

Phil 317: [handout #7]
Kim: *Philosophy of Mind*
Chapter 4
Mind As A Computer: Functionalism

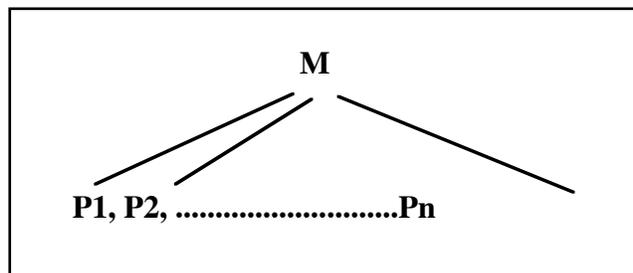
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§ Multiple Realizability and the Functional Conception of the Mental

- 1. Physicalism =_{def} the thesis that anything that exhibits mentality must be a physical system (i.e., there are no floating minds.)**

- 2. The Physical Realization Principle:** **If something x has some mental property M at time t , then x is a material thing and x has M at t in virtue of the fact that x has at t some physical property P that realizes M in x at t .**

- 3. Multiple Realizability of the Mental:** **Mental property M can have different physical realizers; i.e., different biological systems can have the same mental property.**



Q: What could the mental lives of Martians and human beings, mammals and reptiles possibly have in common? List some examples.

- 4. Functionalism: The thesis that mental kinds are causal-functional kinds, and what all instances of a given mental kind have in common is the fact that they serve a certain causal role distinctive of that kind.**

Basic Assumptions behind Functionalism:

- ___ 1. Minds are like computers and mental processes are computational processes.
- ___ 2. Just as vastly different biological or physical structures can execute the same computational program, so vastly different biological or physical structures should be able to subserve the same psychological processes.

- ___ 3. Psychological properties abstract from physical or biological properties so that different organisms and systems can instantiate the same psychological regularities.
- ___ 4. Psychological kinds concern *formal* patterns or structures of events and processes.
- ___ 5. Such formal structures are called "functions" which are defined by job descriptions or causal roles (e.g. the concept of pain is defined in terms of its function, and the function involved is to serve as a *causal intermediary* between typical pain inputs (tissue damage, etc.) and typical pain outputs (escape behavior, etc.)).

§ Functionalism vs. Behaviorism

1. The functionalist takes mental states to be real *internal* states of an organism with causal powers (The functionalist does not eliminate the mental.) ⇒ **mental realism**
2. The functionalist includes reference to *other mental states* in the characterization of a given mental state. ⇒ **mental holism**

Behaviorism:

Mental state M = inputs -----> behavioral outputs

Functionalism:

Mental state M = inputs ----> other mental states ----> outputs

[Note]: Mental Holism

- ___ What makes a mental event the kind of mental event it is is the way it is causally linked to other mental-event kinds and input/output conditions. Since each of these other mental-event kind in turn has its identity determined by *its* causal relations to other mental events and inputs/outputs, the identity of each mental kind depends ultimately on the whole system -- its internal structure and the way it is causally linked to the external world via its inputs and outputs. In this sense, functionalism gives us a *holistic* conception of mentality.

§ Turing Machines [Block, 'Troubles with Functionalism]

1. finite set of machine tables, inputs, and outputs: given any state and input, the table specifies an output and a next state.
2. The output: it prints a symbol on a tape, then moves the tape and brings a new symbol into the view of the input reader.
3. The tape must be infinite in one direction and movable in both directions.
4. *probabilistic automaton*: if the machine is in S_a and receives I_b , it has a probability p_1 of emitting O_1 ; p_2 of emitting O_2, \dots ; it also has a probability r_1 of going into S_1 , r_2 of going into S_2, \dots

§ Multiple Physical Realization of the Turing Table

A Turing table can be multiply realized by different physical devices:

- ___ What needs to be done is to replace *the functional or computational relations* among the various abstract parameters mentioned in the machine table with *appropriate causal relations among the physical embodiments* of these parameters.
- ___ Therefore, the intrinsic natures of the physical systems are of no interest to us as long as they have the right causal/relational properties. Their intrinsic natures matter only to the extent that they affect the causal powers of states and objects that have them.

Q: Do you agree that the mental is just an abstract network of formal relations that can be *realized* by different biological/physical systems?

Q: Do you agree that the actual structure of the brain is not essential to the nature of mind?

§ Machine Functionalism

Main Claims:

- ___ **1. What it is for something to have mentality is for it to be a physically realized Turing machine of appropriate complexity, with its mental states identified with the internal states of the machine table.**
- ___ **2. The psychology of an organism can be represented by a Turing machine.**
- ___ **3. It is our brain's computational properties, not its biological properties, that constitute our mentality. Our brain is our mind because it is a computer, not because it is the kind of organic, biological structure it is.**

Three potential problems for machine functionalism:

1. On machine functionalism, two subjects' total psychology must be identical if they are to share a single psychological state.
2. Machine functionalist may not be able to define mentality without begging the question about what mentality is.
3. By the criterion of same input/output specifications, humans and other species cannot be said to be in the same mental state since their outputs would be different.

§ The Turing Test

Claim:

- ___ **If machines can do as well as humans on certain appropriate intellectual tasks, then they must be judged no less psychological (or intelligent) than humans.**

e.g. Eliza

⇒ **the imitation game:**

an interrogator ↗ **X: a machine**
 ↘ **Y: a human being**

[Turing Thesis]: **If two systems are input-output equivalent, they have the same psychological status; in particular, one is mental just in case the other is.**

§ Searle's Chinese Room Argument

The Chinese Room Argument:

___ If I do not understand Chinese solely on the basis of implementing a computer program for understanding Chinese, then neither does any other digital computer solely on that basis, because no digital computer has anything I do not have.

- 1. Programs are syntactical.**
- 2. Minds have semantics [Real understanding involves semantics, knowing what these symbols represent, or mean.]**
- 3. Syntax is not the same as, nor by itself sufficient for, semantics.**
- 4. Therefore, programs are not minds.**

Q: Do you agree with Searle that the mind is basically a semantic engine; the computer, in comparison, is only a syntactic engine?

Q: Between a machine functionalist and Searle, whose side do you take? Why? What is your conception of the mind?