Is the "Bottom-Up" Approach from the Theory of Meaning to Metaphysics Possible?[1]

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Dummett's *The Logical Foundations of Metaphysics* (LFM) outlines an ambitious project that has been at the core of his work during the last forty years. The project is built around a particular conception of the theory of meaning (or philosophy of language), according to which such a theory should constitute the corner stone of philosophy and, in particular, provide answers to various metaphysical questions. The present paper is intended as a critical evaluation of some of the main features of that approach. My negative answer to the title's question notwithstanding, I find Dummett's analyses, which both inform and are guided by his project, of very high value. Among the subjects to be discussed here, which relate to but are not fully reflected in the title, are the concept of a full-blooded theory (in *4.*) Davidson's program (in *5.*) and holism, to which the last third of this paper (section *6.*) is devoted. That section can be read independently; to some extent, this is also true of *4.* and *5.* taken together.

1. A Passion for Clear Understanding

Underlying Dummett's conception of the philosophy of language is a general view about the nature of a philosophical inquiry; namely, that the goal of such an inquiry is a true understanding of our practices. The point comes up in Dummett's reaction to Kitcher's criticism of Frege's project in the foundations of arithmetic. That project, Kitcher claims, unlike the foundational work of Cauchy and Weierstrass—which was instrumental in the advancement of mathematics—did not address real mathematical needs and did not contribute to the furthering of number theory, an area free of crisis, where mathematician knew what they were doing. As Dummett sees it, such a disparagement of Frege's project evinces a misconception of the very nature of philosophical inquiry:

[1]This paper grew out of an attempt of fulfilling a promise to review Dummett's book *The Logical Basis of Metaphysics.* Since it was impossible to keep the work within the limits of a review article, I have tried to capture in this paper the main issues, hoping to develop other points elsewhere. I would like to thank Isaac Levi and Sidney Morgenbesser for useful observations, and Akeel Bilgrami for many detailed helpful suggestions.

> Since, however, it [the philosophical inquiry] has no purpose beyond itself, there is no justification that can be offered to the sceptic, any more than art can be justified to the philistine. For someone to whom it was of no concern if we had no clear idea of what we were doing... ... all inquiry into these matters is vanity. The philosopher seeks not to know more but to understand what he already knows. He continues to seek unless that he is seduced by the sceptisim that denies that understanding is possible. p. 240

A different philosophical temperament may see in the connoisseur-versus-philistine analogy a high-handed purism. But the force of Dummett's contention cannot be denied and Frege's *Grundlagen* provides the best case for making his point. The understanding achieved through the analysis that was given in the *Grundlagen*, is a philosophical conquest of the first rank, yet the work had no effect on mathematical practice—nor, apparently, did it aim at such "practical" implications[2]. On Dummett's view, an understanding in depth of one's uses of language requires hard philosophical labor. Furthermore, the analysis that leads to understanding may show that certain well-mastered linguistic practices, entrenched as they may be, are based on confusion, and it may suggest revisions. But the nature of philosophical understanding cannot be found except in the very inquiry that leads to it. There are no external criteria, just as there are no external criteria for artistic merit. The project of philosophy is autonomous.

Dummett's second major principle is stated at the very beginning of LFM: Philosophy of language (or, as he would prefer to call it, and not accidentally, the theory of meaning) is to be placed at the center of the philosophical inquiry[3]. The philosopher's main goal should be "the most ambitious of intellectual endeavors, to gain a clear view of the working of our language". Traditional philosophical questions are to be handled through the analysis of thought as it is expressible in language [4]. Such an analysis is feasible because linguistic constructs acquire their meanings from patterns of use: "No hidden power confers these meaning on them: they mean what they mean in virtue of the way we use them, and of nothing else". And among its corollaries we should have nothing less then verdicts on an impressive list of philosophical disputes that fall within the "realism / anti-realism" mold: realistic versus idealistic views of the external physical world; mathematical Platonism, as opposed to formalism and to various brands of constructivism; realist versus instrumentalist views of science; realistic conceptions of morality—against subjectivist ones; the reality of

[2]We can ignore, for the sake of the argument, the wider perspective of Frege's work, within which the *Grundlagen* analysis has consequences concerning the construal of natural numbers inside a set-theoretic framework.

[3]He proposes this principle as a characterization of "analytic philosophy". No doubt, many would take issue with the proposal.

[4]" Philosophy can take us no further than enabling us to command a clear view of the concepts by means of which we think about the world, and, by so doing, to attain a firmer grasp of the way we represent the world in our thought. It is for this reason and in this sense that philosophy is about the world." p. 1

time, in particular—the status of statements about the past and about the future. These (and presumably others) are to be solved not by treating them as metaphysical problems—what he calls a "top-down" approach—but "bottom-up", that is, by regarding them as problems in the theory of meaning, where meanings reflect, or are derived from, the correct use of language.

The pedigree of this strategy is well-known: Wittgenstein and the British ordinary language school of philosophy, as well as the Vienna circle. But to identify Dummett with these traditions is to do him injustice. He belongs to the post-positivist era in accepting, at least prima facie, the metaphysical questions as meaningful. The language-oriented approach is intended to solve them, not to brush them aside. Moreover, the demand for clear understanding goes hand in hand with a view that puts normative evaluation above linguistic practices. Dummett is thus immune to the relativism inspired by the language games of the late Wittgenstein, as well as to Carnap's dualism of internal-versus-external questions. He also follows in the footsteps of Frege in looking for a systematic, rigorous account that makes full use of sophisticated formal methods. While eschewing any goal of formalizing natural language, Dummett uses formal systems, and in particular proof-theoretic analysis, as tools for uncovering principles of usage.

The main outlines of his project are roughly as follows. A successful theory of meaning—one that provides a workable account that accords with what we observe—will reveal by virtue of what are statements made in the language true or false, and how the functioning of linguistic constructs is determined by their components. It will point out, at least for some important sectors of language, the kind of semantics that is required as a basis for the meaning theory and the kind of logic that goes with it. This, in turn, will give us a way of adjudicating between conflicting metaphysical claims concerning the domains described in these sectors of languagethe[5]. Dummett's declared aim is not such a theory, a project—he remarks—in which, after the first steps taken by Frege, there has been no agreement whatsoever how to proceed. His goal is only a preliminary chalking out of possibilities: "no greater ambition than to set up a base camp", from which "an assault on the metaphysical peaks" can be mounted.

[5] A realistic conception is, by far and large, marked by classical bivalent logic, where this is not merely a formal condition on the deductive system, but a property of the semantics (the truth values should be "determinate"). Also conforming with realism is classical logic in a wider sense, which includes certain many-valued logics—with a subset of so-called designated truth-values representing truth. The truth-values signify different ways in which a sentence can be true or false. More than two values are needed in order to enable a truth-functional interpretation of the connectives. Not all gap-logics are, however, of the type that conforms with realism.

2. The Metaphysical Basis of Logic

Fortunately, we need not subscribe to Dummett's overall program in order to appreciate his insights. Unlike applied science, a philosophical work can benefit also those who disagree with its underlying axioms. I, for one, doubt that Dummett's bottom-up approach is capable of delivering what he expects of it. A less ambitious meaning theory, whose goals are limited to philosophy of language proper—i.e., to a systematic account of the working of language—can avoid metaphysical commitment (in the way that the Chomskian project in linguistics, or the theory of speech acts, is metaphysically neutral.) Such a theory may render great service in laying bare hidden mechanisms of language and thought; but it will not be able to adjudicate between rival metaphysical conceptions. Genuine metaphysical questions, I think, cannot be solved by taking a pure philosophy-of-language tack. It is rather the other way round. A full-scale analysis of meaning should address metaphysical questions as the direct questions they are, about the world, or about us in the world.

The case of intuitionism versus realism in mathematics—say, first-order number theory—will serve here to illustrate my point, as well as to clarify Dummett's contention. Here is a case where we have by now a reasonably clear picture of the issues (due partially to Dummett's own contributions), where the implications of each position have been, philosophically and formally, worked out. And yet the issue remains open. Dummett's way of arriving at a verdict rests on a basic maxim concerning meaning, which constitutes the third major principle of his philosophy:

A theory of meaning should tell us in what the understanding of a language consists, without appealing to primitive notions such as *understanding that...*[6], or *grasping the meaning of...* . One's understanding is to be grounded in one's ability to recognize the circumstances that make certain basic statements true, and those that make them false; an ability that can be manifested by one's accepting, or rejecting, such statements, according as the circumstances warrant acceptance or rejection. The statement's truth, or its falsity, should "in principle" be recognizable, even if it is not actually so. (I shall return to this, in more detail, in *4*.)

For example, grasp of the concept *prime number* is manifested by one's ability to decide, given any natural number x, whether x is prime. One can do so by applying the correct procedure, indicated in the very definition of *prime*: test, for each number smaller than x, whether x is divisible by it. This may require a very large number of steps, but since that number is finite, the decision is "in principle" possible. For a large variety of statements, however, there is no such general procedure. We cannot survey all natural numbers in order to decide whether there is an infinite number of twin primes[7]. In as much as we cannot

[6] In the ordinary sense of 'understanding', in which somebody is said to understand French. This should be distinguished from the philosophical understanding discussed in the preceding section.

