could profit from an inclusion of literature of early ethology (comparative animal psychology) of the Lorenzian type. Ritualization as defined by ethologists is behaviors that have changed meaning and function within an evolutionary time-frame. These behaviors are usually short and distinct gestures making communication precise. To give an example, lowering the head, formerly a deferential way of behaving, became a gesture signaling a greeting in humans. A similar view is implied by Rosano’s wording of "emancipated" and "formalized" gestures.

Cultural anthropologists and scholars from cultural studies or religious studies generally use the term “ritual” to refer to longer sequences of acting involving many behavioral acts. Thus rituals are similar to film scripts and are based on complex cognitive models. Furthermore, these research traditions emphasize the function of rituals in forming groups and especially in forming group identity. In addition to these differences in the use of the term, there is a difference of time perspective. Whereas comparative ethology thus clearly places ritualization of behavior in an evolutionary framework, approaches to cultural anthropology see these functions in a merely synchronic way.

On [3.2] | Rosano states that it is through ritualized gestures that we transmit normative values to others, especially infants and children. This is in line with one of the most unequivocal findings of anthropology saying that children learn their culture without teaching. Most socialization is done unconsciously and thus does not involve explicit instructions. However, recent comparative anthropological research has demonstrated that this is only half true, especially when it comes to social norms. A comparative reading of field studies of child-rearing practices shows that the most important social norms are often transmitted by intentional and ineffective teaching. Common forms of sanctioning poor behavior in children include beating, teasing, shaming, intensive staring at the child, gaze avoidance, withdrawal, isolation, and emotional punishment. These behaviors have the potential to instill social norms in the child and are predisposed to emotional priming. Taken together, this limited set of child-rearing practices seems to be the main requirement for effective norm socialization.

On a didactic level, the function of all these techniques is not only to make norm socialization effective in general, but also to motivate members of a society to learn norms in such a way that they never forget them. Quinn’s four universal features for effective norm socialization focus on instilling norms by evoking emotions within the human psyche. The four features or methods are built upon different human psychological mechanisms, which are used within cultures. We can say that culture makes use of the human brain and its capacity for learning in order to solve universal problems in norm socialization.

On [5] | In his remarks on the “ritually defined person” Rosano states that traditional cultures and most religious traditions define personhood as relational. This is standard anthropological fare but nevertheless this was never truly comparatively studied. It seems to me that many of these cultures define only one aspect of the person as purely relational, whereas other aspects are subject-personal. Rosano’s bold statement requires more than the anthropological field reports quoted. The two general sources cited by Rosano (Bedley, Green) on this point do not substantiate this claim in any empirically strict form.
On [6] Most sociologists and anthropologists studying late modern society would strongly disagree that the ritual's role is becoming increasingly marginalized nowadays. People as well as institutions are still very interested in having rituals. This does not only pertain to religious people. Many agnostics and even explicit atheists are interested in having rituals like those of religion for commemorating special occasions or singular transitions in the course of their lives or the lives of others. Thus marginalization only pertains to the function of rituals in organizing cooperation in societies structurally on a large scale.

Résumé and a remark on anthropological publishing | This is a very well argued article. Rossano presents a speculative story, but it is more than another just-so story. Nevertheless, my main problem is Rossano's tendency to present a one-factor theory. I do not dismiss the aim of finding 'master factors', since I think - in disparity to many of my fellow cultural anthropologists - that reduction is the bread-and-butter business and aim of science proper. But there is a difference between saying that ritual played a central role in making us human, as the abstract says, and proclaiming that "human uniqueness finds its origins in ritualily-organized cooperativeness". There are other factors which might be relevant, such as rational intelligence or cooperative capacities beyond ritual.11

I have one general remark relating less to this target article but generally to anthropological publishing. I see an increasing problem in the proliferation of references in anthropological texts (including some of myself) not only but especially in US-American anthropology. Rossano's text contains more than four dense pages of references for 17 pages of text. A few of these sources are used extensively but the bulk of these cited publications are only briefly referred to. Following an American tradition almost all citations only give the year of publication and some of the cited publications are books of several hundred pages of text. This seems somewhat problematic since the relation of an argument to the source quoted remains a little obscure. But this inflation of references is not a problem of Rossano's text specifically but of academic publishing in social sciences, anthropology and the humanities in general.

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Michael Blume

Cooperative Breeding instead of Cooperative Killing

The Evolution of Human Ritual & Religion has not been a "male thing"

Foreword | In his outstanding target article on "The Ritual Origins of Humanity", Matt Rossano presented empirical findings and theses from the forefront of interdisciplinairy anthropological studies, ranging from biology to psychology and sociology. But I will argue that he has inherited a classical bias that is unfortunately still alive in evolutionary studies, namely, the implicit assumption that male-centred "cooperative killing" has been the driving force in human evolution, while female-centred cooperative upbringing of children is unconscious regarded as a minor matter. In this commentary, I will argue that cooperative breeding has been a major factor in the evolution of human prosociality, group cohesion and finally ritual and religiosity.

In recent years, evolutionary studies of religiosity and religions have improved tremendously not only in terms of the sheer number of empirical studies from various scientific disciplines, but also as regards thoughtful texts bringing such empirical studies together. With "The Ritual Origins of Humanity" Matt Rossano contributed to outstanding works in the latter. While agreeing with nearly everything in his article, there is a single issue I want to address. This is one of the last blind spots of evolutionary studies: the implicit -- and to my opinion mistaken -- emphasis on cooperative killing as opposed to cooperative breeding in human history and nature.

On [1.1] | A question of no small consequence is: by what ways and means have those social cognitions that have made our species unique and prepared its abilities for speech, ritual and religion evolved?

Rossano can hardly be blamed for following the footsteps of generations of (mostly male) scientific predecessors in implicitly emphasizing the role of cooperative killing, for instance in hunting and warfare, as the basis of human prosociality. He argues (p. 4): "Something happened over the course human evolutionary history that forced our ancestors to make the connection between cooperation and justice. Tomasello (2014) argues that the key selective event was 'obligate cooperative foraging.' For our ancestors, the most basic survival activity, getting food, required cooperative effort.
Chimpanzees and other apes largely forage alone, with the only notable exception being the collaborative hunting discussed earlier. * 

Charles Darwin (1809-1882) would have agreed. But then again, this great scientist also ignored the argument of his (unfortunately and unjustly almost forgotten) female colleague Antoniette Brown-Blackwell (1825-1921), who pointed out the importance of reproduction for all evolutionary processes. 

In fact, "getting food" cannot be directly linked to "getting many offspring" among humans as, for example, contemporary European populations (wealthier and with great longevity than ever before but also characterized by reduced procreation) have vividly demonstrated. Evolutionarily speaking, survival without reproduction turns out to be a dead end. 

In direct contrast, a range of deeply religious congregations emphasizing sacred values, rituals and symbols such as the Old Order Amish, Haredi Jews or Hutterites strictly abstained from hunting, warfare and even proselytizing but managed to reproduce and grow in terms of population very successfully (sometimes almost exponentially). Among almost all long-lived religious traditions, issues concerning sexual mores, family relations and respective dress codes feature prominently among those sacred values that are emphasized by rituals and myths. The empirically strong and almost universal link between religious practice and intergenerational reproductive success is gaining increasing, if reluctant, attention. 

In fact, Rossano himself came very close to this point, musing in a sentence (p. 4): "Upright and hairless, hominin mothers were forced to carry infants or "park" them on the ground or in a tree while gathering food. Lone mothers would have been at a severe disadvantage compared to pairs or groups of mothers who worked together to minimize risks while maximizing returns." 

What's formulated here as "minimizing risks" in procuring food turns out to be the essential divergence of our species from the evolutionary pathways of all closely related primates: the tradition of cooperative breeding. No chimpanzee could entrust her (and his) child to a kindergarten or school, or let little Orang-Utan could board a crowded bus or enjoy a fellow's birthday party. While all of our primate relatives have been dependent on food, hominin and later human generations evolved a reinforcing and upward movement of intra-human trust, cooperative breeding and reproductive success to the point that our xenophobic instincts had been pushed back to contemporary levels. Our comparatively long phases of childhood and brain growth have been achieved by "pairs or groups of mothers" sharing trust and duties of child care — later on integrating fathers in the process. We had to become social in order to become (somewhat) intelligent. 

On this point is further supported by another observation Rossano rightfully derived from a range of empirical studies in order to explain the emergence of cooperative communities (p. 6): "Moreover, it's children, and not chimps, who are especially concerned with in-group reputational status. When being watched, chimps are equally likely to behave selfishly or cooperatively. Five-year-old children, on the other hand, are far more likely to behave cooperatively when watched — especially if the observers are in-group members. [...] What these studies show is that from a very early age children are motivated to exhibit behaviours that identify them as good group members. An important aspect of this motivation is demonstrating commitment to group values. For example, even very young children will swiftly acquire and vigorously enforce social rules." 

Again, these findings can hardly be explained by assuming that cooperative human infants sported more success in foraging and hunting. If the availability of food had been the restricting factor, we should expect a competitive behavioural outcome such as that in bird's nests where the young struggle to get as much food as possible from their parents by any means. 

But if we understand that the survival of human children depended strongly on their abilities to form social relations and to integrate into complex social groups, the evolution of "behaviours that identify them as good group members" ultimately makes sense. In fact, the (ongoing) evolutionary process of our "groupish" species can be described as one of social self-domestication, with social punishments such as expulsion directly impairing chances for survival and reproduction. 

Conclusions | Rituals and religions showing the potential of binding non-related humans into groups, addressing members as 'as-if' kin ("brothers and sisters", "holy father", "holy mother" etc.), has intrigued scientists for decades — as have scores of stone-age "Venus figurines", featuring female-only symbols of fertility over tens of thousands of years rather than war-faring hunters. The growth of some contempo-

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3 Hrdy, Sarah B: Mothers and Others. The Evolutionary Origins of Mutual Understanding, Cambridge/Massachusetts 2011. 

rarity religious groups is seldom driven by cooperative killing, but quite frequently by motivating and organizing cooperative breeding. And although scientists in the fields of evolutionary studies are producing far more scientific arguments, religious creationists are producing far more children leading to intergenerational, epistemological batters and yet-to-explore fields of in irony, religious history and philosophy.

Matt Rossano deserves to be acclaimed for his contribution in deciphering “The Ritual Origins of Human History”. And we should finally have the strength to admit that large parts of this peculiar history were not only constituted by spear wielding males but by mothers and others living and teaching sacred values of cooperative breeding.

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Religious Rituals –
Cooperation, Costly Signalling and Cultural Evolution

Foreword | Rituals are an important building block of human cooperation – Matt Rossano makes a convincing argument for this. In this brief commentary I would like to discuss just two of his points. First, rituals in particular can fulfill a role language cannot since they are able to serve as costly signals and thus strengthen group commitment of individuals. However, some arguments leading to this conclusion are less convincing, e.g. augmenting the differences between humans and great apes. For example, there is evidence contrary to this and in favour of the hypothesis that hunting in chimpanzees is truly cooperative. In addition, the benefits and costs of human foraging and cooperative hunting are still largely unclear and we know little about group competition during the times of hunters and gatherers. Therefore, the arguments leading from rituals as enhancing group cohesion to fitness benefits in inter-group competition are none too convincing to me. The second point addressed in the article which I would like to put into a different perspective concerns the non-ritual transmission of values to children.

On [1.1] | It is always tempting to set humans apart from other animals. This has been done throughout written history, one prominent example being Aristotle who, in his Nicomachean Ethics, arranged nature into a hierarchy (the scala naturae) with humans (and God) at the top. There are many possible candidates for humans exceptionalism, among them language, writing, religion or other cultural achievements. Here, cooperation is chosen. In fact, it is perfectly possible to make a good case for this, – as for any other of the above mentioned attributes (language etc.) – as humans do cooperate on a global level, there is an extremely fine division of labour, kinship is not necessary for stable cooperation, the time frames of social interactions may run over generations and so on. However, we do find all of these aspects of cooperation in other animals as well: eusocial animals like bees, ants or termites or mammals like the naked mole-rat also have a division of labour, cooperative breed care and different generations within one colony. It might be argued that there may be no single animal combining all of these features, but still the question remains whether it makes sense at all to try to find the one special feature.
of a species (here humans), since evolution is fundamentally a teleological and there exist millions of very special adaptations that could be taken as exceptional.

Most importantly, our closest relatives — chimpanzees — are very well able to coordinate complex cooperative hunting, although the target article states that there is little evidence that this hunting is truly cooperative in the sense of different individuals understanding and coordinating distinct roles in achieving a shared goal. On the contrary, I think there is good evidence that hunting is a cooperative activity in chimpanzees, since to learn the complex coordination within the group with different assigned roles (I) takes up to twenty years. These roles — different specifications — are also important for how much an individual receives from the hunt. To be successful, not only different roles have to be trained and assigned, but experienced hunters are also absolutely necessary. Therefore, I would argue that hunting in chimpanzees is a “truly cooperative” activity, which, as argued above, closes the putative gap between the “unique cooperative capacities” of humans and those of other species.

The target article also sees a qualitative difference between chimpanzees and humans with regard to fairness: “From these studies, Tomasello (2014) has concluded that young children have a sense of distributed justice that is closely tied to collaborative activities” (p. 189) — something utterly lacking in chimpanzees.” Again, there is evidence to the contrary: apes do seem to have a kind of fairness and they are at least somewhat able to judge efforts and distribute the prey accordingly.

In this section [1.1] Matt Rossano goes on to argue that a) lone foraging was perilous especially for women and b) lone male hunters were at a disadvantage in killing and defending prey in competition to other predators. Although this sounds plausible, it is mostly speculation, since, unfortunately, we have little evidence from these times. One could make the opposite argument with stressing some other aspects: first, humans were the top predators, even known to occasionally steal meat from a feeding (I) pride of lions and other large cats and second, competition with other large predators could not have been too harsh in the first place, since

As Matt Rossano rightly points out, one of the major functions of ritual is undoubtedly to transmit signals that are costly and thus honest. This is a reference to costly signaling theory which posits that communication between two organisms should be expected to be biased towards conferring fitness benefits to each individual, making lying or cheating the default. Rituals are one important way to circumvent the evolutionary problem of how to signal honest intentions.


may be achieved in different ways. One is by making it time-consuming to learn to do something "in a proper way" (e.g., rites in mass) or to make the ritual itself very expensive (e.g., the potlach feasts, where massive amounts of goods were distributed or destroyed to demonstrate wealth) or to perform the ritual (the signal) over very long periods of time (e.g., praying five times a day for years). The receiver of such a signal knows that it is honest, because it cannot be faked (or only at a high cost).

