Lecture 03

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1. A Problem

'action demands are not the only cause of failures on occlusion tasks' (Shinskey 2012, p. 291)

'A similar permanent dissociation in understanding object support relations might exist in chimpanzees. They identify impossible support relations in looking tasks, but fail to do so in active problem solving.' (Gómez 2005)

'to date, adult primates' failures on search tasks appear to exactly mirror the cases in which human toddlers perform poorly.' (Santos & Hood 2009, p. 17)

2. Like Knowledge and Like Not Knowledge

'no concept causes more problems in discussions of infant cognition than that of representation' (Haith 1998).

3. What Is Core Knowledge?

For someone to have *core knowledge of a particular principle or fact* is for her to have a core system where either the core system includes a representation of that principle or else the principle plays a special role in describing the core system.

3.1. Two-part definition

'Just as humans are endowed with multiple, specialized perceptual systems, so we are endowed with multiple systems for representing and reasoning about entities of different kinds.' (Carey & Spelke 1996, p. 517)

'core systems are:

1. largely innate

2. encapsulated

3. unchanging

4. arising from phylogenetically old systems

5. built upon the output of innate perceptual analyzers' (Carey & Spelke 1996, p. 520)

Note There are other, slightly different statements (e.g. Carey 2009).

'We hypothesize that uniquely human cognitive achievements build on systems that humans share with other animals: core systems that evolved before the emergence of our species. The internal functioning of these systems depends on principles and processes that are distinctly non-intuitive. Nevertheless, human intuitions about space, number, morality and other abstract concepts emerge from the use of symbols, especially language, to combine productively the representations that core systems deliver' (Spelke & Lee 2012, pp. 2784-5).

3.2. The Core Knowledge View

The *Core Knowledge View*: the principles of object perception are not knowledge, but they are core knowledge. And we generate expectations from these principles by a process of inference.

4. Objections to Core Knowledge

'there is a paucity of ... data to suggest that they are the only or the best way of carving up the processing,

'and it seems doubtful that the often long lists of correlated attributes should come as a package' (Adolphs 2010, p. 759)

'we wonder whether the dichotomous characteristics used to define the two-system models are ... perfectly correlated ... [and] whether a hybrid system that combines characteristics from both systems could not be ... viable' (Keren & Schul 2009, p. 537)

'the process architecture of social cognition is still very much in need of a detailed theory' (Adolphs 2010, p. 759)

5. Core System vs Module

'In Fodor's (1983) terms, visual tracking and preferential looking each may depend on modular mechanisms.' (Spelke et al. 1995, p. 137)

5.1. Modularity

Fodor's three claims about modules:

1. they are 'the psychological systems whose operations present the world to thought';

2. they 'constitute a natural kind'; and

3. there is 'a cluster of properties that they have in common' (Fodor 1983, p. 101).

Properties of modules:

— domain specificity (modules deal with 'eccentric' bodies of knowledge)

— limited accessibility (representations in modules are not usually inferentially integrated with knowledge)

— information encapsulation (modules are unaffected by general knowledge or representations in other modules)

— innateness (roughly, the information and operations of a module not straightforwardly consequences of learning; but see Samuels (2004)).

6. A Hypothesis: Object Indexes Underpin Infants' Abilities

The *object-specific preview benefit*: 'observers can identify target letters that matched the preview letter from the same object faster than they can identify target letters that matched the preview letter from the other object' (Krushke & Fragassi 1996, p. 2).

Hypothesis:

Tracking occluded objects depends on object indexes.

(And reaching for endarkened objects depends on motor representations of objects.)

7. Phenomenal Expectations Connect Object Indexes to Looking Behaviours

The principles of object perception

are not items of knowledge

instead

they characterise the operation of

object indexes (FINSTs, components of mid-level object files)

(Leslie et al. 1998; Scholl & Leslie 1999; Carey & Xu 2001; Scholl 2007).

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