

What connects thought and action?

MARK GREENBERG

Jerry A. Fodor

THE ELM AND THE EXPERT
Mentalese and its semantics
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The success of the natural sciences has put philosophy in a tricky position. On the one hand, science has propelled a salutary trend in philosophy: philosophy is increasingly empirically grounded, suspicious of armchair intuitions, and committed to naturalistic explanations. On the other hand, philosophy has always drawn fruitfully on phenomena that are not easy to integrate into a scientific world-view, like introspection, conceptual understanding and common-sense or "folk" theories of the world or the mind. While it is healthy and prudent to be sceptical of the impressions and intuitions that press themselves on us when we consider these phenomena, among the impressions and intuitions may lie otherwise inaccessible insights into the deepest aspects of our minds and their relation to the world. The heroic course is to insist on the reality of these phenomena and on the most central and unshakeable of our apparent insights into them, while never abandoning the search for naturalistic explanations. Of course, the heroic path is never guaranteed to be the path of truth (or of prudence). The trick is to know when some forceful impression must be explained away, rather than explained. Philosophy of mind more than any other area of contemporary philosophy presents this challenge: its subject-matter is so close to us that we have a wealth of vivid impressions, but too close for us to be able to separate the insights reliably from the illusions.

At the centre of great ferment in the philosophy of mind over the past twenty-five years has been the problem of thought – the problem of how to give a scientific account of the way in which thoughts mediate behaviour. In some cases, the best explanation of an organism's reaction to its environment is that a sensing device in the organism registers a change in the environment, directly triggering a motor response. In contrast, much human behaviour is mediated by chains of thought. John hears footsteps in the hall. Because he believes that it is past midnight and that only Bill would visit at that hour and because he wants to avoid hearing about Bill's latest bowling scores, John switches off the light and sits in silence. This everyday psychological explanation of why John switched off the light assigns an important role to John's thoughts – ie, to his beliefs and wants. In particular, John's thoughts serve both to cause him to switch off the light and to make it logical or rational for him to do so. Explanations of behaviour that depend on thoughts in this way are a fundamental part of our understanding of ourselves and our place in the world. The problem of thought concerns how thoughts can play the role necessary for these psychological explanations of behaviour to be legitimate.

Such explanations depend on thoughts having two sorts of properties. First, the explanation of why John switched off the light wouldn't get off

the ground unless thoughts were part of the causal order; events in the world cause thoughts, thoughts cause other thoughts, and, finally, thoughts cause behaviour. At the same time, though this point may be slightly less obvious, the explanation is equally dependent on thoughts having meaning or *semantic* properties: thoughts can be *logically* related to each other, they can be *true* or *false* (depending on how things are in the world), they can be *about* things in the world. The story about John and Bill makes sense only because John's thoughts – from the belief that it is Bill, through the belief that turning off the light will make Bill believe John is asleep, to the intention to turn off the light – are semantically related: their meanings or contents are connected in a way that makes the chain of thought rational. The semantic properties enable thoughts not only to cause behaviour but to relate behaviour rationally to how things are both in the world and in the person.

