

# The Developing Mind: A philosophical introduction to issues in cognitive development – Book Proposal –

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## **Brief Description**

How do humans come to know about objects, causes, words, numbers, colours, actions and minds? The question goes back to Plato or earlier and remains unanswered. Two recent scientific breakthroughs appear to bring us closer to an answer, and to show that the question is even less straightforward than philosophers have assumed. The first breakthrough is the discovery that preverbal infants enjoy surprisingly rich social abilities, abilities which may well be foundational for later linguistic abilities and enable the emergence of knowledge (e.g. Csibra & Gergely 2009; Meltzoff 2007; Tomasello, Carpenter, Call, Behne & Moll 2005). A second breakthrough concerns the use of increasingly sensitive—and sometimes controversial—methods to detect sophisticated expectations concerning causal interactions, numerosity, mental states and more besides in preverbal infants (e.g. Spelke 1990; Baillargeon, Scott & He 2010). These expectations or the representations and processes underpinning them arguably also enable the emergence of knowledge. Although each breakthrough has been discussed at length by leading psychologists, philosophers have yet to consider either systematically in print. Further, the two breakthroughs are associated with different camps, one nativist and the other Vygotskian, and have rarely been considered together as identifying twin factors enabling the emergence of knowledge. The proposed book will familiarise readers with findings related to both breakthroughs and explain their relevance to philosophical accounts of knowledge, action and experience. Most importantly, the book aims to introduce readers to philosophical issues raised by these findings in cognitive development.

Advances in neuroscience may be transforming parts of developmental psychology much as they have already transformed the study of perception and action (Johnson 2005). The proposed book focusses on discoveries rather than methods but

will introduce readers to some relevant findings in developmental cognitive neuroscience along the way.

The book is organised by domains of knowledge, so that one chapter concerns knowledge of objects, another focusses on knowledge of number, and so on. The domains are chosen so that each set of developmental findings is linked to one or more philosophical issues. For instance, research on knowledge of objects gives bite to questions about modularity and the nature of tacit knowledge (Davies 1989; Fodor 1983); research on knowledge of number invites discussions of nativism (Fodor 1981; Spelke 1998); and developmental findings on knowledge of colour may challenge some assumptions philosophers have made about relations between language, thought and perception (Gilbert, Regier & Ivry 2006; Regier & Kay 2009).

## **Audience**

The book is aimed at advanced undergraduate and graduate students in philosophy. It is suited to teaching a course on philosophical issues in cognitive development. The book could also be used in courses on the philosophy of mind and action, or the philosophy of psychology. To this end the book will not presuppose familiarity with the philosophy of mind and will include chapter summaries and suggestions for further reading.

Professional philosophers whose research connects with issues in cognitive development may also find the book useful. Judging by papers and manuscripts under review for journals and university presses, even those writing about cognitive development can have difficulty identifying the full range of findings relevant to their positions.

Students in psychology are often drawn to philosophy and should find in this book an accessible introduction to key distinctions and arguments. It might even be used for courses in developmental psychology. (I once co-taught such a course in psychology with Jim Russell in Cambridge).

## **Length**

70,000–100,000 words

## **Timetable**

I aim to submit a first draft of the manuscript by 30 September 2014.

I plan to try out material for the book while teaching courses at the University of Warwick (UK) and Central European University (Hungary).

## Competition

At the time of writing there is no book or collection devoted to philosophical issues in cognitive development.

Philosophers have written monographs and edited collections on particular issues in cognitive development (e.g. Bermúdez 2003; Carruthers & Smith 1996). The proposed book complements these by providing a unified discussion of a wider range of topics. The advantage is not just convenience: understanding and properly evaluating theories about the developmental origins of knowledge requires bringing together research on different domains of knowledge.

