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Meaning, Classical Logic and Semantic Realism

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ABSTRACT: I argue that there are two ways of construing Wittgenstein's slogan that meaning is use. One accepts the view that the notion of meaning must be explained in terms of truth-theoretic notions and is committed to the epistemic conception of truth. The other keeps the notion of meaning and the truth-theoretic notions apart and is not committed to the epistemic conception of truth. I argue that Dummett endorses the first way of construing Wittgenstein's slogan. I address the issue by discussing two of Dummett's arguments against the *realist* truth-theoretic conception of meaning: the manifestation argument and the argument for the unintelligibility of classical logic. I examine the dialectic of those arguments and show that they rest on the assumption that meaning needs to be explained in terms of truth-theoretic notions.

KEY WORDS: Dummett, meaning, truth, use, Wittgenstein.

1. Two Ways of Construing the Slogan that Meaning is Use

Dummett holds that some considerations in the field of the theory of meaning prove that semantic realism[1] is flawed. I argue that Dummett's claim relies on the acceptance of the truth-theoretic conception of meaning (TM):

> TM: Truth and meaning are intimately connected to the extent that any meaning-theory must employ some truth-theoretic notion.

[1] Semantic realism is the view that sentences relate to some reality that renders each of them determinately either true or false independently of our capacity to know that this is so. However, Dummett (1982: 56–57) says that to endorse semantic realism is also to have a specific conception of the manner in which sentences are rendered either true or false. This conception consists in the classical two-valued semantics that employs the notions of reference and satisfaction.

My claim that Dummett accepts TM needs clarification. Is it not a commonplace that much of Dummett's philosophical achievement is his criticism of TM? Doubtless, Dummett attacks the *realist* TM. According to him, any meaning-theory must be tripartite in a theory of reference, a theory of sense and a theory of force.[2] The theory of reference determines recursively the conditions for the application to each sentence of that notion which is taken as the central notion in the explanation of meaning. The theory of sense specifies what is involved in ascribing the knowledge of the theory of reference to speakers. In other words, the theory of sense is a theory of understanding that specifies that in which the knowledge of the theory of reference consists. As the knowledge of the theory of reference is an implicit knowledge, the theory of sense must correlate the knowledge of each theorem of the theory of reference with a practical linguistic ability.[3] Realist TM meaning-theories employ classical truth as central notion. Accordingly, to know the meaning of a sentence amounts to knowing how its truth-value depends on the truth-theoretic values of its composing expressions, where this sort of dependence is explained in terms of reference and satisfaction conditions.[4] Dummett's criticism is that the classical notion of truth cannot serve as the central notion in the explanation of meaning since it makes it impossible to construct a proper theory of sense. This is to say that one cannot specify what is involved in ascribing to speakers the implicit knowledge of the theorems of a classical two-valued semantics that assigns epistemically transcendent truth-conditions to sentences.

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[2] See Dummett (1976: 127): "Any theory of meaning was early seen as falling into three parts: the first, the core theory, the theory of reference; secondly, its shell, the theory of sense; and thirdly, the supplementary part of the theory of meaning, the theory of force… The theory of reference determines recursively the application to each sentence of that notion which is taken as central in the given theory of meaning…The theory of sense specifies what is involved in attributing to a speaker a knowledge of the theory of reference".

[3] See Dummett (1976: 72): "We may therefore require that the implicit knowledge which he [the speaker] has of the theorems of the theory of meaning which relate to whole sentences be explained in terms of his ability to employ those sentences in particular ways…The ascription to him of a grasp of the axioms governing the words is a means of representing his derivation of the meaning of each sentence from the meanings of its component words, but his knowledge of the axioms need not be manifested in anything but the employment of the sentences".

[4] As Davidson pointed out, it is important not to confuse the explanation we get when a meaning-theory is in place with the explanation of why the meaning-theory is correct. The correctness of the meaning-theory is tested against our grasp of the concept of truth. This is the reason why the notion of truth is treated as a primitive notion in classical truth-theoretic meaning-theories even though, when a theory is in place, the sentences' truth-values are shown to depend on reference and satisfaction. Cf. Davidson (1990: 300).

It is another commonplace that Dummett's alternative to the realist TM does not employ truth as its central notion. I contend that this is true in one sense and false in another. As said, Dummett accepts the view that the core part of *any* theory of meaning must determine recursively the application to each sentence of that notion which is taken as central in the explanation of meaning. Dummett says that the meaning of a sentence must be given in terms of the objective correctness condition for its assertion and that the conditions of objective correctness must be distinguished from the conditions of warranted assertibility, where the latter amount to the speaker's personal entitlements to make assertions.[5] Dummett draws the distinction between an assertion being warranted and an assertion being objectively correct and, using a terminology not always coherent,[6] identifies objective correctness with truth. Specifically, according to Dummett, the need for the notion of truth arises in order to account for the meanings of compound sentences, especially conditionals and sentences in the future tense, and to account for the informativeness of deductive inference.[7] The difficulty Dummett has in mind can be generalised. For example, for any atomic sentence S, S and "it is assertible that S" have the same meaning because they have the same assertibility condition. But it is not the case that for any atomic S, "not S" and "it is not the case that S is assertible" have the same assertibility condition. In general, it is the need to cope with the principle that the meaning of a compound expression is a function of the meanings of its components that forces the distinction between warranted assertibility and objective correctness. Contrary to warranted assertibility, objective correctness must be a stable and absolute property of sentences, that is a property that sentences cannot lose across time and do not possess in varying degree.

