

The Revolution will not be Optimised: Enactivism, Embodiment and Relationality

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Abstract. Optimising the 4E (embodied-embedded-extended-enactive) revolution in cognitive science minimally requires the robust rejection of two guiding commitments made by orthodox thinking in the field, namely (i) an internalism about the whereabouts of our cognitive architecture, and (ii) the principle that intelligent thought and action are standardly to be explained in terms of the building and manipulation of content-bearing representations. In this paper, I argue that enactivism currently does not have the theoretical resources to robustly reject (i). Enactivism's best hope for rejecting (i) is the bringing together of embodiment and relationality to develop the concept of extensiveness. But this falls short of what is needed. By contrast, one leading alternative to enactivism in 4E space, namely extended functionalism, is in the position to robustly reject (i), but, unlike enactivism, has no theoretical interest in rejecting (ii).¹

Extended Abstract

As I understand things, optimising the 4E (embodied-embedded-extended-enactive) revolution in cognitive science minimally requires the robust rejection of two guiding commitments made by orthodox thinking in the field, namely (i) an internalism about the whereabouts of our cognitive architecture (henceforth *internalism*), and (ii) the principle that intelligent thought and action are standardly to be explained in terms of the building and manipulation of content-bearing representations (henceforth *representationalism*). Anything short of this dual dismissal will, as Rupert nicely puts in his sobering set of conclusions regarding the revolutionary implications of 4E approaches in general, be “more of a nudging than a coup” [1, p.242].

The radical enactivists Hutto and Myin [2] hold that the prospects for rejecting internalism and the prospects for rejecting representationalism are connected. For example, in their turf war with the sensorimotor enactivists [3, 4], Hutto and Myin charge the latter with failing to rule out the idea that knowledge of sensorimotor contingencies involves behaviour-mediating content-involving states with the character of knowledge-that (states tantamount to representations), and that it is this failure which blinds the sensorimotor enactivist to a properly enactive understanding of embodiment. As we shall see later, it is precisely this enactive understanding of embodiment that provides a potential route to the robust rejection of internalism. In addition, Hutto and Myin argue that it is because those advocates of the extended cognition hypothesis who develop that hypothesis in a functionalist register (e.g. [5, 6]) typically maintain a commitment to some variety of representationalism

about cognition, that such thinkers are poorly placed to resist their internalist critics. Against Hutto and Myin, I shall briefly present an analysis which indicates that to the extent that extended functionalism can be adequately defended, it can be defended in a representationalist register. What this tell us is that the extended functionalist has the theoretical resources to robustly reject internalism, but, unlike the enactivist, standardly has no theoretical interest in rejecting representationalism. Of course, if my opening thoughts are right, the revolution would be better served by a view that robustly rejects not only internalism, but internalism and representationalism. It is here that the main claim of this paper emerges from the shadows. For I shall argue that enactivism currently does not have the theoretical resources to robustly reject internalism.

To see why this is, we need to focus on the notion of embodiment. For the functionalist, and thus for the extended functionalist, the physical body is relevant “only” as an explanation of how cognitive states and processes are implemented in the material world. Of course, the extended functionalist is rather more liberal than her internalist cousin about which parts of the body might count among the vehicles of cognition, but that outcome does not herald a fundamental change in our understanding of the relationship between cognition and material embodiment. To the enactivist, this further outbreak of conservatism is something of which to be wary. This is because enactivism aspires to deliver a transformed way of understanding the claim that cognition is embodied. According to this idea, the notion of embodiment in embodied cognition should be unpacked in terms of sensorimotor capacities and sensorimotor activity. Thus Hutto and Myin [2] explain that “for enactivists, embodiment is not defined with reference to an intuitive, everyday understanding of bodies and their boundaries, but in terms of wide reaching organismic sensorimotor interactions that are contextually embedded”. Enactively speaking, these interactions are literally constitutive of cognition. I suggest that it is the unpacking of this notion of embodiment as sensorimotor activity that provides the enactivist's best hope of delivering a revolution-delivering robust rejection of internalism.

This is the moment where 4E threatens to become 5E. For it is here that Hutto and Myin introduce the idea of cognition not as extended, but as *extensive*. What does this mean? The key idea is brought out in a comparison with the hypothesis of extended cognition. As Hutto and Myin put it, “prominent versions of [the extended cognition hypothesis argue] that only in exceptional cases do minds extend... By contrast, those who endorse [radical enactivism] and thus the strongest version of the Embodiment Thesis assume that minds are already, in their basic nature, extensive and wideranging”. At root, this is a dispute

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over what we might call the point of departure for psychological theorizing: is mind a phenomenon whose primary ontological manifestation is inner, but which sometimes spreads beyond the skin (extended functionalism as often understood), or a phenomenon that is widely constituted in its very essence (the extensive mind of radical enactivism).

But precisely how are we to explicate the property of extensiveness, and thus what it means for mind to be “widely constituted in its very essence”? I shall argue that this is a point where radical enactivism and autopoietic enactivism [7, 8] converge, meaning that the radical enactivist’s notion of extensiveness is most usefully unpacked by way of recent work in the autopoietic enactivist tradition by Froese et al. [9], according to which cognition is a *relational* phenomenon underpinned by *nondecomposable* dynamical systems. Froese et al. (drawing on Di Paolo [10] and Thompson and Stapleton [11]) argue that cognition is a relational phenomenon, in that it is “a kind of adaptive relationship between an agent and its environment”. Moreover, “[i]f cognition is a relational phenomenon, it logically cannot be located inside the brain (or anywhere)”. In other words, the enactive rejection of internalism does not turn on the spatial repositioning, in an outward direction, of the boundary of the cognitive system, but rather on the jettisoning of the idea that there is a relevant spatial boundary to be repositioned. Ultimately, that must be what is meant by mind being “widely constituted in its very essence”.

I shall argue that, to the extent that the relationality of cognition as identified by autopoietic enactivism is a genuine phenomenon, it is to be found at the wrong level of organization to establish that the internalists are wrong about the location of our cognitive architecture. It might seem that this criticism can be resisted, if the kind of relationality uncovered so far were to be underpinned causally by a second kind of relationality, that of environment-involving nondecomposable dynamical systems. A system is nondecomposable if its behaviour “cannot be modeled, even approximately, as a set of separate parts” [12, p.31] or (equivalently), if its behaviour can be characterized only using “collective variables and/or order parameters, variables or parameters... that summarize the behavior of the systems’ components” [12, p.36]. Froese et al. attempt to explicate the property of nondecomposability using an empirical model, but I shall argue that this fails to complete the robust rejection of internalism, because the results of the model in question are fully compatible with an embedded internalist account of our cognitive architecture.

In conclusion, even if at least some forms of enactivism have the theoretical resources to robustly reject the principle that intelligent thought and action are standardly to be explained in terms of the building and manipulation of content-bearing representations (something which I don’t dispute in this paper), enactivism’s best hope for resisting an orthodox internalism about the whereabouts of our cognitive architecture, namely the bringing together of embodiment and relationality to underpin the concept of extensiveness, falls short of what is needed. By contrast, one leading competitor to enactivism in 4E space, namely extended functionalism, is in the position to robustly reject internalism, but standardly has no theoretical interest in

rejecting representationalism. The revolution, it seems, will not be optimised.

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