

Special section:

The Human Condition for the Anthropocene: Being more-than-human

Guest editors: Martin Bohle and Eduardo Marone

Metamodern Theory for the Study of More-than-Human Cultures

JASON ĀNANDA JOSEPHSON STORM

Williams College, USA; e-mail: jaj1@williams.edu,  0000-0002-4607-8060

Keywords: hylosemiotics; semiotics; more-than-human culture; agency

Abstract: This article develops a metamodern framework for the study of more-than-human cultures by integrating a materialist semiotics (hylosemiotics), with a processual social ontology of agency. Against anthropocentric accounts that restrict culture to language and symbolic thought, I argue that culture emerges wherever social animals coordinate through materialized signs. Drawing on cases from corvid tool use to multispecies infrastructures, the article reconceptualizes meaning as situated inference rather than transmission. Agency is asymmetrically distributed across socio-material systems, not lodged in individual actors or flattened into universal actancy. The result is a framework that preserves normativity without either anthropocentrism or anthropomorphism and naturalizes meaning without reducing it to matter. By tracing how coordination, agency, and responsibility are routed through materialized signs and social kinds, metamodern theory provides an analytic for studying multispecies cultures as well as ethical accountability under conditions of planetary scale transformation.



OPEN ACCESS

Copyright: © 2023 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>.

Cultural.Science.Journal is a peer-reviewed open access journal published by Erfurt University, Tallinn University and Sciendo

Introduction

At the edge of the forest above Wabao village in New Caledonia, a young crow watches from its perch on a pandanus leaf. Below, among the garden plots and scrubby paths, its parent grips a branch with the steady confidence of long practice. What follows is what Jennifer Holzhaider and company call a 'well-coordinated sequence of cutting and ripping actions,' but that clinical phrasing hardly captures it (Holzhaider et al, 2010: 210). The adult crow is sculpting. Cutting here, stripping there, working the branch with deliberate precision until it has been reshaped: now broad at the base, tapered to a barbed tip. The finished tool is purpose-built for one task—teasing insects from deep inside rotting wood. Here's what makes it remarkable: this isn't instinct in motion. This type of tool making seems to be socially transmitted. The crow learned by watching. The technique varies from region to region. And with each generation, the birds refine it. By some accounts, this is a paradigmatic example of non-human 'material culture' (Hunt and Gray, 2003).

While attributing culture to a species of corvids may not surprise readers of this particular journal, claims of this sort were, until relatively recently, nearly unspeakable. Despite its etymological roots, the term 'culture' has long been held captive to an anthropocentric frame. For much of anthropology's history, in particular, culture was presumed to be the exclusive domain of *Homo sapiens*, a mark of our supposed exceptionalism. Anchored in language and symbolic thought, culture was not merely what humans had, but what made us human. It was taken to mean the symbolic mediation of human meanings by human minds. Likewise, culture and nature were presumed to be a binary opposition. Within this tradition, the phrase 'more-than-human culture' would have sounded like a category error. All that is to say, dominant anthropological frameworks doubled back on themselves—defining the human by culture and culture by the human—and foreclosing more expansive theorizing that might include other species. And yet, as the crows of New Caledonia suggest, other species remember, imitate, refine. Their tools carry knowledge. Nor are the crows alone in exhibiting cross-generational social learning; ethological research has increasingly documented socially transmitted behavioral traditions across a wide range of species (e.g., Helfman and Schultz 1984; McComb et al. 2001; Whitehead and Rendell 2014; Whiten et al. 2001; see also Hartigan 2014). The circular definition did not preserve a truth. It prevented inquiry into what humans share with other social animals.

In light of the recent special issue of this journal (see introduction by Herrmann-Pillath 2022), I need not rehash the now-familiar, albeit still incomplete, shifts of the past two decades—the revival of Jakob von Uexküll and the multispecies anthropology sparked by Eduardo Kohn and others. This journal's refocus, along with a broader shift toward multispecies and more-than-human approaches, happily, suggests that the value of such work is finally being recognized. Even so, much of the existing theorization remains conceptually under-specified. Hence, here, I believe I have something to add. In *Metamodernism: The Future of Theory* (2021), I also argued for the ethical and ontological stakes of multispecies flourishing and I developed frameworks for semiotics and social ontology that may offer a useful complement to the study of more-than-human cultures. In particular, accounts of more-than-human culture often operate with a flattened semiosis that blur crucial distinctions between agency, causation, sign-production, and interpretation. What I want to propose here is a recalibration that sharpens those distinctions while preserving the gains of multispecies scholarship.