In combination with a belief in the supernatural and other costly obligations (e.g., not working on Saturday or Sunday) this has proven to be very effective in enhancing group cohesion. Matt Rossano makes this argument in a very convincing way. For me at least, this seems to be one of the crucial aspects of ritual and worthy of deeper investigation. Still, the steps described in the text to reach one of the central statements of the article, namely that "[o]ver the course of our evolutionary history, those communities with sacred shared values out-competed others, thus making religion a human universal," are - at least in my opinion - not so closely linked as to make it a watertight case. Even if we accept the relatively uncontroversial facts (for evolutionary biologists at least) that humans show high levels of cooperation, that religion is a human universal and ritual an important part of it that helps solve the problem of group commitment by making signals costly and thus conferring fitness benefits on such groups in terms of intergroup competition, we are still left with important and unanswered questions like:

- Why do (religious) rituals work so well (instead of other alternatives like non-repeated, non-formalized costly acts)?
- Why are group commitment and individual group markings important; if (as hunter and gatherers) groups' members were well known without it and neighbouring groups were usually related by kin through diverse marriages?
- Why should it be an advantage to distinguish one's own group from others, instead of making it similar so as to prevent hostilities or splits between groups?

Since these questions are at least in part points of debate in recent evolutionary research on religiosity, we can hope that progress will be made and that at least some of the riddles of religiosity and rituals will be solved in the near future.

On [3.2] | Here, the article makes a broad claim, namely "It is through ritualized gestures that we transmit normative values to others, especially to infants and children. Indeed, ritualized behaviours are the means by which we draw infants increasingly into the adult social world and its normative standards."

While I would acknowledge that children overemulate and often separate intention and the "correct way to do it", these claims are still too strong in my opinion.

First, it is hard to see rituals in its full sense in motherese or monitiones: explaining repeatedly to a child how to tie his shoe-laces is not a ritual; on the contrary, it is highly focused on helping the child to reach that particular goal. Therefore, it is the exact opposite of a ritualized action which has the attribute of goal demotion as mentioned earlier.

Teaching is, in contrast to rituals, very much about explaining a situation or how to follow certain steps in various, differing ways so as to help the child understand what is important about it. It does not help to repeat the action over and over again in the very same fashion as in a ritual - it does help, however, to explain it and repeat in in different ways in order for the child to grasp what really matters. The importance of learning new skills, facts or norms for a child is almost completely goal-focused, i.e., only factors are considered that are of causal relevance. Again, rituals are a different set of actions entirely. In particular, if in trying to transmit rules and norms, this is not achieved by rituals but by either role models, repetitive instructions or explanations of why an action is moral (notice the causal relevance again). This may resemble rituals because repetitions are involved, but both formalization and goal demotion are notably absent.

Therefore, it seems that explanations are important in transferring norms and values within a group. At least in education, there are few rituals regarding children in a daily routine that embody values that are accessible or understandable by children without explanations. True, children are perfect imitators of behaviour they cannot understand, but without explanation, most rituals would be totally meaningless to them such as the mentioned tossing dirt on the grave or in fact just about any other ritual.

So, education (transmitting values) is in my opinion not principally about rituals as is implied, but is different from it in several aspects: it is almost totally goal-centered, it is not repeated, but varied (coming from different angles to case understanding) and the explanation of why this action / moral attitude is important is at the centre. Note that this could easily be the case for rituals also. However, the article does not talk about the connection between explanations and rituals. Therefore, it is not clear whether they are an integral part of rituals or not.

On [5] | In this latter section, one argument in particular may be questionable for at least two reasons, but let me first state it with the appropriate citation: "Communities don't need to instill supernatural fear in their members to compel them to follow norms of cooperation. The police, along with an array of governmental and professional regulatory agencies, can largely keep us all in line."

First, morality is clearly not dependent on religion (here: supernatural fear), since we do not find higher crime rates in more secular countries or in an individ-
Conclusion | Rituals are an important part of religions. They fuel group cohesion and make it possible for such groups to reach goals that require cooperation on a high level or over longer periods of time. It can be argued, as the target article does, that this results in a fitness that is highly beneficial to such cooperative groups. This does not need to invoke group selection, but concerns group competition and augmentation, where individual members profit from a more cooperative group on an individual level. Still, we know little about how and why rituals developed. However, we can be relatively sure that they were derived from and feed back into our social bonding abilities as mammals, enforcing these abilities regarding group cohesion or forging alliances with other groups by signalling honest intentions.

Bibliography


Gerald Hartung

On Rituals and values

**Foreword** | Rossano’s main argument is concerned with the hitherto insufficiently observed role of rituals in the origin and development of the human life form. The thesis is that if rituals are universal, so too is religiosity as a dimension of ritualized human behaviour. The main argument of Rossano’s article, the thesis and the description of human behaviour are convincing. My philosophical inquiry is not concerned with calling these into question, but rather with looking at their premises. One of the central premises is that rituals can be explained by values and vice versa. Here we find a certain methodological difficulty: is Rossano’s argument based on a description of empirical facts that lead us to an idea of humankind or is it based on an idea explained by facts, appropriate to the underlying idea?

On [1] | The claim that humankind is ultra-social or hyper-social is one of the fundamental premises of the research field called evolutionary anthropology (To masello et al.), which is adopted by Rossano. The claim of human hyper-sociability is successful, because it is actually the dominating interpretative pattern for human behaviour. That is how we want to see ourselves, not as an aggressive but as a cooperative being, able to build communities ranging from the two-person relation to the world community.

One of the ideological functions of this argument is to construct an important counterpoint to the model of the human being as an aggressive being that comes to sociality only by suppression (Hobbes, Darwin, Dawkins). This is another way of seeing ourselves and to legitimating our actions in the market society or in competitive sports, in the clash of civilizations (Hobsbawm) or wherever we praise the disparity of human individuals.

Rossano’s argument is not based on ideas but mainly on facts, as he suggests. He shows, by describing our social interactions, that we have good grounds for saying that human cooperative abilities are part of the evolutionary history of humankind. There is obviously no absolute evidence that says that man is a cooperative being by nature, because we have also arguments that say that the cooperative ability is a product of cultural development (see the Pinker-Fodor debate). At the limits of this argument it is very difficult to decide – as Rossano well knows – whether human
action is "a collective action arising from separate self-interests" or "a truly cooperative activity". To use my terms: the empirical facts are helpful but not crucial to our need to find an answer to the question of whether we want to see ourselves as selfish or as a cooperative being.

Evolutionary theory supports the argument that whatever is part of human nature is a product of the evolutionary process. But the riddle still remains: if objectivity ("the bird's eye") is the result of the evolutionary process, what is the reason for the emergence of an "objective animal" (Georg Simmel)? Objectivity is not simply the outcome of evolution but the condition for the evolutionary theory itself. Again, we can ask, if the idea of a cooperative and objective animal is the result of an empirical analysis or the philosophical premise in the anthropological research. In the end that is also the case, if we say that our actions are guided by implicit norms, that means shared values. What is the evidence for saying that there are norms behind our actions? Why is the positivistic answer, that there are only actions and norms the complex social structure caused by actions, insufficient? I don't want to argue for the positivistic explanation. My argument is that we have to look more closely at the rationale, if we want to define the human by aspects of abilities like cooperativity, objectivity and normativity.

On [2] | Cooperative communities are defined by shared values. The most interesting argument is that the selective event is the "obligate cooperative foraging" (Tomasello). There we find a strong link between cognitive psychology and anthropological philosophy. If human individuals are, from the first years of their personal development, obliged to cooperate with other individuals, then we have an external and an internal perspective. From the external perspective we could say that communities are interested in stabilizing their social structure by motivating individuals in many ways to cooperate with other individuals. From the internal perspective we find a lot of possible reasons for it. The classical answer given by theologians and philosophers is that the human being is human because he has a conscience (Augustine, Luther, Kant, Nietzsche, Freud). I don't want to go into this debate, but only to make one point: the reason for becoming cooperative is not necessarily grounded in an internal cooperative structure.

That is not an argument against findings in child psychology that demonstrates how important group commitments and the communication of group values are. Without doubt the evidence of rituals, which are combined with cultural and symbolic significance, for the communication of values cannot be overestimated. My point is that group values are first and foremost the product of an internalisation of individual experience and effective training for expressing our individual affections, emotions and cognitions by social forms of communication. Rituals are not the only, but perhaps the most efficient, forms of articulating our self to others. With William James I prefer to say that the very common ground of our shared values is my individual experience and my ability - learned through cultural techniques - to relate myself within a social frame (family, neighbours, friends, community and other human beings in general).

On [4] | Thus I don't want to deny the argument that the ground of our cooperation in a human is the ability to cooperate, but I would deny that this relation is caused by nature. There is a lot of evidence that says that the development of values - and in connection with this the evolution of our ability to cooperate - depends on social and cultural factors, for example the Reformation in Europe initiated by Luther (Huyb), the discourse of discipline and the building of the modern state (Foucault), the modernization of the world and the evolution of neurosis (Freud) or, as a new subject of research, the politics of shame and responsibility in Germany after the second world war (Joas, Welzer). In short, cooperative ability is a very complex system situated somewhere between the boundaries of nature and culture.

Thus I do not deny that values are expressed by rituals, but I question the thesis that values are defined by rituals. In fact formalization, repetition and goal denotation are the central aspects of the ritual, as Rossano outlines very convincingly. It seems clear because without one of these aspects we would lose the difference between ritualized and ordinary behaviour. Aside from this cogent analysis we are confronted with a demonstrative circularity: if the value is the motivational ground for ritual and ritual for the defining social form of the values, then we are trying to define one by the other. The advantage of this holistic concept for the description of ritual behaviour is very obvious. But as an explanation of the complexity of human behaviour it does not work. Where lies the difference between what is "causally necessary" and what is "normatively necessary"? Of course it cannot lie in the circumstances or the action itself or in the external form of the ritual, but in the categorical distinction between cause (Ursache) and reason (Grund). Our social actions are not only caused by natural or social factors, they are first and foremost motivated by reasons.

On [4] | "Rituals are embodied actions" - this is a perfect description of the fact that the knowledge of "what we have to do" is in our mind, in our body and in the situation. Individuals learn the content of group values by practicing social or religious rituals. But that is only one side of the coin. On the other side we could see that individuals understand what is the objectively general and what is the subjectively individual part of their thinking and expressions by ritual behaviour. Ritualized behaviour is, in a Hegelian sense, the realisation of "objective mind".
on the one side the institution of law or religion as a lived experience and on the other side the individual as integrated in the social context.

Therefore I would not say that "nature solved the problem of social instability by making some social signals costly", but rather say that mankind manages to do more or less effectively as political history shows - the problem that our obligation to institutional forms of our life depends on many factors, for example, our "nature" (desires, interests, habits) and our ability to understand the demands of the actual social situation and to anticipate the consequences of our decisions.

If it is true that religious communes have greater longevity than secular ones, then trust could be a strong factor, as Rossano points out. Again we could ask, if the internalisation of values is perhaps the stronger condition of a trustworthy social institution. Without doubt people trust other people expressing the same convictions and practicing the same rituals. But what is the reason for doing so? My hypothesis is that we share values that we accept in a Kantian sense as axioms of our individual acting as a human being. Of course the practice of moral and religious maxims is necessary for their realisation as objectives in reality, but not the reason for their normativity.

On [5] | Rossano outlines the philosophical concepts of "personhood" and he is right to say that the majority of theologians and philosophers in Western civilisation have defined personhood as the essence of the human being. In contrast traditional cultures and most religious traditions have defined personhood as relational - and so do philosophers in the phenomenological and anthropological tradition of the early twentieth century. If the relational approach has the advantage of being fully compatible with our evolutionary history, as Rossano argues, then our concept of normativity is itself part of this history. That causes a lot of logical problems, which are already treated on a sophisticated level in the tradition of philosophical logic since Kant and in the interesting replies to Hegel and Darwin by Husserl and Cassirer on the one side (idealistic concepts) and Dewey and Scheler on the other side (realistic concepts). If we talk about normativity, rituals and personhood, we should plan an extra conference and a special volume of this journal. In the background lies the ambitious thesis of modernisation, expressed very different by Charles Sanders Peirce or Georg Simmel and elaborated by Ernst Cassirer that there is a dramatic shift in modernity in the construction of social relations from a traditional, Aristotelian logic of substantial aspects to the new logic of functional forms.

On [6] | Rossano asks how we can truly be human without some form of religious ritual? Or, more exaggeratedly: is a de-ritualized world a de-humanized world? This is, of course, an open question. But I think, it is not as wide open as Rossano suggests. Moral, juridical or religious rituals are the external structures of our moral institutions and the expression of our internal obligations. Beyond these institutional frameworks we face undoubtedly inhumanity. The task of philosophy, in the perspective of interdisciplinary anthropological research, is to integrate the overwhelming mass of empirical data. As we can see in Matt Rossano's article, it is necessary to bring together empirical facts and ideas - or, as Ernst Cassirer says: "Unless we succeed in finding a clue of Ariadne to lead us out of the labyrinth [...] we shall remain lost in a mass of disconnected and disintegrated data which seem to lack all conceptual unity." (Essay on Man)

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Methodological Framework and the Cognitive Niche Construction

Foreword | Rossano’s Ritual Origins of Humanity is a major contribution towards a philosophical anthropology of religion. His description of the evolution of rituals enlarges the theoretical arguments in contemporary theories of religion, especially in treating specific properties of human behaviour that were already discussed in recent studies dealing with phylogenetic aspects of human psychological development. Tomasello’s recent works enlarge in an exemplary fashion philosophical anthropology’s field of discussion, bringing it into an interdisciplinary field. My commentary aims to broaden the perspective, discussing changes in the axiomatic framework of evolutionary theories (multilevel selection and group-selective approaches) involving the theory of CMC (cognitive niche construction), bringing these into the debate and referring also to other aspects of ritual(s).

On [1] | The Darwinian paradox has to deal with theoretical compatibility of the problem of cooperation/social behaviour within the framework of the ‘survival of the fittest’. Although the tension between the early description of man as an animal sociale and the narrowness of genetic explanations in sociobiology lead to fruitful discussion about biological aspect of social behaviour, the dependence of the theoretical framework seems to be a major point. Rossano’s approach uses the term “ultra-social” so as to highlight the relevance of specific social formation for our human self-understanding. In The Social Conquest of Earth, Edward O. Wilson recently tried to develop the evolution of social life in a theoretical setting, letting him explain the different strategies of social life in eusocial species and the social form (ultrasocial) of mankind. The theoretical framework developed shows that the evolution of social life not only concerns suppressing (genetically induced) egotistic behaviour but in describing the selective forces on the group level as part of the multilevel-selection approach - also concerns selective pressures targeting the group. Thus: “Selfishness beats altruism within groups, Altruistic groups beat

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selfish groups. Everything else is commentary." Besides the developmental aspect of rituals which show certain patterns of (human) behaviour and even founding structures of social life in groups, the role of this development in the perspective of group conflict and competition may be a fruitful research field. Thus cultural group selection may be the framework to integrate ritual into evolutionary approaches and aspects of group selection, as some authors already discussed.

