

# Introduction: Folk psychology and scientific psychology

*John D. Greenwood*

This volume is about the future of folk psychology. It concerns the likely intellectual fate of our everyday conceptual scheme for accounting for our own and others' actions in terms of beliefs, desires, emotions, and motives, and developed scientific psychological forms of explanation that employ analogous references to contentful and causally efficacious psychological states.

## I

Despite the impression created by many recent critics of folk psychology, its serious treatment as a form of causal explanatory theory by philosophers and psychologists is a relatively new phenomenon. For many years, philosophy of mind had little to say about intentional psychological states such as beliefs, desires, emotions, and motives. Through the 1950s and 1960s, the central debate concerned the mind-brain identity theory, but only rarely did the discussion focus on intentional psychological states. Most philosophers were almost exclusively concerned with the question of whether the qualitative aspects of sensations such as pain or sense impressions could be reduced to brain states (Smart 1959). Although the neo-Wittgensteinians generated famous debates about our knowledge of other minds and the possibility of a logically private language, and developed detailed conceptual analyses of psychological concepts such as emotion (Kenny 1963) and motivation (Peters 1958), these did little to further our understanding of the causal-explanatory role of references to intentional psychological phenomena. Indeed, a central thesis of many neo-Wittgensteinian accounts was that folk-psychological references to intentional psychological states are not causal explanatory (Peters 1958; Louch 1966). According to such accounts, a folk-psychological explanation is a logically distinct kind of

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explanation, one that explicates the social meaning of human actions or renders them “intelligible” in the light of rules and reasons.

Philosophy of mind, as such, had little to say that would have interested the practicing psychologist. In any case, the practicing psychologist would not have been much interested, because for an equally long period psychologists themselves were not particularly concerned with intentional psychological states. For many years psychologists were committed to some form of behaviorism, either rejecting references to psychological states outright as “explanatory fictions” (Skinner 1953), or insisting on their strict operational definition in terms of observable environmental stimuli and behavioral responses (Kendler 1952). The logical consequence was the methodological exclusion of substantive cognitive theories referencing contentful and causally efficacious psychological states. The only philosophical analyses held to be relevant to scientific psychology were apparent philosophical justifications of some form of logical behaviorism (Ryle 1949), or philosophical critiques of the principles of behavioral conditioning theory (Taylor 1964). During this period there was little philosophical analysis that could be properly described as philosophy of psychology, insofar as such a discipline is regularly held to be centrally concerned with the theoretical psychological states postulated by psychologists. The reason is that during this period there was scarcely any first-order theoretical domain that could become the object of philosophical analysis.

Now there is such a domain, and with a vengeance. The reason is the ‘cognitive revolution’ in psychology, which began in the 1950s and has continued to grow at an exponential pace into the multidisciplinary enterprise that is contemporary ‘cognitive science’. On the metatheoretical level, many researchers became dissatisfied with the sterile and restrictive conception of theoretical psychological descriptions avowed by traditional empiricist and behaviorist accounts. Thus in a classic paper in the *Psychological Review*, MacCorquodale and Meehl (1948) distinguished between “intervening variables” that are wholly definable in terms of observable stimulus–response sequences and that serve a merely logically integrative function, and “hypothetical constructs” that are not wholly definable in terms of such sequences, and whose “surplus meaning” can be developed to generate novel empirical predictions (cf. Hempel 1985).

The fertility of such “open” theoretical constructs was demonstrated by the success of substantive theories of cognition based upon an “information-processing” perspective (Miller 1956; Broadbent 1958). A

powerful impetus for this development was the parallel development of the study of 'artificial intelligence' in computers, providing psychologists with a theoretical model of human cognition in terms of internally processed 'programs' (Newell, Shaw, & Simon 1958). The success of cognitive theories based upon a general information-processing approach, and the ability to simulate many cognitive achievements in computers, convinced many practitioners of both the utility of psychological theoretical constructs and the reality of the structures and processes putatively described by them: "The basic reason for studying the cognitive processes has become as clear as the reason for studying anything else: because they are there" (Neisser 1967, p. 12).