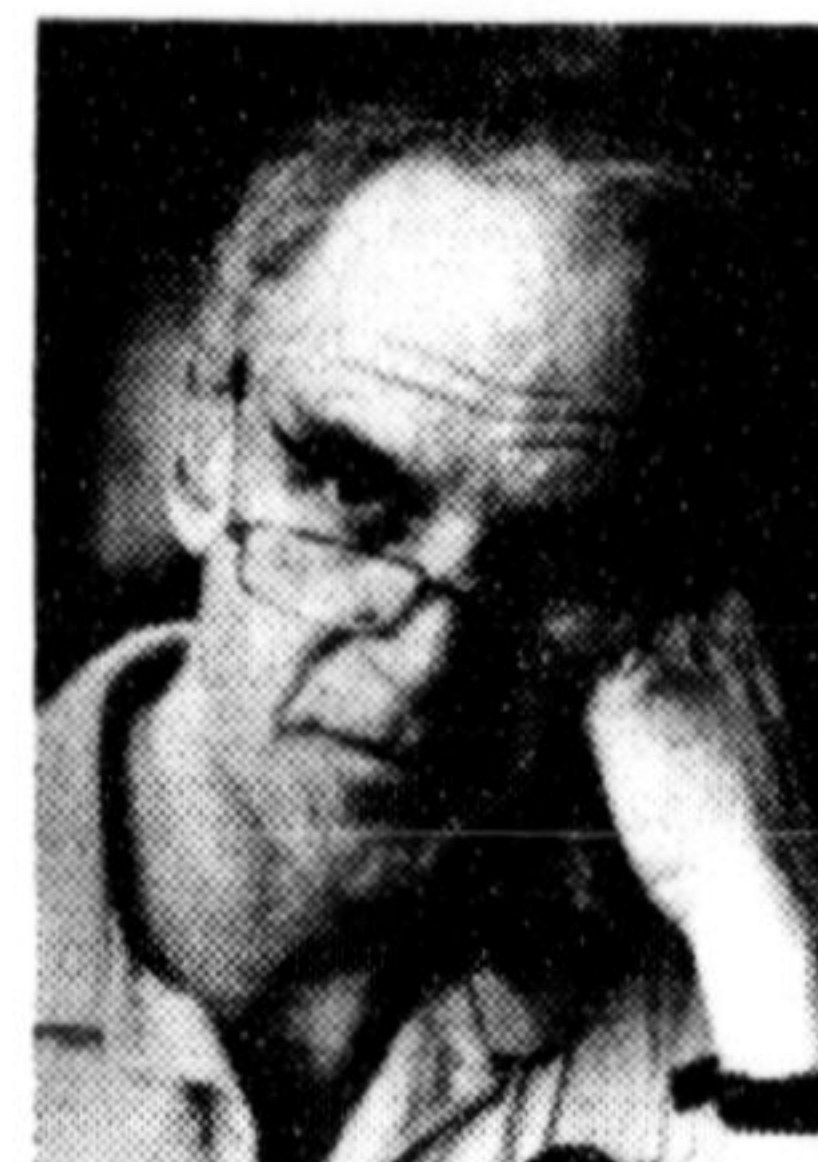
Crucially, thoughts must not only have causal and semantic properties, but those properties must be *integrated*. The causal properties that make one thought cause another must make it cause a thought whose content is related to the first thought's content in an appropriate way. For example, the contents of the beliefs that someone has arrived after midnight and that only Bill would visit at that hour are related to the content of the belief that Bill has come to visit in such a way that the causal transition from the former to the latter is rational; indeed, it is logical. In general, causal relations among thoughts must preserve or reflect the rational relations among the thoughts' meanings, if thinking is going to be worth doing. In sum, psychological explanations make essential use of the integrated semantic and causal properties of thoughts. For psychology to take on the legitimacy of science, we need to give a scientifically respectable account of how thoughts can have causal and semantic properties that are appropriately integrated – that is, we need to solve the problem of thought. In short, in order for psychology to be science, we must make meaning scientific.

The response to the problem of thought, at one extreme, has been to deny either the existence of beliefs and desires or their explanatory role in human psychology. At the other extreme are those who claim that the semantic properties of beliefs and desires are real, yet not susceptible to further explanation, not within the scope of science. These responses repudiate the problem rather than solve it. We cannot rule out in advance the possibility that one of them is correct, but we cannot give in too easily. After all, what is at stake is, on the one hand, the central role of thoughts in mediating our behaviour – what could be more central to our self-understanding? – and, on the other, the success of science in explaining everything there is.

Jerry Fodor, more than anyone else, has taken the heroic path of both insisting on the reality of the role of meaning in psychological explanations of behaviour and trying to reconcile this role with psychology's being a science. He has thus squarely faced the problem of how to give a scientifically acceptable account of meaning and, especially, of the integration of the causal and semantic properties of thoughts. Fodor has been an influential and tireless defender of what he believes to be the only solution: the computer model of the mind, according to which thinking