Hylosemiotics: Toward a Naturalized Semiotics of Culture

The 'hylo' in hylosemiotics derives from the Greek ὕλη (hylē), originally meaning 'wood' by extension 'forest,' and then later coming to mean 'matter' in Aristotelian philosophy. As the term suggests, my brother (Seth Josephson) and I coined 'hylosemiotics' to name a semiotics grounded in materiality. It starts from two claims. Meaning is not confined to language. All signs are materialized.

The first claim aligns with biosemiotics and with several post-Peircean approaches, though my own argument diverges in emphasis and detail. I argue that meaning arises wherever a sentient being makes inferences about its world. By 'sentient,' I mean capable of interpreting signs. The category reaches beyond animals to plants, fungi, possibly certain information-processing machines. It may even make sense to conceive it on a spectrum, not a hierarchy, but a range of distinct kinds of sentience (see Godfrey-Smith 2016). Still, not everything that reacts to its environment is thereby interpreting signs. A rock that heats under sunlight responds causally by absorbing energy and increasing in temperature, just like other features of its surroundings. It does not infer. Interpretation requires that an entity treat some material trace as carrying information relevant to its situation. Nor does it possess agency in any non-vacuous sense. When a New Materialist claims that a rock 'has agency not only in its capacity to excite the human mind, but also in the energy of its atoms that support a mountain overhead,' (Tagnani 2019, 218; also discussed in Storm 2021: 161), this amounts to little more than the observation that rocks exist materially and can be perceived or described by humans. Here, the concept of agency does no explanatory work. The attribution trades on an equivocation between material efficacy and interpretability. Material interaction is ubiquitous. Interpretation is not. Where that threshold lies—between brute physical causation and genuine semiosis—is worth contesting. But the distinction itself is not optional (I'll return to and recoup a more generative account of agency below).

When a bird scans the horizon for a shadow, when a child reads the sky for snowfall, both are interpreting signs. Meaning extends beyond human communication. It emerges from the practical exigencies of life, from what matters to an organism in a given context (Storm 2021: 151–2).

Language evolved by exploiting perceptual systems already in place. Long before humans coined words, other animals navigated their surroundings through tracking patterns of similarity, spatial affordances, and other correlations that bore on survival. The shape of a paw print. The shift in a scent. The sudden stillness in a forest. These were signs for animals because meaning could be extracted from them. In this respect, the perceptual capacities used to interpret the movements, calls, and gestures of conspecifics were not categorically distinct from those used to read the broader environment. Communication did not create interpretation; it focused it. Hence, the central claim follows: interpretation does not require intentionality on the part of the sign producer.

In this, I am drawing on Uexküll's insight that organisms inhabit worlds (*Umwelt*) structured by functional significance, but I depart from him in a crucial way. Hylosemiotics foregrounds an inherent asymmetry between *sign production* and *sign consumption*. Sentient beings consume voluntary signs, those deliberately emitted, and involuntary ones, unintended but no less meaningful. A snake's hiss may be deliberate. A broken twig is not. Both can be meaningful signs, depending on the interpreter and the context.

More precisely, 'voluntary' and 'involuntary' name a continuum, not a binary. By way of illustration, when I give a talk on 'Competing Epistemologies in the History of Japanese Medicine,' I produce signs I intend an audience to interpret: claims about Kampō lineages, subtle ki 気 anatomies, diagnostic regimes, and the politics of nosology. That is the voluntary, sender-directed layer of meaning. But the same performance radiates involuntary signs. My North American accent. The

cadence of my enthusiasm. The slight quickening when I reach material I particularly enjoy, perhaps even the fatigue from the red-eye I foolishly took to get there. None of these are meanings I actively set out to convey. Indeed, they occupy a graded field of 'voluntariness': I can attempt to suppress my accent or mask exhaustion, but only with limited success, and never entirely. Yet these cues may be among the most salient meanings inferred by particular listeners, especially those bored by the talk's main topic.