On [1.1] As Rossano shows in following a group of chimpanzees on their hunt for monkeys, there must be a criterion for inclusion that enables others to "join in", otherwise the hunt will be unsuccessful. A major influence on the debate about the criteria for cooperative abilities came from the Tomasello research group at the Max Planck Centre of Evolutionary Anthropology in Leipzig, Germany. In comparing apes and humans specific ontogenetic levels can be identified - and even tested empirically - that are needed for cooperative activity. I would suggest that the search for unique human abilities should look more closely at the theory of cognitive niche construction (CNC) that enables the targeting of processes of coevolution and feedback loops between certain patterns of action and thought and the construction of our living environment. Social cognition describes the ability to take into account social agents as intentional objects, "reading their mind" allows the bearer of social cognition to take this into account and align their behaviour accordingly. In the theoretical approach the CNC adds a layer of shared cognitive contents, thus generating a socially shared mental world of intentions and mapping the causal pathways relating biological evolution to cultural change. The approach of Richerson and Boyd, who discuss a cultural evolution "not by genes alone", brought a fruitful impulse as did beside other authors on the topic. This prepared an extension of the niche concept, originally introduced to address key adaptation, enabling an organism to occupy ecological niches by applying organismic licenses. The picture of the niche has been extended to cognitive niches, therefore offering a mental construction of cognitive niches as a theoretical approach to handle cultural development - as shown in Rossano's concept of rituals. It builds on evolutionary theory by placing emphasis on the capacity of organisms to modify sources of natural selection in their environment. Niche construction means influences on more than the ecological surrounding and even social and cultural parameters are changed. Thus feedback in form of changing selective aspects of selection plays a role in the process of cultural evolution. The evolutionary dynamics are broadened, allowing the incorporation of ontogenetic and cultural processes. Individuals or phenotypes have a more active role as compared with the standard assumption of a passive phenotype determined by genetic dispositions and environmental impact: "there is both accuracy and utility in treating niche construction as an evolutionary process in its own right, rather than as merely a product of evolution. Niche construction may be influenced by genetic, ontogenetic and cultural information and feeds back to influence selective processes at each of these levels". For the formulation of hypotheses on adaptive processes in human evolution, the organism-environment match can be addressed as a reciprocal interaction between various levels of natural selection and aspects of (cultural) niche construction. The phenotype, formerly seen as a passive object of evolutionary processes, appears in a new light: "Now phenotypes play two roles in evolution, they survive and reproduce but they also construct and modify environments, modifying selection pressures". Human evolution may be unique in that our culture and niche construction have become self-reinforcing, with transgenerational culture modifying the environment in a manner that favours ever-more culture, and niche construction informed by

4 see Jahrbuch Interdisziplinäre Anthropologie
cultural knowledge becoming ever-more powerful. This perspective may explain rituals and religious behaviour as unique, because the cognitive construction of its components is self-reinforcing, with transcultural domains of religiosity modifying the social environment in a manner that favours religion in the cultural evolution of Homo sapiens."

On (3.1) Without any doubt ritual plays a key role in defining rules and regulating social life. To broaden the field in the direction of an interdisciplinary perspective I want to refer to studies and theories in human geography, introducing rituals as techniques for defining spaces in political, sacred and historical dimensions. The culture of remembrance as a common historical consciousness leads to, for example, the commemoration of the landing of the allied forces in Normandy, generating "Normandy" as epitome ritually. Sacred rooms or topographic areas seem to be the first archeologic evidence of sacred buildings. The reconstruction of the emerging Neolithic communities refers to archeologic findings on rituals in celebrating sanctuaries. Although without archeologic evidence we must imagine a more ritually defined space in Neolithic communities. Theories of reconstruction must face the problem of constructing these ancient worlds depending on a theory of rituals as well and not only in interpreting archeological findings. Recent developments in archaeology show an emerging field which integrates ritual dynamics into models of humanisation.

On (3.1) Besides the problems of defining ritual there is also a problem of observing rituals in ethology, especially in outdoor observation of apes. Recent findings link this to a phenomenon that is often interpreted as an initial point of religious thoughts and actions: the (ritual of) dealing with the deceased. Some primatologists described certain patterns of carrying and caring of corpses (in chimpanzees and baboons) that show a special relationship to former members of the group after death. The concept of thanatology might sound too demanding in this context, but shows that fundamental aspects of ritual practices concerned with traditional religious topics may also reach into research areas of primatology.

Bibliography


Muñoz Schlette

Do natural born cooperators need rituals?

Foreword | Matt Rossano’s essay on the ritual origins of humanity is an excellent example of the kind of mediation between empirical study and theoretical reflection that puts the sciences and the humanities in dialogue with each other. What at first sight appears to be an evolutionary account of the functional role ritual plays in the phylogenetic development of human cooperation, bears in fact a philosophical or at least philosophically relevant thesis on the concept of personhood and the ethical consequences implied in this concept. Let me quickly paraphrase Rossano’s argumentation from the point of view I am particularly interested in, which is the social embodiment of human individuality. Since the classical concepts of man as a zoon politikon it has been as intellectually agreeable as it is intuitively evident that man is characterized by his sociability. Empirical evidence from developmental and evolutionary psychology gives this insight an increasingly fine-grained basis, which does not merely confirm the well-known, but forces us to rethink it in new directions. Among these new directions is the path followed by Rossano in his essay.

The social embodiment of human individuality does not just mean that a primordially constituted individuality, based on essential properties intrinsic to the individual make up, enter into social life to begin reciprocal relationships; their environment is not just a public stage, so to speak, on which individuals may unfold what qualifies them interiorly. Against this atomistic view of free-standing individuality which connects with an outer world, Rossano mobilizes much research, according to which whatever individuals are going to be in their lives is individuated within the reciprocity of interpersonal and group relations. The point is that humans are ‘natural born cooperators’. Whereas non-human primates cooperate exclusively for purposes of self-interest, the case of humans, self-interest can also be derivative of the intrinsically valued good of cooperation. Cooperation comes first, but cooperation serves first too. Our evolutionarily nearest neighbors, the chimpanzees, lack “the motivation that makes achieving joint goals inherently rewarding”, therefore they are limited in their ability to share information and coordinate joint ventures. In contrast, the ‘feel good factor’ of human cooperation allows its participants to stretch the bonds of reciprocity to large groups with internal specification of tasks and goals. Above all, it is a substantial resource for the “sense
of distributed justice that is” — as Rossano quotes Michael Tomasello — “closely tied to collaborative activities”.

With the cooperative communities’ “increased personal and tribal identification and increased intra-group role specialization” shared values come into play, which shape the group commitment of the individuals, and they call for means of representation whose function clearly is to keep the common ground of all group members alive, that is, they call for ritual. Here we get to the heart of Rossano’s argumentation: The social embodiment of individuality is linked to enactive modes of self-assurance about the values that are shared by all qua members of the community. Since social cohesion is critical to the survival of the groups, and ritual can do the job of enactively representing the shared values to its members the more forceful the more authority is lent to them, their supernaturalization is functional for the social embodiment of individuality. Our highest values are sacred because their source is a transempirical power to which we connect through ritual. Any violation of the ritual or of the values represented in the rituals calls for punishment from above. Therefore religious rituals appear to be not only representations of the sacralized values but also thresholds which make group participation costly for the individual, thereby ensuring the commitment of its members to the common good of cooperation. Here the thesis is that self-interest alone would not prompt anybody to enter a group due to the heavy investment she would have to make in ritual and the many ensuing negative consequences she would face if she failed to make the required effort. Reciprocal trust — according to the data Rossano refers to — is significantly higher among religious groups than in non-religious communities.

Anybody deeply dedicated to the work she does tends to view the world out of the perspective of this particular work: the fireworker’s first glance entering the Louvre is directed towards the sprinklers in the ceiling; the manager, impressed by the mosaic art of Ravenna, quickly estimates the cost-intensity of its fabrication, and the philosopher thinks that everybody always needs a reason for what they are doing. Rossano has a strong bias toward understanding man and his culture from the perspective of their ritual activity. He offers an anthropology of the “ritually defined person”. Ritual, according to Rossano, has been the central feature of the individual’s social embodiment within the evolutionary history of humanity. It is a kind of second-order embodiment: firstly, man is embodied as a relational self, becoming what he is evolutionarily designed to be within the reciprocal bonds of cooperation starting from mother-child-communication over play and game to complex social coordination of common goals; secondly the relationality of the

self is enacted within the framework of ritual, which represents and authorizes the shared values of the community. Rossano leads us to believe that ritual’s main function is stabilizing the bonds of community. Therefore, supposing its marginalization in modern, highly individualistic societies, he is deeply worried about the possibility of a decrease in “the psycho/emotional sharing of the relationship”, that intrinsically connects the individual to her group. It seems that without ritually stabilized communities humans are doomed to increasing de-personalization.

But observing symptoms of de-personalization is one thing, their causal relation to a decrease of ritual ties that guarantee social cohesion is another. I agree with Rossano’s thesis about understanding human personhood in terms of a relational self, and I do see a correlation between de-personalization and the loss of dispositions, capacities or opportunities for psycho/emotional sharing of relationships. But I have conceptual as well as empirical problems with his thesis about the function of ritual for the enactive articulation of the relational self. On the conceptual side, I doubt that rituals can carry the explanatory burden they are charged with. On the empirical side, I question whether modern, individualistic societies are really characterized by a marginalization of ritual. Let me try to explain my concerns and start with their conceptual aspects (1), before I point out my doubts about the empirical base of Rossano’s concerns (2).

(1) My hesitation to accept Rossano’s argument on the functional role of rituals in the history of mankind refers to his concept of a “ritually defined person”. Ritual-organized cooperativeness is contrasted with failing attempts “to identify a critical trait or quality unique to and universal among humans that accounted for personhood” (p. 14 f.). It is supposed to compete with “rationality, self-awareness, free-will, morality, language, or memory” (p. 15) — and according to Rossano, it does so successfully. It seems that the ritual organization of cooperativeness is meant to be not just a necessary, but a sufficient property to qualify human uniqueness — against the aforesaid characteristics. This idea follows the old Aristotelian differentiation of genus primum and differentia specifica that has already guided the classical concepts of man as an animal rationale. It assumes a common make up of human and non-human species with an internal differentiation along specific properties, which can be only ascribed to human beings. Whereas rationality, language or free will had been classical candidates for this specification of humanity, Rossano seems to replace them with ritual-organized cooperativeness. He does not specify why these properties have failed to characterize human’s uniqueness. Either they do not exist — this might be a possible interpretation of free will (whatever we mean by free will) — or they also exist in non-humans — which might be a

possible interpretation of rationality or language. Let me focus on language alone and formulate two objections.

Firstly, the claim that language is found among non-humans would only be a plausible claim under the condition of an oversimplification of what we mean when we talk about language. If we take language to be a device of direct reference mapping between signifiers and significats we miss the whole point of specifically human language: its capacity for indirect reference (reference via an inferential network of signs), which presupposes the use of propositions with singular terms. We don't find anything like this among non-humans. Secondly, I think that the logic of differentiation between genus proximum and differentia specifica has severe limits anyway, because it does not allow for a holistic understanding of properties that intrinsically depend on one another. But this is the case with full-fledged human language, which, after it has emerged, fundamentally changes many of the other properties humans might have had in common with non-humans. And it also has consequences for the discussion of ritually-organized cooperation. However we understand it, its intrinsic make up will change according to the semiotic and linguistic resources humans are capable of activating throughout their evolutionary history.

Terrence Deacon and Tyrone Cashman have argued that human's symbolic abilities resulted in the predisposition to understand worldly events and one's own identity and place within the world in narrative terms and gave rise to dualistic worldview according to which "objects and events of mundane experience are like signs expressing meanings that concern a hidden and more fundamental level of existence". Only the inferential use of symbols allows us to fundamentally differentiate between signifiers and significations and allows us to make references which are not restricted to the indexical boundaries of the here and now (indirect reference). On the basis of full-fledged symbolic language, we may form a principally unlimited number of statements about reality and ponder their pros and cons; we may think the hypothetical and contrast the real world with possible worlds; we may reflect on our state of being in light of alternatives; we become aware of the limits of the actual and the enticements as well as the deterrence of anything that lies beyond it. The symbolic device feeds into man's moral and temporal orientations and their complex interrelations, which become embodied in feelings like hope and resignation, expectation and anxiety, sentimentality and melancholy, happiness and despair: human-specific emotions, as Deacon and Cashman point out (p. 509 II). Finally the sense for "a hidden and more fundamental level of existence" calls for "beyonding" the immanent - as Kenneth Burke has coined it - in the direction of a concept of transcendence "with a capital T". 5

Even if one concedes the importance of ritual within human evolution - as for example Deacon explicitly does - the meaning of ritual is changed by the means of symbolic language. Merlin Donald has taken an evolutionary approach to the development of human culture that is based on the idea of shared representation: cultures and the successive activation of their potential to shape the relation of human selves and their environment. Donald's view blends into Deacon's approach and gives it a historical depth of perspective (for an attempt to read Donald's stages of culture in the light of Deacon's account of the symbolic species see Jun 2012), which might also enlighten the role of ritual. Whatever ritual means and which function it may fulfill depends on the representational cultures in which ritual plays likewise important but different roles. Under conditions of self-reflexive, critically deliberative theoretical cultures with developed scriptural systems as they emerged around the vaguely so called axial ages, which have come to a full use of symbolic language's potential to shape the difference between the obvious and the hidden, appearances and meaning, facts and norms - rituals are not as much the cause of social cohesion as its expression. In those cultures we should expect the ties of ideas and norms to generate social cohesion among cooperators and ritual to be derivative of this internal (symbolic) force of communication to make reciprocal acknowledgment of communal goals possible and stable. Where rituals deny their derivative status and claim a foundational role for society - as this is typically the case in totalitarian states which replace participation in the public sphere in achieving common goals with ritualistically ornamented masses affirming the charismatic authority of a ritual leader - we should expect the more resistance the more suggestive the scenario of psycho/emotional sharing of relationships appears. This brings me, briefly and finally, to my second and empirical point of doubt about Rosano's "ritually defined person".

(2) Rather than a decline in ritual praxis, modern individualistic societies seem to be characterized by a shift in the forms and functions of ritualization. Émile Durkheim's "cult of the individual" bears no obvious resemblances with the elementary forms of religious life that he analyzed with reference to tribal societies. From peer group behavior among teenagers up to the British coronation ceremony that Edward Shils took as a secular embodiment of a modern society's sacred values, from the pathos-charged sport events to the signs and practices of civil religion in our contemporary open societies we are overwhelmingly confronted with ritually organized expressions of "organic solidarity" (Durkheim).

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Foreword | In "The Ritual Origins of Humanity", Matt Rossano offers an important contribution to our understanding of ritual's role in the development of humanity. Among the many merits of his target article, Rossano's insights into the differences between chimpanzee and human capacities for group commitment are particularly pertinent and valuable. While we are in general agreement with Rossano's approach and while we share his sentiment that ritual played a critical — and often overlooked — role in human social evolution, we think Rossano's argument is in need of further elucidation. Specifically, although it is clear that apes are limited in their ability to elicit shared values amongst group members, it is not obvious how human rituals achieve what ape and other nonhuman rituals are unable to do, that is, provide a foundation for collective values. Our comments are aimed at filling this lacuna in Rossano's argument.

