

Review of: ""Brainets" Shaping The Embodied Activities"

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I find the article very well written, current for today's cognitive science landscape, and very well developed in terms of logic and the literature considered.

I feel obliged to point out that my own position on the subject is very similar to that of the authors here, and therefore my review may be somewhat vitiated by a similarity of views.

I therefore consider the article clearly meritorious of publication and inclusion in the contemporary debate in cognitive science. I only have two points to make, plus one of a typographical nature.

1) Regarding the section "The Brain and the Body" the authors make a strong assumption: It is not the body that shapes the mind, but it is the brain that shapes the body. This, however, goes against the evolutionist precept, made explicit by Leroi-Gourhan in *Le geste et la parole. Technique et langage* of 1964, which speaks metaphorically about the brain as a tenant of the body, in the sense that, for example, the bipedal position allowed the cerebro-structural configuration we know today. I understand that the authors do not intend to speak of a priority of the brain over the body in evolutionary terms, but I think it is important to point this out. Furthermore, '*perceiving is rather an activity of the brain*' is a problematic phrase, since it does not take into account that the body structure defines the constraints of cognition - see for example: Pulvermüller et al. 2021 - *Biological constraints on neural network models of cognitive function*-, which is why we perceive images with our eyes, perceive smells only with our nose, etc.. This, albeit trivial (and partially highlighted by the same authors in the point just below), identifies the level at which it is the body that shapes cognition, i.e. the body that constrains the possibilities of cognition, and only from those biologically limited possibilities can we then affirm, with the authors, that the brain shapes the living body. In this sense, a circularity is discernible that has been recognised by some enactivists (Di Paolo & De Jaegher, 2012; Barandiaran, 2017; Di Paolo et al., 2017; Di Paolo et al., 2018) and, partially and with much ambiguity, by Varela himself: '*The operational closure of the nervous system then brings forth a specific mode of coherence, which is embedded in the organism. This coherence is a cognitive self: a unit of perception/motion in space, sensory-motor invariances mediated through the interneuron network.*' (Varela 1992, p. 10)

2) Brainets, the authors argue, '*are synchronisations of neural activity between different brains.*' This paradigm tells us that the same body is not necessary for tactile experience: bodies can be different, as well as the spaces they occupy in the same experience. '*The relationship between any perception and the body itself is metaphysically contingent [...] We need what the enactivist wants to deny: the existence of a neural network instantiated in an indefinite series of bodies in different spaces.*' But, what is meant by '*the same body is not necessary*'? It seems to be understood to mean that the body experiencing the tactile experience is not necessary. If this is the meaning, I see some problems: 1) Two different monkeys (As reported in the example on the Ramakrishnan 2015 experiment) do not have the same body, but still have

similar bodies with a comparable structure. What would happen in Brainet experiments that connect brains of very different species? In this sense, the same body, or at least the same body type, is required (in this regard, I recommend Casasanto 2011 - *Different Bodies, Different Minds: The Body Specificity of Language and Thought* for an examination of how different bodies correspond to different minds, and Gallese 2003 - *The Roots of Empathy: The Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity* - for a theory that relies on the similarity of bodies, and neural structures, to define human intersubjectivity). 2) Perhaps some enactivism wants to deny the role of the neural network instantiated in bodies to explain cognition, but not the whole enactivism, as pointed out in the contributions suggested in point 1.

3) The citation GUILLERMOS TONONI AND KRISTOF KOCH's (2015) is wrong, because the TONONI's name is not GUILLERMOS but GIULIO.

Notwithstanding my points, which are not errors but merely extensions of a broader debate, I consider the work meritorious and of high scientific quality.