

Stances on the Relations of Psychology to the Brain

Basic Question: Just what are mental/psychological state?

- Three basic strategies:
 - They are identical to states of the brain
 - They are states realized by states of the brain but not to them
 - They do not exist—they are nothing, although there are states of the brain
- Positions might differ depending on whether one focuses on
 - Intentional psychological states
 - Believing, remembering, wanting, etc.
 - Qualitative/experiential psychological states
 - Feeling pain, experience color, etc.

Pain = C-Fiber Firing

- C-fibers distinguished from others in terms of their thickness and myelination (Erlanger and Gasser)
- C-fibers carry the hurting stimulus in pain
 - Aδ (faster) tell of the occurrence of damage
- To be in pain is simply to have one's C-fibers firing

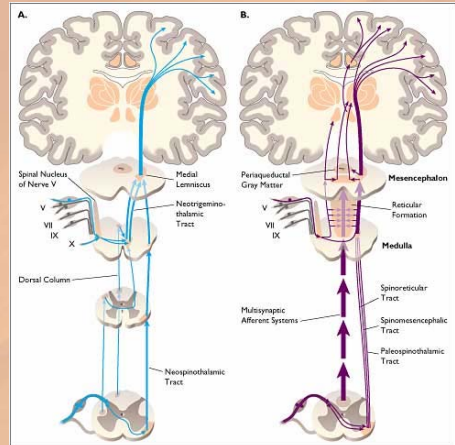


Figure 1. Pain signals are transmitted to the brain by two main pathways. The lateral system (A) is made up of long thick fibers that transmit information about the onset of injury, and its precise location and intensity. They are designed to carry a rapid flow of pain signals to the thalamus to stimulate an immediate antinociceptive response. The medial system (B) is composed of phylogenetically older fibers that carry slower signals and probably transmit information related to the persistence of injury and level of response induced.



U. T. Place: Sensations as Brain Processes



Ullin Place's brain

- Example identity: The morning star is the evening star (=Venus)
- How to account for having a mental experience (visual image) of something green?
 - Mistake to insist that there is something green that is being seen.
- “When we describe the after-image as green... we are saying that we are having the sort of experience which we normally have when, and which we have learned to described as, looking at a green patch of light.” Place (1956, p. 49)
- When a person says ‘I see a yellowish-orange after-image’ he is saying something like this: *“There is something going on which is like what is going on when I have my eyes open, am awake, and there is an orange illuminated in good light in front of me”*. Smart (1959)

Identity Theory



- Place was an identity theorist only about sensations
 - With respect to intentional states he was a behaviorist
- J.J.C. Smart: generalized to intentional states
- “Consider an experience of pain, or of seeing something, or of having a mental image. The identity theory of mind is to the effect that these experiences just *are* brain processes, not merely *correlated with* brain processes.”
- Identity theory is “an ontological, not a translational physicalism. It would be absurd to try to translate sentences containing the word ‘brain’ or the word ‘sensation’ into sentences about electrons, protons and so on.”

Apparent Problem for Identity

- Mental terms don’t mean the same as physical terms
 - You cannot naturally say the same things about thoughts as you can about brain processes
 - But they can still be about the same thing
 - Oedipus can say about Jocasta that he desires to marry her, but he cannot acknowledge to himself that he wants to marry his mother
- Smart’s strategy: topic neutral translations

David Lewis' Strategy

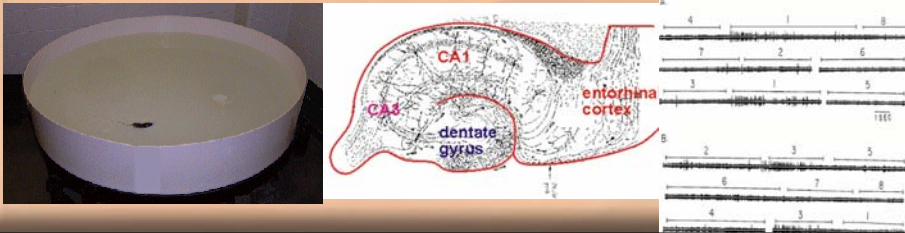
- Consider the story of Mr. Body:
 - X, Y, and Z conspired to murder Mr. Body. Seventeen years ago, in the gold fields of Uganda, X was Body's partner . . . Last week, Y and Z conferred in a bar in Reading . . . Tuesday night at 11:17, Y went to the attic and set a time bomb . . . Seventeen minutes later, X met Z in the billiard room and gave him the lead pipe . . . Just when the bomb went off in the attic, X fired three shots into the study through the French windows . . .
 - Story can be understood even if you don't know who X, Y, and Z are
 - If we later learn the identities of X, Y, and Z, we can say that they realize or play the roles in the story
- Generalize to mental states

Lewis' Version

- Do the same thing with a statement about mental processes
 - Pain tends to be caused by bodily injury; pain tends to produce the belief that something is wrong with the body and the desire to be out of that state; pain tends to produce anxiety; pain tends to produce wincing or moaning
 - $\exists x \exists y \exists z \exists w$ (x tends to be caused by bodily injury & x tends to produce states y, z, and w & x tends to produce wincing or moaning)
- Now identify with the mental state anything that plays the same role in the internal economy