The model Dummett looks at is the intuitionistic semantics for mathematical sentences according to which the meanings of the composing expressions of a mathematical sentence determine a decidable relation between that sentence and a mathematical construction that obtains just in case that construction is a proof of that sentence.[8] In other words, to know the meaning of a mathematical sentence is to know the condition that must obtain in order for the sentence to be proved. Provability is a stable and absolute property of mathematical sentences. So, if one identifies truth in mathematics with provability, one can describe the knowledge of the

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[5] See Dummett (1976: 120): "We have seen that, in the general case, we have to consider as primary, in determining the content of an assertion, not the speaker's personal entitlement to make the assertion, but the condition for its objective correctness".

[6] For an allusion to Dummett's contrasting terminology see Prawitz (1987: Section 7).

[7] Cf. Dummett (1976: 83–86, 115–116) and (1991: 168, 175–176).

[8] Cf. Dummett (1982: 59).

meanings of mathematical sentences as knowledge of their (epistemically constrained) truth-conditions. Dummett's idea has been interpreted as the attempt to extend the intuitionistic semantics for mathematics to the rest of the language by employing a more general notion of objective correctness as notion of truth in place of provability. Objective correctness must be shaped in terms of an epistemic notion in order to be guaranteed that whenever a sentence is objectively correct one can know that this is so. In spite of the role that Dummett recognises to the notion of truth, in the sense in which it amounts to objective correctness, he does not attempt any definition or explanation of truth from the antirealist perspective and confesses that it is certainly a difficult task to give an explanation of truth within a theory of meaning in terms of verification.[9] Other philosophers, who are sympathetic to Dummett's antirealism, have tried to explain truth. Prawitz (1987: 155) says that a sentence is true if and only if there is – in a tenseless sense of "is" – a direct or canonical verification of it. Tennant (1987: 136) suggests a similar definition. Wright (1992) proposes to identify truth with superassertibility and says (1992: 60–61) that superassertibility is the notion that is needed to develop Dummett's antirealist programme. Wright (1987a) maintains that the notion of superassertibility enables one to construct the Tarskian recursive clauses for connectives in accord with antirealism, provided that the proof theory employed in the metalanguage makes use only of logical constants whose semantics is construed along the sort of intuitionistic lines, so that one can give a truth-functional antirealist theory of meaning. In which sense, then, is it true that Dummett dethrones the notion of truth in theory of meaning? That is true only in the sense that, according to Dummett, truth cannot be taken as the two-valued and primitive notion as the realist (e.g. Davidsonian) TM meaning-theories do. Truth must be clarified, if not defined, by means of another notion, a notion that, like direct or canonical verification, can be employed to explain understanding of meaning first and then to spell out an epistemic characterisation of truth.

The foregoing lead to the conclusion that the commonplace that Dummett opposes TM might be very misleading. Dummett opposes the *realist* TM. However, the conception of meaning he professes is an antirealist version of TM, according to which to know the meaning of a sentence is to know how its truth-value depends on the truth-theoretic values of its composing expressions. Of course, truth conditions must be so construed that they are not epistemically transcendent. This conclusion should not strike us as very surprising since Dummett himself distinguishes between strong

[9] Dummett (1976: 116) recognises that "It is far from being a trivial matter how the notion of truth, within a theory of meaning in terms of verification, should be explained".

and weak truth-theoretic theories of meaning and says explicitly that semantic realism implies strong truth-theoretic theories in which truth is classically two-valued and taken as primitive, while semantic antirealism implies weak truth-theoretic theories in which truth is epistemically constrained and characterised in terms of direct or canonical verification.[10]

Though not surprising, the above conclusion is relevant in order to understand the limits of Dummett's criticism of the realist notion of truth. My claim is that Dummett's criticism of the realist notion of truth stands only under the condition that one endorses TM. So, the point of contrast between Dummett and his opponents is not whether meaning must be explained in terms of truth-theoretic notions, rather it is about what notion of truth must be involved in such explanation. Dummett advocates an epistemic notion of truth, while his opponents advocate the classical, epistemically transcendent notion of truth. My claim might sound surprising. Indeed, a further commonplace is that Dummett's theory of meaning is inspired to Wittgenstein's slogan that meaning is use. The manifestation constraint is Dummett's explication of Wittgenstein's slogan and consists in the view that any theory of meaning must include the theory of sense, which specifies that in which the knowledge of meaning consists.[11] Dummett says that a theory that meets the manifestation constraint specifies not only what speakers know when they know the meanings of the expressions of the language they speak but also what such knowledge consists in, in such a way that one would acquire the meanings of the expressions of the language under study, were he taught the practical abilities that the theory of sense describes. There is, however, another way of construing the slogan that meaning is use, which accepts the manifestation constraint but rejects TM. I claim that this second way of construing the slogan that meaning is use is more Wittgensteinian and is compatible, in a sense to be specified, with the realist notion of truth. In the next sections, I will argue for this claim by examining the dialectic of two arguments that Dummett presents against the classical notion of truth: the manifestation argument and the argument for the unintelligibility of classical logic. I will show that the conclusions of those arguments follow only if one subscribes to TM.

