

The Cognitive Neurosciences IV

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77 Ned Block : Comparing the Major Theories of Consciousness

Philosopher Ned Block compares the three frameworks for theories of consciousness that "are taken most seriously by neuroscientists":

* Consciousness is a BIOLOGICAL state of the brain

[The idea] that consciousness is some sort of biological state derives from Democritus (Kirk, Raven, & Schofield, 1983) and Hobbes (1989), but was put in modern form in the 1950s by Place (1956), Smart (1959), and Feigl (1958). (See also Block, 1978; Crane, 2000; Lamme, 2003.)

* Global workspace perspective

The global workspace account of consciousness was first suggested by Bernard Baars (1988) and has been developed in a more neural direction by Stanislas Dehaene, Jean-Pierre Changeux, and their colleagues (Dehaene, Changeux, Nacchache, Sackur, & Sergent, 2006). The account presupposes a neural network approach in which there is competition among neural coalitions involving both frontal and sensory areas (Koch, 2004), the winning coalitions being conscious.

* Higher order thought (HOT) [explains consciousness in terms of of higher order states].

experience is phenomenally conscious only in virtue of another state that is about the experience (Armstrong, 1978; Lycan, 1996a; Byrne, 1997; Carruthers, 2000; Byrne, 2001b; Rosenthal, 2005a). This perspective comes in many varieties, depending on, among other things, whether the monitoring state is a thought or a perception. The version to be discussed here says that the higher order state is a thought ("higher order thought" is abbreviated as HOT) and that a conscious experience of red consists in a representation of red in the visual system accompanied by a thought in the same subject to the effect that the subject is having the experience of red.

The comparison features the "explanatory gap" (Nagel, 1974; Levine, 1983), the fact that we have no idea why the neural basis of an experience is the neural basis of that experience rather than another experience or no experience at all.

It is argued that the biological framework handles the explanatory gap better than do the global workspace or higher order views. The article does

not discuss quantum theories or “panpsychist” accounts according to which consciousness is a feature of the smallest particles of inorganic matter (Chalmers, 1996; Rosenberg, 2004). Nor does it discuss the “representationist” proposals (Tye, 2000; Byrne, 2001a) that are popular among philosophers but not neuroscientists.

The explanatory gap

Phenomenal consciousness is “what it is like” to have an experience (Nagel, 1974). Any discussion of the physical basis of phenomenal consciousness (henceforth just consciousness) has to acknowledge the “explanatory gap” (Nagel, 1974; Levine, 1983): nothing that we now know, indeed nothing that we have been able to hypothesize or even fantasize, gives us an understanding of why the neural basis of the experience of green that I now have when I look at my screen saver is the neural basis of that experience as opposed to another experience or no experience at all.

Nagel puts the point in terms of the distinction between subjectivity and objectivity: the experience of green is a subjective state, but brain states are objective, and we do not understand how a subjective state could be an objective state or even how a subjective state could be based in an objective state. The problem of closing the explanatory gap (the “Hard Problem” as Chalmers, 1996, calls it) has four important aspects:

- (1) we do not see a hint of a solution;
- (2) we have no good argument that there is no solution that another kind of being could grasp or that we may be able to grasp at a later date (but see McGinn, 1991); so
- (3) the explanatory gap is not intrinsic to consciousness; and
- (4) most importantly for current purposes, recognizing the first three points requires no special theory of consciousness.

All scientifically oriented accounts should agree that consciousness is in some sense based in the brain; once this fact is accepted, the problem arises of why the brain basis of this experience is the basis of this one rather than another one or none, and it becomes obvious that nothing now known gives a hint of an explanation.

The explanatory gap was first brought to the attention of scientists through the work of Nagel (1974) and Crick and Koch (Crick, 1994; Crick & Koch, 1998). Many would argue that the candid recognition of what we do not understand played an important role in fueling the incredible wave of research that still engulfs us.

There is a fine line between acknowledging the explanatory gap and surrendering to dualism.

The explanatory gap and dualism

Dualism is the view that there is some aspect of the mind that is not physical (Chalmers, 1996). It comes in many varieties, but the issues to be discussed do not depend on any specific variety.

Let us start with a historical analogy (Nagel, 1974). A pre-Socratic philosopher would have no way of understanding how heat could be a kind of motion or of how light could be a kind of vibration. Why? Because the pre-Socratic philosopher did not have the appropriate concepts of motion—namely, the concept of kinetic energy and its role—or of vibration—namely, the concepts involved in the wave theory of light—that would allow an understanding of how such different concepts could pick out

the same phenomenon.