Of course, many psychologists remained hypercautious, given their traditional antipathy toward cognitive theories. Thus for example, Lachman, Lachman, and Butterfield, in their oft-cited introductory text in cognitive psychology, *Cognitive Psychology and Information Processing* (1979), spend about 500 pages describing in great detail the experimental evidence favoring specific theories of cognitive processing, and then rather lamely conclude that it is too early to tell whether such processes really exist. This hypercaution had much to do with traditional associations of cognitive theory and discredited forms of 'introspective psychology'. Many felt that cognitive psychology was bound to be unscientific because it must depend upon the introspection of psychological states and processes by experimental subjects. The substantial theoretical achievements of cognitive psychology, however, demonstrated that the link between cognitive theory and introspection was one of association only and not of methodological entailment, for the theoretical successes of cognitive psychology were achieved largely without reference to the accounts of introspecting subjects.<sup>1</sup>

Indeed it is arguably one of the theoretical achievements of cognitive psychology that it has demonstrated that experimental and lay subjects have rather poor introspective access to cognitive processes. Thus, for example, theorists such as Evans and Wason (1976) have developed theoretical models of logical reasoning that successfully predict normal errors as well as achievements, strongly suggesting that heterogeneous subject explanations are rationalizations of their errors rather than descriptions of the cognitive processes that generated them. Analogously, theorists such as Nisbett and Wilson (1977) and Nisbett and Ross (1980) have documented a whole range of experimental studies in cognitive and social psychology that strongly suggest that subjects have very poor introspective access to the distal stimuli and cognitive processes that

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influence their choices, and produce largely erroneous explanations of their behavior that are based not on introspection of cognitive processes but on socially learned “a priori causal theories.”

Contemporary philosophy of mind has moved in a similar direction, and in the process has very largely developed into philosophy of psychology. Philosophical interest has shifted from sensational phenomena such as pain and sense-data to intentional psychological phenomena such as beliefs and desires etc. Davidson’s (1963, 1967) seminal papers on the explanation of human action have led to a new consensus that folk-psychological explanations referencing ‘propositional attitudes’<sup>2</sup> are a species of causal explanations that may play an entirely legitimate role in a scientific psychology (whatever Davidson’s reservations about its prospects). Nowadays most philosophers treat intentional psychological phenomena as theoretical entities and endorse a realist (as opposed to an ‘instrumentalist’ or ‘fictionalist’) account of their descriptions, debating the acceptability of alternative ‘functionalist’ accounts of their metaphysics and semantics in terms of their causal role.

These psychological and philosophical developments came together in Jerry Fodor’s *The Language of Thought* (1975). In this work, Fodor articulated what he claimed are the ontological commitments of contemporary theories of cognitive science. According to Fodor, cognitive science largely is and ought to be committed to *intentional realism*: the doctrine that propositional attitudes are contentful (“semantically evaluable”) and causally efficacious (functional) states instantiated in neural systems (and perhaps other forms of physical systems, such as computers). Fodor also articulated what he held to be the basic form of many cognitive theories in psychology: that information processing essentially involves rule-governed computations performed upon mental representations. Although Fodor’s own detailed account of cognition has always been a subject of controversy, his general perspective did integrate a number of central assumptions shared by very many philosophers and cognitive scientists.

## II

These developments went on swimmingly for a short while. But only for a short while, for there was a price to pay for granting intentional psychological descriptions a causal-explanatory theoretical status. It was the price paid by any genuine explanatory theory: the risk of falsification. It could no longer be maintained – as it was maintained by the neo-

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0521403359 - The Future of Folk Psychology: Intentionality and Cognitive Science

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Wittgensteinians – that references to propositional attitudes have a privileged conceptual position with respect to the explanation of human action. Indeed it could no longer be presumed that propositional attitudes have *any* explanatory role to play in developed psychological science. The behaviorists may have been wrong to reject explanatory references to contentful psychological states on dubious epistemological and semantic grounds. Modern cognitive science may, however, be correct to reject such references on sound empirical grounds, because of their inaccuracy or inadequacy as causal explanations. Or at least so argue the contemporary critics of folk psychology, such as Paul and Patricia Churchland (P. M. Churchland 1979, 1981, 1984; P. S. Churchland 1986) and Steven Stich (1983).

