Transcending False Dichotomies in Developmental Psychology

A. KARMILOFF-SMITH, *Beyond Modularity*. Cambridge, MA: MIT Press, 1992. 234 pp. ISBN 0–262–11169–1.

Karmiloff-Smith's large-scale aim in this book is to transcend a number of false dichotomies that permeate developmental psychology. Among these are:

1. innatism vs environmentalism;
2. domain-specific vs domain-general development; and
3. implicit vs explicit representation.

She suggests several different mixtures and refinements of these dichotomies, introducing developmental progressions from one to the other, and introducing intermediate categories. She proposes that development is not so simple as the

endpoints of these dichotomies would have us believe. In the course of illustrating her position, she provides a review of much recent developmental literature: there are chapters reviewing the child as linguist, as physicist, as mathematician, as psychologist and as notator.

Karmiloff-Smith is to be applauded for recognizing the pervasiveness and the perniciousness of these dichotomies, and for attempting to do something about it. The mesmerizing sway of such dichotomies renders much developmental thinking, and developmental research, nugatory for understanding actual development.

The core of Karmiloff-Smith's alternative proposal is the *Representational Redescription* (RR) model. This is a sequence of four levels of representation, each generated via redescription, or re-encoding, of the level below. The first level is that of implicit representation (level-I), which is implicit in behavioral abilities. It is the representation that inheres in the procedural organizations that permit the child to engage successfully with the environment. The next level (level-E1) re-encodes various parts of the level-I representations, losing detail, but generating distinct elements, and, thus, gaining flexibility of functional access. Level-E2 involves conscious access to representations, and in E3 the representations become available for verbal report. Much of this book focuses on ages at which the E2–E3 distinction is not germane, and as little research has been done that probes this distinction, for most of the book, these are collapsed. Karmiloff-Smith does provide some examples, however, of E2 abilities that are not E3, and, thus, support for keeping them distinct.

The processes of redescription that climb the representational levels are phases of re-encoding, not age-synchronous stages. These phases will recur in all domains and micro-domains of development, and it is possible, even likely, that a particular child will be in multiple levels across distinct domains. The RR model, then, is at its base a rejection of the implicit–explicit dichotomy.

On the basis of much recent research, the lowest level representations in a domain are presumed to involve innate knowledge, or at least innate constraints on the acquisition of knowledge. The process of redescription, however, is a domain-general process. Nevertheless, as the levels are climbed within a domain, the representations already available in that domain progressively constrain the influence of inputs from outside of the domain, and the representations increasingly reflect the actual history of engagement that the child has experienced. That is, the RR begins with domain-specific innate supports to development and a domain-general process of development, but the process of development will tend to create relatively independent domains and will become more reflective of the child's experience. The dichotomies of innatism vs environmentalism, and of domain-general vs domain-specific, are, therefore, also rejected and transcended. A related but alternative model of how domain-general process can yield domain-specific development is outlined in Campbell and Bickhard (1992).

I applaud the general goals that Karmiloff-Smith pursues in this book, and some of the particulars of her proposals for doing so as well. But there are two sorts of concerns that I will elaborate a little further: (1) concerns with the research and its interpretations in her reviews, and (2) concerns regarding her RR model.

Karmiloff-Smith's overview of the literature is too accepting of the designs, results and interpretations in that literature—specifically, the innatist literature. In contrast, I find it to be riddled with problematic assumptions. To do justice to my

concerns here would require a massive critique, so I will have to rest, though not be content, with some illustrative points.

Much of this work is built around Chomsky's classic poverty of the stimulus argument (e.g. Chomsky, 1965, 1975). The basic notion is that the space of logically possible hypotheses that the child faces is much too large to be capable of having a correct specific hypothesis determined by experience. The conclusion is that since sufficient knowledge cannot come in from the environment, it must be provided by the genes: the constraints on the hypothesis space that are provided by experience are inadequate, so there must be innate constraints.