There are also several collections bringing together research by philosophers and developmental psychologists or presenting developmental research in ways accessible to philosophers (e.g. Hirschfeld & Gelman 1994; Carruthers, Laurence & Stich 2005, 2006; McCormack, Hoerl & Butterfill 2011). From the point of view of the proposed book, these provide useful sources of further reading for those who want more information on particular issues.

Finally, the proposed book will complement the many excellent books which expound particular theories about the origins of knowledge; these include Carey (2009), Tomasello (1999), Gopnik & Meltzoff (1997), and Elman, Bates, Johnson, Karmiloff-Smith, Parisi & Plunkett (1996). The proposed book will include critical discussion of theories presented in these volumes. Its aims are clearly distinct from any of these volume's aims: the proposed book will review a range of existing theories and explore philosophical questions they raise.

## Contents

(This plan may change.)

### *Introduction*

How do humans come to know about—and to knowingly manipulate—objects, causes, words, numbers, colours, actions and minds? In pursuing this question we have to consider minds where the knowledge is neither clearly present nor obviously absent. This is challenging because both commonsense and theoretical tools for describing minds are generally designed for characterising fully developed adults. Davidson writes:

‘We have many vocabularies for describing nature when we regard it as mindless, and we have a mentalistic vocabulary for describing thought and intentional action; what we lack is a way of describing what is in between’ (Davidson 1999, p. 11).

To understand the emergence of knowledge we need to find ways of describing what is in between: individuals whose movements are neither mindless nor guided by intention and knowledge. Some progress has already been made but many challenges remain. Philosophers have much to contribute in crafting distinctions and conceptual tools useful for meeting the challenges involved in describing what is in between. There is also much for philosophers to gain: studying what is in between mindless nature and the sorts of cognition captured by adult humans' everyday, pre-theoretical mentalistic notions will reveal things about what minds are and how they work.

As well as explaining how research on developing minds bears on some existing philosophical issues and raises some new ones, this chapter introduces two scientific breakthroughs that have recently furthered understanding of how knowledge might emerge in development. As already mentioned (in the Brief Description), the first breakthrough is the discovery that preverbal infants enjoy surprisingly rich social abilities, abilities which may well be foundational for later linguistic abilities and enable the emergence of knowledge (e.g. Csibra & Gergely 2009; Meltzoff 2007; Tomasello et al. 2005). A second breakthrough concerns the use of increasingly sensitive—and sometimes controversial—methods to detect sophisticated expectations concerning causal interactions, numerosity, mental states and more besides in preverbal infants (e.g. Spelke 1990; Baillargeon et al. 2010). These breakthroughs are driven by researchers with conflicting theoretical positions and raise quite different issues. But they both identify ingredients necessary for understanding the developmental origins of human knowledge.

### ***Chapter 1. Social Interaction without Words***

Could social interaction be an enabler of cognitive development? This chapter examines arguments for the hypothesis that it could (as offered in Tomasello & Rakoczy 2003 and Moll & Tomasello 2007); it also discusses objections to this hypothesis and introduces questions it raises.

An immediate problem is that much adult social interaction depends so heavily on communication by language (not to mention social networks) that it can be hard to imagine what social interaction with preverbal infants could involve. Relatedly, many theoretical accounts of social interaction presuppose linguistic abilities. To overcome this difficulty we shall review evidence for a package of social abilities manifested in preverbal infants. These include imitation, which can occur just days and even minutes after birth (Meltzoff & Moore 1977; Field, Woodson, Greenberg & Cohen 1982; Meltzoff & Moore 1983), imitative learning, gaze following (Csibra & Volein 2008), goal ascription (Gergely, Nadasky, Csibra & Biro 1995; Woodward & Sommerville 2000), social referencing (Baldwin 2000) and pointing. Taken together, the evidence reveals that preverbal infants have surprisingly rich social abilities.

