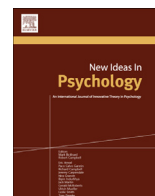




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New Ideas in Psychology

journal homepage: www.elsevier.com/locate/newideapsych

Action guidance is not enough, representations need correspondence too: A plea for a two-factor theory of representation

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ARTICLE INFO

Article history:

Available online 14 February 2015

Keywords:

Representation
 Interactivism
 Job description challenge
 Mental models
 Structural representations
 S-representation

ABSTRACT

The aim of this article is to critically examine what I call Action-Centric Theories of Representation (ACToRs). I include in this category theories of representation that (1) reject construing representation in terms of a relation that holds between representation itself (the representational vehicle) and what is represented, and instead (2) try to bring the *function* that representations play for cognitive systems to the center stage. Roughly speaking, according to proponents of ACToRs, what makes a representation (that is, what is constitutive of it being a representation) is its being functionally involved in preselecting or guiding the actions of cognitive systems. I intend to argue that while definitely valuable, ACToRs are underconstrained and thus not entirely satisfying, since there exist structures that would count as representations according to ACToRs, but which do not play functional roles that could be nontrivially or in an explanatorily valuable way classified as representing something for a cognitive system. I outline a remedy for this theoretical situation by postulating that a fully satisfying theory of representation in cognitive science should have two factors; i.e., it should combine the pragmatic, action-oriented aspect present in ACToRs with an element that emphasizes the importance of the relation holding between a representational vehicle and what is represented.

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1. Introduction

The turn of the 20th century in cognitive science will probably be remembered as a time when “embodied”, “enactive”, and “extended” approaches came to play a prominent role in theorizing about, modeling, and studying cognition. Admittedly, there is (still) no universal consensus as to how exactly we should understand these approaches and the way they are interrelated (but see e.g. [Goldman, 2012](#); [Shapiro, 2010](#)). However, it seems safe to say that they have two very broad characteristics in common. First, proponents of these approaches usually see themselves as being in opposition to “classical” cognitive

science, which construes cognition in terms of rule-based symbolic computation. Second, they criticize the classical view of cognition as too spectatorial or passive, and opt instead for a view that emphasizes that cognition has evolved in order to help embodied agents to control their ongoing interactions with the environments they inhabit.

Among the “orthodox” assumptions of classical cognitive science that are often criticized and discarded by proponents of these new approaches is the idea that cognition involves internal representations. Thus, embodied, enactive, or extended cognitive science seems to be a natural ally of anti-representationalism. Under closer examination, however, it turns out that this diagnosis is an oversimplification. There have been attempts to reconcile representationalism with new approaches in cognitive science (see e.g. [Clark & Grush, 1999](#)). In this article, I will

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critically examine a specific strategy for achieving this sort of reconciliation—one that tries to reconceptualize the very nature of representations by postulating that being a representation is constitutively dependent on being somehow involved in guiding the actions of a cognitive system (Anderson & Rosenberg, 2004, 2008; Bickhard, 1993, 1999, 2004a, 2004b; for an attempt to combine this approach with computationalism in cognitive science, see also Miłkowski, 2013). Throughout this paper, I will call proposals of this sort “Action-Centric Theories of Representation” (ACToRs).

Although I think that ACToRs are, in some important respects, a step in the right direction, I also think that they are fundamentally incomplete. ACToRs are too liberal and underconstrained and thus do not give us a notion of representation that is *explanatorily* nontrivial and valuable. This is because at least some cognitive structures that would have to count as representations according to ACToRs do not meet what William Ramsey (2007) calls the “job description challenge”: under closer scrutiny, it turns out that those structures do *not* play functional roles that are recognizably representational, and because of that, they cannot be characterized as representations in an explanatorily illuminating way. Showing that this is the case is my first aim in this article. My second aim is to suggest a way of expanding the notion of representation present in ACToRs so that it can meet Ramsey's challenge. According to my proposal, what we need is a two-factor theory of representation, one that combines the action-oriented or pragmatic element present in ACToRs with the idea that representations *also* owe their representational status to a relation (“correspondence”) that holds between the representation itself (the vehicle) and what is represented.