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[10] Cf. Dummett (1991: 113, 161–62).

[11] See, for example, Dummett (1977: 376): "An argument of this kind is based upon a fundamental principle, which may be stated briefly, in Wittgensteinian terms, as the principle that a grasp of the meaning of an expression must be exhaustively manifested by the use of that expression… and hence must constitute implicit knowledge of its contribution to determining the condition for the truth of a sentence in which it occurs; and an ascription of implicit knowledge must always be explainable in terms of what counts as a manifestation of that knowledge, namely the possession of some practical capacity".

2. The Manifestation Argument

The manifestation argument starts from three premises and has the form of a *reductio*.[12]

(1) Knowledge of meaning is knowledge of classical truth-conditions.

(2) Knowledge of meaning consists in the capacity to recognise, if appropriately placed, whether or not the truth-conditions obtain.

(3) Classical truth-conditions are such that, if actualised, they need not be recognisably so.

Consider a sentence S whose truth-condition, if actualised, need not be recognisably so. According to (2), every speaker who knows the meaning of S must be able to recognise that its truth-condition obtains whenever it obtains. But S's truth-condition might obtain without being possible to know that this is so. Therefore we are not guaranteed that the knowledge of S's meaning consists in a capacity that can be ever exercised. This is an absurd consequence since to have a capacity is to be able to do something that can be done. Nobody possesses a capacity to do what cannot be done. The conclusion Dummett draws is the negation of (1):

(4) Knowledge of meaning is not knowledge of classical truth-conditions.

And from (4), Dummett derives

(5) The realist notion of truth is flawed.

It might be objected that Dummett's reductio rests on (2), which expresses the constitutive view of the manifestation constraint. The constitutive view of the manifestation constraint differs from the methodological constraint that the empirical adequacy of the theories of meaning amounts to consistency with observed patterns of assent to and dissent from whole sentences in conformity with observational evidence. The methodological constraint is met also by those philosophers who take the realist TM meaning-theories to provide a representation of linguistic competence. They hold that the ascription of the implicit knowledge of the theory, which for each sentence specifies its classical truth condition, amounts to the ascription of internal states and allows for making testable predictions about speakers' behaviour. On this view, speakers' knowledge of truth conditions is explained by hypothesising internal states that constitute the implicit knowledge of the classical semantics of their language.[13] By contrast, the constitutive view

[12] I borrow this presentation of the manifestation argument from Tennant (1987).

[13] Smith (1992) points out the distinction between the descriptive stance, which asks for the analysis of linguistic behaviour, and the explanatory stance, which asks for the explanation of it. For example, Evans (1981) advocated the explanatory stance. According to

regards linguistic behaviour not as something in need of explaining, but in need of analysing. Accordingly, linguistic behaviour is not explained, but analysed in order to determine the complex of linguistic abilities that constitute the mastery of the language. To know that a certain expression has a certain meaning is to be able to make a certain use of that expression and it must be the aim of the theory of meaning to describe such patterns of use.[14] Some advocates of the realist notion of truth oppose Dummett's reductio by rejecting (2), namely the constitutive view. My claim, instead, is that Dummett's argument rests on the acceptance of TM. So, one might oppose Dummett's argument by rejecting TM.

It helps to notice the importance of TM in Dummett's criticism of the realist notion of truth, if one considers (1)–(4) attentively. (4) prevents one from identifying knowledge of meaning with knowledge of classical truth-conditions. By itself, this is not yet a difficulty for the realist notion of truth. In order to derive the stronger conclusion (5), that the realist notion of truth is flawed, from (4) one needs to assume TM. In effect, the impossibility of explaining meaning in terms of classical truth conditions implies the rejection of the realist notion of truth only if it is agreed that the adoption of a truth-theoretic notion can be criticised if it precludes the construction of an adequate theory of meaning.[15] And this much is a consequence of TM, given that TM says that meaning is to be explicated in terms of truth-theoretic notions. Indeed, if Dummett's tripartite conception of a theory of meaning is accepted, there are two ways in which meaning can be explained in terms of truth-theoretic notions: either by adopting the classical semantics as the base for the theory of meaning and then providing a corresponding theory of understanding or by adopting a different notion – say verification – for explaining understanding of meaning first and then employing such notion in order to shed light on truth and construct a semantics alternative to the classical one. Dummett's manifestation argument shows that we cannot adopt the classical semantics and provide a satisfactory theory of understanding. On the other hand, the notion needed to explain the understanding of meaning cannot sustain the

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Evans, to ascribe the implicit knowledge of the theory of meaning to a speaker is to ascribe internal states that are the bases of dispositions to react in regular ways to the sentences of the language, basically to accept them as true in the circumstances specified by the theory of meaning.

