

The (Most) Algorithmic Animal: Unknowable Causal Structures in the Information Age

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Rituals are a means of regulation—they are a means for maintaining coherence and attaining long-term goals, including social coherence. But does their efficacy depend entirely or at all on their opacity? In this requested commentary on Harvey Whitehouse’s new book, *the Ritual Animal*, I discuss the utility of costly rituals in an evolutionary context, and suggest that causal opacity is only one, potentially-substitutable cost. I relate this to the urgent topical concerns of polarization, and of regulating sustainability globally.

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“Nothing in biology makes sense except in the light of evolution.” This title is the statement of a deeply religious man, Dobzhansky (1973), echoing one of his also religious heroes, de Chardin (1930). Dobzhansky wanted to both insist on the importance of science including evolutionary theory, and assure his readers that embracing it should in no sense challenge their faith. No more so than should their hopefully-extant embrace of current astronomy:

Seen in the light of evolution, biology is, perhaps, intellectually the most satisfying and inspiring science. Without that light it becomes a pile of sundry facts—some of them interesting or curious but making no meaningful picture as a whole. . . Does the evolutionary doctrine clash with religious faith? It does not. It is a blunder to mistake the Holy Scriptures for elementary textbooks of astronomy, geology, biology, and anthropology. . . [Such a] blunder leads to blasphemy: the Creator is accused of systematic deceitfulness. (Dobzhansky, 1973, p. 139)

The reference in the latter part of the quote to anthropology is not accidental; Dobzhansky goes on next to quote de Chardin:

Is evolution a theory, a system, or a hypothesis? It is much more—it is a general postulate to which all theories, all hypotheses, all systems must henceforward bow and which they must satisfy in order to be thinkable and true. Evolution is a light which illuminates all facts, a trajectory which all lines of thought must follow. . . (de Chardin 1930 as quoted *ibid.*)

Whitehouse’s new assemblage of his own theories and evidence seeks to connect ritual into this complex. Incidentally in so doing, Whitehouse winds up somewhat congruent with one of de Chardin’s primary goals. Both Whitehouse and de Chardin express hope that a world covered with agents cognizant of its own functioning will be able to solve problems at a planetary scale. Yet the emphasis in Whitehouse is not only on a wide, global society, nor even on small, local ones. Personal rituals can be used to hold together even individual identity, to help one achieve one’s longer term goals in the face of nearer-term temptations (Ainslie, 2001). Similarly, social rituals can be viewed as helping any society maintain its coherence and long-term focus.

Whitehouse emphasizes an extremely appealing characterization of ritual: “unlike technically useful behavior, rituals *lack a fully specifiable causal structure*” (p.3, italics original.) This is appealing because it clearly differentiates ritual from many other routine, regulatory behaviors we perform to keep ourselves, our families, and our wider societies going. We commute to work, we eat regular meals. We subscribe to news sources and read or otherwise observe them, to be informed citizens contributing to a well-functioning nation. But is causal opacity really a necessary component of ritual? If so, will cognizance of the means by which we coordinate ourselves and our societies lead to a loss of the capacity for that coordination?

I say ‘will’ here because we are in the information age. What was previously unknown is being discovered at ever-faster rates with new tools like artificial intelligence. But even just with contemporary communications technology like fiber-optic cables, more information is communicated faster than ever. Even if it is also obscured with misinformation, ultimately so long as people can still travel and connect it is likely that the truth as the most stable narrative will out, at least for a while.