This is why I argue that meaning is inevitably to some extent *interpreter-relative*. Sign producers intend to communicate specific inferences—otherwise they would not bother to produce voluntary signs at all. Yet, the same material signs can yield divergent meanings depending on who is doing the inferring and to what end. Hylosemiotics treats this divergence not as a problem in need of a solution but as evidence of what meaning is: an act of situated inference operating across a spectrum of intended and unintended cues.

This inferential model of meaning also corrects several dominant accounts of meaning and information. It challenges prevailing linguistic theories within the humanities by relocating meaning away from communicative acts and the internal architecture of linguistic structures. It likewise rejects communication-theory models in which 'information' is identified with statistical unpredictability or complexity. Meaning, in this view, is emphatically not equivalent to Shannon-style entropy. A string of unpredictable nonsense syllables may score maximal 'information' in the formal computational sense, yet remain semantically inert. The phrase '*Frumpy go pick Michael hats now tickle money gravity*' ranks high in statistical novelty or entropy, but achieves negligible interpretive yield. Conversely, the phrase '*No, I am your father*' uttered by Darth Vader—statistically predictable to the point of cliché—precipitates a dense inferential cascade for an attuned interpreter such as Luke Skywalker. Meaning, on this account, is not a measure of information-qua-unpredictability. It is a function of situated inference. Meaning crystallizes in reception. The sender may propose a meaning, but the receiver disposes.

Meaning emerges from a sentient being's interactions with and interpretations of its environment. But against some accounts of 'natural information,' the world does not come preloaded with fixed, interpretation-free packets of information waiting to be decoded. Significance is not built into things. It arises in context-sensitive inference. Take categorization. Identity, or more precisely *similarity*, is never absolute. It is fundamentally context and purpose dependent (Storm 2021: 79).

Take the term 'berry.' Botanically, it includes cucumbers, grapes, and chili peppers and excludes strawberries. Common usage reverses this. Both classifications have their value inasmuch as they pick out clusters of properties for specific purposes. The botanical classification is biologically developmental, tracking the properties shared by fruits derived from the ovary of a single flower. The culinary classification tracks sweet, small, edible items that behave similarly in recipes. But a category that lumps together strawberries, cucumbers, unicorns, and a particular shade of yellow would be analytically, void of purchase. This last classification would be useless to anyone because it would fail to track any coherent cluster of properties relevant to any actual task. Inference is powerful, but not all interpretive moves are conceptually or practically valuable.

Hylosemiotics distinguishes receiver meaning (what the interpreter infers) from sender meaning (what a sign is oriented toward eliciting) without implying reflective intention on the part of nonhuman sign producers (Storm 2021: 172–4). These may align or misfire by degrees. Either way, inference, not intention or statistical novelty, drives meaning. Put differently, communication is inference, not decoding. Utterances and other signs function by guiding situated inferences rather than by carrying self-contained semantic contents. In Peircean terms, the interpretant is not merely

an interpreter but the inferential effect a materialized sign produces in a situated semiotic ecology. Meaning lies not in the individual that receives a sign alone, but in what the sign actually does—the interpretations, expectations, or actions it helps organize within a particular material and social context. At its core, hylosemiotics is a framework for specifying how meaning is enacted under particular material and ecological constraints.

The second key conception of hylosemiotics is that all signs are materialized (Storm 2021: 163–168). This is not a metaphor. It names a basic ontological and epistemic constraint: before any sign can be interpreted, it must take material form. If I speak a word, your eardrum must vibrate; without that vibration—without air pressure changes in a medium—there is no auditory sign to interpret. When you read this sentence, you are not receiving some disembodied meaning; you are engaging with patterns of light emitted as pixels on a screen.

Recast, signs exist only as physical traces—gestures, odors, prosodic modulations, bodily cues, inscriptions, footprints, pheromone trails, digital pulses. Meaning is always embodied in some substrate and therefore susceptible to decay, distortion, drift. There is no 'pure' sign behind its materialization; the materialization is what makes the sign a sign.