[14] According to Prawitz (1977: 37) to each sentence A there must be certain kinds of behaviour B_A such that the theory of meaning implies that if x knows the meaning of A then x manifests B_A.

[15] See Dummett (1991: 303): "A semantic theory may be criticised on the ground that it cannot be extended to a coherent or workable meaning-theory at all; and since, by definition, a semantic theory can be so extended, this criticism amounts to saying that it is not, after all, a genuine semantic theory".

classical semantics. Under the assumption of TM, then, the realist notion of truth turns out to be incompatible with meaningfulness.

I maintain that the realist notion of truth can be defended by rejecting TM and endorsing a more Wittgensteinian conception of meaning. If one works within a conception of meaning that is not truth-theoretic, the impossibility of employing the realist notion of truth to explain meaning provides no longer a compelling reason for abandoning that notion of truth. So, one might concede that a theory of meaning must be a theory of understanding and therefore be based on an epistemic notion that draws essentially on mastery of rules of evidence for warranted assertions and inferences, but one might reject the view that truth needs to be clarified in terms of the same epistemic notion. There is a conception of meaning that is more Wittgensteinian than TM and is not truth-theoretic. This is the conception of meaning as use (henceforth UM) or conceptual role semantics according to which to have a certain meaning is to be governed by certain basic and explanatory fundamental patterns of use.[16] A meaning-theory inspired to UM describes the meaning-constitutive patterns of use without employing any truth-theoretic notion. Truth-conditions are derived from the theory of meaning together with the deflationary schemata. As Horwich (1998: 72–73) says, a sentence's truth-condition is a consequence of its meaning, not constitutive of it. What UM rejects, then, is the view that to understand a sentence involves knowing its truth condition in a stronger sense than the truism that someone who understands a sentence and the proper use of the truth-predicate is thereby able to understand the corresponding instance of the Tarskian schema.[17] In this sense, UM is not truth-theoretic. It does not employ any truth-theoretic notion in order to give the theoretical representation of the linguistic competence and it is not under the obligation to shed light on the notion of truth by means of the notion that serves to explain meaning and understanding.

UM satisfies Dummett's manifestation constraint. According to UM, what a person needs to know in order to be a competent speaker is how to use expressions in accordance with their meaning-constitutive patterns of use.[18] The knowledge of meanings is theoretically represented by the

[16] See for example Horwich (1998), (2005).

[17] I borrow this point from Skorupski (1986: 153).

[18] One might object that Dummett's manifestation objection still has not been addressed. Indeed, which use of a sentence constitutes its meaning? If one answers that it must be the disposition to accept "p" when p, then one has the problem of undecidables. And if one comes up with some other meaning-constituting usage for sentences – something that avoids the problem of undecidables – then why couldn't that solution be equally

theory that describes the meaning-constitutive patterns of use. Indeed, one of the advantages of UM is that it is able to accommodate the explanatory link between meaning and use, namely the fact that speakers use words as they do because of their meanings.[19] My contention is that UM is also compatible with the realist notion of truth. More precisely, I contend that UM is compatible with the realist notion of truth, if UM succeeds in defending the intelligibility of classical logic. According to UM, the meanings of the logical constants supervene on their introduction and elimination rules. The classical logical constants do possess clear introduction and elimination rules. Assume this is enough for them to be meaningful. In this case the law of excluded middle is taken to be partly constitutive of the meanings of negation and disjunction. But if the law of excluded middle holds in a deductive system, and if Tarski schema also holds in that system, then the principle of bivalence can be derived,[20] and Dummett regards the principle of bivalence as one of the hallmarks of the realist notion of truth.

Dummett gives an argument aiming to prove that the introduction and the elimination rules for the classical logical constants do not succeed in conferring a meaning to them and, consequently, that classical logic is not intelligible. In the following section, I will show that Dummett's attack to the intelligibility of the classical logical constants assumes TM and, thereby, begs the question against UM.

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exploited by the advocate of the classical truth-theoretic conception of meaning? One should grant that to know the meaning of an undecidable sentence cannot consists in the ability to ascertain that it is true whenever it is. Rather, the knowledge of the meaning of an undecidable sentence need to be explained via the knowledge of the meanings of the words that form that sentence and compositionality, where the knowledge of the meanings of the composing words is constituted by the acceptance of sentences that are decidable and/or of patterns of inference involving those sentences. The crucial point is that, contrary to the classical truth-theoretic conception of meaning, the advocate of the use conception of meaning does not have to justify the claim that such linguistic abilities constitute the implicit knowledge of epistemically transcendent truth-conditions.

[19] Cf. Horwich (1998: 6).