[7] Twin primes are two prime numbers differing by 2, such as 5 and 7, or 11 and 13. Whether there is an

recognize the circumstances that make statements true or false, we cannot regard them as having determinate truth-values, implying that bivalence no longer applies. This does *not* mean a *lack* of truth-value, but rather a suspended state; for we may still be able to prove such a statement, or its negation. The proof, however, cannot presuppose classical logic. The logic that recommends itself in the case of arithmetic is intuitionistic.

The suspended state, where neither A, nor its negation, $\neg A$, has been established is a delicate affair. From a simple-minded perspective the following two possibilities are left: (i) Either A or $\neg A$ is provable (i.e., by intuitionistically acceptable methods), we have just not found the proof. (ii) Neither A nor $\neg A$ is provable. To put the matter thus is, however, to view it through classical glasses. Intuitionistically, that a is not provable means the existence of an effective procedure that leads from any proof of A to a contradiction; but this procedure would constitute a proof of $\neg A$. Hence, (ii) is not a possibility that an intuitionist can entertain. Yet, this does not entail—as it would in classical logic—the acceptance of (i). Another aspect of this is the fact that in intuitionistic logic $\neg(A \vee \neg A)$ leads to contradiction (for it implies both $\neg A$ and $\neg\neg A$), hence $\neg\neg(A \vee \neg A)$ is provable; but $A \vee \neg A$ does not follow. We can recap the situation thus: An intuitionist refuses to subscribe to the general principle that A is either true or false, yet he does not envisage the possibility of a truth-value gap, for he is prevented from asserting that A is neither true nor false. This feature of intuitionistic logic led McDowell to argue that intuitionism is consistent with a realistic view[8]. But his argument is not convincing. The anti-realism of an intuitionist shows in the rejection of the law of excluded middle, even though his rejection is "passive" in that it does not make positive place for truth-value gaps. A related line of thought has been proposed by Wright[9], who argued that bivalence implies realism only if bivalence implies that truth transcends verifiability, and such transcendence follows only if one assumes the possibility of provability-gaps (statements that are neither provable nor disprovable); yet—Wright argues—that assumption is unwarranted, for it cannot be sustained in intuitionistic logic. But this argument stands only by presupposing that bivalence is compatible with intuitionism, which it is not. For bivalence is a metalinguistic principle that leads inevitably to the law of excluded middle, a law that the intuitionist rejects, even while accepting $\neg\neg(A \vee \neg A)$ as valid. All of which mark intuitionism as a brand of anti-realism, though there are other, more extreme brands.

I shall not pursue this matter here, for I think that Dummett construes correctly the relations

infinite number of twin primes is a well-known open problem.

[8] J. McDowell, "Truth-Conditions, Bivalence and Verificationism" in *Truth and Meaning: Essays in Semantics* 1976, edited by G. Evens and J. McDowell. His argument is also based on the closely related fact that Tarski's truth-definition can be applied within an intuitionistic system, where the same intuitionistic logic governs both language and metalanguage. Dummett, however, has argued quite convincingly (LFM, pp. 27 – 29 and 56 – 57) that this formal analogue of classical logic does not amount to any real interpretation of the intuitionistic system, because it does not yield semantic values.

[9] C. Wright "Dummett and Revisionism", in *Michael Dummett, Contribution to Philosophy*, B. Taylor editor, 1987.

between realism, bivalence and intuitionism. The points on which I take issue are different: First, that, unless one begs the metaphysical question of realism, there is no argument from the theory of meaning to intuitionism. Second, that the adoption of an intuitionistic system does not satisfy Dummett's criteria for grasp of meaning. Dummett claims that a realist cannot give a satisfactory account that explains what grasp-of-meaning consists in. On one possible account, which he considers on behalf of the realist, grasp-of-meaning consists in mastering the practice of reasoning and deducing according to classical logic. This, Dummett argues, fails to distinguish the mastering of a formal practice—something that can be inculcated by training, or conditioning—from an understanding of what the practice is about. (The point is directly related to Dummett's distinction between mere formalism and true semantics.) On another realistic account, grasp-of-meaning figures as a theoretical concept within a meaning theory, which, like other theoretical concepts in science, does not reduce to its observational consequences. Mastering the practice is taken as evidence for attributing understanding, or grasping, to the speaker; it is not what the grasping consists in. Dummett contends, however, that such a scheme, borrowed from the philosophy of science, would not do here. While a scientific theory aims at a systematic account of a complex of phenomena, a meaning theory should do more[10].

> A meaning theory has not fulfilled its function if it merely provides an accurate conspectus of a single complex phenomenon, the use of a language within a community ... it has also to explain in what the understanding of language by any individual member of the community consists. The language is indeed a social practice, and an individual mastery of it is his ability to participate in that practice. But his understanding of what is said to him, and what he himself says is a conscious understanding: he does not merely react in accordance with the training he has received like one conforming to a post-hypnotic suggestion. For this reason, we must demand from the meaning theory the capacity to explain what it is for an individual to understand a particular utterance , his own or someone else's. p. 343

But here one can argue that to treat *conscious understanding* as a theoretical non-reduced concept implies neither that we make it an unresolved mystery, nor that we ignore the difference between it and training-induced skill. We may—indeed, are required to—elucidate it by placing it within a wider conceptual map. But to require, at this point, an explanation of *understanding* of mathematical statements, solely in terms of manifested ability to recognize the circumstances where truth-conditions hold, is to impose a restrictive criteria that carries an anti-realistic bias. The ability of such a theory to decide metaphysical issues is not

[10] Dummett also argues that the usual scheme, under which philosophers view scientific theories, leads to holism, which is unacceptable in the case of meaning theory; for "one may misunderstand, or fail to understand at all, because one misunderstands or does not know a single word contained in the sentence." The point is not well taken. Reasonable holism will have no essential difficulty with tracing failures of understanding to single words. I shall go into the matter in *6.*

surprising, given that a particular metaphysical stance has been taken already. Dummett, as we shall see, distinguishes between abilities that testify to the understanding of the semantics and those that evince mere syntactic skills. While there is place for some such distinction, it cannot be made sufficiently sharp and rigid in the way that Dummett's position requires. I shall elaborate on this later, in *4.*

Now for my second point. Even intuitionism falls short of satisfying the criterion of manifested ability to recognize the obtaining of truth-conditions. Consider, for example, the statement: '$2^{2^{100}}+1$ is prime'. In any standard intuitionistic account, it and similar statements[11] have determinate truth-values and are subject to classical logic. But any prescription for finding the truth-values is, generally, not implementable. The number of symbol-tokens required to carry out the algorithm (on short inputs, such as ' $2^{2^{100}}+1$ ') may easily outrun the total number of elementary particles and the number of steps may exceed the life span in nanoseconds of the solar system, perhaps even of the universe. Occasionally, the question is decided by an ingenious proof. But since sufficiently short proofs are not always available, such lucky strikes cannot justify our regarding *all* statements of that kind as having definite, yet unknown, answers. The last thirty years have seen a proliferation of results that point to the general intractability of various problems; problems which can be decided in a finite number of steps, but which remain, in general, beyond our ken, because the number of steps is enormous. It is actually proven that no algorithm achieves a general substantial reduction of the required computations.

The only reason for accounting the answers to such problems as verifiable "in principle" is that the number of steps is *finite*. This appeal to our intuitions about finiteness precedes any justification that relies on verifiability "in principle"; therefore it cannot itself be justified by invoking such criteria. We are convinced that there is no essential difference between the questions "Is $2^{2^4}+1$ prime?" and "Is $2^{2^{100}}+1$ prime?", that the first, under the four-minute warning (the scenario in which all our reasoning activity will come to an end in four minutes), is similar to the second. But what are the grounds for that conviction if not this basic intuition about finite iterations? Our limited mathematical experience gives rise to clear indubitable understanding of certain operations involving indefinitely large finite numbers, and certain properties concerning practically unsurveyable totalities. Both realist and intuitionist share the view that certain finitistic procedures—including extremely complex ones—can be iterated any finite number of times and that they yield determinate values that, in most cases, are unknown and practically unknowable. Their disagreement is about the possibility of extending this view to non-finite totalities. The dispute derives from different conceptions of the gap between the finite and the infinite, it belongs to the foundations of mathematics not to the philosophy of language[12].

[11] Of the form 'τ is prime', where 'τ' is a term obtained by iterating notations for addition, multiplication and exponentiation. In general, this is true of all statements of primitive recursive arithmetic.

[12] At the very end of the book Dummett provides an impressive analysis in order to show that the assumption of an omniscient being, such as God, does not clash with the intuitionistic outlook. The analysis

Therefore, the adoption of an intuitionist framework leaves Dummett's requirement for some sort of reductive account of *understanding* unfulfilled. No such account can tell us in what consists one's understanding that the $2^{2^{100}}$-th iteration of a certain procedure yields a certain unknown result. The only criteria for understanding would be the ability to reason and deduce correctly, which is not what Dummett requires.

I shall now take a closer look at some of the basic aspects of Dummett's overall conception. While relating directly to his overall conception, these features should be evaluated on their own.

