

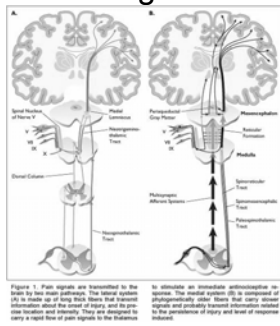
Stances on the Relation of Psychological States to the Brain

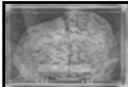
Basic Question: Just what are mental/psychological state?

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

Identity Claim: 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 simply is to have one's C-fibers firing**





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



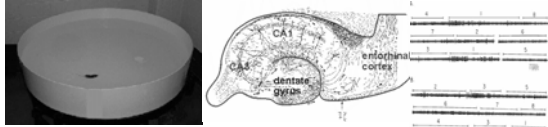
- Place was an identity theorist only about sensations
 - With respect to intentional states he was a behaviorist
- J.J.C. Smart (also David Armstrong): generalized to intentional states
- “Consider an experience of pain, or of seeing something, or of having a mental image. The identity theory of mind 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
 - “The winner of the lottery” and “your best friend” may both refer to the same person, but they don't mean the same thing
- Smart's strategy: topic neutral translations—describe the state in neutral terms and claim it is both the mental and brain state.

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
- Identity claim: CA3 place cells are Tolman’s mental maps



Possibly Fatal Objection: Multiple Realizability

- Too many brain serve as the same mental states, so you cannot identify a mental states with just one of them
- Consider the diversity of things that count as money
 - Strings of wampum
 - A signed check
 - A French 100 franc note
 - A US silver dollar
 - A wire transfer by computer
 - Bits in a computer
 - Etc.
- Supposed conclusion: types of mental states are identical to types brain states (even if each instance is a brain state)





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

David Lewis' Strategy: Stories with Unspecified Role Fillers

- 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 who X, Y, and Z are, we can say that they realize or play the roles in the story
- Generalize to mental states

Analytic Functionalism

- 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
 - $\exists x \exists y \exists z \exists w (x \text{ tends to be caused by bodily injury} \ \& \ x \text{ tends to produce states } y, z, \text{ and } w \ \& \ x \text{ tends to produce wincing or moaning})$
- Note that we have described the internal economy without specifying the role fillers
 - Different items could fill the roles



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 write 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.

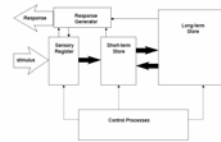
Mental States in the Chinese Nation



- “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 identified in current theories
 - Psychological explanations 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 Again: Functionalism Either 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
 - Only applies to organisms with our sense organs
- “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.*”

More Problems for Functionalism: 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”



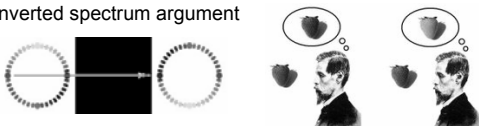
Earth: “Water” refers to H₂O



Twinearth: “Water” refers to XYX

More Problems for Functionalism: 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: imagine a group of humanoids who had developed the ability to use language to refer to things in the world and to their behavior. Along comes Jones, who constructs a *theory* that explains behaviors in terms of beliefs and desires.
 - People even learn to characterize themselves in these terms
 - But they are still theorizing, not reporting
- 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
 - Neuroscience offers the promise of giving us better accounts of why we do what we do



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)