From Beliefs to Brain States

- “[B]eliefs as *mappings* of the world. They are structures within us that model the world beyond the structure. This model is created in us by the world. Purposes may then be thought of as driving causes that utilize such mappings.” (D. M. Armstrong)
- Recall Tolman’s *cognitive maps*
- Rats lacking a hippocampus are unable to solve the navigation problems Tolman studied
- Cells in CA3 fire in response to rat’s location—place cells



Functionalism (Philosophical)

- What determines the **identity** of a mental state is not its material composition, but its relation to other mental states
 - Recall Aristotle’s distinction between form and matter
 - Soul is the form of the person, not its matter
 - What determines the kind of thing a human is
 - Recall Turing
 - A Turing machine performs its activity in virtue of how it is organized, not what it is made of
 - Challenge: figure out the right way to characterize relations between mental states that defines their identity



Machine Functionalism

- Like a coke machine, a person goes through a sequence of states

	S ₁	S ₂
nickel input	Emit no output Go to S ₂	Emit a Coke Go to S ₁
dime input	Emit a Coke Stay in S ₁	Emit a Coke & a nickel Go to S ₁

- If one could right the rules for such a system (a la Turing), then that would define the person's mental states
 - They are simply states in the machine table



Block: Machine Functionalism Too Liberal

- “Imagine a body externally like a human body [but in which] the neurons from sensory organs are connected to a bank of lights in a hollow cavity in the head. A set of buttons connects to the motor-output neurons. Inside the cavity resides a group of little men. Each has a very simple task: to implement a ‘square’ of an adequate machine table that describes you. . . . Through the efforts of the little men, the system realizes the same (reasonably adequate) machine table as you do and is thus functionally equivalent to you.”
- Replace the little men with citizens of China, linked together by radio and observing the tape in the sky.

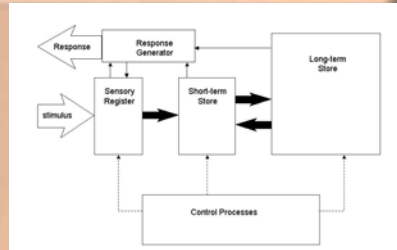
Mental States in the Chinese Nation

- “What makes the homunculi-headed system just described a prima facie counterexample to (machine) functionalism is that there is a prima facie doubt whether it has any mental states at all—especially whether it has what philosophers have variously called ‘qualitative states,’ ‘raw feels,’ or ‘immediate phenomenological qualities.’ In Nagel’s terms, there is a prima facie doubt whether there is anything which it is like to be the homunculi-headed system.”



Psycho-Functionalism

- Mental states identified in terms of their role in a network of mental processes
 - Psychological accounts often represented in box and arrow diagrams
 - Present the causal process without specifying what plays the various causal roles
- “Mental states and processes are just those entities, with just those properties, postulated by the best *scientific* explanation of human behavior.”



Block's Dilemma: Functionalism Too Liberal or Chauvinistic

- Treat the entities in the functional analysis totally abstractly
 - If the Bolivian economy realizes the same flow chart, it has mental states
- If restrict oneself to inputs and outputs like those in a human, the analysis is too chauvinistic
 - “on any sense of ‘physical’ in which the functionalist criticism [of the identity theory] is correct, *there will be no physical characterization that applies to all an only mental systems* inputs and outputs. Hence, any attempt to formulate a functional description with physical characterizations of inputs and outputs will inevitably either exclude some systems with mentality or include some systems without mentality. Hence, . . . *functionalists cannot avoid both chauvinism and liberalism.*”

Analytic Functionalism

- Start with ordinary mental terms and our a priori understanding of relations between such terms
 - Platitudes about mental states
 - If a person want X, knows that Y is the way to get X, has not competing beliefs or desires, the person will desire to do Y.
- Question of whether our folk theories are be so represented

Problems with Intentional States

- Can intentional states be represented totally as states within a person's head?
 - Putnam's Twinearth Example
 - "Beliefs just ain't in the head"



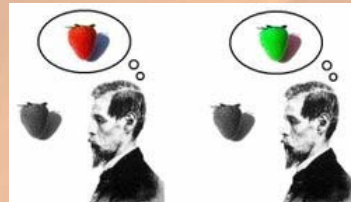
Earth: "Water" refers to H₂O



Twinearth: "Water" refers to XYZ

Problems with Qualitative States

- Inverted spectrum argument

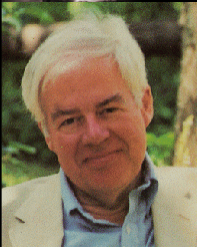


- Absent qualia argument

Eliminative Materialism

- Wilfred Sellars: our accounts of minds as populated by beliefs, desires, etc., constitute theories, not reports
 - The Myth of Jones
- Theories might always turn out to be wrong!

Pioneers in Eliminativism



- Theories often get replaced
 - Often the vocabularies of the old and new theory are incommensurable (Paul Feyerabend)
 - When theories are replaced by those whose vocabulary is incommensurable, the entities referred to in the old theory are abandoned
 - The view of the mind as mirroring nature is such a false theory (Richard Rorty)

Eliminativism San Diego Style

- The fate of belief is like the fate of phlogiston (element of fire)
 - Once chemists understood that oxygen, carbon, etc. were the basic elements, they concluded that phlogiston does not exist
 - Folk psychology represents an impoverished, unprogressive research program



Does Eliminativism Cost Anything?

- if commonsense psychology were to collapse, that would be, beyond comparison, the greatest intellectual catastrophe in the history of our species . . ." (Fodor, 1987, p. xii)

