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Concepts, Core Knowledge, and the Rationalism-Empiricism Debate

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Abstract. While Elizabeth Spelke’s book *What Babies Know* provides powerful support for concept nativism, her focus on understanding concept nativism through six innate core knowledge systems is too confining. There is also no reason to suppose that what she calls the *curse of a compositional mind* constitutes a principled reason for positing less innate structure in explaining the origins of concepts. Any solution to such problems must take into account poverty of the stimulus considerations, which argue for postulating more innate structure, not less.

What Babies Know is a landmark achievement, consolidating and developing Spelke’s many important contributions to the rationalism-empiricism debate concerning the origins of concepts. The account it offers has two major parts. One is that children’s learning begins with six innate core knowledge systems. This provides them with an initial starting point comprised, not simply of low-level sensorimotor representations, but also of abstract concepts, allowing them to form a richer initial conception of the world around them. The other is that, unlike other animals (many of whom share a broadly similar representational starting point), children have language, which both allows and encourages them to form concepts that can range over, combine, and extend the content domains that are associated with their individual core knowledge systems.

While Spelke’s focus is not on how the rationalism-empiricism debate about the origin of concepts should be understood, the broad outlines of how her account fits into the larger landscape of positions in this debate is clear: It’s meant to offer a rationalist theory of the origins of concepts that avoids the excesses of Fodor’s notorious *radical concept nativism*, which takes virtually all lexical concepts to be innate (Fodor 1981). Spelke’s six innate core knowledge systems, and the idea that evolution is likely to have favored learning mechanisms that employ highly abstract forms of representation, sharply differentiate her account from standard empiricist accounts. At the same time, she is equally clearly not a Fodorian radical concept nativist, as she refuses to postulate further innate concepts on the grounds that they aren’t seen in newborns and (specifically with reference to Fodor) because she thinks that having too much innate psychological structure makes learning harder, not easier—a problem that she calls “the curse of a compositional mind”.

There is much that we admire and agree with in the immensely important body of work by Spelke and others that this book synthesizes. In particular, while we have a different understanding of

some of the core knowledge systems that she posits¹, we think that there are overwhelming grounds for accepting innate abstract representations in each of the six areas of core knowledge discussed. We also agree that language plays a vital role in conceptual development. Despite these substantial points of agreement, we will argue that it's too confining to think of rationalist views in this debate, as Spelke seems to, only in terms of how many and which core knowledge systems there are.

To see why, we first need to clarify what is and isn't at stake in the rationalism-empiricism debate about the origins of concepts, since the range of options available in the debate depend in part on how it is framed. On some ways of framing the debate, Spelke's view turns out to not be a version of concept nativism at all. On such views, a minimal requirement for being a version of concept nativism is positing some innate concepts. And while it's clear that Spelke's core knowledge systems involve abstract representations of some sort or another, these representations would not count as concepts on a number of different accounts of what makes a representation conceptual. For example, some accounts distinguish concepts from nonconceptual representations in terms of something like the *generality constraint*, according to which a representation is a concept only if it can be flexibly and freely combined with all other concepts (e.g., Evans 1982). Others holds that concepts are constitutively linked to capacities for conscious rational reflection, including the ability to justify one's use of a concept (e.g., McDowell 1994). On either of these approaches, the representations in Spelke's core knowledge systems clearly aren't concepts. These systems are supposed to be, for the most part, Fodorian modules which automatically respond to very specific types of input and that operate independently of one another, competing for cognitive resources such as attention. The fact that they aren't involved in general forms of rational reflection and that their representations aren't capable of being freely combined with conceptual representations in other parts of the mind is built into the whole idea of a core knowledge system, as Spelke understands this construct. It's also what explains why, on her account, animals (who share these systems with humans) lack the form of flexible cognition that begins to appear once children's linguistic abilities are sufficiently developed.