For readers steeped in New Materialism or multispecies studies, the distinction here matters. Hylosemiotics rejects the common New Materialist claim that matter itself is equivalent to meaning and that all material interactions are identical to semiosis. That move collapses causation into communication, attributing 'agency' or 'meaning' to mere physical change. Hylosemiotics draws a harder line.

Materialization is a precondition for semiosis, not its completion. A falling rock leaves an indentation in the soil. That indentation becomes a sign only if some sentient being can draw an inference from it. Matter furnishes the trace. Meaning arises when an interpreter takes that trace as carrying meaning for them. Signification therefore requires two things simultaneously: a material form in the world and a situated inferential act by a sentient being.

This framework moves beyond merely cataloguing potential signs to explain why some patterns come to matter for specific organisms. Signs are mind dependent in the sense that they require interpretation, but they are not arbitrary. Their salience is shaped by physical, biological, evolutionary, and historical forces that carve the world into affordance laden patterns, clusters of similarity and difference more likely to be noticed, tracked, or acted upon by organisms capable of inference. For example, scent marks on a trail are not inherently meaningful: they become signs for a wolf because its morphology, olfactory capacities, and evolutionary history render certain molecular traces salient as indicators of territory, kinship, or potential prey. Semiosis, on this view, is a way of navigating fields of potentiality, structured by both material constraint and interpretive capacity.

Hylosemiotics thus provides a rigorously naturalized semiotics that honors materiality without conflating it with meaning. The sign is always in the world; the meaning is always in the inference. This makes signs neither sheer constructions, nor rigid reference to natural kinds; but processual affordances that permit potential actions for the interpreter.

That said, hylosemiotics takes this insight to a maximal extension by denying a rigid bifurcation between a mental inside and a physical outside. We are not disembodied intellects. The mind is not a sealed chamber but a participant in a semiotic ecology that extends across bodies, artifacts, and environments. Knowledge emerges not from abstract contemplation, but via the exploratory manipulation of the physical environment of an embodied being (Storm 2021: 198-199). This position resonates loosely with work in distributed and extended cognition, but it differs from those accounts

by treating materialization not merely as a cognitive aid but as the very condition under which signs become available for interpretation and thus cognition becomes possible in the first place.

Cognition is not only embodied. It is also offloaded. Matter and energy are used to store information and alter cognitive complexity (Storm 2021: 199-200). We learn to count on our fingers. To jot a number on a napkin while calculating a tip is to reduce the cognitive complexity of a task by externalizing thought into the world. The napkin becomes a cognitive artifact. Thought extends into matter. We let things do some of our thinking for us. Writing is only the most familiar instance of this. Long before written language, shepherds used tallies to track their flocks. More recently, many of us memorized the phone numbers we dialed most often. Today that information has been stored in our devices and, in many cases, lost to conscious recall.

The externalization of memory cuts both ways. As Bernard Stiegler (2009) warned, externalizing memory enables vast accumulation of knowledge but risks alienating us from it. We gain access but lose possession. This tension sharpens in the era of generative AI, where machines simulate understanding even as our own grasp of underlying concepts atrophies. The outcome of this phase shift remains uncertain. Our prosthetic minds grow stronger. Our capacity to wield them may not.

Culture resides not in individual cognition but in shared ecologies of signs. Another key implication of a hylosemiotc account is its emphasis on the public dimension of semiosis and the forms of coordination this makes possible. In humans, as in other social animals, sign production and uptake function as mechanisms of alignment, ways of synchronizing attention, expectation, action across individuals. This coordination is never perfect. Members of a group do not share identical representations. They approximate, negotiate, adjust. What matters is not uniformity but partial alignment. There are also unintended manifestations. Still, from a hylosemiotc perspective, cultures are composed not of shared mental contents but of individuals whose concepts are oriented around overlapping constellations of materialized signs. This shift allows for more precise analysis of culture, no longer framed in terms of diffuse collective representations but as the outcome of concrete interactions mediated by specific material vectors.

