Perception Is Not Always and Everywhere Inferential

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ABSTRACT
This paper argues that it is possible to embrace the predictive processing framework (PP) without reducing affordances to inferential perception. The cognitivist account of PP contends that it can capture relational perception, such as affordances. The rationale for this claim is that over time, sensory data becomes highly-weighted. This paper, however, will show the inconsistency of this claim in the face of the cognitivist premise that 'encapsulated' models can throw away 'the body, the world, or other people' [Hohwy 2016: 265]. It is then showed how it is possible to embrace a non-cognitivist reading of PP—one that does not need to reduce affordances to representational content.

KEYWORDS affordances; internal models; perception; predictive inference

1. Affording the World

In the target article, Gallagher [2019] contends that affordances due to their funda- mentally relational nature are not reducible to neuro-computation. If humans actively explore a world of affordances, and not a world of objects, and if affordances are irreducibly subjective, then Gallagher is perhaps

correct to claim that our understanding of naturalizing should be revised. The challenge for cognitive sci- ence, then, would be to adopt a conception of nature that does not reduce the embodied agent to a set of computational-neuronal processes.

Some claim however that computational neuroscience has the capacity to plausibly explain the phenomenology of affordances. Jakob Hohwy [2019: 138], for example, suggests that computational cognitive science 'has the resources to accommodate insights from transcendental phenomenology', that is, 'to capture the relational states of the world'. The next section will overview and critically assess the computational proposal for reducing the embodied exploration of affordances to brain function.

2. Throwing Away the World

Predictive processing (PP) is purported to be a single, conceptually unified theory of perception, cognition, and action [Clark 2016; Friston 2009; Hohwy 2013]. PP advocates converge on the idea that perception can be accounted for in terms of probabilistic calculations executed by the 'Bayesian brain'. Some argue that the explanatory power of PP reaches both the perceptual processes and the phenom- enal character associated with the perceptual experience, by virtue of reducing the latter to the former [Hohwy 2019; see also Clark 2018].

PP is the view that nervous stimulations are directly perceived, known as sensory observations or data, but the brain does not see external objects themselves. Because brains are 'encapsulated', brains have to draw multiple hypotheses to determine the cause of the hidden sensory signal. Conceiving perception in this indirect way, cognitivists argue, brains make sense of the hidden world by reconstructing it in inner, neural models[1]. Neural models thus promise to explain the hidden access to the world.

Cognition is the updating of hierarchical, probabilistic models of the world. The parameters of said models are updated in approximate accordance with Bayesian norms. PP depicts action as the predictive organism interfering in or manipulating their immediate environment in the pursuance of ensuring that incoming sensory data is consonant with the most highly-weighted (the most trusted or salient) hypothesis.

According to the cognitivist PP account, all perceiving is inferential and thus contentful. Hohwy claims that current computational neuroscience—via appeal to the PP paradigm—can allow for a highly perceiver-relative notion of affordances that is reducible to neuro-computation. In this fashion, Hohwy puts pressure on Gallagher's claim that affordances are—by their subjective nature—irreducible. What are affordances for Hohwy? Affordances will, by virtue of prior learning, correspond to high precision-weighting by the predictive brain. Sensory data (error units) associated with certain external objects—those afforded to the predictive organism—will, over time, become increasingly highly-weighted.

Against this assumption, the next section will attempt to show why perceiving a world of affordances implies, instead of inferences from inside the secluded brain, direct perception.

3. Affordances Are Directly Perceived, Not Inferred

The main feature in perceiving the world of affordances is that, given an organism's situation, there is only one possible way something is perceived. There is only one possible way, for example, a glass, or the water in it, look to the organism. That is, the way the glass is graspable, and the water is drinkable is directly perceived[2]. So, in the context of a particular situation between a certain organism and its environment, there is one way only that something looks to direct perception.

If affordances are directly perceived in this manner, as suggested by Ecological Psychology [Gibson 1979; Reed 1996], it seems then puzzling that inferences are required to do any job. Why would predictive inference be required to make sense of something supposedly obvious? What seems puzzling is that, if there is only one way something can be directly perceived in the context of a particular situation, what is the role of inferential perception?

This seems even more difficult to answer if we consider the cognitivist feature of the seclusion [Hohwy 2016], which supposedly justifies why the brain perceives by re-constructing internal models that represent what is aimed to be perceived. There are at least three problems raised by this supposition.