This is not to say that these representations *aren't* concepts. It only means that it isn't uncontroversial to suppose that they are. There are many different ways of drawing the conceptual/nonconceptual distinction, and on other accounts of what concepts are, these representations turn out to be conceptual.² The point is that this matter remains enormously controversial (see Laurence & Margolis 2012 for an analysis of this complex debate). So if the rationalism-empiricism debate is taken to be about whether there are innate concepts, it will be unclear whether or not Spelke's position should be understood as a form of concept nativism.

In our view, however, this isn't how the debate about the origins of concepts should be understood, and so none of this should be seen as an objection to Spelke. The requirement that concept nativists must posit innate concepts stems from one of a number of common misunderstandings about the

¹ For example, we have argued that Spelke's account of the origins of natural number concepts doesn't posit enough innate structure specific to this domain. What's missing is a system that represents small precise numerical quantities as such—representations for *one*, *two*, and *three* (see Laurence & Margolis 2005, 2007; Margolis & Laurence 2008; Margolis 2020; for a related account see Leslie et al. 2007).

² For example, they would arguably come out as conceptual on Fodor's account, according to which the conceptual/nonconceptual distinction roughly corresponds to the distinction between iconic and discursive representations (Fodor 2008).

rationalism-empiricism debate. What's at stake in this debate is not whether or not there are innate concepts. It's whether the foundational psychological basis for acquiring concepts—what we call the *acquisition base* for learning—is rationalist or empiricist. The acquisition base is the collection of all psychological structures that are not themselves learned (or otherwise the product of any psychological-level process of acquisition) and which form the ultimate psychological basis for acquiring all concepts (Margolis & Laurence 2013, 2023). On an empiricist account, the acquisition base is largely confined to sensorimotor representations and domain-general learning mechanisms. On a rationalist account, it also includes such things but also various types of abstract representations and domain-specific learning mechanisms. Spelke's account is clearly rationalist—a version of concept nativism—in light of the fact that she effectively holds that the acquisition base includes six domain-specific core knowledge systems, each of which encompasses a set of interrelated abstract representations. Whether these representations are concepts per se (according to some preferred account of the conceptual/nonconceptual distinction) may be difficult to say. But on our understanding of the rationalism-empiricism debate about the origins of concepts, this is irrelevant. All that matters is whether the acquisition base for acquiring concepts is rationalist.

However, while this objection doesn't pose a direct problem for Spelke's account, once we see that what matters to this debate is the character of the acquisition base, it immediately follows that a rationalist account of the origins of concepts can be grounded in many different types of rationalist psychological structures in the acquisition base above and beyond any core knowledge systems that are part of the acquisition base. Seen in this light, Spelke's focus on core knowledge is too confining. Concept nativists should be prepared for the existence of many different types of structures in the acquisition base that don't fit the mold of core knowledge systems. They may well not be evidenced as being present at birth—as in the case of universal grammar, for example. They may be relatively isolated structures, not part of a tightly interrelated set of concepts. They may involve attentional biases of various kinds, domain-specific heuristics, links between innate cognitive systems, domain-specific dispositions in memory, particular types of motivations, mechanisms for causal-explanatory reasoning, representations for basic metaphysical distinctions (e.g., events, individuals, and kinds), and much else. So, this debate should not be understood as being about how many or which core knowledge systems exist.

Finally, what should we make of the curse of a compositional mind (Spelke's claim that too much innate psychological structure makes learning harder, not easier)? We agree that the possibility of there being too many hypotheses to entertain in acquiring a new concept (or any type of psychological structure) is an important problem. But as we see it, this problem doesn't stem from the postulation of a large number of innate abstract representations and is not solved by substantially reducing the initial representational resources that a learner has access to.

