Encodingism is not just a bad metaphor

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Abstract

Brette's criticism of the coding metaphor focuses on its presence in neurosciences. We argue that this problematic view, which we call "encodingism," is pernicious in *any model of cognition that adopts it*. We discuss some of the more specific problems it begets and then elaborate on Brette's action-based alternative to the coding framework.

Brette argues that encodingism assumptions are pernicious in neuroscience. We would like to expand this critique a bit: Encodingism is a problem in models of cognition in general, not only in neuroscience. We argue that, though encodings certainly exist, they are derivative by nature, and cannot serve to explain the basis of natural cognition. As Brette points out, neurons *could* be said to "encode" the information about some property *for neuroscientists*, as it is they who are interpreting the coding relationship. That is, encodings always require an interpreter who already knows about or represents the two ends of the encoding relationship, as well as the relationship itself. But this representation is exactly the knowledge we are trying to account for when researching minds, and so encodingism becomes circular and leads to an infinite regress of interpretive homunculi. Something else has to lie at the bottom of the natural ability to represent.

The above point underlies Brette's article, but it is also important to note that there is a whole family of problems that plague encodingism. Some of these problems have withstood resolution for millennia. For example, the impossibility of system detectable error that Brette mentions can be traced back to classical scepticism – how am I supposed to know whether what I represent is true, if, in order to find that out, I would have to step outside of myself to gain some independent epistemic access and check? The other end of an encoding is, supposedly, some entity, or property, or state of affairs, but if encodings are all the system has available to represent its reality with, then the only way to attempt to check the encoded end of an encoding is use another encoding. Circularity again.

Foundationalism is another problem forced by encodingism assumptions. Within an encodingist framework, it is impossible for the organism to create first encodings or representations for the very same reason stated above – the organism would have to already know what this particular information is "about" to use it to create a representation. Circularity for a third time.

One would think that this impossibility of representational emergence should automatically discredit encodingism among developmentalists who study the origins of mentality. However, this has not always been the case. Rather, the problem of emergence has been pushed onto biology, and various "core knowledge" accounts have been proposed: infants are supposed to be born with innate theories of physics, biology, or mind (for more criticism, see Allen & Bickhard 2013; Mirski & Gut 2018). But if encodingism blocks emergence in ontogeny, there is no reason why it would not do so in phylogeny too. These are just three of many more problems; for more, see Bickhard and Terveen (1996; Bickhard 2009).

What alternatives are there then? Brette's proposal that we should ask what neurons do rather than what they encode is a significant step in the right direction. However, there are further aspects of cognition, which Brette does not discuss, that we would like to briefly address. Organisms certainly represent reality, and can be wrong about it, and when they are wrong, they often discover that and learn from their mistakes. Naturalism requires that whatever constitutes this representing, and representational error detection, has to emerge at some point from non-representational phenomena. As has been argued, none of these can be accounted for in encodingism in principle, but an action-based perspective has to provide an alternative on pain of being explanatorily vacuous.

Brette briefly mentions what we take to be central to an action-based model when he says "what is useful for the organism is not literally to predict what will happen next, but rather what *might* happen next, conditionally on the actions I can do, so that I can select the appropriate action" (sect. 3.4, para. 6). This statement contains a hint of what mental content can be in an action-based model – the anticipation of possible interactions. This is the proposal of interactivism (Bickhard 2009). (Strictly, it is the anticipation of possible internal process flows that are co-determined by the environment and the organism's actions; it is not anticipation of interaction with the environment as such – there is no surview of the organism and its environment. See, for example, Bickhard 2009; 2015a; 2015b). Such anticipations will have truth value – they implicitly predicate something about the environment (i.e., it is the kind of environment that supports this kind of interaction). And they will be in principle falsifiable and detectable by the organism – all it takes to see if I am right is to actually (try to) engage in the interaction.

As for learning and initial emergence of such action-based normativity, it can happen if we adopt a variation and selection model of learning. If successful anticipations are retained and unsuccessful anticipations are selected against, then the limiting case of representational emergence will be to randomly engage in various interactions and retain the ones that turn out to be successful. No prescience is necessary like in encodingism. Similarly in learning, if my anticipations are falsified, I vary the way I do things until I stumble on a successful alternative. A more detailed discussion of these points can be found elsewhere (Bickhard 2001; 2003; 2009; 2015c; Bickhard & Campbell 1996).

Conceiving of brain functioning in terms of such an anticipatory organization is a viable alternative to coding (Bickhard, 2015a; 2015b). On this view, the brain establishes modes of functioning that implicitly anticipate the upcoming interaction. The modes of functioning are set up by the modulations of such elements as volume transmitters, astrocytes or silent neurons. Such modulations *are* anticipatory in that they set particular modes up, which could turn out to be inappropriate modes for what process flow actually happens. Adopting this alternative, anticipatory view of the brain could complement and extend Brette's proposal. (The above has similarities to some other contemporary frameworks, especially to predictive processing [Clark 2016] and enactivism [Di Paolo & De Jaegher 2012], and indeed there are considerable overlaps, but also fundamental differences [Bickhard 2015b; 2016a; 2016b]).

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