

REVIEW

P.M. Churchland, *Matter and Consciousness*. Revised Edition, Cambridge, Mass.: MIT Press, 1988.

Philosophy of mind is a lively issue these days. The abandonment of behaviorism, together with the use of computational models in psychology and linguistics and the growth of and philosophical interest in neuroscience has given rise to new approaches to old philosophical problems.

In 'Matter and Consciousness', one of the leading figures in the debate, Paul M. Churchland sketches the state of the art. In this book he does not only overview both the scientific developments and the main philosophical theories often inspired by them, but he also outlines his own position on the substantial issues.

The interplay between philosophy of mind and science is reflected throughout the book. Though it can be said to consist of two parts (chapters 1-4 versus chapters 5-7 or 8), the first part philosophical and the second part, scientific, in fact the first part is filled with scientific evidence to decide philosophical problems. Likewise, in the second part scientific theories are confronted with philosophical questions.

After an introductory chapter (ch. 2, 'The Ontological Problem'), the problem of the meaning(s) of the terms of our common sense psychological vocabulary (ch. 3, 'The Semantical Problem'), and the related problems of our knowledge of other minds and of our own minds (ch. 4, 'The Epistemological Problem') are treated. Next, both artificial intelligence (ch. 6) and neuroscience (ch. 7) are overviewed. The last chapter ('Expanding our Perspective') is announced as 'overtly speculative' (p. 9). It concerns the distribution of intelligence in the universe and the ways in which advances in neuroscience might have an impact on introspection.

In the spirit of Quine's plea for a naturalized epistemology, it is one of Churchland's most central convictions that philosophical theories should be judged by the same standards as scientific theories. The main criteria Churchland appeals to, are:

- (1) coherence (of the philosophical doctrine) with well established scientific theories
- (2) explanatory and predictive value
- (3) generality

Involving ontological issues, Churchland rejects dualism by invoking criteria (1) and (2). Dualism can't satisfy the first criterion because it is not coherent with evolutionary biology, and it fails by the second criterion because it cannot explain

how physical causes (drugs, lesia) can affect mental processes. This leads Churchland to materialism. Yet he rejects the once popular 'identity theory', because it lacks generality (criterion 3). By identifying mental states one-to-one with brain states, it overlooks the possibility that non-human or non-organic entities could exhibit mentality. This is of course the classical functionalist argument against the identity theory. Functionalism itself acquires the right sort of generality by type-identifying mental states not physically but functionally. This means that a mental state is seen as belonging to a certain type of mental states because of its functional role, i.e. its relations to environmental stimuli, other mental states and overt behavior. No specification of the nature of the matter in which the state is 'realized' is needed. Thus far, Churchland agrees. He does not, however, fully embrace functionalism. Strange enough, Churchland thinks functionalism is necessarily committed to realism with respect to propositional attitudes and the other posits of folk psychology. Because Churchland expects that it is very unlikely that the categories and laws of folk psychology will match those of a future neuroscientific psychology, folk psychology and also functionalism, fail by the first criterion. So Churchland shows himself an adept of 'eliminative materialism', the theory that says that folk psychology will disappear in the course of the development of neuroscience.

It must be remarked that Churchland has a rather narrow view of functionalism, by seeing it tied up so closely with folk psychology. There are philosophers, like D.C. Dennett, who are very sceptical about the fate of folk psychology, but nevertheless defend functionalism. Churchland indeed does the same, and his 'eliminative materialism' could as well have been named 'eliminative functionalism'.

This is seen very clearly in his treatment of the semantics of mental (folk psychological) terms. According to Churchland, what is essential to the meaning of mental concepts, is their functional role, i.e. the relations they entertain with terms referring to environment and behavior, and with other mental terms. Churchland argues that the meanings of our ordinary mental concepts are fixed by the laws of folk psychology, which stipulate such causal/functional relations. He thinks this theory of meaning holds both for intentional concepts (concepts referring to states or processes that have a propositional content, e.g. belief states) and for qualitative states (without propositional content, e.g. pain states). Thus pain, for example, is the state that is caused by bodily damage, that is hated by people, that causes distress, wincing, moaning, and avoidance behavior (p.

59).

Churchland argues that this semantical theory is supported by the fact that it enables us to explain (remember criterion (1)) how mental concepts have the same meaning for different people. Moreover, he claims that it can be used to solve an old epistemological puzzle, the famous 'other minds problem'. It explains how people attach the same meaning to mental terms because it says that knowing the meaning of a mental term involves nothing more than the mastery of a theory. This theory, folk psychology, can be understood by different people because it is partly grounded in observable phenomena. Terms referring to mental states and processes play the role of theoretical terms. They are not observational terms, yet they are linked to environmental stimuli and overt behavior by the laws of folk psychology that implicitly define them. Thus the semantical theory is, according to Churchland, superior to theories that tell that the meanings of mental terms consist in the private sensations or feelings they allegedly refer to. Since one can never know whether one's private sensation of pain is the same as another one's, this theory (which Churchland calls 'inner ostensionism') leaves unexplained how people can engage in mutually intelligible conversation about their mental lives.