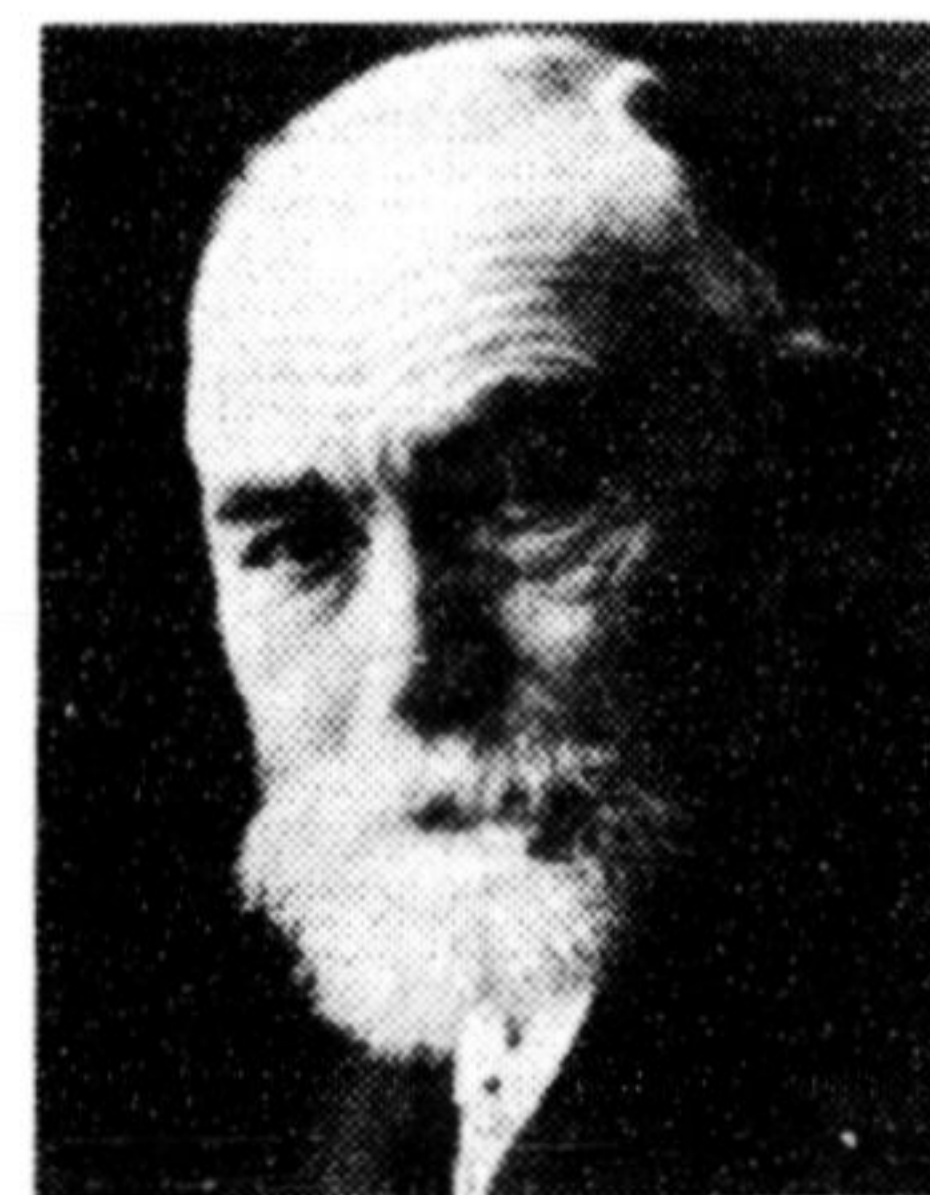
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is transforming or rearranging mental symbols into other mental symbols. The computer model can solve only part of the problem, however, and in recent years Fodor has come to adopt a view about the solution to the second part that he had initially resisted on the ground that it could not be reconciled with the computer model. In this ingenious, witty and perverse book, he attempts to reconcile the two parts of his solution.