The future of folk psychology, conceived as a body of causal-explanatory theoretical references to contentful psychological states employed by layfolk and scientific psychologists, is threatened by a number of related arguments. It is argued that our folk-psychological explanations are, or are likely to turn out to be, generally inaccurate or inferior to alternative theoretical explanations of human behavior in terms of neurophysiological processes. If this proves to be the case, it is argued that we ought to abandon our cherished forms of folk-psychological explanation and the ontology of contentful psychological states they presuppose. It is also argued that it is, or is likely to be, the case that the posits of our best theories in cognitive science will not be identifiable with the posits of folk-psychological explanations. Thus we are, or are likely to be, forced to conclude that there are no entities that have the essential properties traditionally attributed to folk-psychological phenomena.

Paul and Patricia Churchland have tended to emphasize the first form of argument; Stephen Stich, the second. There is a third and more general form of argument common to both and most other critics of folk psychology (cf. Rosenberg 1981). It is claimed that folk-psychological phenomena do not form 'natural kinds' that support universal causal laws that could in principle be reduced to neurophysiological laws. This is often expressed via the claim that everyday or scientific folk-psychological references to intentional psychological phenomena do not reduce "smoothly" to neurophysiological explanatory kinds, or that such phenomena are not identifiable with the "naturally isolable" mechanisms described by neurophysiological theories. The "intentional categories" of folk psychology "stand magnificently alone, without any visible prospect of reduction" (Churchland 1981, p. 75). Folk-psychological phenomena thus appear to be ontologically discontinuous with the

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0521403359 - The Future of Folk Psychology: Intentionality and Cognitive Science

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rest of physical nature. This creates an intolerable situation for the hard-nosed cognitivist scientist, one that critics of folk psychology argue can be resolved only by the abandonment of folk psychology and the ontology of contentful psychological states. Together these arguments are employed to support the position known as 'eliminative materialism'. (For early approximations and statements see Sellars 1956; Feyerabend 1963; and Rorty 1965.)

The first two forms of argument are based upon conditional premises, the truth of which is generally accepted by most contributors to the debate. Thus most parties agree that if folk psychology is a body of inaccurate or stagnant causal-explanatory theory, then it – and the ontology it postulates – ought to be abandoned. Critics of folk psychology affirm the antecedent of this conditional and derive the consequent. Defenders of folk psychology deny the antecedent, either by denying the claim that folk psychology is a body of theory or by denying that it is a body of inaccurate or stagnant theory. Most parties also agree that if folk psychology postulates psychological states that are contentful and causally efficacious, and if cognitive science suggests that there are not or are unlikely to be any psychological states with these properties, then we are obliged to abandon the ontology posited by folk-psychological explanations. Again critics of folk psychology affirm the antecedents and derive the consequent. Defenders of folk psychology deny the antecedents, either by denying that folk-psychological phenomena are individuated by such properties, or by affirming that there are psychological states with such properties.

Most critics and defenders of folk psychology endorse the materialist assumption that intentional psychological phenomena – if they exist at all – are incarnated in the human brain. Most critics and defenders of folk psychology also assume that folk-psychological explanations will not "smoothly" reduce to neurophysiological explanations. Critics of folk psychology see this "failure" as a reason for rejecting the postulated ontology of folk psychology, whereas defenders of folk psychology see it as a reason for maintaining the autonomy of folk-psychological explanation. Those who endorse eliminative materialism tend to have a negative view of the empirical adequacy and fertility of autonomous folk-psychological explanation. Those who reject eliminative materialism naturally tend to take a much more optimistic view.