3. Truth and the Semantics Basis of a Meaning Theory

In previous works[13] Dummett classified meaning theories into those that take truth as the central notion of the theory and those that take some other notion as central, verifiability or warranted assertion; his preference was clearly for the latter. That position is now modified, or—if you wish—refined. To take truth as the central notion of a meaning theory is, roughly speaking, to make the grasp of truth-conditions a key to grasp of meaning. While Dummett accepts this, he distinguishes between a strong and a weak sense of the truth-as-the-central-notion thesis. The strong sense presupposes the truth concept that goes with classical logic[14]. In the weak sense, which Dummett endorses, truth and meaning are interdependent. *Both* are constrained by the requirement that grasp-of-meaning be grounded in a manifestable ability to recognize the obtaining of truth-conditions. Considerations that have to do with verifiability, or warranted assertion, can therefore play a role in determining the concept of truth, opening possibilities of non-classical logics. As we shall see (in the subsection on semantic values) the marriage of truth with verifiability raises problems when it comes to the semantics of intuitionistic systems.

Behaviorally, language is manifested in various acts, among which assertion is central. It is through assertion—and the criteria for its correct performance—that truth enters the play. But, Dummett claims, even if we do not go for realism, the distinction between the truth of a statement and the evidence that warrants its assertion should be maintained for a variety of reasons. Truth-values (and, more generally, semantic values—to be presently discussed) are needed in accounting for the role of non-asserted sentences that are proper components of asserted ones. Truth also enters in an irreducible way when we consider statements used in

rests squarely on the finite-versus-infinite distinction. Clearly, Dummett engages here in direct metaphysical argumentation.

[13] E.g., "What is a Theory of Meaning (II)" , in *Truth and Meaning*, 1976, ed. E. Gareth and J. McDowell

[14] In the strongest sense this would be a two-valued logic. In a mitigated, but still "strong" sense, this would cover also various many-valued logics, with designated values playing the role of "true", cf. footnote **??**.

guesses, hunches, prophesies and the laying of bets. Finally, deductive reasonings are usually regarded—and rightly so—as knowledge-enhancing procedures. For they lead from assumptions, known to be true, to conclusions whose truth is far from obvious. And what justifies deductive practices is the preservation of truth. (An analogous point, with "preservation" appropriately qualified, can be made with respect to *inductive* reasonings.) Dummett rejects the view that the deductive practice itself generates meaning and therefore needs no justification. A complete mastery of a formal procedure, complex and intricate as it may be, does not guarantee an understanding of what the procedure is about. Underlying our deductive (and inductive) practices is a picture of truth as something independent of our knowledge, subject to discovery. We conclude, for example, that a certain unobserved event took place, even when direct evidence for it no longer exists. Such a picture inclines one to a realistic conception, but—Dummett argues—the pull towards realism should be counterbalanced by considerations of what is in principle recognizable. The use of counterfactuals serves often to underline such considerations. We say, for example, that the event *would have been* observed, had we been there and made such and such tests. The subjunctive conditional, however, has no power of its own to legitimize the realistic conception; it serves here merely to point out that the event in question is of the right kind, i.e., *recognizable in principle*.

Following this line, Dummett maintains that the arguments for the centrality of truth need not carry us beyond the weak sense of this thesis. On the other hand, he sees no prospect for a meaning theory that rejects the thesis altogether. Wittgenstein, he remarks, outlined, for certain miniature language fragments, systematic accounts of meaning divorced from any notion of truth. But each of these language fragments is "used only as an adjunct of some one specific activity", and we are unable see how such a strategy is extendible to an entire natural language, or to some sufficiently comprehensive sector of it. Though we have no proof that truth is central to meaning, we have not even a bare sketch of a radically different alternative[15].

The upshot of taking truth as the central notion is that the meaning theory should have a semantic theory as its base.

[15]Examples in which the truth concept plays no essential role can be found in meaning theories proposed for various programming languages—an ongoing project for the last twenty five years, with hundreds of participating researchers. A language of this kind is a far cry from Wittgenstein's toy languages, and by no means "an adjunct to some one specific activity". Still, Dummett's main contention stands, given that the programming languages are set within a well-contained framework and fall quite short of the universality of natural language. Moreover, the languages for which truth does not enter are command languages. Truth enters, as soon as the language incorporates declarative sentences, whose function is to describe.

Semantic Values

A semantic theory provides interpretations of a language (or languages), by correlating systematically extralinguistic items, or features, with linguistic expressions[16]. In particular, it includes rules for assigning truth-values to sentences. Dummett's view of the semantics is less general then what I have just outlined, it takes the determination of truth as the main point of the semantic enterprise:

> *Every* [Dummett's emphasis] semantic theory has as its goal an account of the way in which a sentence is determined as true, when it is true, in accordance with its composition. p. 31

In any case, whether or not truth occupies the central position, one should expect some compositionality principle, by which the functioning of compound linguistic constructs is determined by their components. The *semantic value* of an expression is an associated entity that represents the expression's role under compositions. If truth-determination is the driving notion, the semantic value represents an expression's contribution to the truth-value of any sentence containing it as a component[17]. Semantic values can however be assigned in semantics that are centered around aspects other than truth—as is the case in denotational semantics for computer languages (cf. footnote **??**).

Dummett's explanation of "semantic values" provides a rough idea. We get a firmer handle on the concept by focusing on its formal properties. Gleaned from various sections in LFM, there appear to be three: (S1) Every linguistic expression has a semantic value.
(S2) The semantic value of a sentence determines its truth-value; i.e., sentences with the same semantic value have also the same truth-value, if any. (S3) The semantic value of a compound is determined by the values of its components. (S1), (S2) and (S3) are not sufficient; for they are trivially satisfied if we identify, by definition, the semantic value with the expression itself. This shortcoming can be rectified by adding a fourth principle: (S4) Two expressions with different semantic values are distinguishable by some context; that is, there is a sentence for which the substitution of one of the expressions by the other results in truth-value change.

[16]This should be qualified, if the language in question is also "about itself"; that is, when its variables range over its own constructs. The "extra-linguistic" items include the language itself—in the role of *being mentioned*, whereas the intra linguistic realm is the language in the role *being used*.

[17]In Dummett's words: "that feature of it that goes to determine the truth of any sentence in which it occurs".

General systems satisfying conditions of this kind have been well known in the semantics of programming languages[18]. It is not difficult to deduce from (S1) – (S4) that two expressions have the same semantic value iff they are intersubstitutable in every sentence, without affecting the sentence's truth. The fixing of semantic values is still open, however. Had the problem been merely formal, we could have solved it trivially: by fixing the semantic value of an expression as its equivalence class with respect to intersubstitutivity[19]. But it is not. Semantic values are constrained by the fact that (in the case considered by Dummett) they represent, in some sense, the extra-linguistic correlate of a language[20]. Substitutivity conditions derive from, and are justified by, the way an expression determines its semantic value. They cannot serve as definitions of semantic values; no more than the deductive procedures can serve to define meaning.

The simplest example of a semantic theory is the standard semantics of an extensional language, under classical logic[21]. Here the basic move, essentially due to Frege, is to take the semantic value of a sentence to be simply its truth-value—which means that its truth-value is all that a sentential component contributes to the truth-value of the compound—and to take the semantic value of a denoting name as its reference[22]. The semantic values of an n-place predicate is then naturally taken to be a function from n-tuples of objects to truth-values. Such is the case of a "single-world" interpretation. Dummett observes that a meaning theory may eschew absolute truth in favour of a relative notion, in which case truth, reference and other semantic values are relative to a possible world. That observation should be qualified. After all, we are concerned with semantics for a language that purports to describe *the* one

[18] The linguistic expressions correspond to program-components and the truth-values correspond to what in the programming-language semantics are known as "observables"; these can be any chosen features of program-execution. The semantic values are often called in that context "meanings". A method for assigning meanings is known as "denotational semantics". (The terms are of course technical; philosophical connotations should be ignored.) Condition (S3) is known as the compositionality of the semantics, and condition (S4)—as the property of full abstraction.

[19]The class of all expressions that are substitutable for it .

[20]Semantic values cannot be chosen arbitrarily also in the semantics of programming-languages (cf. footnote **??**). The values assigned to program-components should derive from familiar, well understood structures, for they are supposed to give us insights into the program's performance.

[21]Here a word of caution is due. Following Dummett, this discussion draws on formal languages. But there is quite a difference between natural languages, at which we aim, and formal ones, on which the analysis is modelled. Both the formal language and its interpretation are defined with full precision within some variant of set theory. A theory of that kind—formal semantics, if you wish—can provide schemes and guidelines for natural-language semantics. But we cannot expect the latter to achieve degrees of precision and comprehensiveness even approaching those of the former. A theorist may resort to addressing general problems through selective examples, or limit the modeling to particular fragments. She may end with sweeping proposals, but the account's scope and its place on the spectrum from a scientific theory to a "picture" remain open. Dummett does not address this question. From his perspective, it is the very basic semantic features that matter, in particular—the underlying logic. Presumably, answers to various metaphysical questions will emerge once the basic outline becomes clear. .