[20] Here is the derivation:

(1) True p ↔ p	(Disquotational Schema)
(2) p ∨ ~p	(Law of Excluded Middle)
(3) p	assumption
(4) True p	from (1), (3) and MPP
(5) ~p	assumption
(6) True ~p	from (1), ~p/p, (5), and MPP
(7) True p ∨ True ~p	from (4), by vel introduction
(8) True p ∨ True ~p	from (6), by vel introduction
(9) True p ∨ True ~p	from (2), (3), (5), (7), (8) by vel elimination
(Bivalence) True p ∨ False p	from (9) by df. of "False"

3. The Intelligibility of Classical Logic

Dummett's argument against the intelligibility of classical logic relies on the proof that the meanings of the classical logical constants, as determined by the rules of inferences, do not validate classical logic, in the sense that the analysis of their meanings does not provide the explanation of the validity of the classical rules of inference. The argument, then, assumes that a necessary condition for the meaningfulness of the logical constants is that the analysis of their meanings provides the explanation of the validity of the logical rules of inference. I contend that this assumption is not compulsory on UM. Dummett's argument goes like follows:

(1) The meaningfulness of the logical constants requires that the rules of inference be validated by whatever constitutes their meanings.

(2) Given UM, the classical rules of inference are not validated by what constitute the meanings of the classical logical constants.

Therefore

(3) If UM is correct, the classical logical constants are not meaningful.

The notion of validation is crucial and deserves clarification. As said above, validation is an explanation of the validity of the logical rules of inference grounded on the analysis of the meanings of the logical constants.[21] According to UM, meanings are individuated by constitutive patterns of use. In particular, the meanings of the logical constants are constituted by their introduction and elimination rules. The validation of the logical rules of inference, then, ought to result from the analysis of the rules of introduction and elimination of the logical constants. To achieve this result, Dummett says, the rules of introduction must be (i) constitutive of the meanings of the logical constants and (ii) in harmony with the rules of elimination.[22] The harmony constraint guarantees that the addition of a logical constant to a language produces a conservative extension of that language. The fact that one obtains a conservative extension by adding a logical constant proves that the rules of inference governing the meaning of that logical constant are truth-preserving. In fact, whatever notion of

[21] As Dummett fully recognises one cannot really give *justification* to basic rules of inferences. Any attempt to do so would require logic, and hence be circular. However, Dummett says, one can gain a kind of *explanation* of why the rules are truth-preserving – an explanation that involves deploying those very rules. Cf. Dummett (1991: 202–4).

[22] Cf. Dummett (1991: 11). The rule of introduction and the rule of elimination of a logical constant are in harmony if and only if the conclusion one obtains by the application of the rule of elimination is already justified by the warrants for the premises to which the rule of elimination is applied.

truth one works with, if a system of rules of evidence is sound and the introduction of a new logical constant generates a conservative extension of it, the system is guaranteed to remain sound after that introduction, since the rules of inference for the added logical constant lead to the same conclusions, in the original restricted vocabulary, that could have been deduced before the introduction.

Dummett's objection to classical logic is that the introduction and the elimination rules for the classical logical constants are not in harmony. To make the point clear, consider the following example.[23] Suppose the law of excluded middle is regarded as constitutive of the meanings of negation and disjunction. It follows that one is warranted in asserting $A \vee \sim A$ independently of any warrant for asserting either disjunct, because even though one has no warrant for asserting either A or ~A, one is warranted in asserting $A \vee \sim A$ as an instance of the law of excluded middle. Further, suppose one is warranted in asserting the two conditionals $A \rightarrow B$ and $\sim A \rightarrow B$, but one is not justified in asserting B. By applying the elimination of disjunction, one gives justification to the assertion of B, which by assumption was not justified before the application of the rule of elimination of disjunction. This shows that if one takes the law of excluded middle to be (partly) constitutive of the meaning of disjunction, the introduction and the elimination rules for disjunction cannot be in harmony. The law of excluded middle has the consequence that some sentences become assertible in circumstances in which previously they were not. Before introducing the law of excluded middle, in the circumstances in which one was not justified in asserting A and was not justified in asserting ~A, one was not justified in asserting B, even though one was justified in asserting $A \rightarrow B$ and $\sim A \rightarrow B$. And, by assumption, B could not be justified otherwise. In sum, the introduction of classical disjunction and classical negation, whose meanings are (partly) constituted by the law of excluded middle, into a language does not produce a conservative extension of that language and the proof of soundness grounded on the analysis of the meanings of the logical constants is lost. Thus, if one accepts UM, one cannot explain the validity of the classical rules of inference through the analysis of the meanings of the classical logical constants. Premise (2) of Dummett's argument is sound.

