

## **The rational predictive brain? Epistemology of Predictive Processing**

On a traditional philosophical view, perception serves as an ultimate source of justification for beliefs. Our beliefs and scientific theories are only justified if they stand up to scrutiny in front of the tribunal of perceptual experience. I *know* that, right now, I am sitting before a word editor because I *see* a computer screen in front of me with an office program running. I *know* that diamond is harder than steel because of testimony of other people, who in turn owe their justification for the belief in question to *observations* they made.

This traditional view seems intuitive enough. And yet it faces serious problems, to the point where many take the traditional view to be naïve and indefensible. The critics point, for example, to the fact that perceptual experience is not “pristine” enough to play the role of an ultimate source of justification. Perceiving, it is said, requires and presupposes beliefs. The same physical stimulus can produce perceptual experiences with different contents in two perceivers, if the perceivers differ sufficiently in their background beliefs and concepts (one can think of the famous duckrabbit as a possible example). It would seem mistaken to point to perceptual experience as an arbiter in such case. There is something circular about perceptual justification of beliefs, in that justifications of this kind presuppose that which is to be justified. The tribunal of experience is not impartial.

Epistemological problems like this one are often distinguished from scientific problems of cognition and perception. It is sometimes said that while philosophers focus on *reasons* for our beliefs, cognitive scientists uncover their *causes* (which may have nothing to do with justification).

The central assumption of the present project is that epistemology and cognitive science are not autonomous at all. This is evident in Predictive Processing (PP) theory of perception that has recently gained considerable popularity among cognitive scientists. In PP, the reason/cause distinction seems to collapse.

On the PP view, the brain constructs an internal model of the world which acts as a sort of virtual reality generator (to use Andy Clark’s analogy). The model’s job is, fundamentally, to predict the future. It creates a cascade of virtual sensory signals, in a way that is supposed to minimize the discrepancy between the predicted and actual sensory signals. Perception, according to PP, is prediction of ongoing sensory stimulation. The key observation here is that if PP is true, then the brain can be described as system that *infers* worldly states of affairs, given the traces that those states leave at the sensory periphery of the organism. In this sense, the brain appears to be a system that exhibits a kind of rationality.

In my research, I plan to systematically investigate the epistemological assumptions and consequences of PP. Five questions will be addressed. Do sensory states, on the PP view, act as an impartial tribunal for the brain’s perceptual representations of the world? Does perceptual justification rest on literal unconscious inference, and if so, what is inference in this sense, exactly? Does it make any scientific sense to say that the external world is hidden from the brain behind a ‘veil of perception’? Does viewing the brain as a rational system give leverage to the claim it works by constructing internal representations of the world? Does PP provide us with reasons to believe that basic categories of the brain’s model of the world (like common-sense physical objects, causality or the self) correspond to something real ‘out there’?