[22]Assume, the sake of simplicity, that all terms have references. Cases of non-referring names can be accommodated by assigning a special semantic value, say *nr*—for 'non-referring'.

and only universe. Hence, in the final account, semantic values should be absolute. Which is not difficult to achieve, for one can "derelativize" the values by incorporating into them any additional parameters. For instance, in a possible-world interpretation, the absolute semantic value of a sentence is a function from possible worlds to truth-values. This, of course, tells us nothing concerning the correlation of values with actual statements, made in particular contexts—a crucial task that remains open.

Less clear and more problematic is the picture that emerges in the case of intuitionistic logic. Here, as Dummett acknowledges[23], we do not have a standard semantic framework. The usual interpretation of intuitionistic frameworks, which has been outlined by Heyting, employs the primitive concept of a *construction*, in particular—of constructions that are proofs[24]. Following Heyting's guideline, Dummett suggests that the semantic value of a sentence is the intuitionistic proposition expressed by it[25], which is "a principle of classification of constructions into those which do and those which do not prove the sentence". The semantic value of a predicate is then a constructive function from objects (or, more generally, n-tuples) to semantic values of sentences. But all of this amounts to a heuristic suggestion. The fact is that Heyting's account has not been expressed so far in terms of a setup amenable to mathematical treatment. This being the case, we would do better, I think, if, instead of speaking of intuitionistic propositions and principles of classification, we would simply say that sentences have the same intuitionistic semantic values iff they are constructively equivalent, and leave it at that.

On the other hand, various semantics—defined within classical set theory—are known, which are sound and complete with respect to intuitionistic formalisms. E.g., a first-order sentence is intuitionistically provable iff it is true in all Beth trees, or in all Kripke trees. We have, however, no systematic way of using these semantics in order to evaluate intuitionistically actual mathematical statements. Returning to this problem[26], Dummett illustrates the difficulty by quoting a result about the sentence-scheme $\neg\forall x[P(x)\vee\neg P(x)]$, where P is a one-place predicate symbol, and where the universe is supposed to consist of the natural numbers. That scheme—obviously refutable in classical logic—is not refutable intuitionistically. There is a Beth-tree in which the sentence, under a particular interpretation of P, is true. Yet, we do not know any interpretation of P *as a predicate over natural numbers* for which the sentence holds intuitionistically.

Dummett's description of the problem is not altogether accurate. Our quandary does not consist in our inability to point out such a predicate, but in our *inability to state the question as a meaningful question in mathematics.* We have no agreed mathematical definition of

[23]LFM, page 26.

[24]Such proofs cannot be identified with the proofs in some formal calculus. While every proof in formalized intuitionistic logic is constructive, constructions outstrip any particular formalization.

[25]LFM, page 29. The clarifying quote that follows is from page 34.

[26]LFM, page 152.

what it means for an arithmetical predicate to satisfy, intuitionistically, a given scheme. The problem is similar to that of evaluating modal statements[27]. We know how to evaluate them in Kripke models, and we can construct specific models that satisfy certain schemes (thereby proving that the schemes are consistent). But which of these interpretations should be used in evaluating particular statements of natural language? This remains undecided. Seen in that light, the intuitionist's predicament is a special case of the general difficulty of setting up a semantics for intensional discourse. The peculiarity of the intuitionistic case, which makes it much harder to tackle, is that it place in a purely mathematical context. It concerns, moreover, frameworks that have an "obvious" classical semantics, e.g., the standard model of natural numbers.

4. Full-Bloodedness and Semantic Capacities

While the role of the semantics is to serve as a basis for a meaning theory, the meanings themselves are *not* truth-values, references, or semantic values in general. For meanings are what the agent grasps, not the external items to which he refers [28]. The most important ingredient of an expression's meaning is its *sense*. According to Frege, the originator of the concept, a sense of an expression is the way in which the expression points to its reference (or, more generally, to its semantic value). In Dummett's framework this idea is given a particular twist. The crucial question is not: what are senses? but what constitutes the *grasping of a sense* by a competent speaker? And the answer is to be given by spelling out the patterns of use to which the speaker should conform. While Dummett insists on *grasp* and *understanding* as conscious states, not mere training-induced reaction patterns, he also insists on bringing them in the open in the form of manifested abilities:

> It is dubious whether there is any way to explain what it is to take a word as expressing a certain sense save by describing the use made of the word *which constitutes its having that sense* [my emphasis]. p. 111

Senses are no more than theoretical auxiliaries, introduced by the meaning theorist, to sum up patterns of use. Among these patterns, the most fundamental ones concern the links of the language with an extra-linguistic domain, the very links that constitute the semantics.

By marking the language's manifest connections with the non-linguistic environment the theorist can achieve a breaking-out of sorts from the linguistic circle. Of course, in some trivial sense, there is no breaking out; for like any theory, a meaning theory is couched in

[27]The analogy is not accidental, given the known connections between intuitionistic and modal logic.

[28]This is not an "internalist" position, given that the very notion of *grasp-of-meaning* is, for Dummett, something public.

some language and helps itself to a stock of concepts that need language for their expression. Nonetheless, the theorist can describe the competent's speaker knowledge of the external links, without appealing to a presupposed relation between the speaker and a conceptual content, i.e., without using in his description "grasp-of-concept", "understanding that..." and their like. A theory that achieves this was called by Dummett *full-blooded*, one that does not was termed *modest* [29].

Consider, for example, an account that sums up one's understanding of the word 'red' by two conditions: (1) One should grasp the concept *red*. (2) One should know that 'red' is correctly assertable of an object just when the object falls under that concept. The account, with its explicit appeal to grasp of *red*, is obviously modest. Though less obviously so, the following is modest as well: "To understand 'red' one should know that 'red' applies to red objects, and only of these." Here, the appeal to grasp of *red* comes through the 'know that' whose scope includes 'red'. By contrast, a full-blooded account, should specify the ability to apply the word correctly in the appropriate external context: "The speaker, under standard lighting conditions, accepts or rejects 'this is red' according as the indicated object is, or is not, red". Here, there is no reliance on propositional attitudes; no relation is presupposed between the speaker and the concept.

Note that the meaning theorist, who sets up the test, knows, and expects his audience to know, what 'red' means. In describing the test he can employ *the concept* "red"; but not *grasp of* "red". The concept can be *used*, but not *mentioned*.

Modesty, by the way, should not connote small scale, or limited scope. A modest theory may have far reaching results in terms of logical form, and it can lead to substantial recasting of sentences. But it does not provide the grounding of the language in the appropriate speaker-environment relation.

Dummett's original phrasing was not felicitous; it left the impression that a full-blooded account should be capable of explaining what the concept (e.g., *red*) is to someone who does not have it[30]. The explanation given in LFM makes the required correction[31]. Some

[29] "What is a Theory of Meaning" , in *Mind and Language*, 1975, ed. S. Guttenplan.

[30] "Let us call a theory of meaning which purports to accomplish only this restricted task a 'modest' theory of meaning, and one which seeks actually to explain the concepts expressed by primitive terms of the language a 'full-blooded theory'.", ibid. p. 102. The "restricted task" is defined in the preceding sentence: "...that it give the interpretation of the language to someone who already has the concepts in question".

[31] "How could a meaning-theory possibly give, for all the words of the language, explanations that would convey the concepts they express to someone who, previously, possessed none of them? Such a demand would be obviously exorbitant.." Dummett then goes on to define: "A modest meaning-theory assumes not merely that those to whom it is addressed have the concepts expressible in the object-language but that they require no explanation of what it is to grasp those concepts. A more robust conception of what is to be expected of a meaning-theory is that it should, in all cases, make explicit in what a grasp of those concepts consists—the grasp which a speaker of the language must have of the concepts expressed by the

clarifications have been also provided, previously, by McDowell, who, among other things, calls attention to a crucial passage from a lecture given by Dummett[32].

In the same paper McDowell argues that the project of a full-blooded theory must fail, either by reducing to some sort of behaviorism, which leaves no place for the speaker's mind, or by covert appeal to hidden mental content—landing thereby in psychologism. His arguments, however, rest on a major presupposition, which prejudges the issue. Namely, that a theory of meaning must start with the notion of intentional content and is thus inseparable from an account of intentionality. Under this presupposition grasp-of-concept must figure as a primitive. Full-bloodedness is then seen as an attempt to give an account of intentionality "from without", contrary to a well-known thesis, associated with Brentano, by which such a reduction is impossible. This presupposition is, however, unwarranted. The point of full-bloodedness is to give an account of meaning as something constituted by public patterns of use. It does not prevent meanings, thus constituted, from being the objects of the speaker's intention. To take again the previous example, we can say that grasp of the sense of 'red' consists in the ability of applying the word (under standard lighting conditions, etc.) exactly to red objects[33]. At the same time we can regard such applications as intentional acts of the speaker, who expresses thereby his thoughts and beliefs. There is no attempt here of reducing intentionality. That the speaker is a conscious, intentional agent possessed with a certain kind of knowledge is a background assumption throughout[34].

