Review of: "Brain Patterns Shaping Embodied Activities of Their Bodily Limbs in Perception and Cognition"

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Potential competing interests: No potential competing interests to declare.

Summary:

This paper tackles interesting topics about Enactivism and it is trying to concentrate on some serious criticisms of that. Here it is argued that Enactivists reject the idea of mental representation and argue that perception is an active process that involves the interaction between an organism and its environment. There are three phases of enactivism: early, middle, and latest, each with its own focus and contributions. The essential principles of enactivism include the idea that embodied action is metaphysically constitutive of perception and cognition, the rejection of mental representation or its reduced importance, the refutation of passive reception in perception, and the importance of the interaction between an organism and its environment. The authors reviewed some papers from different aspects and concluded that Enactivism can't answer some important questions, for example, they asked about the role of the brain in our experiences and tried to redefine things by being forced on neural networks at first then the body and organism-environment.

Essential revisions:

1. It is important to clarify that the term "enactivism" encompasses a broad range of theoretical and philosophical approaches that share some key assumptions. Enactivism is not limited to the specific viewpoints of any particular author or group of authors, but rather refers to a broad framework that incorporates various perspectives and approaches. These may include, **but are not limited to**, embodied cognition, situated cognition, ecological psychology, and phenomenology. Therefore, before delving into the specific viewpoints of individual authors or groups, it is important to establish a clear understanding of the general principles and assumptions that underlie enactivism as a whole. You have pointed out that this area is widespread, **but after that, the extent is limited to the views of one or two people and is criticized as the whole field.**

However, that quote by FRANCISCO VARELA did not say anything about this term and the beginning of the introduction is not clear.

1. **Please check your citations.**

For example: Page 2 paragraph 2," His main inspiration comes from the Wittgensteinian tacit claim that cognition is embodied sensorimotor contingency or know-how"

You did not mention the reference of that.

Page 2 paragraph 3, "The relevant contributions here are by Hutto and Myin. They defend what they call the "radicalized" version of "enactivism" - REC." The leitmotif is "going wide!"

page 8, "According to enactivism in its various forms, perception is essentially an embodied activity of an organism. There should be an essential metaphysical relationship between perception/cognition and the body."

Also page 12, "Almost all people who have had a limb amputated or a nerve removed report phantom limb pain", needs a reference too.

And on page 16 you **mentioned research**," Elderly individuals exhibit the same eye movements during hallucinations and real perceptions, and they zoom in on hallucinated and real plants in their visual field." **but you did not cite that**

1. Page12, paragraph 2 is not clear , ‘’That is, the body that is significant for perception is not a "Körper" but a "Leib" (living body)’’.
2. On page 6, regarding the story of playing the piano, it's important to note that Enactivism doesn't claim that losing a finger would result in the loss of knowledge. Memory and perception are distinct systems, and knowledge of how to play the piano is stored in memory. However, the correlation between memory, body movements, and perception is still significant. It's worth exploring the ways in which memory and perception interact in this context, you use the memory as perception and vice versa. For further reading on the topic of memory, I recommend **Glenberg's (1997) article "What memory is for?"** published in Behavioral and Brain Sciences.
3. I should mention that you must check the new edition of Vrela and Thopmpson book, they gave new ideas about representation. In my opinion , it is better to clarify your definition of representation and then checking new version of theories in enactivism than saying : ’’ Neither commitment nor deserve to be discussed here.’’
4. This article combines the opinion of the individual and the entire approach repeatedly. It is important to avoid conflating the views of individual authors with the broader framework of enactivism, which encompasses a range of theoretical and philosophical approaches. While certain authors, such as Alva Noë, may be prominent within the field and their ideas may be influential, **they do not necessarily represent the entire scope of enactivism.**

It is also important to acknowledge that within the field of enactivism, there may be differing views and criticisms of individual authors' ideas. For example, the **Radical Embodied Cognitive Science framework proposed by Anthony Chemero (You did not mention that at all)** offers a critique of certain aspects of enactivism, particularly its emphasis on the role of consciousness and subjective experience.

Therefore, to fully understand enactivism as a field, it is crucial to engage with a diverse range of perspectives and criticisms, rather than relying solely on the ideas of a few prominent authors.

1. Page 13, The authors discuss about phantom limb pain and mentioned RAMACHANDRAN AND RAMACHANDRAN paper, but did not use their explanations, RAMACHANDRAN explained that **plasticity** helped patients get better and the back and **forth interaction between vision and touch** is important, so just based on mirror treatment you can’t conclude that’’. Again, it is not the physical body (Körper) that dominates, but the living body (Leib), i.e., what the brain

represents as its body.'' You did not mention the direct correlation between Living body and body, the mirror treatment showed that **our mental body and brain needs to understand new body's shape.**So it is not about '' One way or another, the brain represented the phantom limb differently through the mirror.''

2. Page 16, ''Moreover, there is compelling empirical evidence that the neural activities underlying hallucinations resemble those of real experiences further undermining the authors' position (see PENFIELD AND PEROT 1963)''

You mentioned PENFIELD work, in that paper Penfield said: The psychical phenomena that are produced by activations within the areas of interpretive cortex are of two types: (a) altered interpretation of the present; and (b) a state of mind. You may call the latter an experiential hallucination if you like.The true nature of such hallucinations becomes quite clear when the records of the stimulation responses are studied. **They are reproductions of past experience! so it is not completely against. I mean they were not completely not real thing! So patients did not need to differ them from reality.**

1. Page 17 , understanding neural code, is an old debate, and I think you should mention the opposite side too, For example, Chinese Room Argument, knowing the neural code and programming a digital computer by them may make it appear to understand the language but could not produce real understanding. Because the brain signal is not equal to all kinds of perception. However, you just try to support your idea and did not mention any other paper against "The [neural] code contains a complete record of the subject's experience".

It seems that you have specifically explained the behavior in human like brains.

Jellyfish, for example, is a brainless creature that has many simple and interesting behaviors. But according to your explanations, their behavior cannot be examined and they don't have a LIVING BODY?

If only the neural code is important, how should this denial of the environment and the body be fully explained in accordance with evolutionary views?

1. Page 18 ,paragraph 1, I think you can check '' Aglioti, S., DeSouza, J. F., & Goodale, M. A. (1995)**Size-contrast illusions deceive the eye but not the hand.** Current biology : CB, 5(6), 679–685. https://doi.org/10.1016/s0960-9822(95)00133-3'' and then rethink about this sentences :There is not a single piece of evidence to support the view.
2. The conclusions was not clear. A conclusion in a paper is a summary of the key findings, interpretations, and implications of the study or research presented in the paper. The purpose of a conclusion is to provide a final statement that summarizes the main points of the paper, and to give the author an opportunity to offer their perspective on the significance and relevance of their research.