The hypothesis that these social abilities enable cognitive development faces an objection. For it seems that many of these abilities already presuppose knowledge of objects, actions and minds. For instance, twelve-month old infants will helpfully point to inform ignorant but not knowledgeable adults about the location of an object (Liszkowski, Carpenter & Tomasello 2008). Some researchers take this to show that these infants are already capable of knowing about others' knowledge and ignorance. If that is right, pointing and other social abilities could play at most a limited role in explaining the developmental origins of knowledge of mind. After all, we can hardly explain the emergence of something by appealing to abilities whose possession already presuppose it. We will encounter tools for replying to this objection in Chapters 2 (on Objects) and 6 (on Actions).

The hypothesis that social abilities enable cognitive development naturally invites a question: How could that work? Some have argued that early social abilities partially explain the emergence in humans of communication by language (Tomasello 2008; see Chapter 5 on Words). This is a valuable contribution. But could social abilities also play a role in explaining the developmental origins of knowledge of things other than words—for example, in explaining the emergence of knowledge of objects, numbers, colours or minds? This question comes up in one way or another in each of the following chapters.

## ***Chapter 2. Objects and How They Interact.***

When can infants first know things about objects they aren't perceiving? For instance, when a ball falling behind a chair disappears from view, when do infants first realise that the ball is somewhere behind the chair? The ability to realise this is known as 'object permanence'. One way to test for object permanence is to ask when infants first reach for objects they can't see or when they first remove barriers to retrieve objects concealed behind them. Infants don't do this until around eight months (Meltzoff & Moore 1998, p. 202) or maybe later (Moore & Meltzoff 2008). Since four-month-olds already have the planning skills they would need to execute the reach (Shinskey & Munakata 2001), their failure to reach is evidence that infants can first think about objects they aren't perceiving at around eight months or later. But another way to test for object permanence is to ask how infants respond to apparently impossible events. Suppose, for example, that infants watch as a solid object is placed immediately behind a screen and then the screen falls backwards, ending up flat as though the object were not there, which is apparently impossible (Baillargeon, Spelke & Wasserman 1985; Baillargeon 1987). If infants show heightened interest in this and similar cases, perhaps by looking at the display for longer than might otherwise be expected, this would be evidence that they can know things about objects they aren't perceiving. As it turns out, infants show such heightened interest from around four months or earlier. Put together, the two sorts of findings

give rise to the ‘paradox of early permanence’ (as Meltzoff & Moore 1998 call it). The best explanation of the first sort of findings seems to be that infants cannot think about objects they aren’t perceiving until eight months or later; but the best explanation of the second sort of findings seems to be that infants can do this from around four months or earlier. Clearly these explanations cannot both be correct. But neither seems to be wrong.

This conflict exemplifies a pattern that occurs again and again in investigating the developmental origins of knowledge. Here’s the pattern. We ask when humans can first know about X. One set of findings provides converging evidence that the answer is: surprisingly early. Another set of findings, using a different set of techniques, provides converging evidence that the answer is: much later. Unless they arise from methodological failings, these conflicting answers force us to recognise that the question involves a mistake. The mistake is to think that there is a single kind of knowledge. The pattern of conflict shows that we must recognise:

‘there are many separable systems of mental representations ... and thus many different kinds of knowledge. ... the task ... is to contribute to the enterprise of finding the distinct systems of mental representation and to understand their development and integration’ (Hood, Carey & Prasada 2000, p. 1522).

It is one thing to propose that there are multiple kinds of knowledge and quite another to make systematic sense of this possibility. In this chapter we will consider attempts to do this by appeal to notions of modularity (Fodor 1983) and core knowledge (Spelke & Kinzler 2007). Both attempts raise further questions. These questions about how to make sense of the possibility that there are multiple kinds of knowledge run through the following chapters.

***Chapter 3. Number: From Perceptual Experience to Knowledge***

***Chapter 4. Seeing and Talking about Colours***

***Chapter 5. Words Are Tools for Communication***

***Chapter 6. Actions: Teleology and Mirroring Motor Awareness***

***Chapter 7. Mindreading***

***Conclusion***

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