Thematic

Holism: mental and semantic

By Block, Ned

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1. The doctrines

Semantic holism is the view that the meaning of a sentence is determined by its place in the web of sentences comprising a whole theory. Mental holism is the corresponding view for belief content – that the identity of a belief content is determined by its place in the web of beliefs comprising a theory. Sometimes holists advocate a more sweeping view in which the identity of a belief is determined by its relations to a body of theories, or even *the whole of a person's belief system*. In what follows, mental and semantic holism are treated as two aspects of a single view.

Holism can be contrasted with two other views: molecularism and atomism. Molecularism characterizes meaning and content in terms of a relatively small part of the web that many different theories may share. For example, the meaning of 'bachelor' might be said by a molecularist to be 'man who has never married'. And the meaning of 'and' might be given by a

molecularist version of inferential role semantics via specifying that the inference from '*p* and *q*' to '*p*', and from '*p*', '*q*' to '*p* and *q*' has a special status (for example, it might be 'primitively compelling', in Peacocke's terms; see Semantics, conceptual role). Atomism characterizes meaning and content in terms of none of the web; it says that sentences and beliefs have meaning or content independently of their relations to any other sentences or beliefs and, therefore, independently of any theories in which they appear.

Note the contrast between the semantic issues that are of concern here and those that concern particular phenomena in particular languages. Semantics in the present sense is concerned with the fundamental nature of meaning and what it is about a person that makes their words mean what they do. We might call the present sense the 'metaphysical' sense. Semantics in the other sense – what we might call the 'linguist's' sense – concerns the issues of how meanings of words fit together to determine the semantic properties and internal structures of sentences. Semantics in the linguist's sense concerns such issues as how many types of pronouns there are and why it is that 'The temperature is rising' and 'The temperature is 60 degrees' does not entail that 60 is rising. There are interactions among the two enterprises, but semantics in the linguist's sense can proceed without taking much notice of the issue of semantic holism.

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Article Summary

Mental (or semantic) holism is the doctrine that the identity of a belief content (or the meaning of a sentence that expresses it) is determined by its place in the web of beliefs or sentences comprising a whole theory or group of theories. It can be contrasted with two other views: atomism and molecularism. Molecularism characterizes meaning and content in terms of relatively *small parts* of the web in a way that allows many different theories to share those parts. For example, the meaning of 'chase' might be said by a molecularist to be 'try to catch'. Atomism characterizes meaning and content in terms of *none* of the web; it says that sentences and beliefs have meaning or content independently of their relations to other sentences or beliefs.

One major motivation for holism has come from reflections on the natures of confirmation and learning. As Quine observed, claims about the world are confirmed not individually but only in

conjunction with theories of which they are a part. And, typically, one cannot come to understand scientific claims without understanding a significant chunk of the theory of which they are a part. For example, in learning the Newtonian concepts of 'force', 'mass', 'kinetic energy' and 'momentum', one does not learn any definitions of these terms in terms that are understood beforehand, for there are no such definitions. Rather, these theoretical terms are all learned together in conjunction with procedures for solving problems.

The major problem with holism is that it threatens to make generalization in psychology virtually impossible. If the content of any state depends on all others, it would be extremely unlikely that any two believers would ever share a state with the same content. Moreover, holism would appear to conflict with our ordinary conception of reasoning. What sentences one accepts influences what one infers. If I accept a sentence and then later reject it, I thereby change the inferential role of that sentence, so the meaning of what I accept would not be the same as the meaning of what I later reject. But then it would be difficult to understand on this view how one could rationally – or even irrationally! – change one's mind. And agreement and translation are also problematic for much the same reason. Holists have responded (1) by proposing that we should think not in terms of 'same/different' meaning but in terms of a gradient of similarity of meaning, (2) by proposing 'two-factor' theories, or (3)

by simply accepting the consequence that there is no real difference between changing meanings and changing beliefs.

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2. Motivations for holism

The best-known motivation for semantic/mental holism involves Quine's doctrine of *confirmation* holism, according to which 'Our statements about the external world face the tribunal of sense experience not individually but only as a corporate body' (1953: 41). This view gains its plausibility from the logic of theory revision. An experimental datum confirms (verifies; gives us some reason to believe) a statement only in conjunction with a great number of theoretical ideas, background assumptions about the experiment, and assumptions from logic and mathematics, any one of which could be (and in the history of science often has been) challenged when problems arise (see Confirmation theory). If we combine this confirmation holism with the logical positivist doctrine that the meaning of a sentence is its method of verification or confirmation (see Logical positivism; Meaning and verification), that is, if we combine the doctrine that meaning is confirmation with the claim that

confirmation is holistic, we get semantic holism. And this implies that talk of the meaning of a sentence in isolation from other sentences makes no more sense than talk of the meaning of 'of' apart from the contexts in which it occurs.

