

# Origins of Mind: Lecture 06

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‘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 et al. 2000, p. 1522).

## 1. Core Knowledge: First Pass

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.

### 1.1. 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 largely innate encapsulated unchanging arising from phylogenetically old

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

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

## 2. Core Knowledge: Objections

‘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). (Carey & Spelke 1996, p. 517)

### 2.1. Objection

‘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)

## 3. Core Knowledge and Modularity

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

### 3.1. 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).

These properties include:

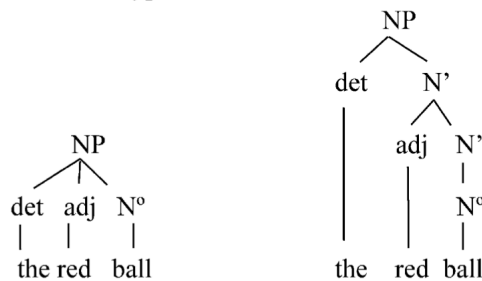
- domain specificity (modules deal with ‘ec-centric’ bodies of knowledge)
- limited accessibility (representations in modules are not usually inferentially integrated with knowledge)

- 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)).

#### 4. Syntax / Innateness

Is the syntactic structure of ‘the red ball’ (a) flat or (b) hierachical?

a. Flat structure hypothesis    b. Nested structure hypothesis



from Lidz et al. 2003

1. ‘red ball’ is a constituent on (b) but not on (a)
2. anaphoric pronouns can only refer to constituents
3. In the sentence ‘I’ll play with this red ball and you can play with that one.’, the word ‘one’ is an anaphoric pronoun that refers to ‘red ball’ (not just ball). (Lidz et al. 2003; Lidz & Waxman 2004).

‘The assumption in the preferential looking task is that infants prefer to look at an image that matches the linguistic stimulus, if one is available’ (Lidz et al. 2003).

#### 4.1. Poverty of stimulus arguments

How do poverty of stimulus arguments work? See Pullum & Scholz (2002).

1. Human infants acquire X.
2. To acquire X by data-driven learning you’d need this Crucial Evidence.
3. But infants lack this Crucial Evidence for X.
4. So human infants do not acquire X by data-driven learning.
5. But all acquisition is either data-driven or innately-primed learning.
6. So human infants acquire X by innately-primed learning .

‘the APS [argument from the poverty of stimulus] still awaits even a single good supporting example’ (Pullum & Scholz 2002, p. 47)

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