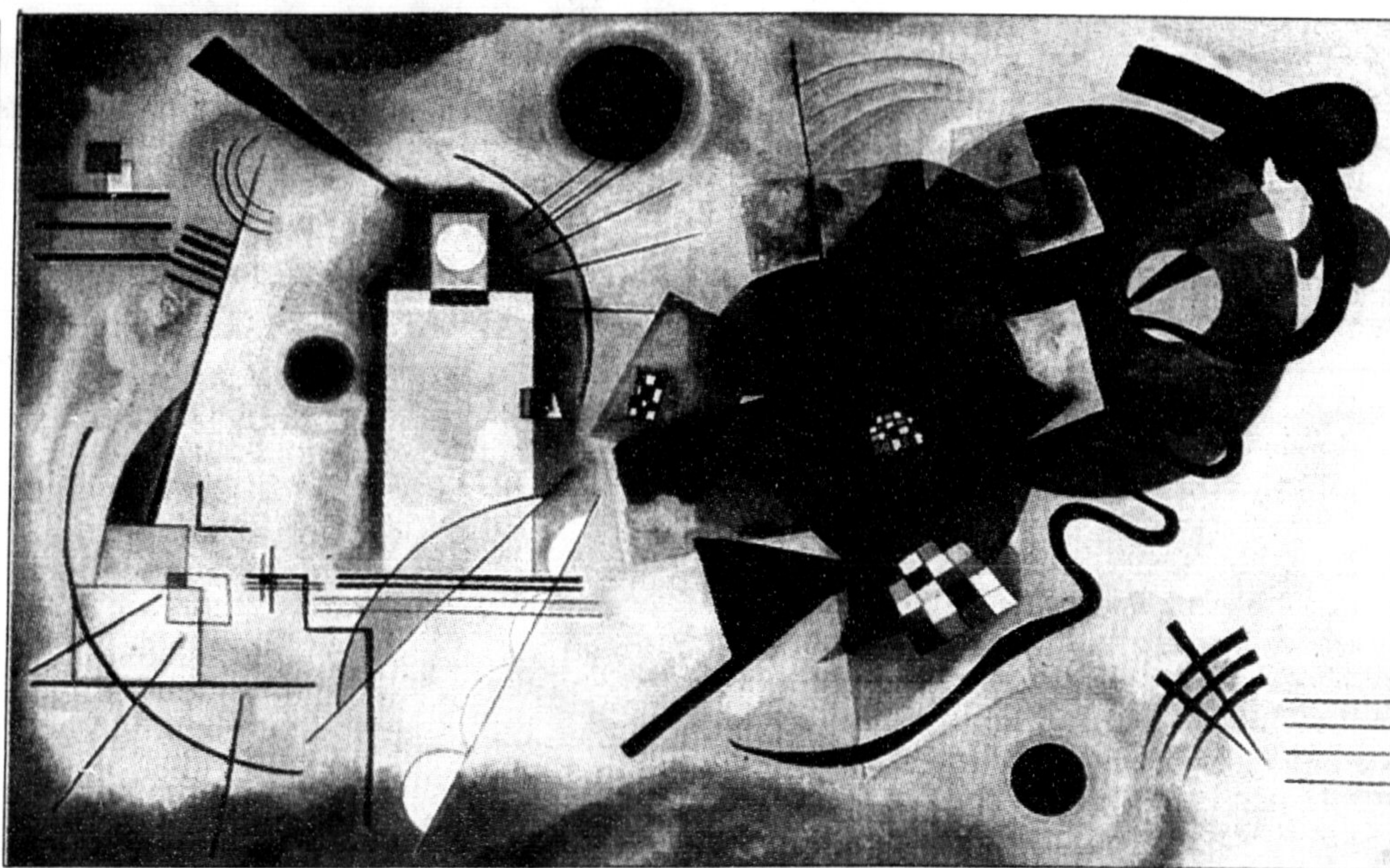
Fodor's strategy for solving the problem of thought centres on the notion of a symbol. Think of a symbol here as a concrete, particular item, like a word written in ink on a piece of paper or a signal on a magnetic tape, that stands for or represents something. As Fodor notes, symbols have long seemed a promising starting-point for solving the problem because they have both causal and semantic properties; a particular sentence written on paper or stored in a computer's memory may be true or false and, at the same time, has causal properties in virtue of its mass, electrical charge, or other physical properties. The first part of Fodor's solution – the computer model of the mind – explains how, given mental symbols with semantic properties, the causal and semantic properties of thoughts can be integrated. The second part tackles the question of how concrete physical items can have semantic properties – can represent something.

