

Peer Review

# Review of: "Observers as Agents: Relational Epistemology from Physics to Ecology"

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## Review of

"Observers as Agents: Relational Epistemology from Physics to Ecology"

This article is a brave one. The author brings together insights from very different disciplines trying to develop an observer-based Epistemology as an alternative to an observer-independent one. She really manages to build an interesting proposal about the relational feature of any possible Epistemology and how to describe the formal aspects of an intersubjective and relational observer. It is, however, just one part of a complete epistemological alternative, because there are other causal or agential interventions in any observation that should also be considered. I recommend a less ambitious claim that argues for the relevance of elaborating a formal model of the collective, relational, and protocolar observer. It will make a better and more sustained contribution to the unavoidable rethinking of observation.

This paper is a sort of an update of the socio-constructivism that in the 80s and 90s of the last century was hegemonic in Social Studies of Science (SSS), as well as an upgrade with the addition of some developments in information theory. But it remains blind to a deeper development in the understanding of observation, although, somehow, she points to it when advocating for "framing knowledge as inherently tied to structured interactions between observers and systems" (p. 2). It remains blind to the so-called "ontological turn" that opens new directions to SSS (Latour, Mol), Quantum Physics (Bohr), Biology (Haraway), Ethology (Despret), etc. For that reason, we may say that this is a one-sided article trying to explain observation only from the configuration of an intersubjective observer, with no participation of the material world implicated in that observation. It reduces the relational nature of observation to human or social relationships and, even more, to elements of those relationships that may be formalized. From the very beginning (p. 2), for example, she equates objective features of reality with

inter-subjective features. Let me sustain my evaluation with a short critical review of three basic assumptions of this article.

First, her reading of Quantum Physics is not coherent with the standard Copenhagen interpretation (Bohr), that even Heisenberg came to acknowledge in the postscript to his famous article of 1927 on the uncertainty principle. According to this interpretation, it is not uncertainty, but (ontological) complementarity that we find in the experimental observation of the wave/particle behavior of light. For that reason, facts are neither “relative to the observer’s interaction with a system” nor “expression of subjective knowledge”, as the author claims (p.3), but relative to interactions (or even better “intra-actions”) within a system to which the observer belongs and depends on, and without the possibility of subtracting from observation results the consequences of using one observational apparatus or another. See Barad (2007: 19-20 y 115-8).

Second, the author is right in claiming that the capability of observation or producing information of any human or non-human organism is an embodied capability “[...] embedding epistemic processes within biological structures” (p. 4), developed in ecological systems through what can be modeled as “nested adaptative cycles” (p.5). The problem here is that the main implication the author extracts from this fact is the emergence of “observational frameworks – such as distributed sensor networks or participatory governance models – [that] make explicit the need to integrate diverse observer perspectives” (p.5). This is not much of an ecological reading. Once again, the nest or the ecological system is located outside or around the observer, as a simple environment and, accordingly, the ontological and epistemological process of observation is reduced to a methodological one that may be formalized. However, if we look with care at the biological theories of evolutive construction of ecological niches, as Rouse (2015: 20, 98-9, 195, 228) has done, we see a different storyline. As well as observational capabilities being merged and forged within niche construction, the specific aspects of our environment that we may observe are selected and conformed within the same process. There is a mutual determination in any observational practice, which, therefore, is not observer-centred, but relational as a sensible compromise with the environment. What is basic here is the intra-action between the observer organism and what is being observed in the environment it belongs to. The signified materiality observed is not mere “networks of information” (p. 12), and it goes hand in hand with the prosthetic embodiment of the observer in the production of observations.

Third, after subordinating material deployments and giving total control of observation to the intersubjective observer, the last step in the author’s argument is to claim (p.6) that we need to construct

a formal model of the “intersubjectively valid frameworks [...] for coherent modeling across complex adaptive systems”. It is an update of an old rationalist movement assuming that the rationality of the model (of intersubjective frameworks and procedures) proves its validity because the world should be rational. An assumption she makes clear when claiming that realism and objectivity are here “preserved through structured coherence” (p. 10). However, it is not possible to make such a rationalist assumption after Gödel's incompleteness theorem and Wittgenstein's investigations. There may be computational aspects in the results of observation, but they cannot explain or model it. We need to consider other aspects and ingredients in observation as well. We may say that our biological niche is also a niche of articulated conceptual reason (Rouse, 2015:25), but that rationality is also a product of the evolution process where observers and what has been observed are differentiated, forged, and determined.

Throughout the article, there are some relevant statements that are undermined by the unilaterality of the general epistemological perspective she is coming up with. For example, her statement that any relational epistemology must overcome the duality between discrete and continuous models (p.9). It cannot, however, be overcome by just an epistemic movement centred on showing the observer's perspective (ibid), forgetting the ontological implications of “measurement processes and operational constraints”. Time after time, the problem is that the author attempts to encompass too much, instead of staying within the limits of a perspective centred on the intersubjective and “rational” character of the observer. A perspective that may seem still hegemonic but is no longer sustained by scientific facts or epistemological arguments.

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#### References:

Barad, Karen (2007), *Meeting the Universe Halfway*, Durham, Duke U. P.

Rouse, Joseph (2015), *Articulating the World: Conceptual Understanding and the Scientific Image*, Chicago: University of Chicago Press.

#### **Declarations**

**Potential competing interests:** No potential competing interests to declare.