Lecture 8.1

Fodor on the Language of Thought

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Pre-lecture reading:
Fodor, J. (1975), *The Language of Thought* (New York: Crowell), ch. 1.

1. In this chapter, Fodor argues for the existence of a language of thought (in a sense to be explained).

2. His broad argument:

   (2.1) The only psychological models (theories) of cognitive processes (cognition) that seem even remotely plausible represent such processes as computational.

   (2.2) Computation presupposes a medium of computation: a representational system. (in which these processes are carried out)

3. Fodor considers three theories of cognition (cognitive processes), each of which presupposes the existence and exploitation of a representational system of some complexity in which mental processes are carried out:

   - Choice (decision)
   - Concept learning
   - Perception

4. **Choice**.

   The following model (theory schema) "seems overwhelmingly plausible" as an account of how at least some behaviour is decided on:

   (4.1) The agent finds himself in a certain situation (S).
   (4.2) The agent believes that a certain set of behavioral options $B_1, \ldots, B_n$ are available to him in S; i.e. given S, $B_1, \ldots, B_n$ are the things the agent believes that he can do.
   (4.3) The probable consequence of performing each of $B_1, \ldots, B_n$ are predicted; i.e. the agent computes a set of hypotheticals of roughly the form if B_i is performed in S then, with a certain probability, C_i.
   (4.4) A preference ordering is assigned to the consequences.
   (4.5) The organism's choice of behavior is determined as a function of the preferences and the probabilities assigned.

   This sort of model presupposes that agents have means for representing their behaviours to themselves - as having certain properties and not having others. Also presupposes that it has means to represent: the probable consequence of acting on its behavioural options, a preference ordering defined over those consequences, and the situation in which it finds itself.

   Might say that the model presupposes a *language*. For the representational system presupposed must share a number of characteristic features of real languages. Two:

   (4.6) Productivity. No upper bound to the complexity of the representation required (in principle)

(4.7) Semantic properties such as truth and reference are exhibited by formulae in the system. ‘D’ describes what ‘a’ refers to iff (‘Da’ is true iff a is D). Also, like natural languages, the representational system will have the mechanism for expressing intensional properties (ones that may have different extensions in different possible worlds).

5. **Concept Learning**. (Learning which goes beyond the data, such as learning that all crows are black, or that red triangles belong in this pile. Not just memorisation, like rote learning.)

(5.1) So far as anyone knows, concept learning is essentially inductive extrapolation. (only one theory of CL has been proposed, and only one is conceivable)

(5.2) So a theory of concept learning will have to exhibit the characteristic features of theories of induction.

(5.3) In particular, it will have to presuppose a format for representing the data, a source of hypotheses, and a metric which determines the level of confirmation that a given body of data bestows upon a given hypothesis.

(5.4) An inductive argument is warranted only insofar as the observation statements which constitute its premises confirms the hypothesis which constitutes its conclusion.

(5.5) Whether this confirmation relation holds depends, at least in part, upon the *form* of the premises and conclusion (the way in which they are expressed). Consider some examples: All crows are black (white shoe); All emeralds are green (grue); Red triangles belong in this pile (subjects who report an affirmative conjunctive hypothesis learn faster than those who report a negative disjunctive one).

(5.6) The notion of ‘form’ is defined only for linguistic objects. The items doing the representing must be structured.

6. **Perception**.

“Perception is essentially a matter of problem solving, where the form of the problem is to predict the character of future sensory experience given the character of past and current sensations as data. Conceived this way, models of perception have the same general structure as models of concept learning: one needs a canonical form for the representation of the data, one needs a source of hypotheses for the extrapolation of the data, and one needs a confirmation metric to select among the hypotheses.” (p. 42)

“Perception must involve hypothesis formation and confirmation because the organism must somehow manage to infer the appropriate task-relevant description of the environment *from* its physical description together with whatever background information about the structure of the environment it has available. Notoriously, this inference is non-demonstrative: there is typically no *conceptual* connection between a perceptual category and its sensory indicants; an indefinite number of perceptual analyses will, in principle, be compatible with any given specification of sensory input. On this account, then, perceptual integrations are most plausibly viewed as species of inferences-to-the-best-explanation, the computational problem in perceptual integration being that of choosing the best hypothesis about the distal source of proximal stimulations.” (p. 50)