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FOLK PSYCHOLOGY

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Folk psychology is the body of information people have about the mind, and it is often regarded as the basis for our capacity to attribute mental states and to predict and explain actions.

1. Introduction – What Is Folk Psychology?

Most broadly, folk psychology is simply the information that lay people have about the mind. Although the scope of folk psychology is thus vast, contemporary discussion of folk psychology in philosophy and cognitive science have focused largely on the portion of folk psychology that guides the prediction and explanation of actions. A large

measure of the interest in this portion of folk psychology derives from the central role it plays in our everyday lives. Folk psychological prediction and explanation abound in our lives. We engage in it for mundane chores, like trying to figure out what the baby wants, what your peers believe about your work, and what your spouse will do if you arrive home late. Folk psychology is also implicated in loftier endeavors like trying to glean Descartes' reasons for thinking that many ideas are innate. So pervasive is the role of folk psychology in our lives that Jerry Fodor has remarked that if folk psychology should turn out to be seriously mistaken, it would be "the greatest intellectual catastrophe in the history of our species" (Fodor 1987, xii).

2. History

The idea that lay people have views about beliefs and desires and that people believe that actions result from beliefs and desires is hardly new. Indeed, Descartes would never have denied that people have such information. However, according to Descartes, the core information about the mind comes from introspection, which he regarded as an unimpeachable source. Since introspection reveals the truth about the mind to each of us, for Descartes, the somewhat pejorative qualifier "folk" is unnecessary. Folk psychology *is* psychology.

In the twentieth century two developments led to a revolutionary new picture of lay views of the mind. The first development was the challenge to introspection as a source of knowledge about the mind. This challenge occurred in both psychology and philosophy. In the early part of the century, psychologists advocating methodological behaviorism

maintained that introspection was scientifically disreputable and could not be a source of knowledge about the mind. In effect, they forswore all talk of mental states in scientific psychology. In philosophy, Ryle (1949) launched a more sweeping attack. On his view, sometimes labeled “logical behaviorism”, it is a mistake to think that there are beliefs and desires inhering in an unobservable mind. Unlike the methodological behaviorists, though, Ryle did not enjoin against using terms like “belief” and “desire”. Rather, he maintained that such terms refer not to internal mental states, but to publicly observable phenomena, in particular, to dispositions to behave in certain ways under certain conditions. Of course, one important consequence of Ryle’s view is that since beliefs and desires are not internal states, they cannot be possibly be revealed by introspection. The suspicions about introspection have exercised a powerful hold over psychology and philosophy of mind ever since, even among those not sympathetic to logical behaviorism.

The second historic development occurred in the wake of introspection’s decline. If we can’t rely on introspection to provide us with knowledge of the mind, then we need a new account of the source of our knowledge about the mind. Wilfrid Sellars (1956) developed what has turned out to be the most influential alternative to the introspectionist account of lay knowledge about the mind. Rather than maintain that the mind reveals its secrets to itself through introspection, Sellars suggested that lay people have a *theory* of the mind. The way Sellars makes the point is by proposing a myth about the origins of our commonsense view. He suggests that in our distant past, our ancestors never spoke of internal mental states like beliefs and desires. Rather, these “Rylean” ancestors only spoke of publicly observable phenomena like behavior and dispositions to behave. At

this point, our ancestors even lacked terms for inner mental states. Then one day Jones, a great genius, arose from this group. Jones recognized that positing inner states like *thoughts* as theoretical entities provides a powerful basis for explaining the verbal behavior of his peers, and Jones developed a *theory* according to which such behavior is indeed the expression of internal thoughts. Jones then taught his peers how to use the theory to interpret the behavior of others. We are ultimately the beneficiaries of Jones' genius as well, since we too use the theory to interpret others' behavior.