We concur with Rossano that human rituals are able to generate shared values. Moreover, we strongly agree that sacred commitments are created through ritual performance. Yet, not all rituals have such effects. As Rossano notes, nonhuman ritual performances directly indicate the intentions of the performer. Human ritual performances, however, not only signal such intentions but they also specify abstract values. How are human rituals able to point to abstractions, defining some ideas and objects as sacred, while nonhuman rituals appear to be limited to specifying the immediate intentions of performers?

The work of anthropologist Roy Rappaport, we suggest, offers insights into this question. Rappaport (1999) argues that human rituals are distinguished from nonhuman rituals by language. All rituals contain an indexical component that signifies the current mental and/or physiological state of the performer. Nonhuman rituals, however, are limited to these indexical signals. The mating rituals of many bird species, the greeting rituals of apes and monkeys, and the submission postures of dogs that Rossano describes indicate the intentions of the performer — respectively, a readiness to mate, willingness to socially engage, and a demarcation...

of play activity. Rapaport contends that human rituals often contain another layer of complexity that results from the amalgamation of embodied action and recursive grammatical communication – language – in ritual forms. The coupling of language and stereotyped movements allows the embodiment of abstract values and ideals. Rapaport refers to this aspect of ritual as canonical; that is, the component of ritual that contains the moral codes and social obligations of a community. He distinguishes the indexical from the canonical as follows: "Whereas that which is signified by the indexical is confined to the here and now, the referents of the canonical are not. They always make references to processes or entities, material or putative, outside the ritual, in words and acts that have, by definition, been spoken or performed before. Whereas the indexical is concerned with the immediate the canonical is concerned with the enduring."

Consider the prayers, for example, of a Sunday churchgoer. The act of reciting a prayer in church is repetitive, formalized, and stereotyped; in short, it is a ritual. The indexical component of prayer refers to how a person recites prayers: the intensity and fervor of her vocalizations, the mood she expresses, and the interest she conveys. The indexical component of prayer is observable and interpretable by fellow congregants. It conveys the inner state of the worshipper. Prayer recited with enthusiasm indicates commitment to the church community and suggests agreement with its values and beliefs. Conversely, mumbling prayers with a scowl on one's face more than likely intimates that sitting in the pews is a consequence of social pressures, maybe from a spouse or friend, rather than personal commitment to the church. Prayer, however, is not limited to indexical signals. In addition to body movements and physical expressions, prayer is an articulation of specific words. These words, the canonical component of prayer, contain the values and moral codes of the church community. As Rapaport (1999) observes, rituals consist of movements and words not encoded by the performer. Indeed, the communal prayers recited on a Sunday morning were not written by anyone offering them.

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3 It is worth noting that while Rossano defines rituals as "emancipated" from their initial function, incorporating emancipation into a definition of ritual may blur an important distinction (see: Timberg, Nikolaas: On Aims and Methods of Ethology, in: Zeitschrift für Tierpsychologie 30 (1963), No. 4, p. 410-433.) between a behavioral pattern (ritual) and the ontogeny of the behavioral pattern (the process of ritualization). We recommend, following others (e.g., Huxley, Julian: A Discussion on Ritualization of Behaviour in Animals and Man, in: Philosophical Transactions of the Royal Society of London. Series B, Biological Science 251 (1966), No. 4, p. 475-476.), that emancipation remains a defining characteristic of ritualization, rather than ritual.


Jews (C), circular material covering one’s head (X) may represent awe of God (Y). Notice that there is individual variation in the acceptance and understanding of Y; Catholics may not interpret the sacrament literally just as Jews might associate wearing a kippah as a statement of religious affiliation rather than awe of God, the Talmudic rationalization. Nonetheless, ritual actions create social realities that result in largely shared sacred values, despite inherent diversity.

Attempts to reduce the role of ritual within religious communities, most evident in various forms of Protestant Christianity, are informative. By delegitimizing ritual’s power to communicate and construct social worlds, Protestant communities necessarily place a heavy burden on beliefs and testimonies. Consequently, shared sacred values in such communities appear to employ specific cognitions. For example, the distinction between theological correctness and incorrectness revealed by cognitive scientists of religion suggests that there is an endowed type of deliberate religious thought necessary for communicating group membership (theologically correct), and a level of cognition that exhibits real-time processing (theologically incorrect). Theologically correct concepts, therefore, can serve as external indexical signals of group membership. Since stated beliefs so often diverge with how supernatural agents are thought about in real-time, they may be useful as signals of group affiliation. If internal sentiments such as beliefs are to serve as signals though, they must be publicly pronounced, understood, and interpreted appropriately by receivers. It is this collectively-determined “cognitive platability”

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the island\(^1\) - that was undergoing a transition toward Catholicism imported from strongly individualistic Western cultures.\(^1\) The transition from Ifaluk's traditional animistic religious system to Catholicism was not a consequence of a cooperative society outcompeting a non-cooperative one, but rather a cooperative society that sought to imitate the norms of a highly successful and powerful, albeit individualistic, society. Similarly, in Fiji, where the second author conducts fieldwork, access to military and material resources promoted conversion from a traditional religious system that supported a redistribution economy to British Wesleyan Methodism.\(^1\)

We conclude by expressing our thanks to the editors and Matt Rossano for the opportunity to engage with such a stimulating article. We share Rossano’s conviction that the study of ritual is vital to our understanding of what it means to be human, and we hope our comments have productively advanced this discussion.

**Bibliography**


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The Crux of a Darwinian Approach on Evolution: What is Evolution, and what did it evolve?

Foreword | According to Matt Rossano, the evolutionary success of the human species is based on its members' ability to cooperate with one another, in turn allowing less militant primates to master difficult tasks such as hunting and defending their prey against other predators. Successful cooperation, however, requires a secure method of communication and it is this communication which falls within the sphere of ritualized behaviour. Even though ritualized behaviour is in no way an idiosyncrasy of the human species or even of primates, but rather can be found throughout the animal world wherever reliable communication is essential (for example during mating rituals) according to Rossano, it is this communication which plays a vital role in humanisation, by initially facilitating the survival of the group as a whole and subsequently strengthening individual groups within the species. Once humans had accomplished the crucial, and highly risky, step from a life in trees to terra and had left the Australopithecus-stage behind (although neither the Australopithecus nor other predecessors of Homo sapiens are mentioned by Rossano expressis verbis), the focal point moved from the survival of the species to the competition of individual groups and from here those groups which had made the most progress in the ability to communicate held an unequivocal advantage. Ritualised behaviour applied to reliable communication thus enabled the development of more and more complex social structures, which in turn demanded more specialised and detailed ritualised behaviour, ultimately resulting in a ritual concerned not only with the adjustment of common behaviour but also with shared sacred values, and therefore the concept of religion.

The strength of Rossano's approach lies in the illuminating and traceable explanations and deliberations on why cooperation, normative thinking and especially ritualized behaviour play such a prominent role in human society and what its biological roots are. Rossano's contribution is therefore crucial to understanding of ritual in both the religious and the daily context.

1 Kappeler, Peter: Verhaltensbiologie, Heidelberg and Berlin 2009, p. 531.
However, Rossano's approach also has weaknesses, mainly concerning the issue of the origins and genesis of religion. Thus he does not distinguish between religious ritual, ritualized behaviour, and mere communication, the relationships between religion and ritual are not clarified and, further, the fact that religion is not merely the execution of ritualized actions but strongly focused on content is entirely disregarded. It is, however, precisely this content, this clear belief in an omnipotent entity whose existence cannot be proven with either of our senses or any scientific method which ultimately forms religion. Even though, for example, a state visit demonstrates mutual interests and common goals and is ritualized in its details, such as an inspection of the honour guard, state dinners or the use of abstract symbols such as flags and national anthems, it does not constitute a religion. Consequently, not ritualized actions and processes but rather this "credo quia absurdum" is responsible for turning the search for the origins and development of religion, or religions, into an object of fascination. That proper cults have developed alongside the contents of faith is, from a contemporary point of view concerning the issue of contents, positively secondary.

The lack of definition in Rossano's article, from the perspectives of religious studies and a biological-paleontological approach (as I can only comment professionally from these perspectives), raises several questions, first concerning his understanding of evolution [1.1].

On [1.1] Man, the hunter? "As hominin brains and bodies grew, meat increasingly became a critical component of the diet", Rossano thus describes the pressure for growing cooperation during the early stages of human history. The drive behind this development, according to Rossano, is the necessity for cooperative hunting. However, our early relatives, the Australopithecines, were in no way successful hunters, but rather they were the prey. As the paleoanthropologists Donna Hart and Bob Sussman have discovered in their analysis of the anatomical characteristics of early Australopithecines and the reconstruction of their habitat, our ancestors lived in groups of twenty-five to seventy-five individuals, stayed small and generalized and were successful by "combining seemingly contradictory specializations". In this context both progressive brain development as well as bipedality played a vital role, as an intelligent brain enables flight from potential enemies and the ability to walk upright allows the early detection of enemies in the open grassland savannahs. Our ancestors were omnivorous, which means that like our contemporary relatives, the chimpanzees, they occasionally ate meat. However, they did not participate in successful hunting expeditions to meet their nutritional needs but instead chiefly relied on an aggressive form of scavenging, possibly by attempting to drive predators away from their prey through throwing stones. This demands special abilities, namely "exquisite harmonization between the hand and the eye, and the ability to string together a whole sequence of actions based on an instinctive assessment of what is needed."

Evidence for the successful communal hunt, which according to Rossano played the decisive role in hominization by applying a positive pressure on the interpersonal ability to cooperate, is found only relatively late in the history of man's development: 500,000 years ago in southern Africa or respectively 400,000 years ago in mid-Europe, where early representatives of the Homo species hunted big game. The necessity for cooperation during the hunt therefore appeared relatively late in the phylogeny of the human and is only one of many factors within the process of hominization, which at this point in time was already very advanced. Without going into paleoanthropological detail, it seems clear that hominid evolution owes its success not to one single factor or ability, but depends on several distinctive adaptive steps and, maybe even more importantly, on characteristics which arose early on but only proved to be important and advantageous in the later phylogeny of man.

In general, it remains questionable whether the search ex post for the one apparently decisive, evolutionary factor is justified considering the manifold layers of evolutionary processes, as in the course of the history of humans their environment and therefore also the pressure of natural selection, were constantly changing imprinting on the ultimate manifestation of the species with all its idiosyncrasies. The best example here might be the Neanderthals, who developed,

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like *Homo sapiens*, from ancestors similar to *Homo heidelbergensis*, and adapted to his European surroundings in a highly successful manner, but ultimately could not survive in the final Ice Age and became extinct, the then available ecological niche being filled by modern man.  

The evolutionary success of the species *Homo sapiens* thus cannot be traced back to the progressive development of a single characteristic, no matter how important in its own right, and such a view does not do justice to the differentiated picture developed by paleontological research, from the evolution of hominids, beginning with the *Orrorin tugenensis*, to the *Australopithecus*, the various representatives of the *Homo* genus up to the *Homo sapiens*. Instead, we come away with the impression that the author had a teleological development in mind when he attempts to pinpoint a single, or in any rate one decisive, feature of hominization. Therefore it seems appropriate at this stage to offer again a definition of evolution.  

Evolution describes the development of organisms over the course of time, through selection, such that in every generation those forms survive which, relatively speaking, have best adapted to their respective surroundings. This thought is both comprehensible and plausible, and indeed it is easy to imagine how through positive selection one single feature, let us say intelligence, is chosen and develops positively through the generations. Such a view, however, disregards the fact that all organisms are astonishingly complex genetic entities, in which a remarkably small number of structural genes... govern the development of an enormous number of bodily tissues and processes. In the end, natural selection can only vote up or down on the entire individual, which is a real mash-up of genes and of the characteristics they promote. It cannot single out specific features to favor or disfavor.\(^8\) To clarify once again: evolution is never the development towards something (even though some humanists would like to believe so), and especially not the development towards perfection or a higher complexity, but instead merely the adaptation to relatively stable natural environment with a steady adaptive pressure. From this originates the notion of a balanced evolution (so-called orthogenesis). Should the surroundings change, then the adaptive pressures also change and the organism in question will always react with new methods of adaption or become extinct.\(^9\) Consequently, we must also imagine the evolution of the *tribus Hominini* as a process, in which fast changing natural environments (climate change as a consequence of the Ice Ages) as well as various predators and other competition for food consistently forced our ancestors and their relatives to face new challenges, to which they responded with many different strategies, amongst others bipedality, progressive brain growth, the development and use of tools, and lastly the ability to cooperate socially, thus surely meaning that these factors were mutually sustaining in the course of their development and that, the closer we come to our current times, the more social evolution has displaced the biological.\(^10\)

A further issue must be mentioned at this point, not only because the issue is often neglected in considerations of evolution, but also because it affects cultural evolution: in this specific case of ritual and especially the concept of religion, we are talking about the basic material for evolution. Evolution only operates with extant material, which means that evolution can modify existing characteristics but cannot create. Should evolution, in an extreme example, have maneuvered itself into a corner through over-specialization, the organism in question cannot react to any changes in its environment and must become extinct. For example, the so-called robust *Australopithecines* (today genus *Paranthropus*) reacted to the increasing airdity of the African savannah by the adaption of their masticatory apparatus (stronger dentures to chew hard-shelled foods) but with increasing humidity they found themselves inferior to the more delicate groups of the *Australopithecines* and became extinct. Other characteristics can be carried through the generations in a seemingly senseless fashion and only prove themselves highly useful hundreds of generations later, allowing evolution a renewed platform. Expressed in the words of Ian Tattersall: “We are all built on modified versions of a template ultimately furnished by an ancient ancestor.”\(^11\) The same concept applies to the cultural evolution, including the evolution of religions and the respective rituals.\(^12\) Here as well nothing new is invented, but the extant cultural-religious inheritance is modified over the course of history and adapts to the changing economic and social situations. Occasionally old traditions and customs are carried over, which might include rituals such as those described by Frits Staal, namely the Agni-ritual, inexplicable in modern India, as well as sacrificial customs in ancient Greece, which no longer correspond to the contemporaneous form of worship. Instead,

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a sacrificial cult is based on the exchange of goods, whereas in fact the sacrifice as part of ritual corresponded more closely with the primary sacrifice of foragers. 14

On [3] The evolution of religions. Returning to the topic of evolution, specifically the evolution of religion, and to the evolution of religions: as complex as the biological evolution of man is, we can trace evolution of religion, including the development of the religious ritual. Adaptive pressure from various directions was ultimately responsible for the development of what we today understand as religion. In the early period of the development of the Homo genus, the ownership of fertile territory and secure living areas was a decisive selection factor, while during the advancing period of early agriculturists, in the Neolithic, focus moved towards conflict-solving strategies within an as yet unstratified society. At the point in time where the stratification of society and the development of successful hierarchies along with conflict-solving institutions (Eneolithic, Chalcolithic, and the subsequent Bronze Era) can be seen, competition between individual settlements, or early cities, became the decisive factor and the omnipotent entities dwelling in the religious cosmos were transformed from the so-called Dema (powerful ancestors) into revered deities as part of a cult whose support had to be secured by means of gift exchange. 15 At an even later stage, early empires enforced the integration of the various local deities into a common pantheon or, as in the case of Israel, the amalgamation of various local invisible deities into one omnipotent deity. 16 It is these developmental steps and the changing evolutionary pressures which the changing societies put on religion and then onto the various religions, that Robert N. Bellah, a sociologist of religion, described in his seminal article of 1964. 17 However, he employed a terminology originating in the social sciences rather than biology and we find no explicit mention of selection or adaptive pressure even though the respective adaptive factors are named clearly. A further decisive issue is explicitly clarified by Bellah: the issue of the evolving unit. According to Bellah, religion is


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Clearly the systematic evolving unit, whereas society represents the surrounding environment for the religions, to which they have to adapt should they wish to survive the competition. Here, Bellah does not question the evolutionary usage of religion in the species man nor is man's evolutionary success explicitly relevant for his discussion of the evolution of religion.