Recent developments in cognitive science have added some spice to these arguments, by providing a live theoretical alternative to traditional computational theories of cognition. 'Connectionist' or 'parallel distrib-

uted processing' (PDP) theories of cognitive functions (Rumelhart & McClelland 1986) advance accounts of how neural networks represent reality that do not involve the neural system's performing computations on mental representations; that is, they do not involve the system's performing operations on stored symbols in the fashion of modern digital computers. According to these accounts, representations of reality are neurally constructed and developed via patterns of excitatory and inhibitory stimuli and the strength of their connections. Critics of folk psychology such as Churchland and Stich have been quick to exploit this development, suggesting that connectionist theory is inconsistent with folk psychology. Defenders of folk psychology doubt this, suggesting that connectionist theories are best conceived as accounts of the neural implementation of systems that perform computations over representations (Fodor & Pylyshyn 1988).

### III

All these forms of argument are discussed in some shape or form by the various contributors to this volume. In the first chapter, "Fodor's Guide to Mental Representation: The Intelligent Auntie's Vade-Mecum," Jerry Fodor provides a conceptual map of the basic philosophical positions adopted in the present debate, as well as a fairly succinct statement of his own distinctive position. What unites most of the defenders of folk psychology is a commitment to realism with respect to propositional attitudes: They hold that there are contentful psychological states that play a causal role in the generation of human behavior. What unites most of the critics of folk psychology is their commitment to antirealism with respect to propositional attitudes: They deny that there are any psychological states that have the semantic and causal properties conventionally attributed to them. Of course, there are important differences between proponents of these basic positions, as Fodor notes, and indeed the details of his own position are not shared by many contemporary realists. There are also those, such as Dan Dennett (1979, 1987), who attempt to steer a middle course by denying the literal reality of contentful psychological states such as beliefs and desires while maintaining their instrumental utility as predictively powerful theoretical constructs.

Paul M. Churchland's essay, "Folk Psychology and the Explanation of Human Behavior" (Chapter 2), provides an economical statement of what has come to be known as the "theoretical view" of folk psycholo-

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gy. According to Churchland, folk psychology is a “framework of concepts, roughly adequate to the demands of everyday life, with which the humble adept comprehends, explains, predicts, and manipulates a certain domain of phenomena.” As such, it ought to be rejected “in its entirety” if it can be demonstrated to be generally inaccurate or inferior to alternative neurophysiological theories of human behavior.

Churchland defends this view against a variety of familiar alternative analyses of folk-psychological discourse that treat such accounts as serving a normative or social-performative function, or as nonempirical or noncausal explanations based on conceptual connections between folk-psychological explanantia and explananda. Churchland deals in a little more detail with one objection which he claims has more bite, and which has motivated him to modify his own position. To account for the fact that few ordinary folk can articulate the body of universally quantified laws relating folk-psychological states and behaviors that are said to constitute the body of folk-psychological knowledge, Churchland argues that our theoretical knowledge is not so “linguistic as we have chronically assumed,” and suggests an alternative connectionist account in terms of subsumption under a “prototype.”

In “Two Contrasts: Folk Craft Versus Folk Science, and Belief Versus Opinion” (Chapter 6), Daniel C. Dennett remarks that if the principles of explanation and prediction employed by layfolk are not linguistically articulated as a body of propositions, then “that’s a pretty good reason for not calling it a theory.” In my own contribution to this volume, entitled “Reasons to Believe” (Chapter 3), I focus on some problems generated by Churchland’s rather liberal and sometimes ambiguous employment of the term ‘theoretical’. Although Churchland is correct to insist against normative and performative theorists that folk-psychological discourse is theoretical in the sense that it is descriptive, he requires a much stronger and very specific philosophical interpretation of the term ‘theoretical’ to sustain the eliminativist argument. We are obliged to abandon the ontology of folk psychology in the face of explanatory failure, only if, as Churchland claims, the semantics and truth conditions of folk-psychological descriptions are determined by the causal-explanatory propositions in which they regularly figure, that is, given this familiar account of theoretical meaning. I argue that this is not the case with respect to our theoretical descriptions of contentful psychological states, nor is it the case with respect to the theoretical descriptions of natural science. Consequently, even if most or all of our folk-psychological explanations turned out to be inaccurate or inadequate,

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this would not oblige us to abandon the ontology of folk-psychological states. We could, rather, conclude that such 'hypothetical' or 'postulated' theoretical states exist (to employ two other familiar senses of the term 'theoretical') but do not have the causal properties we formerly attributed to them.