Although Sellars explicitly presents this origin story as a myth, the point is that the myth allows us to see quite clearly a new picture of the nature of our commonsense views about the mind. On this picture, the commonsense view is a *theory* of mind, and the theory posits inner mental states like thoughts that are not publicly observable. Once this proposal is in place, the myth can be seen as one possible (and surely false) account of the origin of the theory. The important advance is that Sellars has provided us with an alternative account of commonsense psychology that does not rely on introspection. Nor, however, does it adopt the desperate logical behaviorist account that terms like *thought* refer to publicly observable phenomena. This idea that folk psychology is a theory, whatever its origins, has come to be known as the "theory theory" (Morton 1980). The theory theory not only makes clear a new way to construe commonsense psychology once introspection had been displaced, Sellars' account provides a new way of construing introspection itself. For Sellars suggests that the commonsense theory of mind is what we use to attribute mental states to ourselves as well as others.

3. Folk Psychology and the Scientific View of the Mind

The very possibility that the theory theory is right requires us to be explicit about the potential gap between folk psychology and the scientific view of the mind. For if lay views about the mind derive, not from indubitable introspection but from a commonsense theory, then it may well be the case that lay views of the mind will not cohere with mature scientific views of the mind. It now becomes a question of some moment whether folk psychology adequately characterizes the mind.

In order to evaluate this question, one needs to know much more precisely what folk psychology *is*. In philosophy, one prominent way of characterizing folk psychology is to appeal to platitudes that everyone accepts, e.g., “Persons in pain tend to want to relieve that pain. Persons who feel thirst tend to desire drinkable fluids. Persons who are angry tend to be impatient” (Churchland 1988, 58-9). According to Churchland, among others, the collection of all these platitudes constitutes the folk theory of mind that guides the prediction, explanation and interpretation of behavior (1988 p. 59). If one assembled such a list, one might then determine whether items on the list would be corroborated or refuted by mature science.

It is at this point that the most prominent theme in philosophical discussions of folk psychology emerges. For, some suggest, if the folk account diverges widely from the scientific account, then we should conclude that the folk theory is *wrong*. Indeed, it may turn out that the folk theory is so thoroughly wrong that we must reject the theoretical posits of “belief” and “desire” and acknowledge that beliefs and desires don’t really exist.

According to Eliminative Materialism this is exactly the case. The folk theory is so far off the mark that we need to uproot the ontology of folk psychology entirely, just as we have uprooted the ontology of the supernatural. Eliminativist arguments have been developed in two rather different ways. Some (e.g., Stich 1983) maintain that folk psychology will be at odds with a mature scientific psychology and that this gives reason to suspect that we need to jettison the folk ontology of beliefs and desires. Others (e.g., Churchland 1981) envision neuroscience as the proper scientific approach to the mind and argue that folk psychology will not fit with mature neuroscience; as a result, the folk ontology should be rejected in favor of a neuroscientific ontology.

Evaluating Eliminative Materialism is a matter of considerable complexity. For, as several authors have noted, eliminativist arguments typically depend on important assumptions about reference, reductionism, and other controversial issues in metaphysics (see, e.g., Lycan 1988, Stich 1996). The claim that bears directly on present concerns, though, is that folk psychology is a hopelessly mistaken theory. The merits of folk psychology have been deeply contested over the last quarter century. Eliminativists bemoan the explanatory failures and limitations of folk psychology, and maintain that these shortcomings indicate that mature science will be quite at odds with folk psychology (e.g., Churchland 1981). Others, however, have celebrated the remarkable success of folk psychology. Indeed, Fodor maintains that folk psychology is much better at predicting behavior than contemporary scientific approaches, and that this extraordinary predictive success suggests that the folk theory is roughly right and hence will fit with a mature cognitive science (Fodor 1987).

4. Folk Psychology as Tacit Knowledge

While philosophers have debated the continuities between science and folk psychology and the consequences that would follow from various scenarios, cognitive scientists have been concerned to explore more systematically the nature of the capacity to attribute beliefs, desires, and emotions and the capacity to predict and explain behavior. It has become increasingly clear that the platitude approach to folk psychology does not suffice to explain the lay capacity for psychological attribution, prediction, and explanation.