The first problem concerns the idea that 'sensory data is all the brain has access to' [Hohwy 2013: 13]. Cognitivism argues that PP can capture the relational char- acter constituted by the direct perception of affordances [Hohwy 2019]. It seems then the purely cognitivist reading [ibid.] faces a puzzle: how can secluded brains, that are never in direct contact with the things they represent, perceive affordances in a direct way?

The second problem is that the supposition of neural models implies the postulate of an internal agent that, in the end, has the 'authority' to update the neural models. As a result, neural models, instead of explaining cognition, merely displace the explanatory burden further up the 'processing hierarchy,' ad infinitum, since to interpret a representation is itself a cognitive act[3].

The third problem relates to Gallagher's point [2018]. That is, how cognitivism conceives of perceptual phenomenology. Howhy [2019] claims that the phenomen- ology of affordances can reduce to neural models, that is, contentful representa- tions. However, further clarification is needed in explaining how it is possible to reduce the perceptual experience of affordances to neural models, without losing something on the way. Particularly considering that the '[B]ayesian approach to perception does not seem to directly concern the full richness of perceptual phe-

nomenology' [Howhy 2013: 18–19]. If this is the case, then Gallagher [2019] is right in calling for a re-conceiving of naturalism that genuinely grasps things as they are.

A purely cognitivist reading of the predictive framework encounters explanatory difficulties of the sort just mentioned above. This is why some argue that the Enactive theory[4], questioning that perception is everywhere representational, upgrades the PP discussion, in that it gets around some of the cognitivist difficul- ties. The reasoning is that, from the claim that brain function is inferential does not necessarily follow that cognition should reduce to the brain; or that predictive inference is all cognition does. Note, that if perception is thought of as everywhere inferential, further detail is required to explain why a large number of living beings can sense, discriminate, valuing, memorize, make decisions, learn, anticipate, and communicate, without a nervous system.

Without assuming that perceiving is everywhere inferential, the question then is how living beings with nervous systems are also capable of also making inferences, with truth conditions, about the world. An account of non-contentful perceiving, as suggested by Hutto and Myin [2017], looks promising. It offers a way to explain how, on the one hand, it is possible to directly perceive without contents, that is, grasp meanings by anticipatory attunements of what is going to happen next in a particular context; and, on the other, how it is possible that certain cognitive systems, become contentful, with sophisticated socio-cultural symbol-using practices.

On this account, PP can accommodate direct perception. However, this calls for a revision of perception reduced to contentful hypothesis. That is, if it is possible that not all perceiving is contentful, but some perceiving is direct and therefore contentless, then, perceiving is not everywhere inferential. This proposal gets around explanatory difficulties that any pure cognitivist reading of PP encounters.

This paper has attempted to show that conceiving perception as direct offers a more straightforward way to explain perceiving. If the purely

cognitivist reading of PP is however supposed to offer naturalistic ways of investigating brain function, what PP then needs to provide is the evidence for the postulate of neural models and how they become contentful, all from inside the secluded brain.

4. Conclusion

PP per se offers an explanation for brain activity. This does not mean that cogni- tion should reduce to brain activity. Brains unfold activities that enable the organ- ism as a whole to efficiently interact with the environment in order to persist. Until today, there is no naturalist reason or philosophical advantage in claiming that the organism adapts to survive by secluding it from its ever-changing environ- ment. Organisms stay alive because they adapt and they adapt because they per- ceive the world of affordances. As Darwin [1909: 434] puts it, '[w]hat can be more curious than the hand of a man, formed for grasping, that of a mole for digging, the leg of the horse, the paddle of the porpoise, and the wing of the bat.'

This paper attempted to show that it is possible to overcome some PP limitations by considering that perceiving is not everywhere inferential. Instead, if there is a world of affordances, some perceiving is direct and thus contentless. If this holds sound, then, it is possible to embrace the predictive processing framework without reducing affordances to inferential perception.

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Notes

[1]Probability density functions describing the likelihood of a sensorimotor event given a current sensorimotor state.
[2]The glass is not both graspable and non-graspable. Likewise, the water does not look both drinkable and not-drinkable.
3See how Di Paolo, Buhrmann and Barandiaran [2017] make this point in chapter 2.
4See Calvo and Friston 2017; Linson et al. 2018; Kirchhoff et al. 2018; Kiverstein 2018; Bruineberg et al. 2018; Anderson 2017; Hutto 2018; Friston 2009; Di Paolo 2017.

2018; Anderson 2017; Hutto 2018; Friston 2009; Di Paolo 2017.