Of course, Churchland would be correct to insist that in order to maintain our commitment to the ontology of folk psychology rationally in such circumstances, we ought to have independent grounds for postulating such contentful states. I suggest that we do in fact have adequate independent grounds. I also note that Churchland makes a rather poor case for the empirical inadequacy of folk psychology and I suggest that the primary threat to folk psychology is not empirical but conceptual: It derives precisely from the restrictive methodological principles that underpin the doctrine of eliminative materialism.

In "Connectionism, Eliminativism, and the Future of Folk Psychology" (Chapter 4), Ramsey, Stich, and Garon distinguish between *ontologically conservative* and *ontologically radical* theory changes. In the case of ontologically conservative theoretical changes, we come to recognize that particular theoretical entities (e.g., planets) do not have some of the properties we formerly attributed to them (e.g., circular motions in Ptolemaic theory), but we continue to maintain our commitment to the existence of such entities. In ontologically radical theoretical changes, we come to recognize that nothing has the properties we formerly attributed to postulated theoretical entities (e.g., the elasticity of caloric), and consequently abandon our commitment to the existence of such entities. They suggest that acceptance of a certain class of connectionist theories of memory would constitute an ontologically radical theory change with respect to the propositional attitudes posited by layfolk and traditional cognitive scientists.

According to Ramsey, Stich, and Garon, folk psychology is committed to *propositional modularity*: the view that propositional attitudes "are *functionally discrete, semantically interpretable* states that play a *causal role* in the production of other propositional attitudes, and ultimately in the production of behavior." Although these criteria seem to be satisfied by many of the theoretical posits of contemporary cognitive theories, such as semantic network theories of memory (Collins & Quillian 1972), they do not appear to be satisfied by the theoretical posits of at least a certain subclass of connectionist theories. If a certain subclass of connectionist theories of memory are correct, they argue, then we ought to eliminate theoretical references to propositional attitudes from this explanatory

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domain, for the mechanisms postulated by such theories are distributed and subsymbolic; that is, they do not have the essential properties of propositional attitudes.

In "Being Indiscrete" (Chapter 5), John Heil doubts that connectionist theories are in fact seriously at odds with traditional cognitive theories referencing propositional attitudes. Although the modes of representation described by connectionist theories may be "widely distributed," such states may still be taken to have the restricted causal roles traditionally attributed to propositional attitudes. Heil also casts doubt on the claim that folk psychologists are committed to any strong "discreteness" requirement. Although this characterization is perhaps true of some particular theorists, most notably Fodor, it does not seem to be true of many others. He notes that according to Davidson, for example, folk-psychological description and explanation are necessarily holistic. These considerations lead Heil to conclude that "connectionist models of cognition seem most naturally interpretable as hypotheses about the underlying dynamics of beliefs, desires, and other propositional attitudes."

Daniel Dennett, in "Two Contrasts: Folk Craft Versus Folk Science, and Belief Versus Opinion" (Chapter 6), also notes that connectionist theories are inconsistent only with particular species of folk-psychological explanation, not with folk-psychological explanation per se: "It is really rather curious to say, 'I'm going to show you that folk psychology is false by showing you that Jerry Fodor is mistaken.'" Dennett distinguishes between folk-psychological explanation as craft, which he is at pains to stress is an "extraordinarily powerful source of prediction," and particular theories or ideologies that account for the success of the craft of folk-psychological explanation. He doubts that developments in cognitive science would ever oblige us to abandon the craft of folk-psychological explanation, given its "prodigious" predictive power. He agrees with Ramsey, Stich, and Garon that developments in neuroscience or connectionist theory may turn out to be inconsistent with particular ideologies that explain the general success of the craft of folk psychology, such as Fodor's computational account in terms of discrete, semantically interpretable, and causally efficacious states.

Dennett claims that the success of folk psychology as an explanatory craft is perhaps best explained by treating beliefs and desires *instrumentally*, as "abstracta – more like centers of gravity than individualizable concrete states of a mechanism." Dennett also gives some reasons for questioning the current enthusiasm for connectionist theories of cognition, and makes a critical distinction between 'beliefs' that may be