I will proceed as follows. In Section 2, I will first describe what I take to be the basic tenets of ACToRs and then take a closer look at two specific theories that are representative examples of the action-centric approach, namely Mark Bickhard's interactivist theory of representation and Michael L. Anderson and Gregg Rosenberg's action guidance theory of representation. In Section 3, I will present Ramsey's idea of the job description challenge. In Section 4, I will try to show that the notion of representation contained in ACToRs is too liberal and underconstrained to meet the job description challenge. In Section 5, I will suggest that this problem can be dealt with by extending ACToRs to create a two-factor theory of representation. I will also present a very sketchy outline of how this sort of two-factor theory might (and should) look.

2. Action-centric theories of representations

2.1. ACToRs: core ideas

It might be useful to introduce ACToRs by pointing to what they are *opposed* to. Proponents of the action-centric approach often claim that their proposals are based on the rejection of a certain way of thinking about the nature of representation, one that is deeply embedded in today's mainstream philosophy and cognitive science. As Mark Bickhard (2004b) puts it, this way of thinking construes representations as *encodings* or *correspondences*, and it can

be expressed using the metaphor of “impressions” left by a signet ring (the world or what is represented) in a piece of wax (the representation). Correspondence-based theories see representations as codes whose constituents are mapped on to constituents of the represented domain. Correspondences are supposed to be established by some sort of (natural) relation that holds between the representation and what is represented. But what sort of relation is this? This is a broad subject, but suffice it to say that causal-nomological dependence, asymmetric causal dependence, or isomorphism are some of the candidates that have been proposed in the contemporary literature. Michael L. Anderson and Gregg Rosenberg express a similar diagnosis to Bickhard when they claim that the problem with many contemporary theories of representation lies in the fact that they are input-focused, meaning that “they give too much importance to the ways in which the environment affects the organism to endow its states with representational meaning” (2008, p. 56). To put it very broadly then, ACToRs are opposed to a very general idea about the fundamental nature of representation, namely the idea that what is constitutive of being a representation is a correspondence between the representation itself and what is represented.

Characteristic of proponents of ACToRs is that, instead of proposing yet another correspondence-establishing relation, they attempt to make something of a paradigm shift in our thinking about what representations really are. If most “classical” theories are indeed input-focused, then ACToRs can be described as trying to bring the representation's *output*—i.e., the relationship between representation and its *user*—to the center stage. From this point of view, of crucial importance for our thinking about the nature of representations is the fact that representations are *for* their users, with all their practical purposes. To put it more precisely, we could say that proponents of ACToRs approach the subject matter in the following way. First, they ask what it is that representations *do* for their users, or what is the “business” of using representations. Second, they treat an answer to this question as a basis for their positive theory of representation, in accordance with Anderson and Rosenberg's claim that “representations *are* what representation *do*” (2008, p. 56, *emphasis added*).

So what function do representations serve for their users? According to ACToRs, their role consists in controlling or guiding the user's actions. Thanks to representations, cognitive systems have the ability to practically orient themselves in the world, perform actions that are adaptive given the circumstances, or (pre)select one action among many that are potentially available at a given moment.

One very important clarification about what I take ACToRs to be committed to is in order. ACToRs can be interpreted in two very different ways. According to a *weak* interpretation, ACToRs simply give an account of the function that representations play for representation-using systems. According to a *strong* interpretation, (1) ACToRs are theories of what *constitutes* representations—what makes them representations—and (2) they put forward the thesis that representations are constituted by their function in providing guidance for action. The weak and strong interpretations are clearly very different. Imagine an analogical situation, in which someone claims that the function of cars is to enable people to cover long distances. On one hand, this

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