At the dawn of the computer age, Alan Turing showed that symbols can be arranged in a machine so that their causal properties are integrated with their semantic properties. In essence, the computer is a device that transforms electronic symbols into other electronic symbols in a way that is entirely controlled by the physical, electronic properties of the symbols, yet produces only arrangements of symbols that are logical consequences of the initial arrangements of symbols. Since the symbols' physical, electronic properties (to which the machine is exclusively sensitive) are systematically related to the symbols' meaning, processes that are controlled only by these physical properties can be set up so as to respect semantics. Thus, by "paying attention" only to the physical properties of the symbols, the computer can generate output with the appropriate meaning.

Although the computer model provides a putative scientific account of how the causal and semantic properties of thought could be integrated, it does not give us any help on the question of how concrete physical items, like ink marks, electronic signals, or, more to the point, neural structures, get to have meaning – can be symbols. (Ink marks or electronic signals may have the meaning we assign to them, but it would be viciously circular to appeal to any such idea in the case of mental symbols.) This problem looks even more fundamentally ill-suited to a scientific account than the original problem of how thought mediates behaviour.

A currently popular view of meaning is called "externalism"; it holds that what a person's thought "means" depends on how things are in the world outside the thinker's head. For example, one form of externalism holds roughly that for me to be able to have a thought like *elms have leaves*, I need to be causally connected to elms in a certain way, not to have in my head a definition of *elm*. Externalism should not come as too much of a surprise; even on a primitive view of meaning according to which a symbol means what it resembles (on the model of simple pictographs), meaning depends in part on external matters, for what in the world a symbol resembles depends on how things are out there.

Fodor perceived early on that externalism is in apparent tension with the computer model, according to which wholly internal properties of symbols, like mass and electrical charge, are what control thinking. He therefore argued that externalism must be wrong, at least with respect



Kandinsky's "Yellow-Red-Blue", 1925; from *Kandinsky and Old Russia: The artist as ethnographer and shaman* by Peg Weiss (290pp. Yale University Press. £40. 0 300 05647 8)

to the meaning of the mental symbols that a scientific psychology needs. Although he was the philosopher most identified with this kind of ground for resisting externalism, more recently Fodor has come to the view not only that meaning is externalist, but also that a very strong form of externalism called "informationalism" is the second part of the solution to the problem of thought. The central goal of *The Elm and the Expert* is to reconcile the computer model of thinking and externalism.

Several of the problems for such a reconciliation that Fodor addresses are problems not for just any version of externalism but only for informationalism, which holds, to take a very crude example, that a mental symbol means *triangle* if triangles would regularly cause it to be triggered. This kind of view is a very strong form of externalism, because it holds not only that a thought's causal relation to external objects or properties is relevant to its meaning, but that nothing else is relevant. A more plausible externalist position, in my view, allows that a thought's having certain connections to things in the world is only one component that goes into determining its content; another part of what it is for a thought to have a particular content is for it to have certain connections to other thoughts. For example, for a thought to involve the concept of a triangle is, plausibly, at least in part for the thought to be connected in appropriate ways to thoughts involving the concepts of three and of a side: a person who believes that X is a triangle should, if the question arises, accept that X has three sides, though, in practice, thinkers may fail to make such required inferences. Although it relies on semantic connections between thoughts, and is therefore not *informationalist*, this type of semantics, which is called "inferential-role semantics", can still be *externalist*, because it can accept that causal connections to the world are one component of meaning.

A major challenge for inferential-role semantics is to give an account of which inferential connections are the crucial or required ones, and, more importantly, what makes them so. The thought that a triangle is equilateral is apparently connected to the thought that it has sides of equal length in a way that the thought that the triangle is equiangular is not (though all equiangular triangles have sides of equal length too). Since thinkers can in practice, however, fail to make either connection, it is difficult for inferential-role semantics to explain what is special about the former connection that makes it part of meaning. By rejecting the idea that any connections are part of meaning, informationalism avoids this challenge, but takes on the burden of doing without the connections.

In the course of the book, Fodor moderates his informationalism slightly by taking into account connections between thoughts in limited ways to cope with various problems, but his semantic view remains essentially informationalist. Since the book is largely devoted to reconciling this view with the computer model, Fodor does not usually examine how the view fares in comparison with more moderate forms of externalism. This is unfortunate because it tends to obscure the fact that the knottiest difficulties in which Fodor finds himself are difficulties only for informationalism, not for other versions of externalism, while the advantages he claims for externalism over internalism are not peculiar to informationalism.