What is a concept? A concept is a mental representation usable in thought. We often have more than one concept of the same thing. The concept light and the concept electromagnetic radiation of 400–700 nm pick out the same phenomenon. What the pre-Socratic philosopher lacks is a concept of light and an appropriate concept of vibration (one that requires a whole theory). What is missing for the pre-Socratic is not just the absence of a theoretical definition but a lack of understanding of what things are grouped together from a scientific point of view. We now realize that ripples in a pond, sound, and light are all phenomena of the same kind: waves. And we now realize that burning, rusting, and metabolizing are all cases of oxidation (Churchland, 2002), but the pre-Socratics, given their framework in which the basic categories were fire, earth, air, and water, would have had no way to grasp these facts. One upshot is that if superscientists of the future were to tell us what consciousness is, we probably would not have the conceptual machinery to understand, just as the pre-Socratic would not have the conceptual machinery to understand that heat is a kind of motion or that light is a kind of vibration.

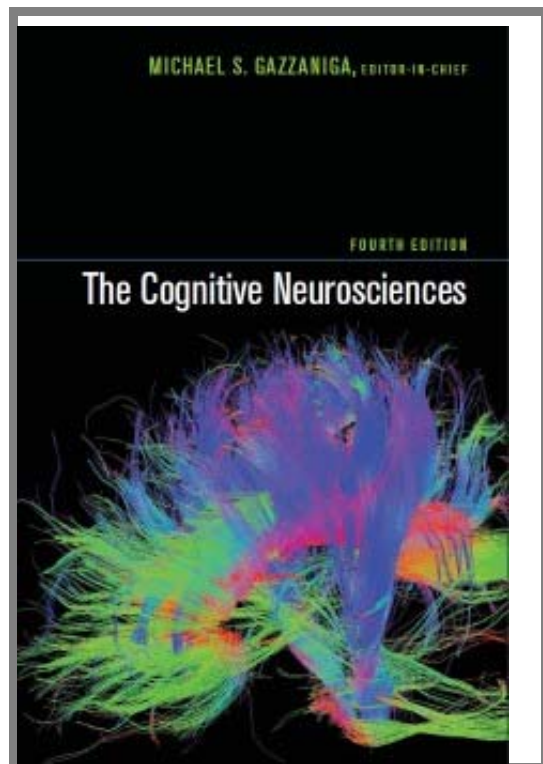
Armed with this idea, we can see how to steer between the explanatory gap and dualism. What we lack is an objective neuroscientific concept that would allow us to see how it could pick out the same phenomenon as our subjective concept of the experience of green. And we can expect that we do not even have the right subjective concept of the experience of green, since we are not sure what subjective phenomena truly should be grouped together. The resolution of the apparent conflict between the explanatory gap and physicalism is that subjectivity and objectivity can be seen as properties of concepts rather than properties of the states that the concepts are concepts of. This idea, that we can see arguments that apparently indicate ontological dualism—that is, a dualism of objects or substances or properties—as really an argument for conceptual dualism, stems from Nagel (1974) and Loar (1990/1997) and is sometimes called New Wave physicalism (see Horgan & Tienson, 2001).

Another way of seeing the point is to consider Jackson's (1982) famous thought experiment concerning Mary, a neuroscientist of the distant future who knows everything there is to know about the scientific basis of color experience, but has grown up in a black-and-white environment. When she sees red for the first time, she learns what it is like to see red, despite already knowing all the scientific facts about seeing red. Does this show that the fact of what it is like to see red is not a scientific fact? No, because we can think of what Mary learns in terms of her acquiring a subjective concept of a state that she already had an objective concept of. Imagine someone who already knows that Lake Michigan is filled with H₂O, but learns something new: that Lake Michigan is filled with water. What this person learns is not a new fact but a new piece of knowledge, involving a new concept, of a fact the person already knew. Similarly, Mary acquires new knowledge, but that new knowledge does not go beyond the scientific facts that she already knew about, and so does not support any kind of dualism. (This line of thought is debated in Block, 2006; White, 2006.)

Importantly, this line of reasoning does not do away with the explanatory gap but rather reconceives it as a failure to understand how a subjective and an objective concept can pick out the same thing.

These points about different concepts of the same thing have sometimes been used to try to dissolve the explanatory gap (Papineau, 2002). The idea is that the false appearance of an explanatory gap arises from the gap between a subjective concept of a phenomenally conscious state and an objective concept of the same state. But note: I can think the thought that the color I am now experiencing as I look at an orange (invoking a subjective concept of orange) is identical to the color between red and yellow (invoking an objective concept of orange). But this use of the two kinds of concepts engenders no explanatory gap.

[goes on to relate the explanatory gap to the three theories being considered.]



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