Churchland claims that his semantical theory can also solve the other minds problem. We know that our fellow people are conscious, have beliefs and pains, because the laws of folk psychology truthfully describe, explain and predict their behavior. No further probing into their private experiences is needed, for instantiating a functional theory of pain (for example) is by definition to be - or to be able to be - in pain.

Sceptics about other minds surely won't be satisfied with the use Churchland makes of his functionalist semantics to 'solve' their problem. Churchland's neglect of the experiential, qualitative and private aspects of mental states or processes, and his stress on causal/functional role will surely be interpreted as begging the question. For they will protest that the other minds problem does not concern the functional organization of candidate other minds, but precisely their qualia. What is at issue, they will say, is not whether we have evidence that in other people pain plays the same causal/functional role, but whether we have any evidence that whatever plays the role of pain in them feels the same way to them as it feels to us.

In some passages of the book, Churchland comes quite close to what might be seen as a meeting of the sceptic's objection, by identifying qualia with the material medium wherein the functional organization is instantiated. So, on page 40, he proposes to

identify qualia in humans with spiking frequencies in neural pathways, while in an electromechanical robot qualia might turn out to be identical with spikes in copper pathways.

Whatever one might think of this example, I believe it may point a way out of the problem of evidence for analogous qualia in other minds. For indeed, for a materialist (like Churchland), qualia must be properties of brains. Since it is known that people have more or less similarly structured brains, this might be evidence enough that they have similarly feeling qualia.

This move, however, has to abandon the functionalist's favourite theme of non-chauvinism, by restricting full mentality to human beings. Another way to reply to the sceptic is to argue that having qualia is a necessary by-product of instantiating a functional organization as complex as that of human beings. Churchland goes some way along this line when he writes: "our functional states (or rather their physical realization) do indeed have an intrinsic nature on which an introspective identification of these states depends" (p.39), and "such intrinsic qualia merely serve as salient features that permit the quick introspective identification of sensations" (p.40) and "sensory qualia are therefore an inevitable concomitant of any system with the kind of functional organization at issue (one that is isomorphic with us -E.M.)" (p.41). It is obvious, however, that the last claim is in no way implied by the former two. Functional states need not to have a qualitative nature in order to be identified (in functional systems). Discriminability seems to be guaranteed by any (physical) difference that the system will react differently to; there is no need for qualia. Thus, this proposal of Churchland is bound not to satisfy the sceptic.

In some sense, one can reproach Churchland's theory, and functionalism in general, that it fails by criterion (2): it does not explain why some mental states have qualitative aspects, and how it comes that, in the course of evolution, they have appeared - for functionalism is compatible with the absence of qualia.

Churchland's description of qualia as 'salient features that permit the quick introspective identification of sensations', fits in with his general view of self-consciousness and introspection as 'a continuous apprehension of an inner reality, the reality of one's mental states and activity' (p. 73). Thus, he thinks that introspection is very similar to ordinary perception. The only difference lies in the object: whereas outer perception is concerned with external objects, introspective consciousness is concerned with one's brain states. By adopting this point of view, Churchland comes to reject the thesis that introspective judgments are incorrigible. Instead, he argues, they are theory-

laden, and the replacement of folk psychology by neuroscience might lead to a refinement of our introspective skills. I think Churchland's theories of introspective consciousness are vulnerable to Rylean objections invoking infinite regresses. For qualia are normally considered to be the inner aspects of ordinary outer perception, and so it seems fruitless to use the model of outer perception to describe qualia themselves.

As said, besides this mainly philosophical bulk, the book contains introductory chapters on both artificial intelligence and neuroscience. They are preceded by a chapter on 'The Methodological Problem' wherein different methodological choices these sciences make are discussed (it also contains a short discussion of phenomenology and methodological behaviorism). Chapter 6 (on artificial intelligence) and chapter 7 (on neuroscience) serve their purposes as short introductions. They surely suggest the flavour of both areas and stimulate further reading. The picture that emerges, is that A.I. sees the mind more or less as a patchwork of independent modules, while neuroscience has a more unified view of the mind. This issues from neuroscience's unified account of what representations are, namely vector codings in multidimensional spaces. As has been remarked earlier, Churchland always tries to point out the philosophical implications of the scientific theories he treats. So, the section on cognitive neurobiology contains a sketch of how color-qualia might be stored as vectors in a 'color quality space', for which evidence exists that it is physically realized in the brain (p.148). An important feature of this storing is that our subjective closeness relations between colors (e.g. that orange is between red and yellow) are mirrored in this physical realization. As Churchland notes, this can be interpreted as evidence for a non-eliminativist reductionist ontological theory.

The last chapter 'Expanding our Perspective' contains, besides a discussion on the probability of extra-terrestrial intelligence, a stimulating comparison of the concepts of life and of intelligence.

Whether or not she or he will be convinced by all of Churchland's arguments, any reader of this revised edition of 'Matter and Consciousness' will have to admit that the book is a highly informed and very well written introduction both to contemporary philosophy of mind and to Churchland's own contribution to it.

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