**Coordination without Meaning: How "Symbolic" Practices Evolved to Organize Social Relations without Explicit Representation**

Archaeological and cultural-evolutionary debates about prehistoric symbolism remain dominated by a semiotic paradigm.[1] Ornaments, pigments, figurines, and other non-utilitarian materials are typically interpreted as *symbols*: signs whose social significance derives from shared conventions and encoded meanings, often taken to parallel the emergence of language. This framework continues to structure discussions across archaeology, philosophy, and psychology, where material culture is treated as external evidence for representational capacities such as reference, abstraction, and explicit meaning attribution.

This paper argues that this symbolic framing is poorly suited to the prehistoric record. Many material practices that are routinely labeled "symbolic" appear to have played important social roles without functioning as symbols in the semiotic sense.[2] Their effectiveness did not depend on users explicitly representing what these materials meant, nor on shared codes comparable to linguistic conventions. Instead, their social force arose from participation in structured practices that coordinated behavior, stabilized expectations, and regulated interaction across individuals and groups.

To capture this pattern, I introduce the concept of opaque social instruments (OSIs).[3] OSIs are culturally transmitted material practices that organize social relations while remaining largely opaque to the explicit reasoning of their users. They are *instruments* because they reliably perform social work—structuring affiliation, cooperation, exchange, and boundaries. They are *opaque* because participants typically do not represent these functions as such; instead, they experience the practices as customary, beautiful, prestigious, sacred, or simply obligatory. Social coordination is achieved without conceptual transparency.

The OSI framework challenges a core assumption of the symbolism paradigm: that socially effective material culture must operate via symbolic encoding or transmitting meanings. Instead, OSIs rely on the way material forms become embedded in shared practices and learned through participation. Individuals do not need to know *why* a practice works in order for it to work. Cultural stability, not representational clarity, is the relevant explanandum.

The paper situates OSIs within a cultural evolutionary framework, drawing on well-established work showing that cultural traits persist and spread when they reliably exploit evolved learning biases and coordination pressures.[4] From this perspective, prehistoric ornaments and related materials should not be treated as exceptions that demand symbolic explanation. Their long-term persistence strongly suggests that they, like rituals and institutions in later societies, solved recurrent social problems in ways that were cognitively tractable and culturally transmissible.

Six families of evolved psychological biases are particularly relevant for understanding how OSIs function and why their effects remain opaque.

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[1] d'Errico et al. (2005); Henshilwood & Dubreuil (2009).
[2] Overmann & van Mazijk (2026).
[3] van Mazijk (2026a; 2026b).
[4] Boyd & Richerson (1985); Henrich (2017).

First, kinship and in-group favoritism biases incline individuals to preferentially trust and invest in perceived group members.[5] Material markers can extend or reshape in-group boundaries, enabling cooperation beyond close kin without users explicitly representing this function.

Second, coalition and alliance tracking mechanisms make humans highly sensitive to cues of group membership and social alignment.[6] Visually salient material practices can function as stable coalition markers, supporting trust and coordination even when participants experience them merely as "what people like us wear or use."

Third, precaution and threat-management biases reflect long evolutionary histories of intergroup tension alongside the necessity of intergroup exchange for gene flow.[7] OSIs can buffer interaction in risky social contexts—through gifting, ornamentation, or display—while being interpreted phenomenologically as custom or prestige rather than as conflict regulation.

Fourth, prestige and mate-choice biases render individuals especially attentive to cues associated with skill, success, or social standing. Material practices tied to craftsmanship, hunting success, or long-distance exchange can organize sexual selection and status differentiation without being consciously understood as such.[8]

Fifth, conformity biases and sensitivity to opaque procedures lead humans to copy practices with high fidelity even when no one can articulate their rationale.[9] This allows socially effective practices to persist over generations while remaining experientially opaque. Many material traditions are reproduced because "this is how it is done," not because their social function is represented.

Finally, narrative memory and minimally counterintuitive content enhance the transmission of certain material forms by anchoring them within stories, myths, or ritual frameworks.[10] While these narratives may provide local explanations, they often further obscure rather than reveal the underlying social functions of the practices they sustain.

Together, these biases explain how OSIs can be both socially powerful and cognitively opaque. Coordination is achieved through patterned participation, not through shared meanings in the linguistic or semiotic sense.

Reframing prehistoric material culture as OSIs shifts the explanatory focus from representation to organization. Instead of asking what artifacts meant or what they symbolized, the OSI framework asks how material practices stabilized coordination, structured social relations, and persisted across populations. This reorientation aligns archaeology more closely with philosophy of psychology and cultural evolution, offering a model of extended social cognition in which material forms actively organize social life without requiring meaning attribution.

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[5] Boyer (2018).
[6] Knight et al. (1995);
Kurzban et al. (2001)
[7] Wrangham & Peterson (1996).
[8] Miller (2000).
[9] Henrich (2017).
[10] Boyer (2001; 2018).

Boyd, R., & Richerson, P. J. (1985). *Culture and the evolutionary process*. University of Chicago Press.

Boyer, P. (2001). *Religion Explained: The Evolutionary Origins of Religious Thought*. New York: Basic Books. ISBN 978-0-465-00695-0.

Boyer, P. (2018). *Minds make societies: How cognition explains the world humans create*. Yale University Press.

Henrich, J. (2017). *The secret of our success: How culture is driving human evolution, domesticating our species, and making us smarter*. Princeton University Press.

Knight, C., Power, C., & Watts, I. (1995). The human symbolic revolution: A Darwinian account. *Cambridge Archaeological Journal*, 5(1), 75–114.

Miller, G. (2000). *The mating mind: How sexual choice shaped the evolution of human nature*. Anchor Books.

Overmann, K. A., & van Mazijk, C. (2026). Beyond Peirce and De Saussure: Symbolism and material engagement in prehistory. *Cambridge Archaeological Journal*. (Manuscript under review)

van Mazijk, C. (2026a). Opaque Social Instruments: A Cultural Evolutionary Framework for Pleistocene Symbolic Artifacts. *Evolutionary Anthropology* (under review).

van Mazijk, C. (2026b). Opaque Social Instruments: Rethinking Symbolic Artefacts in Pleistocene Archaeology. *Cambridge Archaeological Journal,* thematic issue: “After Peirce: Symbols and Symbolism in Prehistory”, ed. K. A. Overmann, (under review).