CHILD DEVELOPMENT PERSPECTIVES

Emergent Constructivism

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ABSTRACT—***Passive versus active ontologies for modeling the nature of representation impose powerful constraints on the conceptual possibilities for the different versions of constructivism. The neoconstructivism outlined by N. S. Newcombe (2011) is convergent with an active, action-based approach to representation; however, it does not directly address the issue of representational emergence. If cognition is fundamentally emergent from (inter)action, then an emergent constructivist approach to development is necessary to fully transcend the limitations of the passive ontologies inherent to nativist and empiricist perspectives.***

KEYWORDS—*emergence; constructivism; representation; nativism; empiricism; action*

In her article "What Is Neoconstructivism?" Nora Newcombe (2011) presents a neoconstructivist approach to developmental research. The stated tenets of neoconstructivism have both a descriptive aspect and a prescriptive aspect—describing contemporary themes and shifts in developmental research, as well as advocating those themes and shifts. We endorse all of them, both descriptively and prescriptively, but would like to suggest that they do not go far enough in certain directions to be able to give a full prescriptive orientation.

Our discussion can be developed from consideration of the core term *constructivism*. In a broad sense, constructivism can be understood as positing internal processes that create new internal organization, not previously available, for future system functioning. This notion comes in several flavors, and the differences among them, so we suggest, make a difference—a very important difference.

In particular, *constructivism* is an umbrella term that has fundamentally different meanings depending on underlying assumptions about the nature of representation. A basic distinction can be drawn between passive and active ontologies for modeling the nature of representation.

In their empiricist versions, passive models of representation derive from a general framework in which the world is assumed to "impress" itself into the mind. In-the-moment representation is constituted by *encoding* the world via transduction (Bickhard & Richie, 1983; Fodor, 1981; Fodor & Pylyshyn, 1981), whereas, longer term learning involves encodings that are *acquired* via induction, association, or statistical input processing (Bickhard, 2009b; Popper, 1968). Thus, for these models, there is some sense in which learning takes place, and so the idea that "something" is constructed begins to get some traction. However, passive encoding models of representation impose serious conceptual constraints such that the strongest sense of constructivism possible is construction out of already available (representational) atoms—a combinatoric constructivism. Such a constructivism may, in addition, posit the ability to make use of prior constructions (i.e., combinatoric constructivism can be recursive), but these can never go beyond the combinatoric space generated by the foundational base of representational atoms.

Importantly, nativist models of representation posit equally passive ontologies. Whereas nativist models differ from empiricist models in that they posit a base set of representations available innately, instead of being "impressed" by the environment, they share the assumption of a fixed generative base set of representational atoms, and are equally limited to the combinatoric space that they generate. In both cases, the mind is passive, either relative to the environment or relative to the presumed innate representational base. Historically, neither approach has ever succeeded in accounting for representation (Bickhard, 2009b).[1]

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[1]It is easy to posit various empirical factual correspondences that might be claimed to constitute representation—causal, informational, lawful, structural, so forth—but a model of how any of these could possibly account for the normativity of representation—of how representation could be true or false, how representation of falsehoods and nonexistents could occur, how representational content could be modeled—has always eluded such efforts (Bickhard, 2006, 2009a, 2009b, 2009c). In current practice, accounting for content for such empirical correspondences that are claimed to be representational tends to be relegated to innatist assumptions.

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In contrast, *active*, action-based models of representation enable accounts of *emergent* representation and, thus, permit recursive constructions in at least two senses. First, the unitization of previous constructions can permit combinatoric construction, but there is no restriction to some fixed foundational set of representational atoms. Second, new constructions can emerge from variations on an internally organized emergence base (an internally organized interaction system; Bickhard & Campbell, 1989; Campbell & Bickhard, 1991). For active models of representation, there is even the possibility of *meta*recursive[2] constructions in which the constructive processes themselves undergo learning and development. The key point is that for active models only, representational constructions can be emergent. This was the case for Piaget, and it is the case for any (inter)action-based model of cognition and representation (Allen & Bickhard, 2011, in press; Bickhard & Campbell, 1989).

The fundamental contrast between active and passive models of representation is that, for the former, action-system organization is emergently constitutive of representation, whereas, for the latter, action may *make use* of representation, but action is not essential to representation (Bickhard, 2006, 2009b). The transition to an action basis removes any temptation to think that competent interaction systems could be impressed into a passive mind. Learning about the world means learning how to successfully interact with it. Knowledge, as interactive competence, must be generated by a constructivist process (it cannot be passively impressed), and without prescience, it must be a *variation* and *selection* constructivist process. The emergence of representation out of action, then, forces a variation and selection emergent constructivism—an evolutionary epistemology (Bickhard, 2006; Campbell, 1974).

In this view, Piaget's "big" idea was the pragmatist notion that cognition and representation emerge out of action. Action is more important than as a finder of new information.

Thus, while many researchers may agree that "there is no a priori need for specific content to be wired in," if you have no account of how content could emerge then it must either be "wired in" or passively impressed from the environment. The standard push by researchers (Spelke & Kinzler, 2007) to stake out some "middle ground" is, therefore, necessarily committed to yet one more oscillation between the standard poles of contemporary research paradigms (Allen, 2007).

It is the failure of nativist and empiricist proposals to account for the emergence of knowledge that drives the in-principle limitations of both positions and, therefore, the entire debate (Allen, 2007). Accordingly, it is precisely the possibility of emergence inherent to an (inter)action perspective that enables developmental theorizing to avoid the commitment to a combinatoric space of some innate set of atoms, no matter how large ("nativism") or small ("empiricism") that set might be taken to be (Allen, 2009; Allen & Bickhard, in press). Such an emergentist framework does more than bridge the nativist–empiricist divide; it transcends it by presenting a "third way" that is not committed to that divide, nor to any causal or statistical interactions between them (Piaget's "*tertium quid*").

[2]Note that Piaget's equilibration was recursive but not metarecursive.

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