However, the implications for Rossano are as follows: it is important to clarify what specifically should evolve: - the tribe Homo and consequently the species Homo? In that case we face the question of the evolutionary relevance of religion and respectively of ritual. Rossano seems to answer this question in the main by highlighting the use of ritualised behaviour and the subsequent focus on ultimate values. However, as mentioned previously, the relationship between religion and ritual remains unclear as does the question of why and how the religions themselves, including their cultic actions, constantly transformed themselves in the course of history (that means however, religions evolved?).

In this context, Rossano's assumption that religions and especially their defining rituals are universal must be questioned as well. At least in modern times, religious convictions and even affiliation with a religious community in Scandinavia and especially in Eastern Germany are the fringes, such that amongst sociologists of religion these regions count as the least religious worldwide. This is a development that is decidedly not covered by Rossano's definition and approach nor is the growing development away from religion with its ritualised cultic forms and towards spirituality - a form of religion that exists without rituals and is an extremely individual experience, thus without any relation to cultic communities. 18 Moreover, on account of its innate advantages for the evolution of human communities, according to Rossano, religion should in fact be on the rise, more specifically a religion which is strongly centred on ritual. But we see the exact opposite in effect.

Further, in forager societies, which resemble early human communities with regard to their economic system, religion is at the most known only in its most rudimentary form. Thus, for the Mbuti Pygmies in the Eastern Congo, a forest on which their existence depends has a religious importance and they direct their prayers towards it. Rituals such as those practices of the neighbouring, more settled farming communities of the Bantu culture are unknown to the Mbuti. While they

do celebrate holidays such as the Molimo festival, which is directed at the forest, these celebrations do not include any firm rituals."

On [4] Religion, Ritual, and Sacred Myth. Bellah's deliberations and the above-mentioned examples demonstrate that rituals, ritualised behaviour or a cult can all play a role in religions but that this role can be manifest in various forms. Whilst foraging cultures have possibly cultivated the notion of a highest entity such as a hypostasised forest, among the Pygmies, their festivals do not include any ritualised practices, meaning any repetitive actions referring to ultimate values. On the other hand, in horticultural societies, whilst equally lacking any social stratification, rituals play a larger role in the religious life for the respective religions as well as for the coherence of the community. This applies to recent unstratified societies as well as to their early Neolithic counterparts.

The reasons for the appearance of complicated rituals in unstratified agricultural societies have been discussed by the British social anthropologist Victor W. Turner and it is exactly this type of society that Rossano imagines when discussing the conflict-solving potential of rituals. Should conflict arise in a group of foragers—whereby the majority employ sophisticated strategies to avoid conflict in the first place—they can part ways if need be. The group splits up. Settled peoples react differently. The investment in arable fields and buildings is too high to simply give up should conflict arise. Since an unstratified society that is not based on a division of labour does not know of hierarchies nor of any conflict-solving institutions such as a ministry or courts of law, other effective solutions must be sought to resolve potential conflicts. In this case, rituals in the strict sense as exemplified by Turner offer suitable strategies, by carving out the social roles of potential parties in conflict, emphasizing their respective values and bringing about a consensus based on a reference to higher, unchallengeable entities. Turner specifically investigated the Ndembu, amongst whom conflict arises easily due to a social structure of contraries which is on the one side maternal and patrilineal on the other. The opposing interests of man and woman or their families respectively, are the main aspects adjusted through rituals with a reference to the value of both genders."

The question, however, remains concerning the final values or the higher powers, which are referred to in the ritual and which are decisive for the effectiveness of the ritual. What in effect remains open is the question, already mentioned at the outset of my commentary, concerning the contents of religion, to which the ritual must refer, the issue of the sacred lore. The importance of sacred lore was rediscovered in the scientific work when the ethnologist Adolf Ellegard Jensen, in his seminal contribution "Das religiöse Weltbild einer frühen Kultur" demonstrated that myth and ritual are closely related, that ritual is the performance of myth (the religious transmission) and that it serves to maintain cosmic order in the imagination of the respective societies. It is always an ancestral figure "with heroic proportions and [...] capacities beyond those of ordinary men," who suffers a certain fate and thus creates the extant cosmic order. In order to maintain this order, perceived as both expedient and necessary, the act of creation in mythical times (URZEIT GESCHEHEN sensu Jensen) has to be repeated in regular intervals which in turn means that the myth has to be represented in a ritual in regular intervals where it can display its conflict-solving effect. In the sense of both Turner and Rossano, seen from the perspective of the history of religion and the sociology of religion, ritual in Jensen's thought is bound to a certain type of society: the so-called early planters, a productive, but not yet stratified society. These results, crucial for the understanding of the interrelationship between religion and ritual, were taken up by the above-mentioned sociologist Robert N. Bellah, who correctly assigns ritual to a specific type of religion which he calls primitive religion. Bellah's primitive religion is thus distinguished by a certain productive but not yet stratified social type for whom a religion is characteristic in which a meaningful founding myth constitutes a world view. More developed societies such as the socially stratified advanced farming societies of antiquity no longer know ritual which repeats the fate of an supernaturally powerful primeval entity, but rather a proper cult in which deities are revered according to the do-ut-des principle. Thus thanks to these researchers the relationship between ritual and religion, or the contents of religion, was clarified as well as the terminological distinction between religious ritual (in primitive Religion

24 ... even if Bellah mainly refers to Levy-Brühl, Lucien: La Mythologie Primitive, Paris 1935.
respectively tribal religion) and religious cult (in archaic religion and later). Such a
distinction was vital for contemporaneous research focused on the question of the
origins and development of religion – and the role of ritual in society.

It must be noted at this point that, especially as regards an analysis of the origins
of religion, a strict concept of ritual and its understanding within the framework of
historical development of religions cannot be overestimated.

behaviour within the framework of reliable communication is part of the primates’
inheritance and is traceable back to mutual ancestors of humans and chimpanzees
at the base of their Hominini family tree. Subsequently, however, ritualised behaviour
has moved from inherited behavioural patterns, primarily amongst humans, and
has incorporated more and more patterns learnt within a social context. In this
instance, ritualised behaviour as described by Rossano proved its value and can
be found wherever reliable communication is necessary – for example in human
encounters, where ritualised greetings signal an unproblematic encounter, in times
of transition (school enrolment, graduation, taking the vows upon entering mini-
stery), in times of communication with deities (religious services), in legal courts,
and in state visits. Only a part of these ritualised behavioural patterns relate to
religion. However, this does demonstrate that ritualised behaviour is ever-present
in our lives: these smaller and larger rituals of daily life which form and frame life
especially in more complex societies and ensure reliable communication enabling
the general safety of society.

It is for this reason that ritualised behaviour can be found in every religion. At
that moment in which the belief in or notion of a higher power or supernatural
agent came to the fore in early religion, ritualised behaviour developed within
the framework of communication with these entities, mainly because ritualised
behaviour in the service of communication is so important. However, this in no

26 van Gennep, Arnold: Übergangstogene [frz. 1909: Les rites de passage], Frankfurt am
Main 2005.
Ithaca and London 1974; Bell, Catherine: Ritual. Perspectives and Dimensions, New

In this context, the most important publication is surely Rothenbuhler, Eric W.: Ritual
Communication. From Everyday Conversation to Mediated Ceremony, Thousand Oaks
1998, which makes perfectly clear that ritual is a part of daily life and not necessarily
bound to religious ceremonies or ultimate values.

manner allows the reverse conclusion! Not everything that incorporates a ritual
is religious!28

From this follows that Matt Rossano’s deliberations on the origins, evolution, and
meaning of ritual for our understanding of how social life functions must be appre-
ciated and highly valued. Likewise, we see how the range of ritualised behavioural
patterns, such as a ritual in the strictest sense or the strictly governed cultic acts
of polytheistic or monothestic religions, could gain a firm foothold in religion.

Instead of an afterword | However, the question of the origins of religion cannot
be solved on this line of thought because the issue here lies in its content, and these
religious contents, as mentioned above in relation to evolution, cannot be chosen
freely and related to the respective ritual. On the contrary, these contents must have
developed out of notions and ideas which must have been modified and adapted to
the respective social, ecologic, economic, and political circumstances over the course
of generations. To be more specific: each attempt to solve the question concerning the
origins of religion must be able to explain how the notion of deities and ultimately
of one single god developed in many small steps, from cave art and female figurines
of the Upper Paleolithic, the clay-covered skulls of the Pre-Pottery Neolithic, the
house-cults of the Early Neolithic, and the Megalithic tombs of the Late Neolithic.
Just as in palaeoanthropology, we must imagine a family tree of religions and trace
the individual branches, in this case the archaeological cultures, logically, i.e.,
map their systematic relationships within a system of religions (equivalent to the
zoological systematic). Here of course a comparison of characteristics is important,
although one must also distinguish between synapomorphic characteristics, or
mere homologies, or even pleisiomorphic characteristics.29

28 Rothenbuhler, Eric W.: Ritual Communication. From Everyday Conversation to Mediated
29 Wunne, Ina: Karl Meuli’s „Griechische Opferbräuche – Towards an Ethology of Religion“. in:
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Gasparro, Augusto Cosenzino, Mariangela Monaca. Palermo 2009, p. 173-185; Wunne,
Ina: Ursprung und geschichtliche Entwicklung der Religionen – ein Evolutionsges-
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With regard especially to plesiomorphy (which is also called "survivals" by the founder of anthropology, Edward Burnett Taylor) and its relationship to ritual—and the issue of carrying useless characteristics, I would like to mention a further impression paradigm: the mystery religion, for example the cult of Demeter, which worships a chthonic deity, Demeter, and her daughter Persephone. Much here is reminiscent of a Deme: a myth which conveys her fate, and the ritual which is executed continuously in order to maintain the cosmic order. Persephone dies, but on account of her death the seasons are born and with them the crop plants. Simultaneously, her fate is connected with love and death. This ritual, already a more "survival" in archaic times, led to a renewed rise of the cult of Demeter when the religious interest of man shifted towards the notion of personal redemption. It was now these old and nearly meaningless rituals, which with reference to the sacred lore of the eternally dying and resurrecting deities, blossomed once more and are still present in Christianity.31

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Mutt J. Rossano

Reply to Comments: Ritual's Long Reach

My thanks to the editors for the opportunity to reply and to my colleagues who have provided very insightful and thought-provoking commentaries. I hope my replies are equal to the scholarly standard they have set. In no way are my replies intended as a definitive "last word" on any of the issues raised. Instead, my hope is merely that they will be a constructive step in an ongoing and important discussion.

On [1] | Achtner agrees that cooperation is an important human trait, but argues that my emphasis on it, over and above other traits such as rationality, is unwarranted. Antweiler expresses a similar concern, cautioning me that "Tomasello and others' insights into cooperative skills should not be taken as social intelligence outcompeting individual rationality as a main factor in human evolution."

In reply, I would contend that cooperation is not opposed to or apart from rationality. Cooperation requires a certain type of rationality — social reasoning. If I observe a young male, head down, flowers in hand, walking dejectedly away from a pretty female, I can conclude that his romantic overtures have been rejected. Furthermore, I can surmise that his mood is probably glum and will likely remain so for a while, but in the not-too-distant future he will probably make further attempts to gain (or re-gain) her favor.

All of this could be restated in the form of inferential reasoning: if X behavior is observed under Y conditions then conclusion C is highly likely. Moreover, this inferred conclusion could be useful in the pursuit of my own goals — suppose I know that the rejected young man is from a wealthy family and I am currently in need of investors for my start-up business. Thus, behind the formation of a potentially mutually beneficial cooperative arrangement between me and the rejected suitor lies a host of rational processing including probabilistic calculations, inferred conclusions, and future predictions.

Over the course of hominin evolution, those of our ancestors who were best able to apply their rational skills to solve social problems appear to have had an advantage over others. Thus, we evolved to be natural social reasoning experts as
opposed to natural experts in physical, causal, or mathematical reasoning. Some evidence for this can be gleaned from a study by Herrmann et al. (2007). They gave a comprehensive battery of cognitive tests to chimpanzees, orangutans and 2.5 year-old children. Tests covered reasoning in the physical domain (spatial, causal, quantity) and social (social learning, communication, TOM). While no significant differences were found in the physical domain, significant differences were documented in all categories of social reasoning. Since the human subjects were preschoolers, it is likely that these differences would widen even more as the children matured.

Achtert also mentions the OT connection between God and justice - God requires his people to behave justly so that they might flourish. Despite this, however, sometimes the truly just still suffer (Job). This is a theological theme that has interesting overlap with recent empirical work on human cooperation. It is not surprising that people behave better (more generously, bravely, honestly, etc.) when watched.1 Norenzayan (2013) has proposed that as groups get larger and human monitoring for ethical behavior becomes impractical, the idea of vigilant gods becomes an increasingly effective strategy for ensuring cooperation. This reaches its apex in monotheism - the idea of a single, all-powerful, all-knowing, ever-present and morally concerned supernatural monitor. The Abrahamic God may have played a critical role in the emergence of large-scale social and economic cooperation (bringing increased flourishing to a wider segment of the human population).

However, monotheism brings with it the problem of evil. If God is all-knowing and all-powerful (and can thus ensure cooperation across tribal boundaries) why does he permit some to seemingly "get away" with uncooperative evil? I have no answer for this beyond those that have been proposed by theologians and philosophers over the centuries. It is interesting to note, however, that ideas about afterlife judgment were not widespread or well-developed in early Judaism. The development of these ideas and their prominence in Judaism's offspring - Christianity and Islam - suggest an attempt to deal with the frustrating inadequacies of earthly justice - postpone "real" justice to after death.

Achtert also raises the issue of innovation and change both in group norms and ritual practices. How, he asks, can this occur if ritual is primarily a mechanism of status? Ritual is designed to preserve group normative structure, not alter it. Certainly group norms and rituals change and this can happen in many ways.

For example, some marginal rituals can become more widespread. In later pagan times, state rituals were increasingly subverted by so-called mystery cults (one of which was early Christianity). Many of these cults had been around for a while but on a much smaller scale. Inter-group interactions can also play an important role in ritual change. As different groups interact with one another, ritual practices and ideas may be borrowed or exchanged. The spread of Christianity was often marked by syncretism, where local religious practices or ideas were incorporated into the larger Christian praxis. Thus, while I concur that rituals generally tend to preserve existing social structures or normative practices, rituals rarely exist in isolation. Rituals, norms, and varying social structures are often vying with one another for hearts and minds producing innovation and change.

