

The neglected conscious subject in consciousness science: Commentary on “Beyond task response—Pre-stimulus activity modulates contents of consciousness” by G. Northoff, F. Zilio & J. Zhang

Matthew Owen^{1,2}

¹Department of Philosophy, Yakima Valley College, Yakima, WA, USA

²Center for Consciousness Science, University of Michigan, Ann Arbor, MI, USA

The philosopher, Mihretu Guta, has identified the neglected subject in consciousness research [1]. When we talk about consciousness in ordinary life, we regularly acknowledge the subject. We ask questions like “is *she* conscious?” We claim, “*Joe* needs to become conscious of his implicit biases.” I pursue opportunities to enjoy conscious experiences, such as the exhilaration of skiing fresh snow in the backcountry, and so do *you*, though perhaps in different ways than I. If we have a loved one in a coma, we want that *person* whom we love to regain consciousness. These descriptions of consciousness imply the presence of the subject who is (potentially) conscious.

As Guta points out, consciousness is not a free-floating property but always has a bearer, the conscious subject [1, p. 132, cf., 2, 3]. Wherever there is a conscious experience there is the experiencer, which is the subject that bears the experience. Granted, someone might have an experience where they have no self-awareness. Nevertheless, every individual who knows about such experiences knows about them by being the subject who had the experience or hearing his report [e.g., 4, p. 1]. Given the ever-present subject of consciousness wherever consciousness is, it is peculiar that consciousness researchers often mention mental states as if they are conscious independently of being the conscious states of someone [1, p. 132]. We refer to visual perceptions that become conscious, when in reality no one has ever studied mere conscious visual perceptions. What are studied are visual perceptions belonging to conscious human or animal subjects; it is the subjects who are conscious of visual stimuli, not the visual perceptions.

I do not know all the reasons why conscious subjects are rarely mentioned in consciousness science, but one could be pragmatic. Explaining the mysterious jump from the nonconscious nuts and bolts of neurons to the aurora borealis of consciousness is a hard problem. But it is an easy problem compared to explaining the emergence of a single conscious subject from the human brain’s 86 billion neurons [cf. 5]. Perhaps it is more practically realistic to solve the less hard problem before attempting to solve the harder hard problem. On the other hand, if we ignore a necessary condition for the presence of consciousness, our explanations of it could be plagued by inadequacy. And how can we explain our whole data set regarding consciousness if we neglect the most fundamental aspect of the data?

NOTE: This is a pre-print of a commentary published in *Physics of Life Reviews*. Please cite the published article. DOI: <https://doi.org/10.1016/j.plrev.2024.06.009>

Given the need to acknowledge not only consciousness but also its bearer, the explicit discussion of the self by Northoff, Zilio, and Zhang is refreshing, insofar as the self could be the bearer of consciousness [6, p. 29]. When considering the fractal aperiodic background structure of consciousness, they directly consider “the experiencing subject.” I want to applaud their divergence from the status quo and briefly point out how their acknowledgment of the conscious subject could compliment their hypothesis, before offering a critique.

Suppose there were only individual conscious states and in a single brain every conscious state supervened on its own neural mechanisms. Though they supervene on neuronal activity in the same brain, it is difficult to say what exactly would unify the conscious states (especially if their neural mechanisms are in disparate brain regions, such as prefrontal cortex and visual cortex) so that some states are at the foreground while others compose the background of a unified conscious experience. Identifying the neural correlate of one of these conscious states, its NCC, would be a matter of merely identifying the particular neural mechanisms that directly corresponds to that conscious state. Those neural mechanisms would be, to use the terminology of formal definitions of NCC, the minimal neural mechanisms that are jointly physically sufficient for the conscious state [see 7, 8, 9].