McDowell makes two specific objections to full-bloodedness, which are both off the mark. His first objection concerns Dummett's remark[35] that the meaning theory captures what the speaker implicitly knows, and that this is attested partly by the speaker's manifest behavior and partly by his acknowledging the account's correctness when presented with it. McDowell argues that the speaker's acknowledgement must rely on his understanding the account, and thus on his grasp of the employed concepts (e.g., the concept *red*). We, therefore, do require, after all, that the speaker grasp the concepts in question. This argument confuses what the theory says with the criteria for adopting it. The speaker's accord—whatever it is and whatever its value—is a metatheoretic consideration in the theory's favour (a natural one, given the background assumption that the speaker is a cooperative agent); but it is *not*, in

words belonging to it." (p. 108)

[32] J. McDowell "In Defense of Modesty", in *Michael Dummett, Contribution to Philosophy*, 1987, B. Taylor editor (an abridged version of a paper read at an International Conference on Perspectives on Meaning, Calcutta 1983). The quoted passage is from Dummett's lecture "What Do I Know When I Know a Language?", given at the Stockholm University on May 1978 and published by the Universitas Regia Stockholmensis.

[33] I am simplifying here by ignoring some other abilities that Dummett would require, cf. "Dummett's Picture of the Language Network" in *6.* I am also ignoring the case of persons with defective eyesight. These complications do not affect the point at hand.

[34] The philosopher is supposed to play both the role of the theorist and that of the speaker. By analyzing, qua theorist, his use of language, qua speaker, he will come, in Dummett's words "to understand what he already knows".

[35] In his 1987 talk, cf. footnote **??**).

any way, part of the theory. Full-bloodedness is therefore not compromised. In a somewhat analogous way, one may invoke simplicity in justifying a theory in physics, but it would be absurd to claim that by so doing one undermines the physical character of the theory.

McDowell's second objection turns on the limitation inherent in finite evidence. No finite test can establish conclusively that a speaker, who passed muster, applied the word in question according to the intended condition, and not according to some other condition that yields the same outcome on the given finite sample; e.g., that he applied 'red' according to the condition of *being red*, and not the condition of *being either red or in Antarctica*, or *being red and not larger than this room*, etc. McDowell argues from this that the speaker's performance cannot be what the speaker's knowledge consists in, but only evidence for an hypothesis, which—he claims—is about some content in the speaker's mind. But here McDowell is in error about the nature of the hypothesis; it is not, and need not be, about internal content, mental state, or their like. The hypothesis is simply that the speaker applies 'red' according to the correct criterion, i.e., to red objects and only to these. Again, the grounds for preferring this hypothesis to others should not be confused with what the hypothesis claims. The choice of the "correct" generalization, on the basis of finite evidence, is a fundamental recurrent problem that has been much discussed in analytic philosophy (recall, for example, Goodman's puzzle of 'Grue'). But it is a separate issue, which does not bear on the questions at hand.

In sum, the point of full-bloodedness is not to give a reductive account of mental states, or of propositional attitudes, but to spell out meaning in terms of certain patterns of use. These patterns, by the way, are not restricted to some "purely observational" layer of language. The understanding of 'table', for example, will involve the ability to recognize tables by noting, besides their shape, the use that people make of them. And the understanding of 'courageous' will involve the ability to recognize an act of courage, when confronted with it, in the appropriate circumstances, or when given a sufficiently detailed description.

Limitations of length prevent me from going into the relation of full-bloodedness to the concept of senses that Dummett proposes to employ. There are some problems there, but they appear surmountable. Here I shall focus on a different and more fundamental difficulty, which underlies Dummett's overall program.

As noted before, the program rests on a major distinction: between (i) mere mastery of deductive procedures and (ii) true understanding of the semantics. Let me refer to them shortly as *syntactic* and *semantic capacities* (where "syntax" is construed in the wide sense: the ordinary syntax and the deductive system). That some such distinction is in order can be seen by recalling Searle's Chinese-Room scenario[36], where "language-understanding" is reduced to mere manipulation of symbols. Semantic capacity provides for the speaker's

[36]John Searle *Minds Brains and Science*, 1984.

interaction with the non-linguistic environment, without which there is no true semantics. I should like to emphasize that "interaction" need not suggest a causal exchange. For one thing, the "environment" can be mathematical, with "interaction" consisting in carrying out mathematical constructions, or proofs. Just as the agent can classify red objects under 'red', she can classify prime numbers under 'prime' by applying the primality test implied in the definition of *prime*[37]. But even with a physical environment, the relation that underwrites the semantics is, I think, more fundamental than causality. To insist at this stage on *causal* links is to put the cart before the horse. (To substantiate this a separate inquiry is required, which I cannot undertake in the present paper.)

In Dummett's setup the distinction between semantic and syntactic capacities provides the basis for normative evaluation. The deductive practice is justified only in as much as it rests on the semantic capacity, and what cannot be thus supported should be trimmed. But I doubt that the distinction can be made across the board in the way needed by Dummett. The semantic grounding of most concepts is provided not, or not only, through direct interactions with a non-linguistic environment, but indirectly—by intralinguistic connections with other concepts; connections manifested in linguistic practices. And whether a certain practice is supported by a semantic capacity may depend on preconceived disputable views.

Consider, for example, the sentential connectives. And let us assume that an agent's overt relation to a statement can be one of three: (i) acceptance, including the statement's assertion by the agent himself; (ii) rejection (dissent, or denial); (iii) none of the above—which can be taken as indecision, or suspension of judgment (where this does not necessarily imply belief in unknown determinate truth-values). According to Dummett, the understanding of 'and' cannot be explained by saying that the agent knows that 'A and B' is true iff A is true and B is true. We should say, rather, that the agent accepts 'A and B' when, and only when, he is prepared to accept each of A and B. Similarly, one's understanding of negation involves, among other things, the disposition to accept 'not-A' when and only when one rejects A. So far we are on firm ground. The problems arise when we go on to disjunction. (Actually, they arise already here, when we consider rejection. But the case of disjunction is clearer and better suited to make the point.)

The speaker's understanding of disjunction should, by the same token, be explained as her disposition to accept 'A or B', when and only when, she is prepared either to accept A or to accept B. To accept $A \vee B$ by dint of deduction that leads neither to A nor to B would be to rely on a syntactic procedure without semantic backing. But such a restriction is exorbitant; it implies that, only when the speaker is prepared either to accept A or to reject it, can she accept 'A or not-A', which is absurd. The intuitionist moderates the demand, roughly as follows: One should accept 'A or B' just when one knows a way that leads, in principle, to

[37]Namely: find, through repeated divisions, whether the number is divisible by any of the smaller numbers > 1.

the acceptance of one of the disjuncts. In particular, 'A or not-A' is acceptable if one knows a way for deciding, in principle, whether to accept A, or to reject it. What "in principle" means can vary. In mathematics it includes the ability to decide in finite time.

Concerning this "decidability in principle", I have argued in *2.* that, in the case of arithmetic, it appeals to a conceptual apparatus whose understanding is left unaccounted in terms of semantic capacity. Here I am making a different point, which relates to my first objection raised in *2.* Taking Dummett's line, the acceptance of 'A or not-A' marks semantic capacity only when A satisfies certain restrictive epistemic criteria. To accept 'A or not-A' otherwise is merely to follow a formal rule; one shows thereby an ability to recognize sentences of that form. On that view, a realist provides fictitious semantic grounds for a syntactic rule (perhaps because he succumbs to the understandable temptation to simplify by uniformizing). A realist, on the other hand, will regard the acceptance of 'A or not-A' as part of one's semantic capacity. For it derives from one's understanding that a sentence is true, or false, independently of one's knowledge and one's ability to find out. That understanding, to be sure, cannot figure in a full-blooded theory; so the realist uses the adherence to certain deductive rules, in order to finesse it.

5. Davidson's Program and Full-Bloodedness

Davidson's program is a natural candidate for testing Dummett's conception. A comparison of the two serves to clarify both. Not accidentally, Davidson's is the only systematic approach, besides that of Frege, that Dummett mentions in LFM. He notes a way of interpreting Davidson's program so as to yield a full-blooded account, thereby avoiding the charge of modesty that he previously levelled against it[38]. The following is my own understanding of the issues.

Davidson's idea was to obtain a theory of meaning by generating the truth-conditions for the statements made in the language. The conditions are to be given in the form of so called T-sentences:

$$s \text{ is true iff } p$$

where s is a standard description of a sentence in the object language (or, more generally, an utterance in a given context) and p is a sentence in the theorist's metalanguage. All this proceeds in a direction opposite to Tarski's. Whereas Tarski's truth theory presupposes a well-understood, formalized language, to which a truth predicate is added as a final touch,

[38]Ibid., footnote **??**.

Davidson takes truth as primitive and uses it as a tool to bring about a deeper understanding of the language. In order to make the theory work in a perspicuous and economical way—in particular, to derive all T-sentences from a finite number of axioms—we shall have to analyses, paraphrase and restructure the language, thereby forcing the meanings into the open.

Davidson's 1967 paper[39] purports to derive its inspiration from Tarski. The language is to be included in the metalanguage; the T-sentences are to be instances of convention T, with necessary adjustments for handling indexicals; the theory's laws are to be given as a finite number of recursive clauses. Such a theory does not address semantic capacities. It is modest *par excellence*. (The program, nonetheless, has ambitious goals of analysis, and restructuring. It may suggest essential paraphrase; such as the handling of action verbs via quantification over events.)