First, as Chomsky noted in connection with poverty of the stimulus arguments, learners face the problem of there being indefinitely many mistaken or unproductive hypotheses to entertain even if they lack the resources to formulate the correct hypothesis. In fact, even a learner with only concepts or representations pertaining to basic sensory or perceptual properties might endlessly entertain different hypotheses involving just combinations of such representations without ever hitting on the correct hypothesis for acquiring some more abstract concept. Second, the fact that adults possess a vastly greater number of abstract concepts than infants but aren't crippled by the curse of a compositional mind shows that it is not the addition of abstract concepts per se that

creates the problems here. So, there is no reason to think that the curse of a compositional mind is a principled objection to having far more innate resources in the acquisition base than Spelke's six core knowledge systems. Third, poverty of the stimulus considerations also suggest that the acquisition of interestingly new psychological traits can crucially depend on having a richer initial representational starting point (Laurence & Margolis, in press). For example, how could a learner who didn't possess any prior capacity for representing modality acquire wholly new concepts pertaining to what *might* have been or what *must* be? Without some initial glimmer that there is more to the world than how things actually are, learners wouldn't be in a position to formulate such modal concepts and wouldn't even see the point of doing so.

Taken together, these considerations argue that the solution to the curse of a compositional mind should be one that simultaneously helps infants avoid problems tied to poverty of the stimulus considerations. For this reason, it is likely that the solution involves adding *more* to the acquisition base, not pairing down its representational resources. Like adults, children might also have domain-specific principles, heuristics, architectural constraints on inferences, or other cognitive resources that allow and encourage them to apply representations in a restricted way. The organization of core knowledge systems provides one way of constraining the hypothesis space in this way. But there are many other possibilities as well. Accordingly, the curse of a compositional mind doesn't give any reason at all to suppose that the number of innate abstract representations (or for that matter, the number of core knowledge systems) is bound to be small.

Spelke is right that having a large number of innate representations or potential combinations of innate representations doesn't necessarily make learning easier; but likewise, it doesn't necessarily make learning harder either. The question is simply how much such structure needs to be postulated to explain the origins of all the concepts we can acquire. So, while we agree with Spelke that some form of concept nativism provides the best account of the origins of concepts, we think that this account will ultimately prove to be one that involves a considerably richer acquisition base than the account grounded in Spelke's six core knowledge systems.³

References

Evans, G. 1982. *The Varieties of Reference*. Oxford University Press.

Fodor, J. A. (1981). The present status of the innateness controversy. In his *Representations: Philosophical Essays on the Foundations of Cognitive Science*. MIT Press.

Fodor, J. A. (2008). *LOT 2: The Language of Thought Revisited*. Oxford University Press.

Laurence, S. & Margolis, E. (in press). *The Building Blocks of Thought*. Oxford University Press.

Laurence, S. & Margolis, E. (2005). Number and natural language. In *The Innate Mind: Structure and Contents*. P. Carruthers et al. (eds). Oxford University Press.

³ This article was fully collaborative; the order of the authors' names is arbitrary.

Laurence, S., Margolis, E. (2007). Linguistic determinism and the innate basis of number. In P. Carruthers et al. (eds.), *The Innate Mind: Foundations and the Future*. Oxford University Press.

Laurence, S., & Margolis, E. (2012). The scope of the conceptual. In E. Margolis et al. (eds.), *The Oxford Handbook of Philosophy of Cognitive Science*. Oxford University Press.

Leslie, A.M., Gallistel, C.R., & Gelman, R. (2007). Where integers come from. In P. Carruthers et al. (eds.), *The Innate Mind: Foundations and Future*. Oxford University Press.

Margolis, E., & Laurence, S. (2008). How to learn the natural numbers: Inductive inference and the acquisition of number concepts. *Cognition*, 106(2), 924-939.

Margolis, E., & S. Laurence (2013). In defense of nativism. *Philosophical Studies*, 165:2, 693-718.

Margolis, E. (2020). The small number system. *Philosophy of Science*, 87, 1-22.

Margolis, E., & Laurence, S. (2023) Making sense of domain specificity. *Cognition*, 240, 105583.

McDowell, J. (1994). *Mind and World*. Harvard University Press.

Spelke, E.S. (2022). *What Babies Know: Core Knowledge and Composition*. Oxford University Press.