To take a simple example, people are quite good at attributing emotions to others on the basis of facial expressions. Very small differences in musculature activity in the face guide attributions of emotions, and people do not seem to be able to articulate the principles that underwrite these attributions. Indeed, some of these processes clearly occur outside of conscious awareness. For instance, subjects are more likely to judge a neutral face as sad if they have just been subliminally exposed to a smiling face (Underwood 1995). Similarly, the attribution of goals from motion cues seems to exceed the available platitudes. In a famous study, Heider & Simmel (1944) showed subjects geometric objects moving around in a two dimensional scene. Almost all subjects attributed goals to the geometric objects, and there was a good deal of consistency in subjects regarding certain events as chasing, fighting, and trying to get out of a box. What is guiding subjects' judgments here? Certainly we have no platitudes about the likely goals of geometric objects. The judgments seem to be guided instead by rather low-level motion cues. Determining which motion cues tend to produce which judgments is an area of active research, and the details are far from worked out. But

there are a number of cues that seem to contribute to judgments of intention in geometric displays, including relative speed following a position change, orientation of the object relative to direction of motion, and the turning axis of the geometric object (see, e.g., Scholl & Tremoulet 2000). It seems most unlikely that the final account of the motion properties that elicit judgments of intention will map neatly onto folk platitudes.

The foregoing suggests that the mechanisms underlying folk psychological capacities are far more intricate than is suggested by platitude accounts. Prediction, explanation and attribution are unlikely to be a matter of applying platitudes to instances. Like other interesting cognitive capacities (e.g., language comprehension and production, folk physics), we can expect that much of the information underlying the capacity is not consciously accessible. This is not a debilitating problem for the theory theory, of course, since one can simply adopt the view that the folk psychological theory is at least partly “tacit”. Indeed, that has long been the prevailing assumption in the empirical research on folk psychology.

By far the most extensive empirical research on folk psychology has been focused on charting the development of folk psychological capacities in children. This research illustrates in a dramatic way the central role that folk psychology plays in our everyday lives. The distressing social deficits of children with autism have been linked to a breakdown in their capacity for folk psychology (Baron-Cohen 1995). Furthermore, an analysis of everyday speech in normal children indicates that from a very young age, they talk a great deal about beliefs, desires, intentions, and emotions (Bartsch & Wellman

1995). And this is not just talk. Experimental evidence indicates that children are quite good at predicting a “target” person’s behavior on the basis of the target’s beliefs, desires, and emotions (Gopnik & Meltzoff 1997). Some important capacities emerge at a strikingly early age. For instance, evidence indicates that 18-month old children can attribute desires on the basis of facial expressions (Repacholi & Gopnik 1997). Most researchers in the field agree that these capacities depend on a tacit theory of mind. In light of the early emergence of folk psychology in normal children and its breakdown in autism, many researchers maintain further that the tacit folk psychology theory has an innate basis. However, even among those who agree that folk psychology is a tacit theory with an innate basis, there is serious disagreement about the nature of the tacit theory. On one account, this body of information is very much like a scientific theory, and the process of development is really a process of theory-revision, much like the process of theory-revision in science (e.g., Gopnik & Meltzoff 1997). On a prominent alternative view, the tacit theory is not at all like a scientific theory, but rather is represented in an innate module with restricted information flow to other parts of the mind. This module has to develop, to be sure, but the development is a fairly tightly constrained maturational process rather than an open-ended theory-revision process (Leslie 1994).

5. Simulation theory

While theory theorists debate amongst themselves about the nature of the folk theory, there is a much more pervasive threat to the theory theory, “simulation theory”.

According to simulation theory, one does not use a psychological theory in predicting a

target's behavior, but rather, one pretends to have the mental states of the target and then runs one's own decision making mechanisms "off-line" using these pretend inputs. The resulting decision is then used to predict what the target will do (Gordon 1986, Goldman 1989). This approach makes a serious departure from the theory theory since it explains important folk psychological capacities by appealing to something other than a tacit body of knowledge about the mind. In fact, the introduction of simulation theory makes the very term "folk psychology" problematic since the term is typically tied to the theory theory. As a result "mindreading" is often used as a more theoretically neutral term for the cluster of capacities we have for attributing mental states and predicting and explaining behavior.