Whitehouse’s text seems sometimes to claim that obscurity though is essential. For example the assertion that “[r]ituals demarcate group identities precisely because they prescribe behaviors that are both arbitrary and instrumentally useless” (p. 17.) At least part of the coordinating power of ritual as Whitehouse hypothesizes it here is akin (as he says) to the theory of costly signaling. This theory, originally known as “the Handicap Principle,” and also known as “honest signaling” hypothesizes that evolution enforces an honest alignment between expensive signals and actual capacities (Zahavi and Zahavi, 1997). Perhaps really more relevant to Whitehouse’s theories is a variant on costly signaling, the bond testing hypothesis also due to Zahavi (1977). Here, the cost paid determines not so much the absolute quality of the individual paying the cost (though they must be capable of such payment), but rather the importance of the relationship being tested. For example, baby birds peeping loudly for food, risking predation, test their parents’ concern. Returning consideration to humans: under either system of signaling, overt investment in being identified as holding absurd beliefs including those that require costly ritualistic behavior might indeed have a high cost. That can be a high cost that like-minded individuals use to demonstrate a new alignment, producing a society. Or it can be a high cost that helps maintains social identity through excluding an individual’s capacity to participate in other societies.

Tests of in group investment do not necessarily have to be dysphoric; they simply need to be costly enough to convince all concerned that dedication to a relationship is honest and primary (Wiessner, 1982; Taylor, 2014). Eating dinner with the same partner every day is a fairly good indication of fidelity, for example. What Whitehouse’s research indicates though is that for certain forms of extreme sacrifice—an outrageously high cost paid just once—may be more effective for at least some purposes. This is postulated to lead to identity fusion, and as Whitehouse and colleagues’ research indicates, such fusion does seem to underlie willingness to sacrifice oneself to the good of the group (Chapter 3).

Whether or not dysphoric rituals are sufficient for such attitudes of sacrifice, they do not seem to be strictly necessary. Whitehouse mentions but does not fully engage with the capacity of highly-polarized mass movements to lead to self sacrifice in wars, mob actions, and other radical behaviors. Polarization is a social phenomenon in which a population divides into belligerent groups with rigidly opposed beliefs and identities that inhibit cooperation and undermine pursuit of a common good (McCarty, 2019). Generally seen as a political or economic phenomena rather than a religious one, it is of considerable concern today as it is associated with populism, violence, and nationalism.

Such polarization is not necessarily due to any lack of ritual belonging. As Whitehouse and colleagues seem to have shown in work under preparation on Brexit, polarization is often characterized by a loss of trust in a larger identity, rather than necessarily a stronger sense of trust in a smaller one (Curry et al., 2020). In fact, more generally, polarization is presently taken to be characterized by a generalized distrust for out groups (Druckman and Levendusky, 2019). This too though oversimplifies how those formerly considered in-group might become an out

group—how a new, exclusive in group might be constructed.

In earlier studies, polarization was believed to occur as a consequence of substantial in-group homogeneity and out-group heterogeneity, which was believed to facilitate schisms, general social unrest, and even violent cleavages such as civil wars (Esteban and Ray, 1994; Duclos et al., 2004). However, such extant homo- versus heterogeneity wouldn't explain observed increases and declines in polarization (cf. Wucherpfennig et al., 2012, for other problems). This contradiction has resulted in the more recent, trust-based conceptualization, which can be measured using survey instruments such as feeling thermometers—asking respondents to rate how cold or warm they feel toward other parties (Druckman and Levendusky, 2019).

Unfortunately, enormous effort is presently being expended on an attributed cause for polarization that has been repeatedly refuted: the spread of misinformation or extremism via communication technology such as social media. Numerous studies have shown social media use is *not* predictive of polarization (Boxell et al., 2021; Guess et al., 2021; Di Tella et al., 2021; Waller and Anderson, 2021). Neither is income bracket, nor minority ethnic identity (Zhukov, 2016). On the other hand, polarization *is* predicted by economic contexts associated with precarity (McCarty et al., 2016; Stewart et al., 2020; Sairam et al., 2022). This does not necessarily relate to present income level, but rather to the perceived reliability of that income. In other words, trust may be thought of as a luxury good—when we are able to afford to take on risks because our obligations are easily met, then we can seek new means of constructing public goods with a broader range of allies. As a part of these processes of social adjustment to economic opportunity, we seem to expand or contract our sense of identity. Such processes can happen very quickly, for example just by priming a sense of economic threat or well being in a laboratory (Krosch and Amodio, 2014).