However, it is not obvious that the advocate of UM must accept premise (1). Indeed, my claim is that the advocate of UM is not committed to (1) and, therefore, need not go on contraposing premise (1) from premise (2). The close examination of the reason why Dummett holds

[23] My example elaborates on an example given by Wright (1987b: 334–5).

that one ought to accept premise (1) reveals how deeply Dummett is committed to TM. The intelligibility of classical logic can be defended within the framework of UM by endorsing the view that any consistent set of rules of inference determines the meanings of logical constants. Given that the classical rules of inference are clearly stated and consistent, the result is that the classical logical constants are assigned determinate meanings and the understanding of such meanings requires nothing more than conformity to those rules of inference. Dummett rejects this account of the meaningfulness of the classical logical constants. The reason of Dummett's rejection is the following. As said above, Dummett holds that two constraints must be satisfied in order for a rule of inference to determine the meaning of a logical constant. (i) The correctness condition for the assertion made by means of a sentence containing that logical constant must always coincide with the existence of a deduction, by means of that rules of inference, to that sentence from correct premises none of which contains the logical constant in question. That is to say that the introduction rules must be constitutive of the meanings of the logical constants. (ii) The rules of introduction and the rule of elimination must be in harmony. The second constraint is compulsory if one wants to regard the meanings of the sentences not containing logical constants as constituted prior and independently of their embedding in logical operations. The point, Dummett says, is that one needs to regard the meanings of the sentences not containing logical constants as constituted prior to and independently of their embedding in logical operations, otherwise one is forced to accept that the meanings of those sentences are constituted also by such logical operations. The trouble is that no restriction can be placed upon the sentences that might feature in logical operations, with the result that there is no proper fragment of the language that can be mastered in such a way that a complete understanding of it might be attained, since in order to master the meaning of an expression the speaker must be able to understand the meanings of all other expressions of the language. Dummett's objection, then, is that if UM rejects the constraint of harmony – premise (1) – then UM is bound to inflate into holism.[24] In other words, if UM is not under the obligation to provide a validation of the logical inferential role, taking meaning to be constituted in part also by the logical inferential role, the meanings of the expressions cannot be determinate in advance of their occurring into logical inferences and the meanings of the logical constants cannot keep faith with the meanings of the sentences among which they

[24] See, for example, Dummett (1978: 302–3): "The rules of inference which are applied in our language are, on such a molecular view, justified precisely by this fact, the fact, namely, that they remain faithful to the individual contents of the sentences which occur in any deduction carried out in accordance with them".

regulate the inferences, since there is nothing to keep faith with. Therefore, no speaker can acquire a complete mastery of any fragment of the language not including the logical constants. And, Dummett argues, holism follows.

As some commentators have pointed out, Dummett's argument is not sound.[25] The tenet of holism is that no language can be divided into fragments allowing for a speaker to master each of them stage by stage in such a way that at each stage his competence is complete. However, holism is not implied by the rejection of the constraint of harmony. What follows from the rejection of the constraint of harmony is the inconsistency of UM with the possibility that any class of expressions not including the logical constants form a fragment of the language that can be completely mastered independently of any other fragment. This does not imply that the language cannot be divided into fragments allowing the acquisition of complete competence to proceed stage by stage. It implies only that any fragment, in which the language can be so divided, must include the logical constants. In other words, the competence of any fragment into which the language can be divided must involve the logical competence (or some relevant part of it).

We can give the following analysis that shows that premise (1) is implied by TM. The advocate of UM takes assertion conditions and inferential role as equally constitutive of meaning. By contrast, Dummett holds that the inferential role needs to be grounded on an independently constituted notion of meaning. Accordingly, the meaning of a sentence is independent of its inferential role and must be given before it. In this respect, Dummett makes it evident how deeply his picture is committed to TM. The inferential role of a sentence must be grounded on a single key notion: the notion of the condition under which the sentence can be used to make an objectively correct assertion. Both the Dummettian antirealist and his realist opponent, who accepts TM, identify those conditions with the conditions under which the sentence is true. Where the Dummettian antirealist and his realist opponent part company is the nature of truth: according to the Dummettian antirealist, truth must be explained in terms of assertibility, whereas, according to his realist opponent, truth is epistemically transcendent. The point is that both realist and antirealist truth-theoretic meaning-theories converge on the idea that knowledge of meaning is knowledge of truth conditions. Indeed, antirealists must accept (iii) if they are willing to accept (i) and (ii):[26]

[25] See, for example, Wright (1987b: 335) and Skorupski (1988: 520).

[26] I borrow this point from Prawitz (2005: 681).

(i) The truth of a sentence can be defined as the existence of a direct or canonical verification of it.

(ii) To know the meaning of a sentence is to know what counts as its direct or canonical verification.

(iii) To know the meaning of a sentence is to know its truth-condition.

In general, then, both realist and antirealist TM meaning-theories explain the meaning of a logical constant C as given by the truth conditions of the sentences in which C is the main logical constant. For example, both realist and antirealist TM meaning-theories explain the meaning of conjunction by the following equivalence:

"A ∧ B" is true if and only if "A" is true and "B" is true.

The distinctive mark of antirealism is that truth is explained in terms of direct or canonical verification:

> There is a direct or canonical verification of "A ∧ B" (= "A ∧ B" is true) if and only if there is a direct or canonical verification of "A" (= "A" is true) and there is a direct or canonical verification of "B" (= "B" is true).

