Consciousness without inner models?
A sensorimotor account of what *is* going on in our heads

Introduction

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There has been much criticism over the years of the idea that conscious experience depends on inner representational models of the environment. Enactive accounts and the sensorimotor account more particularly [1,2] have criticized the reliance on inner models and they have offered an alternative way of thinking about experience. The idea of sensorimotor approaches is that experience involves the perceiver's attunement to the way in which sensory stimulation depends on action. But how then should we conceive of what happens in the agent's head to allow for this attunement? The main aim of this symposium is to address this question, focussing on the following two questions. First, how does an enactive sensorimotor theory offer guidance for the interpretation of neurophysiological findings? Second, how are its predictions about neural processes different from the predictions of representationalist accounts?

The first question, concerning the philosophical interpretation of neurophysiological findings, may be addressed by focusing on key processes such as corollary discharge or 'efference copy' and notions like 'expectation error' and 'forward models' in relation to the sensorimotor account or enactive accounts more generally. Here the main question is how to get the brain into view from an enactive/sensorimotor perspective. Where classical approaches speak of neural computation of properties of the environment, or the build-up of representations in the brain, what specific analysis can a sensorimotor account offer in its place? Addressing this question is urgently needed, for there seem to be no accepted alternatives to representational interpretations of the inner processes. Also robotic models of perceptual processes are often interpreted as mimicking the allegedly representational nature of neural processes. A sensorimotor account could help to avoid this bias towards interpretations based on the notion of inner models.

The second question, concerning the predictions following from an enactive/sensorimotor account, requires contrasting the neural processes that are postulated in representational theories, with the processes required by the enactive/sensorimotor account. Which processes postulated by representational accounts are rejected by the sensorimotor account or enactive accounts more generally? For example, why and when can neural 'binding' or 'filling in' be rejected? And are there processes that are specifically required by sensorimotor theory, which are not required by representational theories? In the symposium we aim to clarify which constraints on inner processes are proposed by the sensorimotor account. If the sensorimotor account is right, these constraints will of course apply to neural processes as well as to robotic models of perception.

In addition to spelling out nonrepresentational interpretations, the symposium will discuss the possibility for representational accounts of sensorimotor engagement, as in the invited contribution of Anil Seth on a predictive processing interpretation. An evolutionary perspective on sensorimotor organization is represented by the invited contribution of Fred Keijzer. Together, we think the extended abstracts give a good impression of the cutting-edge work that's being done on the neuroscience of sensorimotor interaction.

REFERENCES

[1] O'Regan, J. K., & Noë, A. (2001). A sensorimotor account of vision and visual consciousness. *Behavioral and Brain Sciences*, 24(5), 883–917.
[2] O'Regan, J. K. (2011). *Why Red Doesn't Sound Like a Bell: Understanding the Feel of Consciousness*. New York: Oxford University Press, USA.

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