Positivism and confirmation holism are not the only roads to semantic/mental holism. Another route proceeds from considering how people learn actual scientific theories. For example, one does not learn definitions of 'force', 'mass', 'kinetic energy' or 'momentum' in terms that are understood beforehand, for there are no such definitions. Rather, these terms are learned together (in conjunction with procedures for solving problems). As Quine (1954) and Putnam (1965) argued, local 'definitions' in a scientific theory tend to be mere passing expository devices of no lasting importance for the theory itself. And this is quite ubiquitous in theories, where there is a circle of interdefined theoretical terms none of which is definable in terms outside the theory. This fact motivates Lewis' proposal that scientific terms can be defined functionally in terms of their roles in a whole theory.

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3. Must functionalism lead to holism?

Functionalism has become a popular approach in the philosophy of mind generally (see Functionalism). For example, the difference between the belief that one will win the lottery and the desire that one will win the lottery is plausibly a functional difference (a difference in the roles of the states), since one but not the other leads to test-driving a Ferrari. But functionalists go further, claiming that the common *content* of these propositional attitudes can also be functionally defined (in terms of the cognitive roles of states which have these contents in the psychological economy, including links to inputs and outputs). It has often been supposed that the most important feature of the functional role of a belief in determining its content is its role in inference, and for that reason functionalism about content or meaning is sometimes called 'inferential role semantics'. The functional role of a thought includes all sorts

of causes and effects that are non-semantic, for example, perhaps depressing thoughts can lower one's immunity, causing one to become ill. Conceptual roles are functional roles minus such non-semantic causes and effects.

A functional theory of the whole mind must make reference to any difference in stimuli or responses that can be mentally significant. The difference between saying 'damn' and 'darn' can be mentally significant (for example, one can have a policy of saying one rather than the other). Your pains lead to 'darn', mine to 'damn', so our pains are functionally different, and likewise our desires to avoid pain, our beliefs that interact with those desires, and so on. So if we functionally define 'pain' in terms of a theory of the whole mind, we are naturally led to the conclusion that two individuals who differ in this way share no mental states. This is why functionalism can lead to holism.

Molecularists object that if you have a fine-grained way of categorizing, you can just coarsen it. But which causes and effects of pain are constitutive and which are not? The form of a solution could be: 'pain = the state constituted by the following causal relations…', where the dots are replaced by a specification of a subset of the mentally significant causal relations into which pain enters. Putnam suggested we look for a normal form for a computational description of pain, and Lycan (1988) and Rey (1997) have suggested that we construct functional

theories at different levels, one of which would be suitable to define ‘pain’ without distinguishing between ‘damn’ and ‘darn’. But after years of discussion, there is no real solution, not even a proposal of something functional common to all and only pains. Lycan and Rey expect the issue to be settled only by an empirical psychology. Moreover, even if one is optimistic about finding a functional definition of pain, one cannot assume that success will transfer to functionalist accounts of meaning. Success in the case of meaning would seem to require an analytic/synthetic distinction which many have found independently to be problematic.

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4. Problems with the analytic/synthetic distinction

Another route to holism arises from considerations involving the analytic/synthetic distinction, that is, the distinction between claims that are true solely in virtue of meaning and claims that depend also on the way the world is. Quineans often hold that the analytic/synthetic distinction is confused. Some philosophers have argued from the idea that there is something wrong with analyticity to holism. We can put the argument in terms of conceptual role semantics. It seems that some inferences (for example, from ‘bachelor’ to ‘unmarried’) are part of meaning-constitutive inferential roles, but others (for example, from ‘bachelor’ to ‘dislikes commitment’) are not. However, if there is no analytic/synthetic distinction, then there is no principled way to draw a line between inferences that

constitute meaning and those that do not (see Analyticity). So, the argument concludes, if some inferences are part of meaning-constitutive inferential rules, *all* inferences are part of meaning-constitutive inferential roles, and this is a form of holism (Fodor and LePore 1992; Devitt 1995).

This argument is of course fallacious. A bald man can have some hairs, and there is no principled way of drawing a line between the number or distribution of hairs on a bald man and on a non-bald man. But one would not conclude that everyone is bald. Failure to find a principled way of drawing a line need not require one or the other extreme.

Still, the argument is onto something. How would the molecularist choose those inferences which are meaning-constitutive if the meaning-constitutive must be analytic rather than synthetic but there is no such distinction? In fact, the problem is more general, and far from being an argument *for* holism, it casts doubt on holism too. If meaning-constitutivity entails analyticity, any view – molecularist or holist – that postulates anything meaning-constitutive is in trouble if there is no such thing as analyticity.