Simulation theory has one absolutely stunning virtue. It gives an elegant explanation of the remarkable success of lay prediction of thought and action. Typically when I am trying to figure out what a target person is going to do, it's plausible that the target and I share similar cognitive mechanisms. As a result, if I use my own cognitive mechanism to run a simulation, it's likely that the outcome of that simulation will be very much like what the target's analogous mechanism will actually do. This virtue of the simulation approach is illustrated well by an example from Paul Harris (1992). Harris asks us to imagine a psycholinguistics experiment in which we are to predict the grammaticality judgments of another English speaker on a set of sentences. It seems likely that we would be quite accurate at such a task. How is it that we would do so well? A simulation-style explanation is that we use our own mechanisms for judging grammaticality and then we attribute the output to the subject. So, if our own

mechanisms produce the judgment that a sentence is grammatical, we attribute that judgment to the target. Given that the mechanisms that produce judgments of grammaticality are extremely complex, to explain success on this task, a theory account would have to appeal to an improbably vast amount of tacit knowledge about how people make grammaticality judgments. The simulation-style alternative is almost certainly a better explanation.

It is important to note that in Harris' example, no pretense is involved, and in that sense, the example is not entirely parallel to the classic off-line simulation account. But the example certainly succeeds in showing that prediction of behavior will at least sometimes rely on resources that go beyond a tacit theory of psychology, and that in some cases at least, we use a simulation-like process to predict others' behavior.

Thus, simulation (or simulation-like) processes plausibly play some role in mindreading. How much of a role does simulation play? One proposal, "radical simulation", is that simulation explains *everything* that the theory theory purported to explain, including all attribution of mental states, prediction of behavior, and explanation of behavior (e.g., Gordon 1986, 1996). This radical view led some simulation theorists to suggest that there *is* no folk psychological theory. Earlier it was noted that even Descartes wouldn't have challenged the claim that people have a body of information about the mind. But radical simulationists challenge precisely that claim. As simulation theorists pointed out early on, this would entail that the debate over eliminativism needs to be seriously

overhauled. For if there is no folk psychological theory, it can't very well be the case that the theory is false.

Despite this provocative prospect, the radical kind of simulation theory has few advocates. One problem for radical simulation is that there are many cases in which we are very bad at predicting what people will do, and simulation theory has difficulty explaining our failures in these cases (Stich & Nichols 1992). There is a huge body of literature in social psychology documenting situations in which subjects behave in ways that are quite surprising to commonsense. It is worth spending the time to look in detail at an example. In an experiment demonstrating the *endowment effect*, Kahneman and colleagues (1990) gave a coffee mug to subject in one group, the "endowed" group, and then offered the subjects the opportunity to trade the mug for various amounts of cash. Another group of subjects, the "unendowed" group, was not given the mug but was allowed to choose between the mug and various amounts of cash. It turns out that subjects in the endowed group tend to place a much higher cash value on the mug than subjects in the unendowed group. Most people find this result quite interesting, and part of the reason it's interesting is because it's *surprising*. Yet if simulation theory explained all of mindreading, it's a bit puzzling why we are surprised by the finding. For we should be able to imagine ourselves in the endowed subject's situation and let our own cognitive mechanisms determine what value we would set on the object. Indeed, recent research confirms that we are *not* successful at this imaginative exercise. Loewenstein and Adler (1995) explored whether subjects would be able to predict the value they themselves would set on an object if they were endowed with it. They handed subjects a coffee mug

and asked the subjects to imagine that they owned the mug and to indicate how much they would be willing to sell it for if they owned it. After they completed this part of the task, subjects were told that they could in fact keep the mug – it was theirs. Then the subjects were once again asked to indicate how much they would be willing to sell it for. It turned out that subjects were bad at predicting their own judgments. Subjects tended to want significantly more money when they were endowed with the object than when they were merely imagining that they were endowed with it. If we made judgments like this using simulation theory, one would expect subjects to be simply excellent at this sort of task. And this is merely one example in a sea of similarly surprising results from social psychology. Indeed, if simulation theory accounted for all of our mindreading capacities, one would expect social psychology to be a radically different discipline, with few deeply surprising results. The theory theory, by contrast, can provide a natural explanation of these folk mistakes by maintaining that the body of information that guides our judgments in these cases is incomplete. The tacit theory is missing information in crucial places, and the absence of this information leads to the mistaken predictions.