Public representations do more than transmit information. Material signs actively structure social relations. They mobilize affect, as in propaganda. They cultivate desire, as in advertising. They enforce power, as with weapons. They stabilize hierarchies, as in regimes of accumulation. These dynamics are not exclusive to humans. Many nonhuman social worlds likewise depend on material mediators to coordinate action and dominance. Dominance displays. Scent markings. Even in paradigmatically human cases, collectives cannot be reduced to aggregates of persons alone. A hospital, for instance, is constituted not only by doctors and patients but by diagnostic machines, pharmaceutical supply chains, architectural wards, insurance protocols, and the constant flow of blood, data, and sterile equipment.

In sum, our social world is constructed not of immaterial discourse, but in materialized forms. Culture emerges from the practices by which social animals coordinate via materializing signs. Not only humans. Crows, elephants, octopuses, bees. All participate in culturally mediated forms of coordination that exceed individual learning while remaining embedded in specific ecological and bodily constraints.

To anticipate an objection, I am not denying that human cultures and languages exhibit distinctive traits. As Susan Pearson and Mary Weismantel (2010: 17) aptly warn, anyone studying animal social life must steer between 'the Scylla of anthropomorphism and the Charybdis of anthropocentrism.' Human language has species-specific affordances. Hierarchically recursive syntax chief among them. No known nonhuman culture matches the scale and cumulative complexity of the current human world-system. Nothing in this account denies the distinctive affordances of human language—

recursion, symbolic abstraction, and unprecedented scale of historical complexity—even as it rejects treating those affordances as preconditions for semiosis or culture as such. Yet, what is often treated as uniquely human 'culture' is already richly multispecies. Humans transform plants and animals. They in turn transform us. For example, the coevolution of humans and domesticated grains reshaped human dentition, metabolism, settlement patterns, entangling biological change with cultural practice. The contrast, then, is not between culture and its absence but between different regimes of semiotic coordination. Put plainly, different sentient beings coordinate through different kinds of signs and senses, at different biological tempos, with very different consequences for bodies and lifeways.

Social Kinds: A Social Ontology for Agency in Complex Systems

I want to introduce one further plank of the model I developed in 2021 and connect it explicitly to questions of agency. That work pushed back against the methodological individualism that still organizes much social and cultural theory. Rather than treating the social as either reducible to individual actors or dissolved into vague structural forces, I argued that the social world is composed of process social kinds, best understood as temporary zones of stability in unfolding social transmission processes, sustained through their materialization and through the patterned interactions that give them durability over time. The social world is built not only out of social animals but out of the practices and materialized signs through which coordination becomes possible.

At least provisionally, I defined social kinds as 'socially constructed dynamic clusters of powers, which are demarcated by the causal processes that anchor the relevant clusters.' (Storm 2021: 111) While the technical details exceed the scope of this article, what matters is what this definition allows us to recover conceptually. Interpretation occurs at the level of sentient organisms, but social kinds work to stabilize the materialized signs through which those interpretations become coordinated.

Approached differently, humans and other social animals continually bring new entities into being. Calendars and currencies, certainly. But also territories marked by scent. Tool traditions in corvids. Ant colonies. Dominance hierarchies within flocks. Migration routes stabilized across generations. Domesticated species. Kinship roles. Traffic flows. Spears. iPhones. Bureaucratic offices. Waste streams that reorganize ecosystems. Some of these are artifacts. Many are not. Some are explicitly institutional. Others are emergent patterns of coordination sustained by repetition, perception, material constraint. I refer to these second-order entities as 'social kinds.' But that language should not lead one to presume unintended oppositions. 'Social' here is not an antonym to physical or biological. Physical properties give social kinds their social powers, social forces bring physical objects into being. Looping effects often make the biological and the social difficult to disentangle (as in the case of domesticated species). Many animal species produce social kinds. So nature-culture, nature-social binaries are unwarranted. Actually, many social kinds interweave what could be called social, physical, and even biological properties.

This framework provides a distinctive account of 'the systematic embedding of agency' (to echo the call for the special issue) that rejects both voluntarism and ontological flattening. Agency does not 'shift' between humans and nonhumans, nor does it dissolve into an undifferentiated field of actants. It is distributed asymmetrically across systems. Humans remain sites of interpretation, deliberation, and accountability, but we are never the sole drivers of action. What matters analytically is not simply who acts, but how action is enabled or constrained by the social kinds through which it passes. This preserves responsibility without anthropocentrism—precisely the

conceptual leverage required for thinking about culture and accountability under the planetary-scale transformations this special issue confronts.

