

Autonomous psychology and the moderate neuron doctrine

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Abstract *Two notions of autonomy are distinguished. The respective denials that psychology is autonomous from neurobiology are neuron doctrines, moderate and radical. According to the moderate neuron doctrine, inter-disciplinary interaction need not aim at reduction. It is proposed that it is more plausible that there is slippage from the moderate to the radical neuron doctrine than that there is confusion between the radical neuron doctrine and the trivial version.*

What does it mean to say that the discipline of psychology is autonomous? Jerry Fodor (1998, p. 9) says that 'a law or theory that figures in bona fide empirical explanations but that is not reducible to a law or theory of physics is ipso facto autonomous'. *F-autonomy* is irreducibility. The Churchlands mean more than this by autonomy; for them, to regard a discipline as autonomous is to 'try to conduct the affairs of [that discipline] independently of the affairs of its immediate neighbours, both upward and downward in level' (Churchland and Churchland, 1996, p. 220). We take it that this is not just a matter of pragmatic choices about conducting research with limited resources; rather, a discipline is autonomous when it is not governed or constrained by other disciplines. In this sense, *C-autonomy* is independence. On the face of it, the two doctrines are distinct and *C-autonomy* entails *F-autonomy*.

Consider now the denial of autonomy in each case. Officially, the denial of *F-autonomy* about psychology is the claim that if there are laws or theories of a genuine empirical science of psychology then they are reducible to laws or theories of physics. We shall suppose that, en route to physics, the laws or theories of psychology would be reduced to laws or theories of neurobiology. This is the aspect of the denial of *F-autonomy* that we shall focus on: the denial of the autonomy of psychology from neurobiology. The denial of *C-autonomy* about psychology is the claim that psychological theories are constrained from above and below: 'theories at different levels quite properly function as ongoing checks, balances, and inspirations for theories at adjacent levels, both up and down' (1996, p. 221). In particular, the

denial of the C-autonomy of psychology from neurobiology says that discoveries in neurobiology may put empirical pressure on psychological theories.

These two denials are, we may say, neuron doctrines, though they do not equate precisely with the radical and trivial neuron doctrines that Gold and Stoljar distinguish. The possibility of reduction is certainly part of the radical neuron doctrine. But it is also part of the doctrine that 'the psychological sciences must be relegated to a second-rate, or place-holder, status' (sec. 1, par. 4), and that psychological theories will be discarded in favour of neurobiological ones. And as the Churchlands argue persuasively (Churchland and Churchland, 1990), this claim about actual scientific practice does not follow from the claim about reducibility. So, the denial of the F-autonomy of psychology from neurobiology is a substantial part of, but not the whole of, the radical neuron doctrine.

The denial of C-autonomy is clearly not radical, but it is not trivial either. The trivial neuron doctrine states only that a successful theory of mind will draw on some or all of the components of cognitive neuroscience; it might draw only on neurobiology or only on psychology or on some combination. So the trivial neuron doctrine would be supported by someone who maintained that neurobiology would play no part at all in a successful theory of the mind. As neuron doctrines go, this is trivial indeed.

We propose to distinguish a weak and a moderate neuron doctrine. The weak neuron doctrine goes beyond the trivial by saying that neurobiology will be one of the disciplines that together furnish a successful theory of mind. But this is still consistent with C-autonomy, for the weak neuron doctrine allows a picture of cognitive neuroscience as a project in which different aspects of behaviour receive explanations from different and independent component disciplines. The moderate neuron doctrine takes the further step of saying that cognitive neuroscience is an inter-disciplinary, and not just a multi-disciplinary, project. It denies C-autonomy and allows that results in neurobiology could count against a putative cognitive psychological explanation of some aspect of behaviour.

Just as the two notions of autonomy are, on the face of it, distinct, so also this moderate neuron doctrine is different from the radical neuron doctrine. The moderate neuron doctrine seems to capture something of the idea that cognitive psychological and neurobiological theories co-evolve (P.S. Churchland, 1986). But Churchland links the idea of co-evolution with something else (1986, p. 284; emphasis added):

[T]he discoveries and problems of each theory may suggest modifications, developments, and experiments for the other, and *thus the two evolve towards a reductive consummation*.

As against this, we do not regard 'reductive consummation' as the inevitable result, or even as the desired endpoint, of co-evolution or inter-disciplinary interaction. Interaction without reduction seems to be an allowable, and even attractive, option.

Amongst those who would accept the moderate neuron doctrine but without any commitment to the reducibility of cognitive psychological theories, laws or categories are those theorists who claim that, within cognitive neuroscience, the functional (i.e. cognitive psychological) level has priority over the neurobiological level. Part of the priority idea is this (Coltheart and Langdon, 1998, p.150):

[I]t can be very hard to understand what a system is actually doing if one's only information about it is a description at the physical-instantiation level.

(Cf. P.S. Churchland, 1986, p.373: '[N]euroscience needs psychology because it needs to know what the system does'.) Another part is that neurobiological theories may be 'conceptually dependent' on cognitive psychological theories (Coltheart and Langdon, 1998, p. 149). And in practical terms, the development of a cognitive psychological theory may abstract from debates within neurobiology even while it is acknowledged that the theory would have to be rejected if there were no neurobiological story consistent with it. (See Young, 1998, p.44, for this point applied to a dual-route theory of face processing.)

Perhaps, defensible claims about the theoretical and practical priority of the cognitive level sometimes tip over into something more extreme and implausible; namely, the claim that neurobiology is strictly irrelevant to cognitive psychological theorising. But even the strong priority claims of Mehler, Morton and Jusczyk (1984) are consistent with the in principle answerability of cognitive psychological theory to neurobiological data (see also Shallice, 1988, p.214). There is certainly nothing inevitable about a shift from the priority idea to an assertion of strict disciplinary independence. On the contrary, the priority idea seems to be consistent even with the reducibility of cognitive psychology to neurobiology.

Like Gold and Stoljar, we are not convinced of the truth of the radical neuron doctrine in either its theoretical ('reduce') or practical ('discard') aspect. We do, however, think that the moderate neuron doctrine is plausible. Cognitive psychology is constrained by neurobiology because neurobiology tells us about the mechanisms in virtue of which cognitive

psychological generalisations are true (Fodor, 1989). In practice this is constraint without government; challenges and insights flow in both directions.

We can hypothesise that some arguments for the radical neuron doctrine involve a degree of slippage from interaction to reduction. But Gold and Stoljar's diagnosis of where the arguments are apt to go wrong is different. Their hypothesis, which figures especially in their discussion of the argument from naturalism and materialism, is that advocates of the radical neuron doctrine confuse it with the trivial version. Given that the trivial neuron doctrine allows that neurobiology has no part to play in a successful theory of the mind while the radical doctrine asserts that only neurobiology has any part to play, this is not an easy confusion to make. [1245 words]

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