



SERRC

Social Epistemology
Review & Reply Collective

<http://social-epistemology.com>
ISSN: 2471-9560

A Comment on Collective Belief

Rodrick Wallace, New York State Psychiatric Institute, rodrick.wallace@gmail.com

Wallace, Rodrick. 2020. "A Comment on Collective Belief." *Social Epistemology Review and Reply Collective* 9 (7): 55-57. <https://wp.me/p1Bfg0-5eI>.

As Humberto Maturana and Francisco Varela (1980) and others remark at some length, cognitive phenomena pervade biology from individual cellular function, ‘simple’ wound healing, through immune maintenance and response, tumor control, neural function, social interaction, and so on (e.g., Wallace 2005, 2012, 2015, 2020).

Cognition, in the sense of Atlan and Cohen (1998), most fundamentally involves choice of an action from a larger set of those available. Such choice reduces uncertainty in a formal manner, and the reduction of uncertainty directly implies the existence of an information source ‘dual’ to the cognitive process of interest. The argument is stunningly direct (Wallace 2005, 2012). As a consequence, cognitive phenomena can be associated with ‘dual’ information sources that, following Dretske (1994), are constrained by the necessary conditions imposed by the asymptotic limit theorems of communication theory (Cover and Thomas 2006).

Cognition’s Ubiquity

Cognition’s ubiquity—found at every scale and level of organization of the living state—opens to evolutionary exaptation the crosstalk and noise that plague all information exchange (Cover and Thomas 2006). A principal outcome, as Wallace (2012) argues, has been the repeated development of punctuated global broadcast mechanisms that entrain sets of ‘unconscious’ cognitive modules into shifting, tunable cooperative arrays tasked with meeting the changing patterns of threat and opportunity that challenge all organisms. When such entrainment involves neural systems acting on a timescale of a few hundred milliseconds, the phenomenon is characterized as consciousness. When entrainment involves many individuals or cultural artifacts, the outcomes are social or institutional processes (e.g., Wallace 2015, Wallace 2020).

Information, however, is also a form of free energy instantiated by physical processes that themselves consume free energy, permitting adaptation of empirical approaches from nonequilibrium thermodynamics and statistical mechanics to cognitive phenomena, given restrictions imposed by the local irreversibility of information sources (palindromes are highly improbable). This makes impossible such simple symmetries as the ‘Onsager reciprocity relations.’

Taking that perspective, Wallace (2005, 2012, 2015, 2020) explores related statistical models of cognitive global broadcasts—slightly different views of the same elephant, as it were. While useful for data analysis, analogous to the varieties of regression equations, they also provide basic conceptual models implementing Dretske’s imperative.

Most singularly, embedding the high level neural global broadcasts of animal consciousness within a nested hierarchy of cognitive and other sources of information evades the logical fallacy of attributing to ‘the brain’ the broad spectrum of functions that can only be embodied by the full construct of the individual-in-context. For humans, of course, culture is the essential context, without which there is no human.

The Mereological Fallacy

The mereological fallacy is, then, fundamentally a matter of decontextualization. Bennett and Hacker (2003) use the lever of that fallacy to banish a philosophical *ignis fatuus* long afflicting consciousness studies that ranges across ‘the redness of red’, ‘qualia’, the ‘hard problem’, ‘what is it like to be a bat’, and so on and on. Indeed, terms like ‘qualia’ may have less meaning for consciousness studies than ‘phlogiston’ and ‘luminiferous aether’ did for physics. Indeed, some recent work on consciousness has devolved into what might well be characterized as invocation of a ‘cognitiferous aether’ (e.g., Tononi and Koch 2015; Tegmark 2014).

Further, Baars’s (1988) global broadcast model, and its development by Dehaene and others (including the author), makes clear that consciousness is very much an expression of classical physics and ordinary biochemistry that does not require reification to some new quality like mass or charge, or invocation of room-temperature quantum computing (Tegmark 2000).

There remains, unfortunately, an implicit and no less debilitating decontextualization that assumes individual consciousness is not merely different from other evolutionary adaptations, but exceptionally so. This belief has deep cultural roots of concern, perhaps, to anthropologists or social scientists engaged in the study of religion. To avoid this fallacy, the scientific context for the study of consciousness must include the evolutionary trajectories that produced it some 500 million years ago.

While we cannot make direct observations on extinct species, we can examine the many analogous global broadcasts, cellular, neural, social and institutional, rapid, intermediate, and slow, that are available to empirical study within and across individual organisms, species, taxa, and their interacting communities, including groups of humans and other animals (Wallace 2015, 2020).

For consciousness studies, taking a broad view—at and across the many scales and levels of organization at which similar phenomena occur—as for the rest of biology, nothing makes sense except in light of evolution.

References

- Atlan, Henri and Irun R. Cohen. 1998. “Immune Information, Self-Organization, and Meaning.” *International Immunology* 10 (6): 711–717.
- Baars, Bernard J. 1988. *A Cognitive Theory of Consciousness*. Cambridge University Press, New York.
- Bennett, M. and P.M.S. Hacker. 2003. *Philosophical Foundations of Neuroscience*. Blackwell Publishing, London.
- Cover, Thomas M. and Joy A. Thomas. 2006. *Elements of Information Theory*, 2nd ed. Wiley, New York.
- Dretske Fred. 1994. “The Explanatory Role of Information.” *Philosophical Transactions of the Royal Society A*, 349 (1689): 59–70.

- Maturana, Humberto R. and Francisco J. Varela. 1980. *Autopoiesis and Cognition*. Dordrecht, Holland: Reidel Publishing Company.
- Tegmark, Max. 2015. "Consciousness as a State of Matter." *Chaos, Solitons & Fractals* 76: 238-270.
- Tegmark, Max. 2000. "Importance of Quantum Decoherence in Brain Processes." *Physical Review E* 61 (4): 4194–4206.
- Tononi, Giulio and Christof Koch. 2015. Consciousness: Here, There and Everywhere? *Philosophical Transactions B* 370 (1668): <https://doi.org/10.1098/rstb.2014.0167>.
- Wallace, Rodrick. 2020. *Cognitive Dynamics on Clausewitz Landscapes: The Control and Directed Evolution of Organized Conflict*. Springer: New York.
- Wallace, Rodrick. 2015. *An Ecosystem Approach to Economic Stabilization: Escaping the Neoliberal Wilderness*. Routledge: London.
- Wallace, Rodrick. 2012. "Consciousness, Crosstalk, and the Mereological Fallacy: An Evolutionary Perspective." *Physics of Life Reviews* 9 (4): 426-453.
- Wallace, Rodrick. 2005. *Consciousness: A Mathematical Treatment of the Global Neuronal Workspace Model*. Springer, New York.