A year later[40] Davidson suggested that an empirical basis for the theory is provided by testing the speaker's acceptance of the T-sentences. But this is too meager a move towards full-bloodedness, and in any case it is on the wrong track[41]. The real significant step (in the same paper) consists in extending the program to cases where the object language is disjoint from the interpreter's metalanguage. Here, obviously, convention T cannot be used. Davidson does not appeal to a presupposed translation from the speaker's language to the interpreter's. The translation is to be constructed, as part of the theory, on the basis of the speaker's observed behaviour. The language-involving interactions are thus used as evidence for assigning truth-conditions to utterances made in the object-language. The later elaboration of this proposal[42] yields the following. In interpreting a foreign language, we are construing—on the basis of a speaker's behaviour—both the interpretation of foreign utterances and the speaker's beliefs. It is similar to solving a system of equations with two kinds of unknowns. The constraint that helps the theorist is what Davidson describes as a charity principle: the speaker's beliefs should come out mostly true, by the theorist's lights[43]. For instance, we can interpret a foreign utterance as 'this is red' only if the speaker, on the whole, applies it to red objects. With evidence to the contrary, it would not do to maintain

[39] "Truth and Meaning" *Synthese* 17, 1967. Reprinted in Davidson's collection *Inquiries into Truth and Interpretation*, 1984.

[40] "Semantics for Natural Language", in a 1968 conference in Milan. Reprinted in Davidson's collection, ibid.

[41] Convention T functions in Davidson's program as a metatheoretical constraint, not as a prediction to be verified by empirical testing. That the speaker agrees that 'snow is white' is true iff snow is white is not saying much; it would be very surprising if he did not. On the other hand, if the T-sentences involve essential reductions, we should not expect the speaker—who is not a theoretician—to pass judgment. There is no analogy here with the testing of a syntactical grammar by matching the generated sentences with those that the speakers accept as well-formed.

[42] In "Radical Interpretation" *Dialectica* 27, 1973, reprinted in ibid.

[43] I think that an attempt to specify "mostly true" would lead to substantial changes in Davidson's picture. My reservations on that score are not, however, at issue here.

this interpretation by ascribing to the speaker strange beliefs (say, he misapplies the word because he believes in invisible color changes). For by saddling the speaker with bizarre beliefs we eventually render him incomprehensible.

Whether Davidson's program yields a full-blooded theory depends on the status, within the theory, of the empirical evidence and of the charity principle. If the speaker's behaviour is taken as evidence for his believing what the truth-conditions (the right-hand side of the T-sentences) express—i.e., for his believing *that* ... —then the theory is obviously modest. But, as Dummett notes, we can take the speaker's behavior as evidence for his holding-true certain sentences (or utterances), where 'holding-true' functions as a primitive that takes as arguments standard descriptions of sentences (or utterances). Moreover, the evidence for holding-true is to be incorporated as an integral part of the theory. On the other hand—a point unmentioned by Dummett—the charity principle, with its open appeal to beliefs *that*, should be no part of the theory, but a methodological guideline for theorizing. The choice of any empirical theory is governed by considerations of economy, plausibility, the avoidance—as far as possible—of ad-hoc measures, and so forth. These loosely formulated principles do not enter into the theory itself. Charity is to be reckoned as such. Thus understood, Davidson's theory is full-blooded.

There remains one final step, which, to my knowledge, Davidson has not stated. We have to come full circle back, applying the same prescription to the case where the language *is* included in the metalanguage. We should regard this as a limiting case, subject to the same principle: the behavioral evidence is to be incorporated into the theory. That the theorist happens also to be the speaker makes no difference, except on the metalevel. On that level, the effect of this identity is to transform the charity principle into a principle of coherence: The beliefs the interpreter ascribes to the speaker should not contradict his own beliefs; since he happens to be that speaker.

The coherence of theorist-as-speaker means that, for any sentence, s, the theorist accepts 's is true' iff he accepts s. This condition is generally weaker than convention T; but, in the context of Davidson's program, it is all that we need. Replacing convention T by this weaker principle has an additional bonus: A standard objection to convention T is that it fails in the case of certain many-valued logics. The weaker principle, however, does not.

6. Holism and the Theory of Meaning

If we interpret Davidson along the lines suggested above, then, it appears that the main issue dividing him from Dummett is holism. The "holistic picture" is, according to Dummett, the view that knowing the meaning of a sentence requires—besides knowledge of its constituent words and their order—knowledge of the entire language. If "knowing the meaning" is taken

in everyday usage, the view is rather extreme and prima facie false. Dummett uses the standard game of dominoes to illustrate holism. The significance of a single domino is not grasped merely by knowing what the piece is; one must also know all the rules of the game. Out and out holism is thus possible. Still, it remains to be seen whether, in the domain of meaning, Dummett's characterization is fair and whether the objections he raises are decisive. The natural candidate for testing is Davidson's program.

In what sense then, and to what extent is Davidson committed to the thesis that understanding a sentence requires knowledge of the whole language? Let me first sketch what I see as Dummett's view of the matter. Though he does not say so explicitly, he has moderated his previous position by incorporating in it a certain amount of holism. "Molecular"—the term he used before, would not, I think, apply to his present position, a position he calls "compositional". Here is an outline.

Dummett's Picture of the Language Network

With respect to logical constants Dummett's position remains as before; to understand, say 'A or B', one has (i) to identify the syntactic structure: an 'or'-compound, with A and B—in that order—as immediate components; (ii) to know the meaning of 'or'; (iii) to know the meanings of A and B. Nothing more is required. The position can be interpreted in proof-theoretic terms, by requiring that—in pure logic—proofs should proceed only through constructs whose complexity is bounded by that of the premises and the conclusion. This is a substantial constraint: even more so when, combined with other philosophically motivated restrictions[44], to which I cannot enter here, it implies intuitionistic restrictions on proofs. One could not, for example, infer in pure logic A from its double negation $\neg\neg A$. The constraint, however, looses its force in as much as we admit as *non-logical* axioms certain sentences of the form $A \vee \neg A$, or $\neg\neg A \rightarrow A$. One's metaphysics—so I argued in *2.*—figures largely in supporting such axioms. The question whether they should count as *logical* is not that essential.

When it comes to non-logical terms and to sentences, understanding, in general, goes "chunk-wise": "To understand a sentence of a given language, one must know some fragment of that language, in which, of course, much would be incapable of being expressed, but which could in principle constitute an entire language". More specifically, several interplaying factors are considered. Dummett does not list systematically the various factors, but the following can be extracted from his discussion.

(A) Certain (usually small) sets of words are co-dependent and must be understood together.

[44] E.g., that, in a system based on Gentzen's sequents, at most one formula occurs in any sequent's right-hand side.

To illustrate:

> Color-words of maximum generality, such as 'red', 'blue', 'green', and 'brown', constitute a plausible example; so do the pair 'male' and 'female', and the trio 'father of', 'mother of', and 'child of'. p. 223

(B) The understanding of a word consists in understanding a certain type (or types) of sentences containing it; not, necessarily, all such sentences, but a sufficiently representative sample. In that sense, sentences are prior. I take it (Dummett is rather brief here) that to understand 'red' requires the understanding of sentences—utterances, to be precise—such as 'this is red', 'that is red', 'the table over there is red', etc.; and to understand 'this is' requires the understanding of some utterances such as 'this is red', 'this is yellow', 'this is big', etc. Knowing the language-fragment based, say on 'this is' 'that is', 'red', 'blue', 'green' and 'brown', would be therefore sufficient for the understanding of these terms. So far we have not touched on the essential aspect of the picture, which is the asymmetric part of the dependency relation; it enters as follows.

(C) A sentence may contain words whose understanding precedes that of the sentence. For example,

> ...an understanding of such a sentence as 'I am afraid that I forgot that it was fragile' *builds on* and *requires* an antecedent understanding of the word 'fragile', but is not a condition of understanding it. pp. 225, 226

A combined effect of (B) and (C) is an asymmetric dependence of 'I forgot that it was fragile' on some sentences (or utterances) of the form 'X is fragile'. Besides all of these we have also:

(D) An understanding of a sentence may require prior understanding of other sentences, because some phrase may lean conceptually on others. To understand 'John is a vindictive person', one should know already the meaning of 'vindictive action', or 'acting vindictively'.

Taken together, the principles imply some rough organization of language-fragments in a partial order. A fragment —which results from (B), or from (A) and (B)—is holistic; it consists of co-dependent expressions which are understood together. The partial order—which is asymmetric—is generated by the dependency between fragments; it reflects the priorities of understanding[45].

[45]Actually, the picture is more complex. The dependencies relate expressions to expression-*types*. The fragments need not consist of fixed sets of expressions; it suffices that they contain samples representing the types. To understand 'I forgot that it was fragile', one has to understand an adequate sample of sentences (or utterances) of the form 'X is fragile'. This is still vague, but can probably be sharpened.

The concessions to holism notwithstanding, there are—Dummett claims—clear-cut lines that distinguish his position from it. An expression should not depend on those of strictly higher logical complexity. (I shall later argue that the constraint is too strong to be tenable on a large scale.) The holistic fragments of language, consisting as they do of co-dependent expressions, are thereby limited. In particular, we cannot declare the whole language a single fragment .