A second problem with radical simulation is that for many normal, successful attributions of mental states, it is difficult even to devise a simulation theory that would explain how we arrive at the mental state attributions in the first place. The point is perhaps easiest to make with attribution of perception. You know that if you are sitting at the dinner table, the person across from you can see your face but not your knees. But if she puts her head under the table, then she may well be able to see your knees. It is not at all clear how pretending to have the mental states of the other person is going to tell you whether she

has visual access to your knees. By contrast, the tacit theory approach suggests an obvious answer. You calculate, in classical fashion, information about the opacity of the table, information about line of sight, information about the amount of ambient light etc, and from this information the tacit theory of mind (which would presumably have information about when a subject is likely to see something) produces a perceptual attribution.

Although radical simulation currently has few advocates, simulation theory has altered considerably the landscape on folk psychology. People working on both sides of the simulation debate have converged in maintaining that a full explanation of the capacities for attribution, prediction and explanation will require a hybrid account, appealing both to simulation processes and to tacit knowledge about mental states (e.g., Goldman 2000, Nichols & Stich forthcoming). Simulation theory exacts a significant revision in the view that lay understanding of other minds derives from a folk psychological theory, and this has ramifications for both cognitive science and philosophy. First, it suggests that the capacity for mindreading cannot be entirely captured by classical cognitive models. The kinds of mechanisms exploited in mindreading will be much different from the kinds of mechanisms exploited by capacities like folk physics and folk biology. Secondly, if simulation processes play an important role in mindreading, much of the eliminativist debate is too crude. For a large part of our mindreading capacity may be insulated from any eliminativist threat. On the other hand, insofar as the success of mindreading depends on simulation-style mechanisms (as opposed to tacit theory), the success of

mindreading cannot be casually used to support the claim that the folk psychological theory is largely true.

6. Introspection Revisited

A second major challenge to the theory theory emerges from a reassessment of the capacity for introspection. One of the vital historical precursors leading to the theory theory was the repudiation of introspection as a reliable source of information about the mind. However, introspection fell into disrepute under the auspices of behaviorism. It's not clear that the motivations for renouncing introspection are still telling for cognitive scientists who reject behaviorism.

Many cognitive scientists in fact still maintain that the available evidence indicates that the only way to access one's own mental states is via the theory of mind (e.g., Nisbett & Wilson 1977; Gopnik 1993). This view effectively embraces Sellars' early suggestion that the folk theory of mind is essential not only for attributing mental states to others but also for attributing mental states to oneself. Although this theory theory approach to introspection continues to be extremely influential, some researchers have recently begun to defend alternative cognitive accounts of introspection according to which access to our own minds does not depend on the theory of mind (Goldman 1993; Nichols & Stich 2002). Goldman (1993) suggests further that introspective access might provide the basis for our concepts of belief and desire. In this case it might turn out that the theory of mind itself depends on introspection rather than the reverse.

The nature of introspection and its possible role in generating our understanding of others' minds is far from settled in the contemporary literature. But whatever the outcome of this debate, there is every reason to think that our capacity for mindreading is subserved by an extremely diverse and intricate set of mechanisms. Although it's likely that the theory theory explains part of the capacity for mindreading, it's also likely the theory theory cannot provide anything remotely like a complete account of the capacity for mindreading. Rather, our capacity for mindreading also plausibly depends on simulation-like processes and perhaps even introspective mechanisms that are independent of the theory of mind.

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GLOSSARY

Eliminativism: The claim that the commonsense view of the mind is so deeply mistaken that commonsense psychological notions like “belief” and “desire” do not refer to anything.

Logical Behaviorism: The view that mental state terms like “belief” and “desire” do not refer to internal mental states, but rather to dispositions to behave in certain ways under certain conditions.

Simulation Theory: The view that the lay prediction and explanation of another’s behavior involves pretending to have the other’s mental states and allowing one’s own cognitive mechanisms to run “off-line” using these pretend inputs.

Theory Theory: The view that the lay prediction and explanation of action depends on a body of information about psychology.