Teleology is not inherent in all things, but it is common in social kinds. Social kinds often exhibit structures that reinforce their own propagation toward particular goals. This means there can be a rationalization toward function in a Weberian sense. Armies, for example, tend to be rationalized such that they become better at fighting. Traits that make them more successful at that are likely to be copied or reproduced. They beat other armies.

Similarly, ant colonies evolve toward more efficient resource extraction and colony survival. Their organizational features, division of labor, pheromone-based communication, adaptive foraging strategies, are shaped by selection pressures that reward success in maintaining the collective. The structure stabilizes around this teleological vector, even if no individual ant 'intends' the outcome.

Yet in human societies, the stated goals of social kinds and the ends toward which they are actually rationalized often diverge. Take the academy. Its avowed aim is the production of knowledge. What is in fact reproduced, however, are often the practices that generate career success. In other words, those most likely to be published, rewarded, and advanced. I'm not denying the possibility of progress in academic fields, especially insofar as rewarded systems are well-calibrated, but such progress always occurs under professional selective pressures. This produces shifting local equilibria: waves of scholarly fashion emerge because certain approaches are temporarily easier to publish and more legible as merit. Once widely adopted, they lose that advantage, and the cycle turns. I'm not denigrating the academy, which is under threat across the globe at the moment, but merely reminding us of the importance of careful attention to those instances when stated aims and professional incentives diverge.

This bears directly on planetary ethics and governance. Many of the systems reshaping the Earth—energy regimes, food systems, logistics networks, research infrastructures—are social kinds with powerful teleological momentum. They optimize for throughput, growth, or efficiency even when those trajectories undermine collective flourishing. Ethical responsibility, in this context, cannot be reduced to individual intention or moral resolve. It requires attention to how social kinds are structured, what they are rationalized to reproduce, and where their operative goals diverge from the values they publicly profess.

This is also where my model intersects, though not identically, with what Martin Bohle and Eduardo Marone call geoethics. In their 2021 piece, they describe geoethics as an 'epistemic-moral hybrid,' a stance that combines knowledge about Earth systems with moral reflection on human entanglement within them. They suggest 'the central tenet of Geoethics is the virtuous and responsible individual (human agent) who pursues a practice that is geosciences-knowledge-based, just, equitable, inclusive, participatory, and ecologically oriented. (Bohle and Marone 2021: 5). This strikes me as broadly valuable. My own framework, however, presents the issue less in terms of individual moral stance and more in terms of the distribution and coordination of agency. It suggests a focus on what kinds of semiotic and material infrastructures make certain actions possible in the first place. Rather than rooting ethics in an epistemic posture toward 'the Earth system,' it asks how responsibility and transformation are routed through social kinds—some explicitly moral, some infrastructural, some sensory, some nonhuman. If geoethics is a call for situated care, social kinds theory provides an analytic for how situatedness is structured. Both, I think, are needed.

Conclusion

In summary, hylosemiotics offers a way to analyze more-than-human culture without collapsing meaning into matter, agency into causation, or responsibility into a flattened ontology. It sharpens the analytic lens through a set of operational distinctions: between causation and interpretation, sender meaning and receiver meaning, voluntary and involuntary signs, material trace and inferential uptake. These are not abstractions. They allow scholars to track how coordination happens. Which signs matter, to whom, under what constraints, with what consequences. A honeybee's alignment dance. An elephant matriarch's infrasonic call. A factory shift bell. A climate station's sensor grid. These are not background conditions or metaphors. They are semiotic events that organize perception, anchor expectation, modulate power across species lines. For example, biodiversity policy appears more likely to succeed when it attends not only to human incentives but also to the ecological signals, interspecies dependencies, and material conditions through which humans and other organisms jointly shape landscapes over time.

The editorial to this special issue usefully portray culture as an active mediator of Anthropocene dynamics rather than a secondary reflection of them (Bohle and Marone 2025). My hylosemiotic account complements that orientation by specifying how such mediation occurs: through materialized signs and social kinds that distribute agency asymmetrically across multispecies socio-material systems.