A holist moreover—and this, I take, is the main contention—cannot derive the distinctions necessary for establishing asymmetric dependencies. And it is the latter that endow compositionality—the thesis that an expression's meaning is determined, according to its composition, by the meanings of its components—with non-trivial significance. For the meaning should derive from components that are, in a sense, more fundamental. Otherwise, if the meanings of both the expression and its components derive from the same total context of language, compositionality looses its bite. It reduces, Dummett claims, to a mere truism.

Holistic Answers

To take the last point first, there is quite a difference between a general thesis about unspecified compositions and a detailed account of components and linkages. That a watch is made of interacting parts is commonplace. A description of the cogwheels, levers, mainspring—or of the oscillating crystal, batteries, the lcd, etc.—and of how they interact is high expert knowledge. Holistic or not, compositionality, *when appropriately spelled out*, amounts to a substantial explanation. That 'this is red' is composed of 'this is' and 'red', of which the first picks—according to such and such rules—a reference, and the second is a color name, is far from trivial and quite illuminating. And here, on Dummett's own account, the meanings derive holistically from a language fragment containing both terms.

Before going on further, we should observe that the dependencies between words, which Dummett considers, represent dependencies that are *conceptual*. That 'male' and 'female' must be understood together is true only in as much as their understanding reflects directly grasp of the concepts. Else, a beginner in English could understand 'male' without understanding 'female': he could know how to translate the first, but not the second, into his native language. And, in a mono-lingual context, one may not understand a word, but understand a synonymous word, or an equivalent expression. Keeping this in mind, a host of ambiguities and slippery slopes, emerge. Doesn't the grasp of *human* involve also knowledge that humans are a species of animals, which would make 'human' depend on 'animal'? By the same token, to grasp the concepts "red", " blue", etc. is also to grasp them as *colors*—distinct in kind from sounds or tastes. And this will make color words depend on 'color'. And 'color' itself should depend on other sense-words, like 'sound' or 'taste'; after all, this is the logic that underlies Dummett's lumping together— as interdependent—different color

words. Does 'animal' depend on 'life'? Do the dependencies go also the other way? Should one know of some specific animal kinds in order to understand 'animal'? The list can go on and on. Push them a bit and such questions cease to have answers.

A holist does not enter into this mine field. He takes the whole linguistic network of words and phrases—linked by truth-conditions—as given; and this being a sociolect, no single speaker is expected to master it and none does. Understanding a general name, or an adjective, or a verb, etc., depends (besides on basic syntactic knowledge) on having at one's disposal an adequate piece of the network containing the item in question. How large is "adequate"? There are certain clear cases of understanding and even clearer cases of non-understanding; but there is no precise overall prescription for deciding. Conventions and shifting interests and goals are paramount. The vaguenesses and ambiguities implied by this picture are not defects, for they match the vaguenesses and ambiguities that go with the very notion of understanding. Imagine a theory of perfect car-driving, which—drawing on details of structure and dynamics—yields optimal solutions for all eventualities of speed and road conditions. No person can realize that kind of driving. In practice, however, we find no difficulty to classify some driving as good and some as bad, and there are legal criteria, which vary from state to state, for licensing drivers.

The non-controversial part of "compositionality", what Dummett sees as a truism, implies that an understanding of a sentence requires its correct parsing and the understanding of its components. His controversial contention goes in the other direction: the understanding of A does not involve sentences of which A is a proper component. The claim is even stronger:

> Thus, to understand a logically complex sentence, one certainly need not understand any sentences of higher logical complexity;... p. 223

To see how problematic the view is, recall that, in any scientific language, a sentence may contain terms whose meaning is given through axioms[46] of much higher complexity; the sentence itself, or some formula sharing its form, may even figure as a proper component in one of the axioms. Dummett argues that, whatever holism is granted for meanings of scientific terms, it cannot be transferred to "everyday" language, for the latter is not sufficiently continuous with the former. Perhaps not. But neither are the two sufficiently segregated. In any case, it is not a peculiarity of science that an expression's meaning, significance, role, or what have you, can depend on connections with constructs of higher complexity. Science may provide the clearest illustrations, but reflections on the meaning of terms, such as 'war', 'insurance company', 'point of view', will show that everyday language is not that different. The last quote above imposes a strong tie between meanings and syntactic form:

[46]Statements accepted as basic truths, which determine the meaning of the concepts in question, such as the physical laws that go into determining the meaning of "force".

meaning-dependencies between sentences are constrained by the partial ordering of syntactic complexity. Dummett may hope that this is achievable by an appropriate recasting of the language. But this is quite doubtful, for it would amount to a radical overhaul, of which we have not been given even a preliminary sketch.

A holistic theory fares better, simply because it is not committed to such a syntactic-complexity constraint It can, nonetheless, underwrite judgments of understanding: our deciding that so and so understands this and this well, poorly, or not at all. And contrary to what Dummett implies elsewhere (cf. footnote **??**), it can trace failures of understanding to single words. The tracing is similar to what we do when we look for a defective component in a malfunctioning instrument: We note the effect of incorporating the same component, in the same role, into other gadgets. John's failure to understand 'Alice thought that her uncle was a bachelor' can be pinned on 'bachelor', as follows. First, John's understanding of the other words is established through his correct reactions to some corpus of sentences containing them. For example, if he holds true 'X is a brother of Y' and 'Y is the mother of Z', he also holds true 'X is an uncle of Z'. Next, his grasp of structure and of the role of 'that' is tested by his mastery of similarly structured sentences, where 'that' is used in the specification of propositional attitudes. Finally, John fails with respect to sentences that incorporate 'bachelor'; e.g., he does not see the connection between 'X is a bachelor' and 'X is unmarried'[47].

In a holistic framework, non-understandings can be seen as resulting from missing links, and *misunderstandings*—from links that are misplaced. The omission of links can separate a word from the rest of the network. Usually, some tenuous connections remain. John may still know that being a bachelor is a property of persons (e.g., he holds true 'every bachelor is a person'). Omissions can also separate a small piece of the web from the main body: one may hold-true 'wombats are marsupials', while having very foggy ideas about either wombats or marsupials. The possible combinations, gradations, and aspects of knowing and not-knowing are endless. More than any other methodology, a holistic approach is suited for bringing out the complexities of partial understanding. To portray this approach as the hand-waving blithe assertion that everything depends on global context is to caricature it. For holism thrives on details of structure.

It is also a matter of proportion and focus. The physical world, science tells us, is "holistic". My going from one room to another changes the mass distribution, hence also the gravitational field at every point of the globe. But the scientist is right to ignore—except on extremely particular occasions—such minutiae. In an obvious sense, the human body is a holistic unit. Yet, we describe organs, like heart and kidney, as separate units, with their own mass, shape, inner structure and mode of operation. If a person were to loose

[47]Such testing is practically feasible to the extent that John is already granted knowledge of some body of language. For then we can deduce his understanding, or lack of it, from a small number of cases.

a finger, would this change the role, the significance, the meaning—what have you, of his heart? Yes—if, by definition, the meaning is determined by the whole organism. No—as far as we can presently see. Similar observations apply to games. Dummett's use of dominoes as a holistic paradigm is misleading. The game is too simple and too homogeneous. A better scope for illustration is provided by chess. A change in the castling rule that would allow castling after the rook had been moved (and returned) would modify the game, but not much, probably; the extent of change will become clear when the implications for strategy and tactics are worked out. Naturally, it affects the role of a rook, but does it change the "meaning" of the queen? On the other hand, changing the arcane fifty-move drawing rule[48] to a forty-move, or sixty-move, rule would be altogether nominal.

The Conflict With Foundationalism

When enquiring into language and meaning, it would do well to remember these last commonplace observations. Dummett barely touches on this, on the fact that—taking into consideration the various factors of goal, interest, focus, etc.—holism results in quite a plausible account of situations that are *local.* When he does, it is only to dismiss it in name of principle:

> This is merely to allow that an accurate holistic meaning-theory would frequently approximate locally to a compositional one, much as Einstein's theory of gravity approximates to Newton's. Our concern is whether the central *principle* [Dummett's emphasis] of holism should or should not be sustained. p. 230

Here by "compositional" Dummett means his non-holistic proposed outline. Given that holistic and non-holistic theories "approximate locally" each other, one wonders what phenomena can provide tests—as in the Einstein-versus-Newton case—to decide the issue. To insist, at this stage, on a central principle is to bias our judgement. A holist, at least a non-dogmatic one, is not committed, a priori, to a global interconnectedness principle. He only wants to ensure that meaning-determining connections *are not ruled out in advance.* He can therefore start with a tentative theory, work out its implication and see if they are satisfactory. What appears at the start as "holistic" may result in a structure possessing clearly distinguished components. In short, methodologies similar to those used in scientific theories can be adopted for the theory of meaning.

[48] The rule that enforces a draw after fifty consecutive moves in which no piece was captured and no pawn moved.

Dummett's opposition to that approach is in conformity with his agenda of using the theory in order to settle substantial questions of metaphysics. The a priori principles, on which he insists in the theory of meaning, are needed for deriving the desired metaphysical conclusions. His overall "bottom-up" approach (cf. *1.*) is reflected within the theory of meaning itself. Namely, meanings derive from basic building blocks: small fragments of language and basic logical operants. Gaining (through philosophical analysis) insight into these elements, we have a basis for normative evaluation—an Archimedean fulcrum for criticisms and for revisions. Dummett argues that holism leaves no place for such criticisms; one cannot criticize a practice by invoking meanings that, on a holistic view, are determined by this very same practice. Just as, I suppose, one cannot criticize the rules of a game by appealing to these very same rules.

