Third Discussion Class

Discussion Question

How should one go about reducing mental illness to brain activity?

- One shouldn't—it is a psychological phenomenon, not a brain phenomenon
- One should follow the ruthless reductionist—find the chemicals that are altered and figure out how to restore them
- One should try to identify the brain networks that figure in ordinary behavior and how they are transformed in mental illness
- Other

Discussion Question

Why should't we settle for ruthless reductions?

- We should. Once we know what caused a phenomenon, we understand it and can predict it.
- We shouldn't. Even in Silva's study, we don't know that what altered CREB is what produced the memory effects of social isolation.
- Maybe we shouldn't settle for it, but it is a good way to get started. We can do further studies to show that CREB is what is responsible for the effects of social isolation.

If one were to be able to predict every instance of human behavior in terms of equations relating variables (including one's describing activities in the brain), why would one want to include representations?

- There is no reason to—you already have a much better explanation of the behavior
- Thinking in terms of representations is a useful crutch for researchers, but ultimately they can be eliminated from the completed account
- There is no way one could predict human behaviors without identifying representations—the way they are processed determines how people behave
- Even if we could predict the behavior, we would not understand it—that requires understanding how an individual represents and so relates to the world

Discussion Question

A ruthless reductionist has provided compelling evidence of a causal relation between a molecular process and a cognitive effect. But no one has figured out the mechanism. Would that be disturbing?

- No. We know the molecular cause—that is all we need
- Yes. Without knowing the mechanism we don't understand how the identified cause generates the phenomenon
- Maybe. In some contexts, without knowing the mechanism we won't be satisfied just knowing that we can produce the phenomenon molecularly
- A ruthless reductionist allowing shows one statistically significant effect. That effect may be small and unimportant with respect to the phenomenon

Discussion Question

What is the relation between a mechanism (take as example the mechanism of LTP) and a law (take as an example f=ma)

- Laws are highly general, and mechanisms employ very specific instantiations (initial and boundary conditions)
- Laws are represented in language or mathematics, mechanisms consist of concrete things
- One can describe any mechanism by generating a law that characterizes the operation of the mechanism
- One can derive consequences from laws, but one imagines or simulates the operation of a mechanism to determine what it does

Discussion Question

Are there ever times it is more useful to work at a higher level even if a researcher could identify and study yet lower-level processes?

- No, studying lower-level processes will always provide more insights
- Yes, when multiple lower-level processes all have the same effect because they affect the same higher-level mechanism
- Yes, when it is possible to satisfy one's explanatory interests in terms of high-level processes there is no gain to going lower
- Other

Discussion Question

How can ruthless reduction account for neural plasticity?

- No. All it does is find a cause for an effect
- Yes. One can identify what lower-level factor makes the system plastic