This analysis fits well Dummett's idea that the introduction rules are (i) constitutive of the meanings of the logical constants and (ii) proved to be valid in virtue of the meanings of the logical constants. Indeed, for example, if the introduction rule for conjunction says that a direct or canonical verification of a conjunction is constituted by the direct or canonical verifications of both conjuncts and truth is explained in such a way that a sentence is true if and only if there is a direct or canonical verification of it, then the introduction rule of conjunction is shown to be truth-preserving by the analysis of the meaning of conjunction. Moreover, if knowledge of meaning is knowledge of the conditions under which truth applies to sentences, we expect to know whether truth is preserved from the premises to the conclusion of any logical inference through the sole analysis of the meanings of the logical constants. Elimination rules and all other logical rules of inference are to be proved valid in virtue of the meanings of the logical constants.[27] Therefore, premise (1), that is the request for the validation of the logical rules of inference, is implied by TM. By contrast, the theorist who endorses UM holds that the validity of the rules of inference does not need to flow from the analysis of the meanings of the logical constants, rather the meanings of the logical constants are constituted by the acceptance of those rules of inference. In sum, to assume without any

[27] In intuitionistic logic their validation is achieved by means of the normalization of deductions. See Prawitz (1965), (1971), (1973), (1974).

argument the truth of premise (1) begs the question against UM. In addition, we have seen that the argument that Dummett presents, which is the threat of inflation into holism, is not sound.

4. Analyticity and Meaning Constitution

It might be objected that if one rejects TM and along with it premise (1), one abandons a way of giving philosophical foundation to logic. The philosophical foundation of logic is an explanation of logical truth and logical validity, which is grounded on the analysis of the *meanings* of the logical constants and is supposed to prove logical truths and logically valid inferences to be empirically unrevisable. The idea is that the philosophy of language ought to provide a philosophically acceptable semantics, where a philosophically acceptable semantics contributes to the explanation of the apriority of logic. In other terms, the philosophy of language ought to serve the epistemological purpose of proving the apriority of logic by showing logic to be analytic.

This view is in line with Dummett's distinction between three levels of justification of a logical system.[28] The first is the level where an argument is validated by giving a proof from its premises to its conclusion by using simpler rules of inference that are already recognised as valid. The second is the level where a proof of soundness, and possibly of completeness, is given for a logical system. This is the level where logicians are involved. The third is the level where one looks for an explanation of how deduction is possible at all. This is the level where philosophers, more specifically philosophers of language, are engaged. The difference between the second and the third level, Dummett says, is that at the third level semantics is connected to the theory of meaning and a semantic theory is accepted only if it can be extended to a plausible theory of meaning that provides a model for the understanding of language. So conceived, semantics is subject to criteria of evaluation that do not belong to logic but to the philosophy of language.[29] As a result, a soundness proof for a logical system acquires a philosophical significance because it provides a justification for the rules of inference based on the analysis of meaning. Indeed, what a soundness proof is taken to show is that certain sentences and certain rules of inference are respectively true and truth-preserving in virtue of the meanings of the logical constants occurring in them. In other

[28] Cf. Dummett (1978: 297).

[29] See, for example, Dummett (1977: 370): "… the semantic theory itself is to be judged by criteria that do not belong to logic, properly so called, but to the philosophy of language".

words, a soundness proof would show that certain sentences and rules of inference are analytic, in the sense that knowledge of their meanings suffices to hold them respectively true and truth-preserving, independently of empirical evidence so that analytic sentences and inferences become empirically unrevisable.

Of course, the phrase "knowledge of meaning" must be taken in a broad sense.[30] The knowledge of meaning that is supposed to justify logical truths and logical inferences is not merely the knowledge of meaning that we can ascribe to competent speakers. For instance, the kind of knowledge that we ascribe when we say that an competent English speaker *knows* that the word "dog" means DOG. Rather, "knowledge of meaning" stands for the theory of meaning that philosophers develop to explain how ordinary speakers are entitled to accept certain truths and to make certain inferences without any justificational reliance on experience.[31] As Hale and Wright (2000: 296 n.) say, the theory that explains *a priori* knowledge is offered as a piece of reconstructive epistemology and not as a psychological hypothesis. Thus, a speaker who derives a theorem in logic is entitled to make the inferential steps of the proof and can be said to know *a priori* the truth of the theorem because philosophers are able to offer a model that explains, and thereby justifies, his entitlement.[32] A clear example of this line of thought is Peacocke's (1992) theory of concepts. According to Peacocke, a concept is individuated by certain possession condition, namely the condition that a thinker must satisfy in order to possess that concept. For the sake of simplicity, let us take concepts to be the meanings of linguistic expressions. For example, consider the concept AND as that concept that a speaker grasps and expresses by being able to use an expression "and" in accordance with the following rules of inference:

$$\frac{P \quad Q}{P \,\&\, Q} \qquad \frac{P \,\&\, Q}{P} \qquad \frac{P \,\&\, Q}{Q}$$

In addition, Peacocke says, a concept is individuated by a determination theory, which is a theory that tells how the semantic value of the concept is determined given its possession condition. Specifically, the determination theory of a concept assigns to it the semantic value that makes the sentences and the inferences involved in the possession condition respectively true and truth-preserving.[33] This picture explains the analyticity of certain sentences and rules of inference. For example, the determination

[30] Cf. Boghossian (1997: 357).
[31] Cf. Peacocke (2000: 265).
[32] For the distinction between entitlement and justification see Burge (1993).
[33] Cf. Peacocke (1992: 19).

theory of the concept AND says that its semantic value is that binary truth-function that makes the inferences featuring in its possession condition truth-preserving. Thereby, the classical truth-function for conjunction is taken to be the semantic value of the concept AND. If one knows the possession condition of the concept AND and its semantic value, one is able to know that the above rules of inference are truth-preserving in advance of any empirical information about the ways the world is. And this gives foundation to those rules of inferences as knowable *a priori*.