Yet, criticisms of entrenched systems are made and revisions are occasionally carried out, which are not underwritten by a pre-established foundational framework. Changes in conceptual outlook can be seen as suspensions of certain links in the system's fabric, followed by tying the pieces in a new way. The suspension brings about a loosening in the global grid of connections, with meanings reverting to more local contexts. The new rigging re-establishes the grid in its new form. Holism should be distinguished from dogmatic adherence to the existing connections; yet we have no prescription for deciding when and how revisions take place. Indeed, any such a prescription might—as far as we know—be itself subject to revisions under unforeseen turns. When changes are called for, the situation is judged, rationally, on a case by case basis. Somehow we manage to peer over our own shoulders, as we engage in the game, and revise it on occasions. To accept this state of affairs does not mean that one embraces irrationality. It only means that one renounces foundationalism.

Where Dummett is Right

Even if Dummett's foundational position is rejected, it behooves us to look into his more specific claim that a holistic approach (exemplified here by Davidson's program) cannot yield the required structure of linguistic fragments, partially ordered by asymmetric dependencies. It is unlikely that Davidson's setup fails to represent some dependency between language-parts. Since the truth-conditions are supposed to exhaust all the possibilities that make any sentence true, the network of direct and indirect links that they generate will cover all connections between various language parts; in particular, any dependency is bound to emerge. The potential shortcomings of the setup are possible failures to account for *independencies*: cases where a sentence, or language-fragment, does *not* depend on another. Too many formal connections may swamp the system.

Some holistic systems have built-in means for expressing degrees of dependency. With numerical measures, such as in physics, we can ignore dependencies whose effects are too small.

But in Davidson's setup the connections are achieved through T-sentences, that is, through the implications of a large set of axioms[49]. But it is very hard, if not impossible, to derive in such a setup a significant measure of connection-strength, not to speak of an asymmetric dependency relation[50]. The only clear independencies that can be established are the extreme (and trivial) cases of language-fragments with disjoint non-logical vocabularies that are unconnected through the axioms; that is, the only implied sentences of mixed vocabulary are those that are implied by the union of theories that relate to each fragment separately. For that reason, the network metaphor should not be overworked. Unlike "real" networks, representable as mathematical graphs, the logico-linguistic network hardly lends itself to the counting of links, the determining of the degree of connectivity, or to clustering techniques.

Within the setup we can, on the other hand, explain why, in specific contexts, certain connections can be disregarded as irrelevant. When Jill—knowing that Terry is a man—wishes to know if he is married, her understanding of 'bachelor' is adequate if she can draw the right inference from an answer to 'is Terry a bachelor?' It is of no consequence if she does not know that 'bachelor' applies only to males. All that matters is the ability to derive, in the given situation, the relevant conclusions from accessible information. Links that are of no use can be ignored.

Is this the whole story? Is there nothing more to a theory of meaning—over and above the global network— besides contextual perspectives, shifting interests and goals? No. But this is not because of some a priori principle, but rather because reflection on certain cases shows the need for structural lines that mark independencies of a more permanent character.

Such a structural line is revealed by Dummett's example 'I am afraid that I forgot that it was fragile', or, for that matter, by propositional-attitude statements in general. The understanding of 'Jane hopes that the bridge will withstand the earthquake' depends on the understanding of 'the bridge will withstand the earthquake', *but not vice versa.* There is an obvious intuition that the propositional-attitude free part of the language—the sublanguage in which we can speak of stars, frogs and pebbles, but not about one's thinking, intending, forgetting and so forth—can stand by itself.

That sublanguage, by the way, may be more restricted than at first appears. Of the conversation topics listed by Lewis Carrol's walrus: shoes, ships, sealing wax, cabbages and

[49] The axioms relate sentences of the form '*s* is true' (where '*s*' describes a sentence, or utterance, in the language) to conditions expressed in the metalanguage. The interpreter has also his own beliefs to go on. The connections between linguistic expressions are thus mediated by the interpreter's metalanguage. This should not affect the force of the general observations made here.

[50] The links between different language-fragments are constituted by the sentences of mixed vocabulary that are implied by the axioms, but are not logically implied by the separate theories of the fragments. Sentences, or sets of sentences, of mixed vocabulary can be compared by their logical strength, but this in itself yields no workable scale and certainly no asymmetric dependencies. Additional items of structure must be assumed in order to start us going. This will become clearer in the sequel.

kings—four involve, by definition, intentional acts; only 'cabbages' can be included without hitch in a language free of intentionality. Objects defined by human goals can nonetheless figure in non-intentional contexts. An utterance of 'this cup is fragile' can be rendered as (pointing to the cup) 'this object is fragile', fragility being an intentionality-free property of midsize physical objects. No matter. The theory should say, or imply, that the meanings of sentences such as 'this is fragile', or 'the bridge will withstand the earthquake', are fully determined within a language-portion that is free of propositional attitudes. And that the meanings of other statements lean on that portion. It is an epistemic feature that has to be introduced explicitly into our account, because it does not derive from the logical-implicational structure alone. A similar need is highlighted by Goodman's 'Grue' and 'Bleen'. As far as expressibility and logical form is concerned, 'Grue' and 'Bleen' are as good as—because they are symmetrical to—'Green' and 'Blue' . That it is the latter and not the former that guide our inductive generalizations must be explicitly stated within any adequate account of linguistic meaning[51].

Mathematics provides other cases where restrictions on holism are in order. Dummett argues that, in the philosophy of mathematics, global holism leads to an untenable position. I cannot enter here into the details of his arguments, to some of which I would take exception. But I find his main conclusion true. The following example (not mentioned by him) is, perhaps, the most suitable for making the point.

Arithmetic, the theory of natural numbers—statable in a first-order language (based, say on addition and multiplication)—is a well-defined natural system. The system's self-contained nature is highlighted, but not created, by the formal language. (The encapsulation of some terms in a special sublanguage, an easy task by itself[52], does not signify an independent status. Whether a sublanguage amounts to more than formal gerrymandering is to be seen from its place within our wider conceptual apparatus.) The natural-number system is central in the whole of mathematics. Arithmetical concepts are presupposed everywhere. And an extremely rich network of implications, from and into arithmetic, ties it to other systems; in particular, to the system of reals (real numbers, among which the natural numbers are properly included). Many of the most difficult number-theoretic results are proved by long excursions through the reals. Wile's recent proof of Fermat's last theorem, which proceeds by proving part of Taniyama's conjecture about curves in the plane, is an outstanding example. It employs a conceptual apparatus that was unthinkable at the time of Fermat, and was not altogether in place even fifty years ago. In the wide sense of "meaning"—which comprises significance, importance, role in guiding research, generating techniques, and so forth—there

[51] This, of course, does not grant it immunity from revision. Patterns of inductive generalizations can be changed under the pressure of accumulating evidence. For that matter, a radical upheaval may even revise the dividing line between intentional and non-intentional contexts. A state of affairs in which an object's fragility is caused by, and is inextricably connected with, one's thinking *that* it is fragile, is highly bizarre but conceivable.

[52] We can create, for instance, a sublanguage for describing males that avoids any reference to females.

is a continuing ongoing evolution of meanings in mathematics, including arithmetic.

But there is another, definite sense of "meaning", under which the meaning of arithmetical statements, such as Fermat's last theorem, has not undergone the slightest change. It is in this sense that Fermat's exact original claim—namely, that for all non-zero natural numbers, x, y, z, n, if $n > 2$, then $x^n + y^n \neq z^n$—has been now proved. And because of this sense, Fermat's claim can be fully understood by any high school kid with a modicum of mathematical knowledge; there is no need to know anything about real numbers. But it takes experts of the highest order, and a considerable effort at that, to read and understand the proof. The case exemplifies to the extreme the distinction between the meaning of a statement and the way of proving it. And it shows that, while the natural numbers must be understood holistically[53], their grasp does *not* presuppose any grasp of the system of reals.

The understanding of reals, however, *does* presuppose an understanding of natural numbers. Not because the natural numbers form a subclass of reals—the term 'mammal' does not depend conceptually on 'wombat', even though wombats are a subclass of mammals—but because the very understanding of what real numbers are rests upon the grasp of natural numbers[54]. This is a clear case of an asymmetric dependency, and one that should be specifically marked, since it does not seem to follow from an axiom-based account constructed along Davidsonian lines.

That some such additional structural elements should be added to Davidson's account is to be expected anyway. An adequate meaning theory should, for example, say something about the main lines of inductive reasoning adopted by language speakers. And the abovementioned case of 'Grue' shows the need for explicit stipulations that imply what the privileged predicates are.

[53]If one understands the meaning of '$10^{100} + 1$ is prime', one also understand $2^{100^3} + 17$ is prime'. And, on a more fundamental level, the system's basic principles—the ordering, the successor operation, the process of *finite iteration of successor steps*—must be grasped together.

[54]The weaker concept of a real closed field can be understood without appeal to natural numbers. But in order to characterize the reals we need the axiom of Archemedes, and here natural numbers, in this or that form, enter essentially.