Achtert also points out that not all rituals are social in their nature or function. What about private prayer or sacrifices to the gods? If a ritual is not social, can it still serve as a costly signal, he wonders. The answer is no - not all rituals are social and not all rituals serve as costly signals.

Let me address the social question first. While I concede that not all rituals are social, many are more social than what we might think. Take the two examples given. For believers (and who other than believers are going to be engaging in private prayer or sacrifices to gods?), both of these activities are social interactions. They are conversations or exchanges with supernatural agents, who are presumed to be capable of understanding and appreciating the acts. Even entirely private rituals often have social effects. I’m told that part of Jesuit discipline is passing ten minutes (or so) each morning and afternoon to contemplate what one has done so far that day and what one still needs to do. This is not prayer (although it could be done prayerfully), so it is not intended to be an interaction with God, but it could certainly be ritual. As ritual, it brings to mind and reinforces certain Jesuit norms of self-control, self-awareness, and thoughtfulness. Being reminded of these norms on a daily basis (in theory at least) should effect one’s social behavior. I think this is probably true of many rituals, public or private. They are “spilling over” into social life.

Now, on the issue of costly signaling. No, not all rituals are costly signals. The riskiness of a joint venture plays an important role in whether costly signals are necessary or not. If risk is low because two parties’ goals perfectly align, then signals need not be costly. In this instance, cooperation is assured because it is necessary if either party is to reap a reward and both parties lose without it (a form of cooperation called “mutualism”). One hyena cannot bring down a water buffalo. But three can. So if any of the three are to eat, all must work together. Mutualism is not uncommon in the animal world and so its presence among humans is unsurprising.

Costly signals become necessary where cooperation between parties is more risky because one or both of those involved might be tempted to defect in order to reap a short-term gain. Under these circumstances, both parties need some assurance

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"Skin in the game" is an expression often used by gamblers that they will forgo immediate gratification in order to jointly secure a potentially greater long-term reward. It is the frequency and complexity of this "riskier" form of cooperation that separates humans from other animals.

Achtert then poses a third question about ritual function, that is, if rituals are supposed to promote social cooperation, how is it that some rituals seem socially destructive. He uses the example of gang rituals, where someone might commit acts of violence as part of an initiation. This is an interesting example and it highlights the importance of the level of analysis at which we are describing a ritual's pro-social effects. First, is the initiation a costly signal? Yes. The gang member wannabe demonstrates commitment to the gang by engaging in acts that could result in his or her injury, death, or arrest (high cost acts). If we analyze this at the level of the larger society, it is anti-social. But if we analyze it at the level of the criminal gang, it is pro-social. Upon successful completion of the gang ritual, the new member will have the respect and trust of the other gang members.

Finally, Achtert wonders why it is that rituals can grow stale and empty (possibly to the point of abandonment) if they have all the positive social effects I claim. A couple of points are relevant here. (1) There is an important distinction between rituals and routines. Routines are any repetitive behaviors that can potentially be executed automatically, as "mindless habit." Because rituals often have repetitive elements, they risk becoming routines, although this is not inevitable.

(2) Harvey Whitehouse (1995) made an important distinction between imagistic and doctrinal rituals. Imagistic rituals were relatively infrequent but highly emotive in nature. Examples might be initiations, weddings, or funerals. Because of their rarity and emotive character, imagistic rituals tend not to become tedious or boring. But imagistic rituals are taxing on people and often lose potency as groups increase in size. As organizations grow in scale (for example as Christianity moved from a minor cult to an empire-wide religion) imagistic rituals become unwieldy. Instead, increases in scale usually force a switch from imagistic rituals to doctrinal ones. Doctrinal rituals are more frequent, scripted, and less emotionally engaging. Weekly worship services fall into this category. The strength of doctrinal rituals is that by virtue of their frequency and repetitiveness, they continually reinforce and enhance institutional teachings or dogma. However, their weakness is that they can easily become tedious. Doctrinal rituals are the ones most likely to become stale and empty.

An implication of the doctrinal/imagistic distinction is that successful organizations must find a balance of the two to remain vibrant. Too much emphasis on imagistic rituals can be draining on members and can lead to confusion and fragmentation regarding the organization's core tenants. Too much emphasis on the doctrinal can lead to rituals becoming empty routines, devoid of meaning.

On [2] | Antweiler expresses some concern that my view of human nature is discontinuous with the rest of the animal world saying "Human nature as I see it is a combination of unique characteristics and traits shared with other primates (and others with mammals, others with all living beings)." I agree. I did not mean to imply that humans represented a major discontinuity with nonhuman animals. Specifically human traits are built upon and integrated with a primate/mammalian foundation. But uniqueness provides information about the specific selection pressures that affected our direct ancestors. The same is true of any organism. A Grizzly Bear has unique traits that make it specifically a Grizzly Bear and not a Black or Polar Bear. These traits emerged because of the particular selection pressures it faced, not replicated in other bears. But those traits are built upon and integrated with a broader set of "bear/mammalian" traits.

Antweiler directs two questions at me concerning primate and hominin cooperation. (1) Could there be subtle, non-verbal cues exchanged by chimpanzees that indicate commitment to a joint goal? Of course this is possible; however, I know of no accounts where one chimp appeared to punish another for having failed to uphold his or her end of a joint venture. One might expect such behavior if there was some form of assumed "commitment" between partners. What seems to be more common is that chimpanzees simply prefer to do things alone, possible because they usually cannot count on others as reliable partners.

(2) Regarding joint foraging among hominin mothers with infants, Antweiler asks if this was the result of natural selection or rational cognizance by the mothers themselves. I would argue that a combination of circumstances and selection was at work here. Hairlessness probably increased due to the greater thermal regulation needed when our ancestors moved from dense forest canopy to more open direct sunlight. In conjunction with this, increase bipedalism narrowed the birth canal, requiring infants to be born in a more immature and dependent state. These circumstances put hominin mothers in a very difficult situation. They had to forage to survive, but at the same time they had to hold and protect a weak helpless infant, who, unlike all other primates, was incapable of clinging to the mother's body.

Cooperative foraging among these mothers probably began simply as greater tolerance for close proximity to other hominin females (probably kin) while foraging. Here is where selection can intervene and operate on a trait of temperament — "tolerance for proximity" — and expand it into cooperativeness. More sociable females, in whom "tolerance" could more easily be generalized into "cooperation"
would have had higher fitness. Eventually, cooperative foraging became the norm among hominins females as those unable to cooperate simply failed to reproduce.

Antweiler points out that while normative transmission through ritual and ritualized interactions certainly exists, recent field work finds widespread use of active sanctioning such as teasing, shaming, and even beating as means of inculcating norms to children. I was not aware of this work. It is disconcerting to hear that these forms of “intensive teaching” are cross-culturally common. For me it raises some questions: Is this an instance where the non-WEIRD world differs in important ways from the WEIRD world? Are these methods more likely to be used in teaching the child what is prescribed in a society as opposed to prescribed? Might it be the case that ritual transmission teaches what is valued by a society, while intensive teaching transmits what is rejected by the society? All questions I hope future research can address.

Antweiler raises an important question about relational personhood. This, it is claimed, is a concept widely discussed (and to some degree accepted) in anthropological circles, yet its empirical substantiation is weak. Relational personhood may be one of those axioms touted by many, but tested by few. While acknowledging that more empirical work needs to be done here, I don’t think that the relational-personhood idea is entirely devoid of empirical support. Along with the (sub-Saharan) African and Sudanese examples that I discuss in the paper (albeit briefly), Charlotte Hardman’s work with the Lohorung Rai of Nepal also supports the relational-personhood concept. She discusses the khimpie ceremony, where newborns are ritually introduced to the ancestors and welcomed into the community. Quite explicitly, she discusses the transitional, “non-status” state that both mother and infant occupy prior to the ceremony. Only after the khimpie is completed are the two officially recognized as “persons” with standing in the community (which includes the ancestors). I suspect that ritual-besown community status was the norm in our ancestral past. However, I agree that at present this suspicion is probably best viewed as a plausible hypothesis awaiting further confirmation.

As with Schlette, Antweiler questions my assertion that ritual is being marginalized in contemporary society. They point to what appears to be a proliferation of rituals in various contexts (i.e., amongst youth, corporations, team sports, politics, etc.). While I agree that ritual’s prevalence may not be declining, what I perceive

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people, costly rituals were correlated with communal endurance. But the same was not true in secular communities. I would also suggest that it is the lack of depth (ritual shallowness, if you will) that may lead rituals more susceptible to the "cult of the individual" that Schlette warns against. When the powerful sense of collective purpose and unity engendered by ritual participation has no deep cultural history on which to cling, a charismatic leader may fill the void.

Modern, corporate, secular rituals constructed 'in the moment' for very specific utilitarian purposes are at greater risk for inauthenticity. They may work for very narrowly defined purposes, such as organizational team building, but I suspect that outside of their niche, they fall flat. A rich community life that offers individual members a palpable sense of purpose needs rituals broad in scope and deep in history. Replacing expensive family dinnerware handed down over generations with plastic utensils and paper plates does not mean that the family cannot eat. But it does make family dinners far more mundane events, less likely to generate a potent sense of family unity.

Antweiler claims that the most pressing problem with my account is that it reduces to a one-factor theory of human nature. This complaint is echoed by Wunn, so I believe that some of what I say in that response is also relevant here. However, while Wunn is more concerned with cooperativeness, Antweiler is focusing more on ritual, worrying that too little attention is being paid to "rational intelligence or cooperative factors beyond ritual."

In reply, let me say that, of course, humans possess rationality. But for what purpose has our rationality largely been selected? As I discussed in my response to Achtner, I would argue that our rationality is largely social rationality. We have not evolved to be 'all-purpose' rational processors. We appear to be specialized for social rationality more so than for abstract logic or complex mathematical thinking, both of which require years of schooling to master, while social reasoning comes quite naturally. Indeed, one can be quite successful in life with only minimal training in math or formal logic. But deficiencies in social reasoning, as in autism or Asperger's syndrome, can be highly debilitating.

With regard to cooperative capacities beyond ritual, I would suggest that being beyond ritual (or, more accurately, ritualized behavior) does not make them inde-


pendent of it. First, we must identify what these capacities are. I'm not sure exactly what Antweiler had in mind, but I'm guessing such things as language, TOM, and social emotions. These are undoubtedly critical to human social intelligence and cooperation. But here is the critical point regarding these abilities: to function they require information; and scripted, ritualized social encounters are the major source of that information.

Some examples should help elucidate what I mean. (1) European explorers wishing to befriend natives. They approach slowly, lay objects on the ground before them (gifts), and back away. By following this nearly universally understood script, they attempt to inform the natives about their intentions and about how they want the natives to think (TOM) and feel (social emotions) about them. That information would be very different if they enacted a different ritualized script, such as marching toward them with drums pounding and weapons brandished. (2) Consider two people attempting to establish a business relationship. Long before any specifics are discussed, a scripted ritualized introductory encounter must take place usually involving a handshake, lunch, and small talk. Each will use elements of that encounter: the firmness of the handshake, the eye contact, the lunch venue, the other's dress, and the ease of the small talk, as information sources for the thoughts, feelings, and intentions of the other. Emerging from the ritualized encounter will either be a sense of mutual sincerity (allowing the business deal to proceed) or suspicion (which may scuttle it). Something very similar could be said for two people working their way through the steps of the dating script (introductions, small talk, coffee, lunch, dinner, and movie, etc.).

In each case, the ritualized script provides a background framework against which words and actions can be assessed. Without this framework, words and actions lack context, and interpreting them can be ambiguous. Ritualized scripts limit ambiguity. They provide venues wherein our social emotions and mentalizing ability can get the information they need to guide our social reasoning. The scripts convey a social message ("I'm following this procedure because I want you to think and feel a certain way about me") or (from the perspective of the observer) they allow for the evaluation of social intentions ("if you want me to think or feel a certain way about you, then follow this procedure"). It is from this starting point, I would argue, that all of the other cooperative capacities 'beyond' ritual come into play.

Finally, a few quick replies to smaller issues raised by Antweiler.

1. Antweiler argues that "it is simply too strong to say with Tomasello and others that they [chimpanzees] can identify intentional behaviors and infer goals and thus understand that someone reaching for an object intends to possess the object." I think this is an important reminder that in studies with other species
Our inferences about their internal mental states are always just that, inferences. Assuming they think as humans think is always risky. Our descriptive language here is a shorthand for something more complicated but more accurate such as: "Their behavior is consistent with what occurs in humans when they infer goals and identify intentions in others."

2. Antweiler cautions that much of our research is biased toward WEIRD people and cultures and emphasizes the importance of cultural anthropology in widening our view. A very good point, indeed. Like many others, I hope there will be increased effort to obtain data from outside the WEIRD realm. The problem, of course, is that the effort and resources necessary to do this are nearly always far greater than simply testing more easily accessible WEIRD subjects.

3. Antweiler advises that I be more precise about what is meant by ritual "regulating social life." Then suggests that what it might entail is "making communication easy by making it unambiguous or the function of avoiding conflict by making a hierarchy unmistakable." Yes, I agree with that. Put slightly differently, I think "regulating social life" means using ritualized gestures to increase signal clarity so as to avoid unnecessary conflicts within the social group.

4. Antweiler discusses the distinction between how the term "ritual" is used in cultural anthropology (longer scripted sequences) versus its use in etymology. I think this distinction overlaps quite a bit with my discussion of the difference between ritualized behavior and ritual (see my response to Frey).

On [3], Blume expresses disappointment at my failure to take into adequate account the highly cooperative activity of women in birthing, nurturing, resourcing, and protecting of offspring. A point well-taken. As Blume discusses, the female side of the cooperative equation has a long history of secondary status, if not outright neglect. In other contexts, I have discussed at length what I believe to be the evolutionary origins of birthing rituals and taboos. No other primate (and to my knowledge no other animal) requires birth assistance and there is evidence to suggest that the need for assistance arose early in hominin evolution, possibly with A. afarensis, and almost certainly by the time of H. heidelbergensis.

Thus, among hominins, a unique and highly fitness-relevant cooperative venture emerged: birth. Among many traditional societies, this venture is an exclusively female one. Moreover, a recent study has found that around the time of birth hunter-gatherer women and their husbands often move into closer proximity to their maternal relatives. This provides support to the new mother and creates a social context for greater gender equality. Both the need for assistance in birth and the tendency to migrate toward maternal kin for that assistance would have created social conditions for the enhancement of cooperation in our ancestral past.