My account social kinds also reframes the question of agency. It shifts focus from the actor to the architecture of action, from not just 'who did it' to how doing became possible, how intent got routed through material and institutional systems, how forces amplify or dissipate through social kinds. Those kinds braid together biology, infrastructure, historical process. In this sense, I've aimed to provide a method for studying coordination, accountability, transformation in entangled multispecies ecologies on a planet undergoing systemic change.

References

- Bohle, M. and Marone, E.** 2021. Geoethics, a Branding for Sustainable Practices. *Sustainability*, 13(2), 895, 1-12. <https://doi.org/10.3390/su13020895>
- Bohle, M. and Marone, E.** 2025. Beyond the human, with the human: Cultural science for the Anthropocene. Editorial for the special issue The Human Condition for the Anthropocene: Being more-than-human. *Cultural Science*.
- Godfrey-Smith, P.** 2016. Other minds: The octopus, the sea, and the deep origins of consciousness. Farrar, Straus and Giroux.
- Harris, R.** 1981. The Language Myth. London: Duckworth.
- Hartigan Jr, J.** 2014. Aesop's Anthropology: A Multispecies Approach. University of Minnesota Press.
- Helfman, GS. and Schultz, ET.** 1984. Social transmission of behavioural traditions in a coral reef fish. *Animal Behaviour*, 32(2), 379–384
- Herrmann-Pillath, C.** 2022. Roundtable: The future of culture in more-than-human worlds of being. *Cultural Science* (14), 1-2.
- Holzhaider, JC.; Hunt, GR., and Gray, RD.** 2010. Social learning in new Caledonian crows. *Learning & Behavior* 38, 206–219.
- Hunt, GR. and Gray, RD.** 2003. Diversification and cumulative evolution in New Caledonian crow tool manufacture. *Proceedings of the Royal Science Biological Sciences* 270(1517), 867-74.

- McComb, K.; Moss, C.; Durant, SM.; Baker, L. and Sayialel, S.** 2001. Matriarchs as repositories of social knowledge in African elephants. *Science*, 292(5516), 491-494.
- Nencini, AM.** 2025. Metamodernism: A Multispecies Approach to Hermeneutics. *Method & Theory in the Study of Religion*. 37, 47-56.
- Pearson, SJ. and Weismantel, M.** 2010. Does 'The Animal' Exist?: Toward a Theory of Social Life with Animals. In D. Brantz (Ed.), *Beastly Natures: Animals, Humans, and the Study of History* (17–37). University of Virginia Press.
- Stiegler, B.** 2009. Pour une nouvelle critique de l'économie politique. Galilée.
- Storm, JĀJ.** 2021. Metamodernism: The Future of Theory. University of Chicago Press.
- Storm, JĀJ.** 2025. Breaking the Postmodern Deadlock: Metamodernism's Methodological Revolution. *Method & Theory in the Study of Religion*. 37, 57-71.
- Whitehead, H. and Rendell, L.** 2014. The Cultural Lives of Whales and Dolphins. University of Chicago Press.
- Whiten, A.; Goodall, J.; McGrew, WC.; Nishida, T.; Reynolds, V.; Sugiyama, Y.; Tutin, CE.; Wrangham, RW. and Boesch, C.** 2001. Charting cultural variation in chimpanzees. *Behaviour*, 138 (11/12), 1481-1516.

Author information

Jason Ānanda Josephson Storm is an historian and philosopher of the Human Sciences. He is currently Francis Christopher Oakley Third Century Professor of Religion and Chair of Science & Technology Studies at Williams College. He is the author of *The Invention of Religion in Japan* (2012), *The Myth of Disenchantment: Magic, Modernity and the Birth of the Human Sciences* (2017), and *Metamodernism: The Future of Theory* (2021), all published by University of Chicago Press. A fourth monograph, *The Genealogy of Genealogy: Nietzsche, Foucault, and the Coils of Critical History* is forthcoming in April 2026.

Open peer review:

<https://culturalscience.org/metamodern-theory-for-the-study-of-more-than-human-cultures/>