By contrast, Northoff et al. hypothesize that the NCC of a content specific conscious state, such as seeing an apple, includes not only the neural mechanisms that directly corresponds to that state following the stimulus, but also pre-stimulus neural activity. In their words, “Neurodynamically, we suppose that fractal background activity and oscillatory foreground activity are related to the distinction between the background structure or stream and the foreground content in consciousness” [6, p. 32]. Their suggestion has more traction if conscious states are not individually existing entities but rather exist as a part of someone’s unified conscious experience that is a whole, capable of having a background and foreground. If each conscious state is one aspect of a subject’s unified conscious experience, then identifying its NCC would more likely require considering the neural mechanisms corresponding to other aspects of the subject’s whole experience. However, this hinges on conscious states being part of a unified experience. And the unity of consciousness is easier to explain when the conscious subject is acknowledged, as long as the subject is a metaphysically simple entity whose unity is intrinsic, not externally conferred by entities or relations outside itself.

For example, according to neo-Thomistic hylomorphism, a human person is a material substance internally unified by a substantial form [10, 11]. The substantial form can consciously experience a multiplicity of content specific conscious states at a time, but the capacity to be in each conscious state must be co-manifested with biological capacities manifested by neural mechanisms. While the neural mechanisms play a key role, they are not the bearer of the conscious states. Rather, the substantial form, a metaphysically simple entity not composed of any separable parts, is the bearer of all the conscious states, which are unified in virtue of belonging to the same simple bearer. If Northoff et al. can say the same or something similar, it would buttress their hypothesis. Unfortunately, this is where their view of the self, as expressed in their article, may stumble.

NOTE: This is a pre-print of a commentary published in *Physics of Life Reviews*. Please cite the published article. DOI: <https://doi.org/10.1016/j.plrev.2024.06.009>

“We assume,” write Northoff et al., “that consciousness is ultimately based in the relational self and its neuroecological point of view...The neuroecological layer of the point of view is constituted by its spatial and temporal coordinates of the organism relative to the much broader array of different temporal and spatial scales of the environment, e.g., the natural world as a whole” [6, p. 29]. If consciousness is rooted in a relational self and its neuroecological point of view composed of spatial and temporal relations, the bearer of consciousness seems far from metaphysically simple. Consequently, it is difficult to see what in the matrix of relations, which consciousness is allegedly rooted in, would unify conscious states into a whole experience with a background and foreground, which is critical to Northoff et al.’s hypothesis [6, p. 32].

References

1. Guta MP: **The Non-Causal Account of the Spontaneous Emergence of Phenomenal Consciousness**. In: *Consciousness and the Ontology of Properties*. Edited by Guta MP. New York, NY: Routledge; 2019: 126-151.
2. Lowe EJ: **Subjects of Experience**. New York, NY: Cambridge University Press; 1996.
3. Rickabaugh B, Moreland JP: **The Substance of Consciousness: A Comprehensive Defense of Contemporary Substance Dualism**. Oxford, UK: Wiley-Blackwell; 2023.
4. Koch C: **Then I Am Myself the World: What Consciousness Is and How to Expand It**. New York, NY: Basic Books; 2024.
5. Chalmers DJ: **Facing Up to the Problem of Consciousness**. *Journal of Consciousness Studies* 1995, **2**(3):200-219.
6. Northoff G, Zilio F, Zhang J: **Beyond task response—Pre-stimulus activity modulates contents of consciousness**. *Physics of Life Reviews* 2024, **49**:19-37.
7. Koch C, Massimini M, Boly M, Tononi G: **Neural correlates of consciousness: progress and problems**. *Nature Reviews Neuroscience* 2016, **17**:307-321.
8. Chalmers DJ: **What is a Neural Correlate of Consciousness?** In: *Neural Correlates of Consciousness*. Edited by Metzinger T. Cambridge, Massachusetts: MIT Press; 2000: 17-40.
9. Owen M, Guta MP: **Physically Sufficient Neural Mechanisms of Consciousness**. *Frontiers in Systems Neuroscience* 2019, **13**(24).
10. Owen M: **Measuring the Immeasurable Mind: Where Contemporary Neuroscience Meets the Aristotelian Tradition**. Lanham, MD: Lexington Books; 2021.
11. Owen M: **Aristotelian Causation and Neural Correlates of Consciousness**. *Topoi* 2020, **39**(5):1113-1124.