Bringing this discussion of polarization back to the question with which I opened, it seems likely both that being cognizant of the causality of ritual expression does not in itself increase or decrease the efficacy of ritual, so long as the ritual is in some other sense can serve its purpose. Athletes and other high achievers can knowingly choose rituals that help them perform. Similarly though inversely, religious adherents seem surprisingly ready to drift away from their beliefs once those beliefs lose causal efficacy. Societies are more accepting of female promiscuity where women are able to support themselves and their families independently of partners (Price et al., 2014). Religiosity declines when states take up the role once played primarily by doctrinal religions, of caring for the poor, orphaned, and elderly (Gill and Lundsgaarde, 2004). So at some level, many or most of us must find disbelief accessible.

Perhaps a good deal of the 'meaninglessness' is useful not because it is opaque but rather because we find it aesthetically satisfying. We enjoy losing ourselves to our group at times, or at least, we crave to do so regularly. Just as we crave food and sleep frequently and regularly. We are evolved to regulate our lives in such a way that we are likely to perpetuate ourselves and the societies that sustain us. For this, we need at least some social connectedness. It is essential to our and our societies' security, so evolution has made it also essential to our mental well being.

One thing shared ritual behavior unquestionably does is increase the proportion of shared memories and common ground between practitioners. In our finite lifespans, the choice or necessity of sharing time with a cohort increases the plausibility that we will understand, or at least be able to predict, others in that cohort. We have more in common, more we can reference.

Whether we share dysphoric or euphoric experiences, so long as we indeed share them, we have more contexts likely to produce similar emotional responses with those with whom they are shared.

It may be therefore that some of Whitehouse's theory will eventually on experimental examination turn out to be open to some simplification, or unification with other cognate phenomena. Nevertheless, the distinctions he has made, and his willingness to express and expose his theories so clearly whether as models or through experimental evidence, brings us all closer to a better understanding of ourselves. I believe or at least hope that this light is not a threat—that we will continuously find new ways to accept and to organize what we discover we are. Apes that remember and run algorithms remarkably well. Members of societies that

sometimes stumble on important solutions through seemingly absurd behavior, then perpetuate those solutions long enough to come to understand them.

We have in our species' capacity for culture indeed constructed a glorious thing, or at least one that appeals to us as such, given our evolved aesthetic taste for wonder in a powerful complex entities and artifacts such as our societies and cultures exude, and, indeed, are. But we must hope—and more than hope, work hard to achieve—the vision of Whitehouse and de Chardin, can be achieved. We need a self-knowing biosphere able to regulate the acute insults we have accidentally inflicted on our ecosystem and through it our climate. The costs we will have to bear to belong to a new sustainable world will be high. It seems likely that if we will achieve these new rituals of belonging to a sustainable ecosystem, it will have to be with our eyes wide open. If causal opaqueness is the only means for a society to cohere, then the ignorance required to fall into sustainable habits may entail more suffering and violence than we should possibly want.

Hopefully though causal opacity isn't critical. The new rituals we are coming increasingly to observe of self-care for our planet will hopefully be more like the rituals of the athlete—still somehow aesthetically pleasing, giving a sense of belonging and purpose, despite their clarity and urgency. Hopefully we can extend this capacity to accepting who and what we are as this too becomes more and more apparent. This is a project for the humanities more than the sciences—maintaining engagement in and alignment with a world we understand, even if we come to know it a little too well.