Two considerations are in order. The first consideration is that, although the examples presented by Peacocke accord with the classical two valued semantics, the whole picture fits also the antirealistic semantics and in particular Dummett's view that deduction is in need of a philosophical justification grounded on the analysis of the meanings of the logical constants.[34] The second consideration is that Peacocke's view that concepts are individuated by possession conditions and determination theories might be regarded as an explication of Dummett's idea that a theory of meaning is composed by a core, the semantics, and a shell, the theory of sense – or theory of understanding. The theory of sense tells what the knowledge of the semantic values consists in by specifying practical abilities of using linguistic expressions, and on the other hand semantics gives the validation of the sentences and rules of inference involved in the specification of those practical abilities in such a way that the assignments of semantic values are correct only if they provide such validation[35] and satisfy the constraints posed by the theory of sense. It is just for the reason that the classical two valued semantics does not satisfy those constraints that Dummett holds that the classical two valued semantics cannot be the core of the theory of meaning.

I agree that the following point should be conceded: without TM one cannot validate the classical logical rules of inference through the analysis of the meanings of the logical constants and, as a consequence, one cannot credit the logical principles and the logical rules of inference with the privileged status of analyticity. So, one lacks a philosophical source for giving foundation to logic. Certainly, this is a trouble for those philosophers who believe that philosophy has a foundational role in respect of science. However, there is at least one philosophical view according to which foundationalism is too much demanding: naturalism. According to naturalism, the only way of gaining knowledge is the empirical way that is the basis of science. There is no privileged and *a priori* perspective from which our inferential practice can be legitimised or criticised

[34] Peacocke (1992: 19), (2000: 261) acknowledges this point.
[35] Peacocke (1987: 166) holds explicitly this point.

apart from the standard scientific canons such as, say, predictive adequacy and simplicity. Conceptual analysis cannot be the source of *a priori* and empirically unrevisable knowledge. Quine's doctrine of epistemological holism and his web-of-beliefs model are the paradigmatic representation of naturalism,[36] according to which all sentences face the tribunal of experience not individually, but only as a corporate body. The periphery of the web, which is composed of observational sentences confronts experience directly. But even the centre, which is composed of the allegedly analytic sentences and rules of inference, is indirectly connected to experience. So, if a prediction is refuted, in principle one might choose to abandon the logic employed to derive it. Thus, in principle, any part of the theory might be subject to revision and the revision of any part can be accommodated by adjustments in other parts of the theory. Any sentence, even of logic and mathematics, is revisable in principle in light of empirical evidence and mathematics and logic too have empirical content and are justifiable to the extent that the predictions derived with their contribution are confirmed by the empirical evidence.

That all sentences are revisable in light of empirical evidence does not imply that no distinction can be drawn between empirical sentences and *weakly a priori* sentences. A weakly *a priori* sentence is a sentence that speakers learn to accept even in absence of any particular sensory inputs. On the basis of this definition, many of the sentences that UM regards as meaning constitutive turn out to be weakly *a priori*. Furthermore, although the meaning constitutive sentences form the conceptual structure of the corporate body of theories that, as a whole, is tested against the empirical evidence, the justification for accepting a given conceptual structure still comes from the empirical adequacy of the whole corporate body of theories. And finally, the empirical adequacy of the whole corporate body of theories is not the sole criterion for the assessment of a conceptual structure. In addition to empirical adequacy, there are other conditions that a conceptual structure must fulfill to gain justification. Among them one can list consistency, simplicity, nomic force. It is worth noting, then, that also the justification of a conceptual structure can be rationally assessed as a theoretical question with a precise cognitive content. As Quine (1948: 16–17) argued, the criteria for adopting a given conceptual structure are the same we employ to confirm scientific hypothesis. In general, changes in conceptual structures result in new ways of theorizing the empirical phenomena, and advocates of different conceptual structures might have a genuine cognitive dispute about the question of what way of theorizing

[36] See Quine (1951).

such phenomena is the best one. In this naturalistic picture, semantics is on a par with logic and mathematics as being at the centre of the web-of-beliefs. It gives the truth-conditional interpretation of our assertoric and inferential abilities and explains part of the nature of linguistic expressions, but it is no longer a philosophical tool for giving foundation to parts of our knowledge. On the contrary, Dummett is interested in saving the foundational role of philosophy, and more precisely of the philosophy of language. This is another aspect that shows how deeply TM underlies Dummett's way of construing Wittgenstein's slogan that meaning is use.

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