The role of female coalitions in the evolution of ritual and language should also be noted. In their search for the origins of ritual and language, Knight and Lewis (2014) point to the complex polyphonic singing of Mbenjile (a traditional people in Central Africa) women. When making overnight camps in the deep bush, these women will chorus loudly throughout the night in order to ward off potential predators. The energy and tonal complexity of their singing act as natural amplifying mechanisms, deceiving listeners as to the number of participants. If ancestral females used a similar protective strategy, then two features may be significant: (1) it is a costly, group-coordinated behavior, as is often found in ritual. (2) It demands great vocal articulatory control, as is required in spoken language. In female Mbenjile singing, we may be seeing the ancient foundations upon which both ritual and language were built.

Coalitions are also central to the Female Cosmetic Coalition hypothesis of Power, Watts, and Knight. In this case, coalitions were designed to secure male investment for increasingly dependent offspring. Encephalization over the course of hominin evolution would have made cooperative breeding essential for female reproductive success. Early on, investment from female kin may have been sufficient. However, the last major increase in brain size occurring sometime around 200,000 ybp, would have made male investment (i.e., stable pair bonds) essential. A constant threat to stable pair bonds in any multi-male/multi-female social group would have been young, newly-fertile females whose status was signaled by the presence of menstrual blood. Older pregnant or nursing pair-bonded females adopted a ritual strategy for controlling male access to newly-fertile females and thereby discouraging philandering.

Power, Watts, and Knight point to the ubiquity of female initiation ceremonies among Southern African hunter-gatherers as a model for these early female coalitional rituals. These rituals almost always involve body decoration with red pigment. This accords well with the vast amounts of deliberately and efficiently.

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procured red ochre in the African archeological record starting about 200,000 ybp. What is significant about these rituals, they argue, is that they would have involved performances that referred to abstract cultural fictions, thus making them more than just indexical signals. By painting themselves with red ochre, non-fertile females would have been feigning fertility with the full knowledge that males were not literally fooled by this display. Instead, what was understood by both parties (the signaling female coalition and the male observers) was a more abstract cultural (as opposed to actual) reality: the sexual inaccessibility of any female member of the coalition in the absence of reliable male investment. This then marks the critical transition from indexical ritualized behaviors of nonhuman primates, to true symbolic human rituals. While one can debate the merits of FCC hypothesis, it does provide an example of the potential significance of the female perspective in the evolution of ritual.

With this in mind, however, the prudent theorist must guard against an overly-reactionary position. Cooperation in hunting, defending resources, inter-group conflict and other traditionally male domains should be reduced to triviality only if the data clearly support this denotation. “Male” and “female” cooperation could very easily have played significant and complementary roles in making us human.

On [4] Frey is skeptical that human cooperation is really all that unique. This is based on the possibility that I might be underestimating the cooperative abilities of other primates (especially our fellow great apes) and the fact that cooperativeness among non-primates such as eusocial insects is also quite impressive, potentially equivalent to humans. These are both worthy points. First on apes: Is chimpanzee hunting truly cooperative? I argue no; while Frey points to evidence indicating otherwise. I readily acknowledge that this is a point of contention among primatologist and anthropologist. As is often the case in these debates much turns on how we define cooperative. Is the implementation of different roles (roles that can require considerable learning to master) in the achievement of a goal enough to qualify as cooperative? If so, then chimpanzee hunting is very likely cooperative.

I follow the definition of cooperation as proposed by Bratman (1992). He proposes three characteristics for identifying cooperative acts: (1) at least two individuals coordinate their actions in a mutually responsive way, (2) in the pursuit of a shared goal, (3) with an understanding of the complementary role each is playing in pursuit of the goal (as evidenced by their ability to engage in role reversal).

Before applying this definition to our primate relatives, first a quick word about eusocial insects. While appreciating the sophistication of their communities, I am skeptical that ants or honeybees possess qualities (2) or (3) of Bratman’s definition. I think their cooperation is based on a very different set of organizing mechanisms.

\[ \text{...that of humans, primates, or even mole rats. Indeed, Wilson}^{10} \text{ has argued that the best model for understanding eusocial insect communities is that of the upper organism with workers being extensions of the queen’s phenotype rather than distinct individuals. Given this, it might be more accurate to say that humans are unique when it comes to agent-based cooperation.}

\text{Now, on to chimpanzees and the like. There’s little question that chimpanzee hunting includes (1) of Bratman’s definition. (2) is probably also present. However, (3) to which chimpanzees actually share the goal of getting the monkey (as in we want the monkey rather than I want the monkey – and it just so happens that a bunch of my mates want it as well) may be a point of debate. Point (3) is the most contentious one.}

\text{Tomasello and Carpenter (2005) concluded that an understanding of complementary roles as exhibited by role reversal was not present in three human-raised chimpanzees (whose cooperative abilities typically exceed those of wild chimps). This is in contrast to 12-18 month-old infants.}^{12} \text{ They argued that only the humans understood the joint task (and the complementary roles being enacted to achieve the joint task) from an objective (“bird’s eye”) perspective whereas the chimpanzees’ perspective was more egocentric. These empirical findings, along with those I discuss in the article, have convinced some (myself included) that important differences exist in the cooperative abilities of the two species. These differences suggest that chimpanzee hunting may not be as cognitively cooperative as it behaviorally appears. But, without question, this is an area where conclusions are tentative and our state of knowledge is still very much in flux.}

\text{A similar state of contentious flux is present regarding the issue of the nonhuman primate sense of fairness. Frey points to studies that provide affirmative evidence on this issue. Indeed, even more recent studies}\^{13} \text{ have further bolstered this assertion. However, other studies have drawn the opposite conclusion arguing that inequity aversion evolved only after the hominin branch split from that of chimpanzees and}

\text{...}^{10} \text{ Wilson, Edward O.: The Social Conquest of Earth. New York 2013, p. 143-144.}

\text{11 see for example Tomasello, Michael et al.: Two Key Steps in the Evolution of Human Cooperation: The Interdependence Hypothesis, in Current Anthropology 53 (2012), p. 673-692.}

\text{12 see also Carpenter, Malinda / Tomasello, Michael / Striano, Tricia: Role Reversal Imitation in 12 and 18 Month Olds and Children With Autism, in: Infancy (2005), Issue 8, p. 253-278.}

\text{13 see the review by Brosnan, Sara F. / de Waal, Frans R.M.: Evolution of Responses to (Un)Fairness, in: Science 346 (2014), Issue 6207.}
bonobos. Methodological differences, ecological considerations, and measurement issues appear to be important factors in the type of result found. Until the weight of evidence clearly falls one direction or another, I tend to take a skeptical approach that is, never assuming more that the minimal cognitive endowment necessary to explain the nonhuman animal behavior.

Frey also asks a series of questions that, as I understand it, he believes are insufficiently addressed in my discussion of ritual and its role in cooperation. These questions are broad-ranging and important and will undoubtedly be the focus of ongoing research for some time to come (why are religious rituals particularly effective? Why are group markings important? Why is it critical to distinguish in group from out-group members?). I suggest that all of these questions emerge from a common, fitness-relevant theme - trust. While we may debate the uniqueness of human cooperation, there is no debating that humans are cooperative and that this cooperation is essential to survival. But cooperation cannot be indiscriminate or unconditional and still be fitness-enhancing. As long as resources are limited and self-interested agents are present, fitness-enhancing cooperation (which is the only cooperation that could be selectively advantageous) requires trust among participants. How does one identify trustworthy others with whom to form mutually fitness-enhancing cooperative relationships? More costly religious rituals (as opposed to less-costly secular ones) and clear indicators of group status (and thus shared beliefs, values, and interests) serve to identify trustworthy others and reduce the potential for exploitation and its associated negative fitness consequences.

Finally, Frey questions my emphasis on rituals as a mechanism for transmitting social norms, especially to children. He argues role modeling, direct (verbal, presumably) instruction, and repetitive behavior serves this purpose much more so than rituals. In reply, I would say that to some degree this criticism arises from confusion between rituals and ritualized behaviors. (I think this distinction is also relevant to issues raised by Antweiler and Sosis and Shaver.) Frey is correct to point out that motherese and motherese do not qualify as rituals. Instead, they are ritualized behaviors (attention-getting, formalized, exaggerated, and repetitive. Rituals include ritualized behaviors but are broader. They envelope ritualized behaviors within ceremonial, symbolic, and culturally traditional elements that serve to increase emotional impact, memorability, sacredness, and historical context.


I would caution against putting these two views of human nature against one another. They are not mutually exclusive competitors, but two sides of the same human “coin.” Both find their origin in human tribalism. The “tribe” is a defined group wherein trust is present, such that cooperative relationships can be established. Herein lays our cooperative past. We need trustworthy others with whom we can work, trade, share, mate, collectively pursue goals and acquire valuable resources. Outside the tribe, however, trust is not assumed and competition, confrontation, and potential violence are far more probable. Our ancestors were those who employed their social intelligence most efficiently for determining with whom to form coalitions and against whom those coalitions should be directed.

Hartung goes on to claim that “the reason for becoming cooperative is not necessarily grounded in an internal cooperative structure.” I take this to mean that cooperation does not necessarily arise from a natural endogenous tendency to be cooperative. If cooperation is not grounded endogenously then from where does it arise? It would seem that the only answer is exogenously – from some external force or coercion. Which seems confirmed by Hartung’s later statement “that communities are interested in stabilizing their social structure by motivating individuals to cooperate.” Yes, this is certainly possible. It could be that the primary reason why I or anyone is the least bit nice to others is because of external social mechanisms that punish nasty, selfish behavior. But it takes energy and resources to keep people in line this way.

Imagine two competing tribes in our evolutionary past. Both are highly internally cooperative. But in tribe 1, members are cooperative simply because they “believe” that cooperation is morally good. Because of this endogenous belief, the external social structures necessary for keeping tribe members in line can be quite minimal. This is not true of tribe 2, where order is maintained by vigilant policing and stern punishment. It would seem that tribe 1 would have a fitness advantage over tribe 2, since so much more of the tribe’s total energy and resources can be directed at the practical business of survival and reproduction, rather than policing. We are more likely the descendants of tribe 1 than 2, I think. Hartung appears to agree with this when he states that “…the internalization of values is perhaps the stronger condition of a trustworthy social institution.”

Having said this, however, we should not dismiss the possibility that a currently endogenously cooperative society began as a more exogenously cooperative one and over time cooperative norms that had to be externally imposed became internally accepted. Indeed, this seems likely given that human beliefs, of whatever type, are not encoded genetically. They are transmitted culturally. However, saying that they are not encoded genetically does not mean that genes play no role. Some beliefs are easier to transmit than others. My guess is that our ancestors were those that, over time, happened upon the most efficiently transmittable prosocial norms which, steadily, over time, needed less and less institutional imposition in order to guide behavior.

Hartung then poses an interesting question about the function of rituals – do they express values or define them? (Hartung seems more inclined to accept the latter than the former). I welcome this question since it gives me an opportunity to clarify a core idea of my proposal. Is it correct to say that ritual defines values or is ritual merely expressing values? My answer is that by expressing or elevating certain values, ritual defines the character of the community. Let me explain: individuals and communities have many things that they value – some are lofty (honesty, beauty, loyalty, family) some mundane (punctuality, leisure time, a good cup of tea). Undoubtedly, within a society different individuals prioritize these values differently – my neighbor values cleanliness more than I value baseball more than he. When an individual or a society bothers to take a value and build a ritual around it, it elevates that value. It puts it on display for others to see and appreciate. Quite clearly and deliberately, this ritualized display value has been selected from among the many and granted particular importance. By virtue of this elevated status, it becomes a defining characteristic of a family, group, or society.

My neighbor and I differ on the roles of cleanliness and baseball as important values, but as Americans, we (publically, at least) are supposed to agree on the values of liberty and democracy, something we are both reminded of when we attend Fourth of July fireworks celebrations. Of course, it is correct to say that the Fourth of July fireworks celebration does not define what liberty is as a concept or value (constitutional lawyers and philosophers will endlessly debate the details). Instead, it represents or displays this defining value of America.

Many British citizens have a similar general pool of values as the average American (they value honesty, loyalty, family, punctuality, and a good cup of tea). But it is England and not America that has made tea drinking into a ritual, and this is not trivial. The British “tea time” ritual elevates and displays a different set of values (civility, order, Monarchy) that define “Britishness” as something distinct from American-ness.

In summary, my argument is this: that which we bother to ritualize is that which we claim (i.e. our culture claims) as our shared defining values. Earlier, I stated that tribal cooperative norms may evolve from being externally imposed to being internally believed. The ritual display of the to-be-internalized norms and values may be an important component of this process.

On [6] Hiergen offers two important methodological observations concerning how the study of ritual can be integrated with evolutionary approaches to human
nature. The first involves the application of cultural group selection as a potentially fruitful theoretical framework. I am in full agreement here. In cultural group selection what is being selected are different normative features of groups. While groups have more adaptive norms structuring their social lives than others. When those groups compete (which need not be direct conflict, but simply a matter of comparative reproductive success), the more adaptive norms win; and those more adaptive norms appear to have been more (intra-group) pro-social ones.

**Herrgen's** second recommendation is a greater appreciation of the role of Cognitive Niche Construction (CNC) as an important force in human evolution. Although I did not mention CNC in the article, I concur that it represents an important perspective from which to understand the evolution of uniquely human social and cognitive traits. I think that many of the traits that we consider distinctively human emerged from selection pressures of our own making. The power of culture to select for particular human traits has already been documented, most notably in lactose tolerance and its clear connection to dairy. In other contexts,**Herrgen** has argued that human working memory capacity may owe some of its evolution to the costly rituals practiced by ancestral groups. That human cognitive and social capacities stem from cultural factors would not surprise me at all.

**Herrgen** goes on to discuss the first archaeological evidence of sacred spaces such as the Neolithic site of Gobekli Tepe, where presumably some of the first communal ritual activity occurred. I cannot resist pointing out that the site (and therefore the rituals conducted at the site) predate settled agriculture. Moreover, Gobekli Tepe is not singular. At Wadi Faynan in southern Jordan, a large Neolithic site was unearthed dated to before 11,000 years ago (similar in age to Gobekli Tepe). What these sites suggest is that it was ritual that supplied the impetus for civilization, not agriculture. Hunter-gatherers, not settled agriculturalists, constructed both sites. They apparently aggregated at them for the performance of community-wide rituals. In the course of these gatherings, they began to experiment with grain-growing in order to feed the large numbers of laborers needed to build the venues as well as the many ritual participants who flocked there. Thus, the idea that it was ritual that brought us civilization is now a credible one.

**Herrgen** also raises the issue of thanatology, rituals surrounding death and burial, pointing out that recent work has documented behavioral patterns among primates that suggest a special concern for dead members of the group. I would

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with Schellette's misgivings about the traditional defining traits of human. But, if I think the problem with these traits runs even deeper than Schellette describes, then only might a potentially defining trait of personhood be present in other animals (rationality, self-awareness, episodic memory, etc.), but it might also be present in humans, which puts us in the precarious position of denying personhood to some members of our own species—a move which many (myself included) are quite wary of taking. This is especially applicable to the issue of language, the focus of much of Schellette's attention and upon which I shall comment later.

Here's the major problem as I see it: the fact that we can have some putative "personhood" traits being present in other animals as well as absent in fellow humans forces us into using those traits arbitrarily. To use them, we must inevitably quantify or scale them in some way in order to make the distinction between a person and non-person.

