

Open Peer Commentary

You can't get there from here: Foundationalism and development

doi:10.1017/S0140525X10002311

Jedediah W. P. Allen^a and Mark H. Bickhard^b

Departments of Psychology^a and Philosophy,^b Lehigh University, Bethlehem, PA 18015.

jwa204@lehigh.edu mhb0@lehigh.edu

Abstract: The thesis of our commentary is that the framework used to address what are taken by Carey to be the open issues is highly problematic. The presumed necessity of an innate stock of representational primitives fails to account for the emergence of representation out of a nonrepresentational base. This failure manifests itself in problematic ways throughout Carey's book.

We are in agreement with Carey's proposal that there must be a way to generate new representational "primitives," and that the idea of implicit definition, which underlies her model of Quinian bootstrapping, is, in general, the correct approach to address this problem (Carey 2009). However, the overall model encounters serious troubles beyond those points. (Implicit definition can be a complex topic in model theory, but the central idea is that a [formal] system implicitly defines the class of all of its satisfiers or models; Bickhard & Terveen 1995; Bickhard 2009.)

Carey says that Quinian bootstrapping requires language, but gives no reason why such implicit definitions couldn't be constructed out of *internal* computational "empty symbols" – for example, perhaps via some version of conceptual role implicit definition. (To the extent that Quinian bootstrapping generates representational content via conceptual or inferential role, it is roughly a version of implicit definition. To the extent that phenomena such as analogy are considered to be *necessary* to Quinian bootstrapping for the generation of content, then it is no longer modeling a form of emergent representation – "primitives" – but relies on earlier representation in order to construct "new" representation.)

Clearly, evolution had some way to create emergent new representations out of non-representational phenomena, and not by using language. But, if implicit definition could work computationally (without language), why couldn't it work for infants and toddlers? That is, the success of Quinian bootstrapping in terms of implicit definition would obviate an innate representational base.

More generally, *whatever* the process was by which evolution supposedly created emergent representation – implicit definition or not – why couldn't that same or similar process be functioning for infants and toddlers? Why, in other words, are innate representations needed at all? Carey's position depends on Fodor's argument for the assumption of a necessary (though not full lexical-level) nativism, but she contradicts Fodor with her notion of the Quinian bootstrapping construction of "primitives" – and Fodor *also* has no answer to the question of why learning and development cannot make use of whatever process was involved in the evolutionary emergence of representation.

On the other hand, if representation is constituted as information semantics has it, then the generation of new

"representation" – of new covariations – should be in-principle trivial. Almost any input processing will generate covariations, which, by this model, should constitute representations of whatever the covariations are with. Many such covariations will probably not be useful, but there is no problem learning or developing more.

If generating new covariations is so easy, why does Fodor postulate nativism at all? Because covariation cannot by itself constitute *content*, and, as Fodor points out, we have no model of learning that can account for new content (Piattelli-Palmarini 1980, cf. p. 269). Carey proposes a way to generate emergent content – bootstrapping – but does not seem to see that any such model invalidates the basic arguments for nativism with which the whole approach begins.

Carey's reliance on an information semantic framework for her discussion of the many early development studies is not only contradicted by the possibility of something like "computational bootstrapping," it also generates problems of its own. In particular, within an information semantic framework, Carey's distinction between perceptual and conceptual representation is questionable. No input processing system is necessarily restricted to pure combinations of whatever "vocabulary" the basic transducers generate (e.g., a connectionist input processor is not, even though we would not argue that connectionist models are adequate). But it is solely in terms of such restrictions to "perceptual vocabularies" that she differentiates conceptual from perceptual. On her account, conceptual input processors are still just input processors, but are not restricted to combinatorics of perceptual "vocabularies." But, if no input processor is so restricted, then what happens to the distinction? Still further, the very intuition of a perceptual base is put into question by models such as Gibson's (1979), and such possibilities are not addressed.

We argue, then, that the framework within which these many studies have been done, and within which Carey interprets them, is itself flawed, and, therefore, does not support rigorous analysis and methodological design: Perceptual nativism and conceptual nativism are not the only alternatives, even for early development. Among other problems, there is an intrinsic and therefore systematic neglect of possibilities of developmental constructions of *emergent* representation in the methodological designs of these foundationalist studies (Allen & Bickhard, in preparation) – such emergentist possibilities do not exist in the conceptual framework being used, and, therefore, do not occur to researchers working within that framework in their designs.

In this regard, it is worth pointing out that Piaget had a model of emergent constructivism of representation (though not one that we fully endorse; Bickhard & Campbell 1989), but that Carey systematically mischaracterizes Piaget's model as an "empiricism" based on "sensorimotor representations." He had no such model, and, in fact, argued consistently against such approaches, seeking what he called a "third way" that would transcend both empiricism and rationalism (Müller et al. 2009). For one contemporary instance of a model of action-based emergent representation, see Bickhard (2009).

The basic problem here is that, aside from the bootstrapping model, Carey's discussion presupposes a foundationalism of representation – representation constructed solely in terms of an innate foundation of representational primitives. A foundationalism cannot account for its own foundations, and shifting the burden to evolution does not solve the problem; it only presupposes (without argument) that evolution can engage in processes generating emergent representation that learning and development cannot engage in. Quinian bootstrapping contradicts foundationalism, and thereby contradicts the framework for the "perceptual nativism" versus "conceptual nativism" debate, but this is not recognized, because of the assumption that implicit definition requires language (but, if so, then the *evolutionary* emergence of representation again becomes inexplicable).

So, foundationalism simply refuses to address questions of the origins of representation, and, thus, cannot be a successful

framework for understanding either cognition or cognitive development. If those are your goals, you can't get there from here.