One response to this argument has been to 'challenge' the principle that a statement or inference that is meaning-constitutive is thereby analytic (Block 1993). There are two very different points of view which see a gap between meaning-constitutivity and analyticity.

One approach to finding a gap between

meaning-constitutivity and analyticity derives from the views of Quine and Davidson, on which there is no clear difference between a change of meaning and a change of belief (see Radical translation and radical interpretation). The other appeals to narrow contents (see Content: wide and narrow). Narrow contents are contents that are necessarily shared by 'twins', people who are internally as similar as you like, even though their environments differ. Consider the influential example of Putnam's 'twin earth' which is a planet identical to earth in every respect except that wherever earth has H_2O, it has a superficially similar but chemically different substance, XYZ. Arguably, I and my twin on Putnam's twin earth share a narrow content for 'water' despite the different referents of our words. If meaning is narrow in this sense, it is false that meaning-constitutive sentences or inferences are thereby analytic if meaning is narrow. The narrow contents which constitute meaning *themselves* are neither *true* nor *false* and hence cannot be true in virtue of meaning. For example, let us suppose that my twin and I accept the propositions that we express with 'Water contains hydrogen'. My belief has a true wide content, my twin's has a false wide content, but the narrow content has to be the same (since we are twins) and is therefore neither true nor false (see Putnam, H. §3). Further, we can even imagine a twin earth in which a putative meaning-constitutive inference is invalid. If there is any inference that is a good candidate for analytically defining 'water', it is the inference from 'water' to 'liquid'. But

consider a twin earth on which 'water' is used as here to refer to H_2O, but where water is very rare, most of the substances referred to as 'liquids' being granular solids that look like liquids. So 'Water is a liquid' as said by on this twin earth is *false*, even though it is true in our mouths. Perhaps it will be said that what is analytic is not 'Water is a liquid' but 'Water has a liquidish look and feel'. But it is easy to imagine circumstances in which the look and feel of water changes. Perhaps what we should be looking for is not a narrow content that is *true* in virtue of meaning but one that is only *assertible* in virtue of meaning. But it is part of our commitment in the use of natural kind terms that the world plays a part in determining truth-values, so we must regard any appearance of warrant solely in virtue of meaning as superficial.

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5. The problem of disagreement and translation

Holism has some weird-sounding consequences. Suppose we say that all of a sentence's inferential links (within a theory or body of theories) are included in its set of meaning-constitutive inferential roles. But what sentences I accept influences what I infer, so how can I reason so as to change my own mind? If I accept a sentence, say, 'Bernini stole the lead from the Pantheon', and then later reject it, I thereby change the inferential role of that sentence, so the meaning of the sentence that I accept is not the same as the one that I later reject. So how can I reason about which of my beliefs should be given up? Along similar lines, one can argue that no two people ever agree or disagree, and that we can never translate anything perfectly from one language to another. The holist owes us a way to reconcile such conclusions with common

sense. This section will explore three holistic responses.

Harman (1973) and Block (1986) have argued that we can avoid the problem by replacing the dichotomy between agreement and disagreement with a gradient of similarity of meaning, perhaps multi-dimensional. If I first accept and then reject 'Bernini stole the lead from the Pantheon', it is not as if I have rejected something *utterly unrelated* to what I earlier accepted. This position profits from the analogy with the ordinary dichotomy between believing and disbelieving. Reasoning with this dichotomy can lead to trouble, trouble that is avoided if we substitute a graded notion for the dichotomy. For example, I can have a low degree of belief in a long conjunction even though I have a high degree in each of the conjuncts. But if we put this in terms of the dichotomy between believing and disbelieving, we say that I could believe each conjunct while disbelieving the conjunction, and that is a contradiction. The proposal, then, is that we substitute a graded notion of similarity of meaning for the ordinary notion of same/different meaning. It must be conceded, however, that there are no specific suggestions as to what the dimensions of similarity of meaning are or how they relate to one another.

This approach can be combined with the aforementioned 'two-factor theory', according to which meaning consists of an internal holistic factor and a non-holistic purely referential factor (see Semantics,

conceptual role §2). For purposes of translation and communication, the purely referential factor plays the main role in individuating contents. For purposes of psychological explanation, the internal factor plays the main role (see Loar 1987).