So for example, let us assume that rationality exists in other animals (and I certainly think it does) but it is not present to the same degree or in the same way it is in humans. Indeed, there are certain forms of analogical reasoning that other animals fail to grasp or require orders of magnitude more trials to learn, suggesting they are not being understood in the same way as humans. 

This information could be used to set a criterion of personhood: if one cannot pass a list of questions or perform on a test x or if one requires greater than y number of trials to pass a logical reasoning test x, then one does not possess "human" rationality and therefore is not a person. The arbitrariness of this criterion is both obvious (why test x and not y? why y number of trials and not y-1?) and troubling (are we really going to deny someone's personhood just because he or she took 51 trials to pass a certain test and not 50?) The philosopher Joseph Fletcher once proposed a specific IQ score as a requisite criterion for personhood—too bad for those who score one point below the cutoff.

Now a comment on language: I agree that language is present in nonhuman animals. That's not the problem when attempting to use it as a criterion for personhood. The problem is that it is not present in some humans: Was Helen Keller a non-person before she learned language? What about Broca's aphasics, stroke victims, or pre-linguistic children? Kanzi scored slightly better than a 2.5 year old child on a set of comprehensive language tests. Am I the only one troubled by using that to say that Kanzi is more of a "person" than the two-year-old child?

The reason why I'm more comfortable using ritually-constructed relationships as the criteria for personhood is because: (a) ritual is both unique to humans, but continuous with nonhuman animal ritualized behaviors. Humans naturally grow into "true" rituals beginning with the first ritualized "turn-taking" encounters between mothers and infants. Thus, nearly from birth, humans are set on a unique interpersonal developmental trajectory, unlike anything that occurs in other species between humans and other species (pets, for example). (b) Once set on this trajectory, human cognitive, emotional, and theory of mind capacities allow for an unprecedented level of interpersonal relatedness. Try as they may, two chimpanzees cannot know and relate to one another with the same depth as two humans. This "depth" can be empirically validated in human cooperative abilities. We can engage in joint ventures and achieve collective goals unmatched by other species.

However, even though we can empirically demonstrate unique qualities to human inter-personal relations, there is also (c) a subjective aspect to it as well. The subjective feel of relating to another human is different (I contend) than when we relate to members of other species. Again, try as I may, I don't believe I can have the same "sense" of relatedness to my dog as I do to another human. While some may argue that this appeal to subjectivity is problematic, I see it as a strength. It becomes relevant when we confront the issue of those classes of humans, for example infants and adults with disabilities, who lack what we often consider to be the traditional attributes of personhood such as language, TOM, or a certain level of rationality. I would argue that we are (rightly) hesitant to deny them personhood because, in spite of their "disabilities," we still experience a subjective relatedness (or even just the potential for a subjective relatedness) that is unique to human-human interactions. I claim this in full awareness of all the problems and complexities inherent to elevating subjectivity to the same status as empiricism. But on this issue, I believe that attempts to maintain a purely empirical approach are even more troublesome.

Schellette makes an interesting and thought-provoking argument by saying that ritual's socially cohesive function is derivative of something more fundamental—"the ties of ideas and norms." I interpret this argument as overlapping with Sosis and Shaver's discussion of the canonical function of ritual, a function dependent upon language. So first we need (as Schellette describes) a "symbolic force of communication" (language) and upon this, ritual (and its canonical function) can be built.

I agree. But (and my response here will echo some of what I say in my response to Sosis and Shaver), upon what are "ties of ideas and norms" and language itself based? Not ritual, but ritualized behavior (see my discussion of the distinction between these two in my response to Frey). If it is the ties of ideas and norms


22 Fletcher, Joseph: Humanism: Essays in Biomedical Ethics, Buffalo 1979.
(expressed in language) that generates social cohesion, then we can ask how the cooperators come to recognize that they shared a common set of ideas. It seems to me that for this to happen, two conditions have to be met: (1) there would have to be awareness that each professed a similar set of ideas and norms and that they would have to trust that these professions are deeply held as to reliably guide behavior. Put more simply, I am aware that you believe in honesty and fairness, and I am confident that you will treat me honestly and fairly, therefore we can enter into a cooperative relationship.

So let's start with condition one. How did the cooperators become aware of each other's ideas and norms? There are many ways this could happen, but all would seem to require proximity – they would have to be physically close enough to one another (without discomfort or fear) in order to somehow exchange information about personally held ideas and norms. One might, for example, overhear another expressing (linguistically) his or her ideas and norms. But to overhear, one must be in close physical proximity to the other.

Amongst all social species, including humans, tolerance for others at close proximity is ritualistically achieved. Baboons use back and forth grunting vocalizations to feed in close proximity to each other without threat. Other primates use stereotypical approach gestures and subsequent grooming to get into and then maintain comfortable proximity. Humans use nods, smiles, handshakes, and "small talk" in order to establish comfortable proximity. More formally, ritualized gift giving is common among humans at the initiation of an intended cooperative relationship. In the absence of these ritualized greeting and initiation gestures, interacting partners often grow uneasy and uncomfortable in close proximity and therefore fail to establish a productive relationship. (Note: I realize that the "virtual" world allows people to interact at great distances, but it is this very fact that makes us so wary of establishing relationships based solely on virtual exchanges.)

Now onto condition two, once I am in proximity to another and have exchanged information about mutually shared ideas and norms, can I believe my partner's expressions? This issue, of course, takes us back to my discussion of when low cost versus high cost signals are required to ensure reliability (see response to Achtner). Briefly, if our potential cooperative interaction is based on mutualism, then our signals can be low cost. I'll probably just take your word because you don't stand to gain anything by deceiving me and you do stand to gain by honestly cooperating with me. However, if our joint venture is more risky and the threat of exploitation is present (you might take advantage of my good will in order to reap a short-term gain), then costly signals are required and participation in costly rituals is one effective way of delivering that message.

On [8] Sosis and Shaver see a prominent gap in my approach which they attempt to fill by drawing attention to Reppaport's distinction between the indexical function of ritual and its canonical function. It is this canonical function (of which language is a critical element) that both contains and conveys the important values and norms of a community. Indexical is immediate; canonical is enduring. I agree and enthusiastically welcome this "bridging" concept which I think greatly strengthens my ideas. However, to some extent, I think the salience of the gap identified by Sosis and Shaver stems from a conflation of ritual and ritualized behavior. Yes, by virtue of their canonical function and costliness, rituals display and transmit that which participants value. But well before one is exposed to or fully appreciative of rituals, he or she has been immersed in ritualized social interactions. These interactions are crucial to the later effectiveness of true rituals because of their intentionality – adult deliberate-ness overtly displayed. Through ritualization, the intentional becomes clearly distinguishable from the accidental, the thoughtless, or the whimsical. Furthermore, the infant or child becomes emotionally invested in this intentional content. He or she learns the "right" way to do things and spontaneously enforces this "right" way on others. I would suggest that this early exposure to ritualized actions creates an emotionally primed mind that is eager to absorb the canonical aspect of rituals.

Example: young child observes, and in time, participates in grace before meals. Initially this is just a ritualized act to the child. A series of rather odd words and gestures repeatedly enacted before eating, with no causal relevance to the actual ingestion of food. But it is obviously intentional. The child understands this as the "right" way to eat. long before understanding the meaning of the words or the concept of prayer or any of the history, tradition, or theology (the canonical parts) of the act. But the emotional connection is already there.

As the child grows, however, ritualized acts will increasingly be understood as elements of larger rituals and the canonical message of those rituals will increasingly become available to him or her. The child will start to "get" what all these words and gestures mean and "get" it with a mind having years of emotional preparation for a strong attachment to those canonical elements. So my big point is this: the transmission of norms and values did not begin with the canonical
element of ritual. Rather, I would suggest that understanding the canonical aspect of ritual is the contamination of a process started long ago with the first ritualized turn-taking interactions between mom and infant.

As with Wunn, I think Sosis and Shaver's concern about group competition stems from a misunderstanding of where and when I think this process was important (which is probably more because of vagueness on my part than misunderstanding on theirs). At the risk of really tightening the noose around my neck, I'll propose a very specific (and therefore potentially more falsifiable) time frame. I say religion (in the form of supernaturalized social rituals of shamanistic healing) emerged roughly 40,000 years ago. As hominins moved out of Africa into Asia and Europe, roughly a time period (from 60,000-30,000 years ago) those with supernaturalized social rituals out-competed those without. This competition was probably especially keen in Europe where Cro-Magnons confronted Neanderthals. Sometimes this competition was direct. However, just as often (maybe even more often) it was a matter of who was able to survive resource depletions brought about by dramatic swings in climate over that time frame.

Thus, when Homo sapiens emerged out of the last ice age (20,000 years ago or so), I would hypothesize that supernaturalized social rituals were universal among them. From that point on, the processes of religious change, cultural transmission, success or extinction are very likely going to involve factors that go well beyond just the facilitation of cooperation. Having said this, however, I cannot resist one quick comment on the Ifaluk's transition to Catholicism. Yes, Western societies are highly individualistic. But that is not necessarily in opposition to cooperation. One might argue that Western "success" (which apparently is attractive to the Ifaluk) is based on the high value Western societies place on the successful execution of one's instrumental role within that society ("I am a good banker, lawyer, teacher, etc."). This allows for large-scale anonymous cooperation and thus social and material success. I would also suggest that religion (Catholic guilt? Protestant work ethic?) played a non-trivial role in this.

On [9], Wunn's comments are expansive taking us all the way from Australopiths to the evolution of monotheism. The ambitious scope of these comments makes it challenging to adequately address all the issues raised without straining the patience of most readers (I suspect). So I shall try to restrict my reply to what I interpret as the most fundamental points of the comment.

Wunn criticizes my evolutionary chronology of events in at least two instances. First, Wunn questions why I would expect group competition to begin early in hominin evolution (with the onset of fully-committed bipedalism). I don't; and if my paper stated or implied this then there is an error. I would argue that group compe-


rituals emerged. When some of those symbolic, ceremonial, and culturally traditional elements came to have supernatural significance, religion was born. The where the first "supernaturalized" social ritual was enacted, religion began. My best guess is that the first supernaturalized social ritual was probably some form of shamanistic healing ritual and presently the best evidence for this is the 70,000-year-old Rhino Cave “snake rock” and associated remains from the Tsodilo Hill in Botswana, Africa.25

My interpretation of much of Wunn’s commentary is that it is focused on a general theme: teleology. That is, that I attribute the origins of humanity to the progressive emergence of a single factor – cooperative ability. Teleology and Darwinism have a long history of bad relations and thus I’m dredging up old, discredited views of evolution best left on the trash heap. My response is twofold. (1) Cooperative ability is not a single factor and (2) I’m trying to understand history, not necessarily endorse it with purpose. Let’s start with (1). The social intelligence behind our cooperative ability arises from a diverse collection of other abilities each with its own separate, but not necessarily independent, evolutionary history. To name just a few: self-awareness, theory of mind, episodic memory, causal analysis, language, enhanced motor control and coordination, self-conscious and social emotions all play a role in uniquely human cooperative abilities.

Now consider just one strand of this complicated evolutionary history. Committed bipedalism put the forelimbs consistently in the visual field, thus under constant and effective visual control. This constant visual monitoring and directing of hand movements enhanced self-awareness. It also set the stage for more effective stone tool construction. Stone tool construction not only enhanced motor control (which has implications for the evolution of language and all of its associated effects on social intelligence) but also made new food sources available. New food sources led to both brain expansion (enhancing self-awareness) and more dependent offspring. Thus, this created conditions for the necessity of cooperative breeding. Tool use also changed the nature of male competition moving it away from physical confrontation to tool creation skill (providing one explanation for the abundance of aesthetically pleasing but impractical and unused hand axes in the archaeological record). The reduction in direct male competition helped reinforce the social conditions for increased cooperative behaviors. My point in going into all this detail is to show how cooperative behavior owes its origins to a complicated array of other factors each with its own separate, but non-independent, evolutionary story.


Now on to (2). I do not intend to be teleological in the sense of arguing that human evolution was a purposeful march toward unique forms of cooperative behavior. Rather I’m standing at an endpoint (humans with unique forms of cooperative behavior) and wondering “how did we get here?” It seems to me that this is no different than looking at any present structure or ability (the eye or beavers building dams) and attempting to trace out an evolutionary history of that structure or ability. Looking retrospectively can give us the illusion of a clear, purposeful movement over time, since once for simplicity’s sake we de-emphasize the myriad false starts, blind alleys, and improbable coincidental events that over long spans of times (another highly underappreciated factor) conspired to produce the observed end. The brief example I provided in the previous paragraph regarding the evolution of human social intelligence was intended to highlight the multifaceted nature of this process. Wunn is certainly correct in reminding us not to glibly dismiss these complications, for doing so risks presenting retrospective scenarios as if they were prescribed ventures.

A couple quick replies to other of Wunn’s comments: Wunn also wonders why Neanderthals, who descended from a common ancestor and possessed many of the same behavioral and cognitive attributes as *Homo sapiens* went extinct. I would offer that there were important social differences between *Homo sapiens* and Neanderthals, including ritual behavior that, in my view, were decisive.26

Also, Wunn questions the modern decline of religion fit: in fact, was advantageous for communities. Religion was advantageous in the ancestral past. That does not necessarily make it advantageous in the modern world. Religion has costs. In the past, those costs were offset by the benefits of strongly-bonded highly trusting communities. As I tried to point out at the end of the article, I think many of the benefits that were once exclusive to strongly-bonded, highly trusting communities can now be just as easily or more easily obtained from modern, secular societies. Services that once depended on trusting personal relationships are now available through legally regulated impersonal marketplaces exchanges. The modern world simply makes religion too costly for many. What direct benefit do I really get from getting up every Sunday and going to church? My life can be just as materially satisfying (maybe more so) by opting out and getting more sleep (or working on my reply!).

Finally, I think Wunn sets an overly ambitious and unrealistic standard when claiming that "...each attempt to solve the question concerning the origins of religion must be able to explain how the notion of deities and ultimately of one single god developed in many small steps." A single theoretical explanation (apart from a trivial claim of some unspecified fitness advantage) capable of encompassing both the evolutionary emergence of something and its subsequent change is rare. The hinge design of reptilian jaw bones emerged because of its crushing power. Its subsequent co-option into the mammalian auditory system could hardly have been predicted based on its origins.

My concern is thus with one piece of the theoretical puzzle: the evolutionary origin(s) of religion, which I think reduces the question of why the supernatural was added to existing social rituals. This also explains why I fail to address the content of religion. I believe the content of the earliest supernaturalized social rituals was shamanistic healing. But beyond that, I doubt that any single theorist has the expertise to fully explain the complicated history of religion as it unfolded globally over time (including such topics as the varieties of animism, various deities, polytheism, monotheism, and development of different theologies). While I have sketched out some general thoughts on the evolution of various religions forms, I'm quite sure that the efforts of many theorists across many disciplines and cultures will probably be necessary for a more complete picture to emerge.

Bibliography


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