References

- Ainslie, George (2001). *Breakdown of will*. Cambridge, UK: Cambridge University Press.
- Boxell, Levi, Matthew Gentzkow, and Jesse M Shapiro (2021). Cross-country trends in affective polarization. Technical Report 26669, National Bureau of Economic Research.
- Curry, Oliver Scott, Michael Buhrmester, and Harvey Whitehouse (2020). Brexiteers are not more british, just less european. in prep., available from Open Science Framework.
- de Chardin, Pierre Teilhard (1930). Le phénomène humain. *Revue des questions scientifiques*, 390–406.
- Di Tella, Rafael, Ramiro H Gálvez, and Ernesto Schargrotsky (2021). Does social media cause polarization? evidence from access to Twitter echo chambers during the 2019 Argentine presidential debate. Technical report, National Bureau of Economic Research.
- Dobzhansky, Theodosius (1973). Nothing in biology makes sense except in the light of evolution. *The American Biology Teacher* 35(3), 125–129.
- Druckman, James N. and Matthew S. Levendusky (2019). What do we measure when we measure affective polarization? *Public Opinion Quarterly* 83(1), 114–122.
- Duclos, Jean-Yves, Joan Esteban, and Debraj Ray (2004). Polarization: Concepts, measurement, estimation. *Econometrica* 72(6), 1737–1772.
- Esteban, Joan-Maria and Debraj Ray (1994). On the measurement of polarization. *Econometrica: Journal of the Econometric Society* 62(4), 819–851.
- Gill, Anthony and Erik Lundsgaarde (2004). State welfare spending and religiosity: A cross-national analysis. *Rationality and Society* 16(4), 399–436.
- Guess, Andrew M., Pablo Barberá, Simon Munzert, and JungHwan Yang (2021). The consequences of online partisan media. *Proceedings of the National Academy of Sciences* 118(14).
- Krosch, Amy R. and David M. Amodio (2014). Economic scarcity alters the perception of race. *Proceedings of the National Academy of Sciences* 111(25), 9079–9084.

- McCarty, Nolan (2019). *Polarization: What Everyone Needs to Know*®. Oxford University Press.
- McCarty, Nolan M , Keith T Poole, and Howard Rosenthal (2016). *Polarized America: The dance of ideology and unequal riches* (second ed.). Cambridge, MA: MIT Press.
- Price, Michael E. , Nicholas Pound, and Isabel M. Scott (2014). Female economic dependence and the morality of promiscuity. *Archives of Sexual Behavior* 43(7), 1289–1301.
- Sairam, Vishali , Vincent S. Heddesheimer, and Joanna J. Bryson (2022). Economic insecurity increases polarization and decreases trust. Article in prep, and accepted for presentation to the European Political Science Association annual meeting.
- Stewart, Alexander J. , Nolan McCarty, and Joanna J. Bryson (2020). Polarization under rising inequality and economic decline. *Science Advances* 6(50), 10.
- Taylor, Daniel J. (2014). *Evolution of the Social Contract*. Ph. D. thesis, Department of Computer Science, University of Bath.
- Waller, Isaac and Ashton Anderson (2021). Quantifying social organization and political polarization in online platforms. *Nature* 600(7888), 264–268.
- Wiessner, Polly (1982). Risk, reciprocity and social influences on !Kung San economics. In E. Leacock and R. Lee (Eds.), *Politics and history in band societies*, Volume 61, Chapter 3, pp. 61–84. Cambridge University Press.
- Wucherpennig, Julian , Nils W Metternich, Lars-Erik Cederman, and Kristian Skrede Gleditsch (2012). Ethnicity, the state, and the duration of civil war. *World Politics* 64(1), 79–115.
- Zahavi, Amotz (1977). The testing of a bond. *Animal Behaviour* 25, 246–247.
- Zahavi, Amotz and Avishag Zahavi (1997). *The Handicap Principle: A missing piece of Darwin's puzzle*. Oxford: Oxford University Press.
- Zhukov, Yuri M. (2016). Trading hard hats for combat helmets: The economics of rebellion in eastern Ukraine. *Journal of Comparative Economics* 44(1), 1–15. Ukraine Escape from Post-Soviet Legacy.