There is another (compatible) holistic response to the problem of disagreement which is associated with the views of Quine, Davidson and Putnam, namely that there is something wrong with the terms in which the problem is posed. They explicitly reject the very distinction between disagreeing and changing the subject that is presupposed by the statement of the problem. Putnam (1988) and Stich (1983) have argued, along these lines, that translation is not an objective process; it depends on subjective value-laden decisions as to how to weigh considerations of similarity in reference and social and functional role. It is controversial whether this Quinean response avoids the problem of disagreement only by rendering meaning something unsuitable for science.

Another holistic response is exemplified by Lewis' observation (1995) that there is no need to suppose that a satisfier of a functional description must fit it perfectly – fitting *most* of it is good enough. Lewis proposes that in framing the functional roles, we replace the set of inferences that are the basis for a functionalized account of belief with the disjunction of all the conjunctions of most of them. Thus, if we think there are three inferences, *A*, *B* and *C*, that are closely linked to the meaning of 'if', we might define

'if' as the relation that satisfies either A & B or A & C or B & C. (Of course, we thereby increase the danger that more than one relation will satisfy our definition.) Then disagreement will be possible between people who accept most of the inferences that define their subject matters.

I have just been canvassing holistic responses to the problem, but of course atomism and molecularism are also responses. Fodor's version of atomism (1987) construes meanings as purely referential. Fodor goes so far as to insist that there could be punctate minds; minds that have only one belief. This view must, however, find some way of accommodating the insights that motivate holism.

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6. Psychological laws

Fodor and LePore (1992) object to holistic accounts of mental content on the ground that they would preclude psychological laws, for example, the belief that one is in immediate danger causes release of adrenaline. According to holism, there is no such thing as 'the' belief that one is in immediate danger because the belief that you designate in this way is not quite the same as the belief that I designate in this way. Beliefs are too fine-grained to be referred to in this way (see Belief; Propositional attitudes). One strategy for dealing with this issue is to observe that many candidate psychological laws can generalize about contents without actually specifying them. Consider this candidate for a law: for *any* action *a* and any goal *g*, if one wants *g* and also believes that *a* is required for *g*, then one will try to do *a*. This is a universally quantified law (because of the role of 'any'), albeit a trivial one. Universally quantified laws are a good scientific bet, and these can involve holistic content. By

quantifying over goals, one can state laws without committing oneself to two agents ever having exactly the same goal. The point just made says that the holist can allow one kind of psychological law (the quantified kind) but not another (the kind that mentions specific contents such as the belief that one is in danger). But the holist may go further, arguing that there is something wrong with the putative laws of specific contents. The point is that 'The belief that one is in immediate danger causes release of adrenaline' stands to psychological law as 'Large slippery rocks on mountain-tops can damage cars on roads below' stands to physical law. Laws should quantify over such specific items, not mention them explicitly (see Laws, natural; Explanation).

However, Fodor and LePore are right that any particular type of holistic state will exist only rarely and transiently. In this respect, holistic mental states are like the states of computers (see Mind, computational theories of). A total computer configuration as specified by the contents of every register in the internal memory and every cell on the hard disk will occur only rarely and transiently. There are deterministic laws of the evolution of total computer states, but they deal with such transient states. So psychological explanation will have to be seen by holists as like explanation of what computers do, in part a matter of fine-grained laws of the evolution of systems, in part coarse-grained accounts of how the systems work that do not have the status of laws.

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7. Narrow-content holism

There is a great deal of controversy about whether there is such a thing as narrow content or meaning, but if narrow content exists, there is good reason to think it is holistic. We have already seen one reason having to do with the fact that there is no analytic/synthetic distinction for narrow content. But there is another reason as well that focuses on change of narrow content with learning. Putnam (1983) and Block (1994) give an argument that uses some relatively uncontroversial premises about identity and difference in narrow content at a single time to squeeze out a conclusion to the effect that one's narrow contents can be expected to change whenever one receives substantial new information, however trivial. The argument depends on a variant of the famous 'twin earth' example. Consider twins who grow up in different communities where 'grug' is used to denote different substances, beer in one and whisky in the other, but the difference has not made any difference to the twins. At the age of 10, they are as

similar as you like, and so the narrow contents of their 'grugs' are the same. By the age of 12, they know as much about 'grug' as teenagers normally know, including the (different) translations of 'grug' into English. One knows that 'grug' in his language is beer, the other that 'grug' is whisky. The argument motivates the claim that their 'grugs' differ in narrow content at 12 despite being the same at 10, so the information that they have acquired (which is designed to be run-of-the-mill) has changed the narrow contents. (But see Devitt 1995 for a reply.)

Issues about holism continue to be at the heart of debate in philosophy of language and mind. In the mid-1960s, it was widely assumed that to be a holist was to be a sceptic about any science of meaning or content, but thirty years later there has been a spirited debate about whether cognitive science can tolerate it.

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