As Fodor sees it, the central problem of reconciling the computer model with informationalism is this: how can laws of psychology involving thoughts with *externalist* semantic properties be implemented by computational mechanisms controlled entirely by *internal* properties of the mental symbols? What guarantees that the internal properties of symbols that exclusively determine the causal interactions of thoughts, on the one hand, and the external relations that determine the symbols' semantics, on the other, stay in step with each other? If a computer "knows" only the internal, electronic properties of the symbols it processes, but the symbols' meanings are independent of those internal properties, how can the causal processing be integrated with the semantics?

The not very surprising answer, which Fodor eventually endorses, is that perception and cognition generally work well, thus ensuring that the internal properties of the symbols reliably reflect what is going on outside. Given the anti-climactic nature of this point, Fodor uses too much space building up to it before going on to address what are genuinely difficult problems about the relation between the computer model and a semantics for thought.

Once he gives the answer that reliable perception and cognition can keep the internal and the external integrated much of the time, Fodor worries about cases in which they come apart. The most troubling case in which they can come apart is that in which thoughts with the same semantics are implemented by more than one physical structure; if two different internal structures can have the same semantic properties, psychology, which pays attention to the semantic properties of thoughts, will predict identical behavioural consequences. But the internal, physical differences may result in different behaviours. Fodor has in mind cases, associated with Frege, that intuitively involve different ways of thinking of

the very same object: I can want Sam to give me a lift home without wanting the Boston Strangler to do so, though they are in fact the same man. According to pure informationalism, "Sam" and "the Boston Strangler" have the same content because they are appropriately causally related to the same object. A psychology that assigns them the same content, however, has difficulty accounting for the evident psychological difference between thinking someone is Sam and thinking he is the Boston Strangler.

This is a difficulty only for informationalism, not for externalism in general. Less extreme versions of externalism can distinguish different ways of thinking of the same object by appealing to the apparent semantic connections between thoughts: the thought that someone is the Boston Strangler has different links to other thoughts than the thought that someone is Sam. A substantial part of the book addresses the great difficulties informationalism faces because it does not accept semantic connections between thoughts. These discussions are characteristically ingenious and well presented – and crucial for informationalists. The book as a whole is commendable both for its recognition of the problems of informationalism and for its original and stimulating attempts to solve them.

The overall effect of *The Elm and the Expert*, however, is to make the reader see the attractions of a not purely informational, but none the less externalist view. For Fodor must exert Herculean efforts in extricating informationalism from difficulties peculiar to it, and the advantages of externalism he considers are not limited to informationalism. Part of our understanding of thought is an understanding of the vast network of connections that exist between thoughts, given their contents. We draw on our understanding of these connections in evaluating how well a proposed psychological explanation explains a person's behaviour. Transitions from one belief to another that are not explained by pure deductive logic are explained, and explained in a way that has a special status, if they are required by the contents of the beliefs. A thinker's moving from the belief that a triangle is equiangular to the belief that it has sides of equal length requires further explanation in a way that a thinker's moving from the belief that a triangle is equilateral to the belief that it has sides of equal length does not. Conversely, other things being equal, chains of thought provide less satisfactory psychological explanations to the extent that thinkers fail to make connections. And, of course, philosophy itself has always drawn on our rich intuitions about the conceptual connections between thoughts.

It is, however, notoriously difficult to give a principled account of these connections. In other work, Fodor, following the influential work of W. V. Quine, argues that the problems with providing such an account should lead us to reject any theory that appeals to these connections, in favour of informationalism. *The Elm and the Expert* confirms my view that, in this one respect, Jerry Fodor has given up too easily on an important part of our common-sense understanding of psychology. We need an account of the connections between thoughts that thoughts' meanings apparently require thinkers to make, although thinkers do not always fulfil what is required of them. Providing such an account is a daunting task, but, then, once we accept psychological explanations that make ineliminable use of semantic properties, we are saddled with no less than the problem of making meaning scientific.

Mark Greenberg is a Junior Research Fellow in Philosophy at Jesus College, Oxford, and Senior Counsel in the Office of Policy Development of the United States Department of Justice.

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