

CHAPTER THREE

MENTAL CAUSATION, COGNITIVE NEUROSCIENCE, AND MULTIPLE REALIZATION

We next trace implications of the detailed example from Chapter Two for two prominent issues in current philosophy of mind and one increasingly prominent area of current neuroscience. Reduction is central to all three. The first philosophical issue—the problem of mental causation—questions whether or how mental properties can exert causal effects on behavior. The second philosophical issue—the multiple realization argument—is widely thought to be one of two decisive arguments against the reduction of mind to brain or psychology to neuroscience.¹ We saw in the previous chapter that “reductionism” is alive and well in current cellular and molecular neuroscience. Now we’ll see whether that reduction-in-practice and its results carry helpful implications for issues that have attracted serious philosophical attention. The scientific issue concerns the status of cognitive neuroscience vis-à-vis the discipline’s cellular and molecular core. How do studies involving, e.g., neuron population dynamics or specific activations across neural regions, relate to ones exemplified by our detailed example from the previous chapter?

1 THE PROBLEM OF MENTAL CAUSATION

“Mental causation” is an ideal problem for modern-day philosophers of mind and cognitive science. That our mental states are causally efficacious for our behavior is central to our shared self-conception. Ruth answered “B” to question #3 on the personality assessment *because* she *believes* that she is kindly. Alonzo signaled the waiter *because* he *wants* another martini. The simplest reading of these common assertions is that the mental properties of our cognitive states—e.g., the contents of Ruth’s belief and Alonzo’s desire—were part of the nexus that generated the action (including the limb movements). Had Ruth’s or Alonzo’s causally efficacious belief or desire contents been different, different behaviors would have resulted; perhaps arm movements with the pencil that result in Ruth’s drawing a circle around

answer “C,” and ones that result in Alonzo’s brining the martini glass up to his open mouth. Yet this common feature of our self-conception raises delicious puzzles. For example, are mental contents *in their capacity as* (or “*qua*”) mental contents (and not, say, in their capacity as the brain states that realize them) causally efficacious, or are content properties like the color of the benzodiazepine tablet with regard to the pill’s tranquilizing effects? The soprano hits a high C note while uttering the English word “Shatter!” The glass shatters. Clearly the semantic properties of her utterance had no causal effects on the glass’s shattering. That was entirely an effect of the event’s acoustic properties on the microstructure of the glass’s molecules. Had the event’s semantic properties differed while the acoustic properties remained constant, the glass still would have shattered. Might mental properties be like that: causally *inefficacious*, with all the causal work on behavior being done by the event’s physical (e.g., neuronal) properties? That suggestion is contrary to our self-conception of being the possessors of causally efficacious mental states. But *how* are mental properties different in a way that permits us to locate them justifiably in the causal fray? A little reflection on this puzzle and philosophers are off and running. The mental causation literature contains theories of “supervenient causation,” “causal-explanatory exclusion,” “downward causation,” “*ceteris paribus* laws,” “causal compatibilism,” and other philosophical exotica. And from such humble origins!²

To my lights, Terence Horgan (2001) has recently provided the best formulation of the metaphysical and epistemological intuitions driving both sides of the mental causation debate. He presents them as an *inconsistent quintet* of claims, each plausible individually but inconsistent when conjoined:³

1. Physics is causally closed. Each physical event is determined (to whatever extent it is determined) completely by purely physical events.
2. Mental properties are causal properties
3. Mental properties are not identical to physical causal properties, because the former are multiply realizable on the latter.⁴
4. Mental properties are real and instantiated in humans.
5. If physics is causally closed, then all causal properties are physical causal properties.

(By ‘physical property’ Horgan means the kind of property postulated in fundamental physics.) Any four of these intuitively plausible claims is consistent, but those four conjointly entail the falsity of the other. The “problem of mental causation” becomes which claim to reject. “Causal emergentists” deny claim 1, “epiphenomenalists” deny claim 2, “identity

physicalists" deny claim 3, "eliminativists" deny claim 4, and "causal compatibilists" deny claim 5. Each view "solves" the problem of mental causation, but at the expense of an intuitively plausible metaphysical or epistemological claim.⁵

Some physicalist philosophers—reductive physicalists, mind-brain identity theorists, "central state" materialists, "brain state theorists"—are initially attracted to Jaegwon Kim's "causal-explanatory exclusion" arguments (1993, 1996, 1998). Using Horgan's (2001) schema, Kim's arguments defend claim 5. Physicalists so moved will thus opt for rejecting either claim 3 or 4. Horgan (2001) gives an insightful presentation of Kim's reasoning. First, since philosophical orthodoxy insists at least that all mental causal properties "supervene upon" or "are realized by" physical causal properties, the ultimate causes of any mental property's becoming instantiated are themselves physical properties. In particular, they will be whichever physical properties cause that mental property's physical realizers to occur. Second, if mental properties are both causal properties and distinct from physical properties, then either

- A) some events depend causally (at least in part) on the prior occurrence of some mental property(ies),

or

- B) some events are causally overdetermined by individually sufficient physical and mental properties.

If (A), then the effect-states can't be physical or else the causal closure of physics is violated. There would then be physical events for which physical causes would not be sufficient. But the effect-states can't be mental, either, without violating the demand of physical supervenience or realization of mental properties. There would then be mental properties for which physics does not provide a complete supervenient base or realization. So (A) is incoherent (for a "minimal" physicalist). Given the causal closure of physics, mental properties can only be causal properties via the physical properties that realize them. But that rules out (B) since there couldn't then be causal overdetermination in any real sense. There would then be no independent causal route leading from mental cause to effect. Kim's upshot is that the physical properties "do all the causal work." Physical causal explanations of behavior "screen off" or "exclude" mental causal explanations.

Unfortunately for physicalists, and despite its seeming reasonableness, Kim's causal-explanatory exclusion argument has been attacked relentlessly by the philosophy of mind orthodoxy. Tyler Burge (1993) and



<http://www.springer.com/978-1-4020-7394-6>

Philosophy and Neuroscience
A Ruthlessly Reductive Account

Bickle, J.

2003, XVI, 235 p., Hardcover

ISBN: 978-1-4020-7394-6