Much of the innatist literature is built around this framework, both in the sense that the basic argument is accepted, and in the sense that much of the research design is directed toward showing that there *is* constraint in how the child approaches tasks, compared to a full space of logical possibilities, with the conclusion that such constraints must be innate. Design, accordingly, tends to control for nuisance variables, such as attention, prior preferences and so on, and to ignore genuine conceptual alternative hypotheses (Bickhard, 1992c), such as perceptual-level alternative hypotheses and constraints that are *neither* environmental *nor* genetic—constraints that are intrinsic (Bickhard, 1992c; Campbell & Bickhard, 1992). Since such classes of alternative hypotheses are not tested, the conclusions drawn in the literature from such studies are much weaker than they might otherwise be (see Bickhard, 1979, 1991a, 1991b, and in press, for additional problems).

Most basically, the dichotomy on which the poverty of the stimulus reasoning is based is itself a false dichotomy—one that Karmiloff-Smith implicitly accepts. The assumption is that knowledge has to come from somewhere, so it either comes in from the environment, or it comes from the genes. False. Knowledge in a species genome concerning how to function in its niche did not arise from instructional input from that niche, nor did it arise from prior knowledge. Such knowledge was constructed *de novo* in evolution, and selected for by that niche—it did not come *from* anywhere. Such a possibility—variation and selection constructivism in development (Bickhard, 1992b; Campbell & Bickhard, 1986)—refutes the assumed dichotomy in the poverty of the stimulus argument, and, together with the possibility for intrinsic constraint, renders all such reasoning invalid.

For another example, the discussions concerning the child's theory of mind are problematic in a number of ways—I mention only two. Distinctions between propositional content and propositional attitude—such as belief, hope and so on—are conflated with issues such as the presence or absence of reflection, of meta-representation, of meta-strategies, and so on. Does 'pretend' play, for example, require meta-representation, reflective representation, reflection on representation? Is a propositional *attitude*—a belief, for example—a (meta-)representation of a propositional *content* representation? My answer would be 'No' in every instance, but often the distinctions are not even understood, and are rarely honored. Does the fact that a task ability *can* be modeled in a way that assumes the ability to reflect provide grounds for concluding that the child who succeeds in such tasks can *in fact* reflect? No—this is egregious reasoning. Yet such reasoning seems to underlie, for example, facile claims that it is obvious that toddlers can reflect (Gopnik, 1993; cf. Bickhard, 1978, 1992a; Campbell & Bickhard, 1986, 1993). Much can be said about such errors in the literature, but my basic point here is that

Karmiloff-Smith does not address them. How much her own model would be affected by such considerations is not clear, but such unaddressed issues leave her claimed motivations for innatism much weaker than she acknowledges.

Karmiloff-Smith's RR model is supposed to be a sequence of four levels of representation. But the representationality of those levels is left unaddressed. The central differences among the levels seem to be located more in the functional flexibility with which various aspects of tasks can influence the functioning of the child engaged in those tasks. That is, the core differences seem to be functional, not representational.

Karmiloff-Smith continues a strong tradition in psychology of not carefully distinguishing between functional and representational considerations. This is clearly under the influence of computer models, in which the distinction is similarly elided (Bickhard & Terveen, in preparation). The various formats of functional influence that constitute the RR levels provide various forms of functional flexibility and possibilities of control across differing tasks—such as verbal reporting. Rendering them as representational, however, introduces problems beyond those of how such control could be exercised, and how such changes in control could occur: In what sense is implicit representation *representation* at all? How does the process of re-encoding work? If each level is generated by re-encoding what is already there at a lower level, doesn't *all* representional knowledge have to be present in even the lowest level from the beginning—can re-encoding introduce new knowledge that was not present before? And so on. Karmiloff-Smith acknowledges that the RR model is a framework of intuitions, hopefully fruitful for research, and requiring much more specificity about mechanism, but the danger is that the presuppositions of how the model is stated will make any adequate completion of it impossible. She claims that the core of Piaget's work is his epistemology, but that is the most underdeveloped aspect of her own model. Theoretical presuppositions, such as regarding representation and reflection, do make a difference: the field of verbal learning was once a dominant force in psychology, but it no longer exists at all—its presuppositions were false.

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