The Semantical Paradoxes, the Neutrality of Truth and the Neutrality of the Minimalist Theory of Truth

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1 Introduction

In the literature on truth, one can make a division between the articles and books in which the semantical paradoxes play an absolutely central role (we might call this the *logical literature on truth*) and the articles and books on truth in which the paradoxes do not play a central role (we might call this the *philosophical literature on truth*). Of course, making such a division involves a huge simplification of the real situation. Nevertheless, this division has a basis in reality.[1]

Almost all researchers who try to come up with a satisfactory theory of the semantical paradoxes are acutely aware of the philosophical nature of their enterprise. Yet they make only scant reference to texts from the philosophical literature on truth. But the converse is even more true. Researchers from the philosophical tradition are aware of the paradoxes, and of ways of getting around them. But they restrict references to the logical literature about truth to Tarski's technique of giving an implicit truth definition for a given language, using the T-sentences. Again I am exaggerating here. But anyone familiar with the literature on truth will know what I mean.

Surely both fields would benefit from more interaction. This paper concentrates on one direction. I want to argue that the philosophical literature should pay closer attention to what is going on in the logical literature. My remarks will be concentrated around one theory from the philo-

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[1] For instance, Kripke's fundamental (1975) (belonging to the logical literature) is not even cited in Davidson's (1990), which is one of the fundamental papers in the philosophical literature. On the other hand, Davidson's (1990) is not cited in Gupta and Belnap's (1993), which belongs again to the logical literature.

sophical literature: Paul Horwich's minimalist conception of truth.[2] We will look at it in some detail.

Most papers in the philosophical literature on truth simply ignore recent developments in theories of the semantical paradoxes. But Horwich explicitly claims that the acceptability of his theory of truth is largely independent of the solution of the semantic paradoxes:

> I should emphasize that my intention ... is not to disparage constructive attempts to deal with the paradoxes, or to suggest that our knowledge about truth is not deficient in the absence of such an account. My point is merely that there are manageable and philosophically fruitful problems of truth that are independent of the search for a constructive solution to the paradoxes... There are no reasons to suppose that the minimalist answers that are advanced in this essay could be undermined by any constructive solution to the paradoxes - so we can temporarily set those problems aside. (Horwich, 1990: 42)

The present paper attempts to cast doubt on the last sentence of the assertion made in this passage. It will be argued that the minimalist theory of truth does not accord well with at least *some* of the more promising recent theories of the semantical paradoxes.

Besides this claim about the neutrality of the minimalist theory of truth with respect to the correct solution of the paradoxes, Horwich also claims that truth itself is neutral with respect to most important philosophical problems. He argues that:

> ... philosophy may employ the notion [of truth] only in its minimalist capacity - that is, as enabling the formulation of certain generalizations - and ... theoretical problems must be resolved without it. (Horwich, 1990: 54)

I will try to show that there are substantial problems in domains that prima facie do not seem to be immediately concerned with the notion of truth, for which considerations centered around the properties of truth are nevertheless highly relevant. This seems hard to explain on the basis of the minimalist theory of truth.

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[2] See (Horwich, 1990).

Not all the arguments presented in the sequel are mine. I will use a couple of arguments that were formulated by Vann McGee. In my opinion these arguments have been given insufficient attention in the philosophical literature on truth, and are therefore worth repeating here.

The structure of this paper is the following. In the next section, the basic features of the minimalist conception of truth will be briefly reviewed. Also, in order to bring results from theories of the semantical paradoxes to bear on the minimalist conception, this theory will be slightly modified. In section 3, I will formulate arguments against the double neutrality explained earlier in this introduction. As mentioned above, my misgivings are based on recent developments in theories of the semantical paradoxes. In particular, they are based on research originating from Kripke's theory of truth. Section 4 contains a summary and some concluding remarks.

2 The minimalist theory of truth

2.1 A sketch of the minimalist theory

Deflationist theories of truth have been around at least since the work of Ramsey and Quine. But Paul Horwich's theory is widely regarded as the deflationist theory that has been developed in most detail and that has been given the clearest expression to date (Field, 1992: 321). I will briefly sketch its main features.

According to Horwich, the notion of truth is *defined* by the T-equivalence axiom scheme:

The proposition that p is true if and only if p.

Because his theory ultimately consists only of the T-equivalence scheme, Horwich calls it the *minimalist theory of truth*. In fact, his theory does not even contain *all* these sentences: the "paradoxical" instances of the scheme (i.e. the ones that lead to a contradiction) should be left out. He relegates the task of weeding out the instances of the T-equivalence scheme that are infected by paradox to the logicians. The *minimalist conception of truth* goes beyond the minimalist theory of truth in the sense that it asserts that there is nothing more to truth than what is asserted by the minimalist

theory of truth.

The truth predicate's function lies in its use as a means of quantification. The truth predicate allows us to express certain propositions in a finite way which otherwise could only be expressed by infinitely long expressions. (As an example, consider the sentence: "No matter what happens, Oscar always tells the truth.") Horwich acknowledges that this aim can also be achieved by other means, for instance if we use some sort of substitutional quantification over sentences instead of the truth predicate[3]. However, he finds (1) that the truth predicate gives the most simple and elegant solution to this practical need, and (2) that substitutional quantification is itself in need of clarification, and that this clarification will have to appeal to the notion of truth (Horwich, 1990: 26-27).[4]

We have already seen in the introduction how Horwich emphasizes that one of the consequences of the minimality of his conception of truth is that it is neutral towards philosophically important problems and puzzles (such as the realism/antirealism debate in the philosophy of science). Even though philosophers have often taken truth to play a major role in the solution of philosophical problems, the minimalist theory shows that in such cases they are mostly mistaken. So Horwich's minimalist conception is also a contribution, for instance, to the philosophy of science: it tells us where *not* to look for solutions to deep problems in the philosophy of science.

All this does not imply that truth is not a property (this is a point where Horwich's conception differs from Ramsey's redundancy theory of truth). Truth is a property of propositions, but the truth predicate does not express a "complex or natural property". Horwich seems to use the terms 'complex' and 'natural' interchangeably in this context, even though it appears to me that even if truth were a natural property, it might not be a

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[3] Roughly, a substitutional quantifier is a device that allows one to *finitely* express the Tarski scheme (Horwich, 26-27). For a classical discussion of substitutional quantification see (Kripke, 1976).

[4] Horwich takes this to imply that truth is an *essentially schematic concept* (i.e. it cannot be given a finite expression) (Horwich, 1990: 31). The question whether truth is essentially schematic is also vigorously debated in the logical literature, and is connected with the question whether a theory of truth should or can be self-contained (compare for instance the position of (McGee, 1989) and (McGee, 1991) with that of (Burge, 1979)).

complex one. Nevertheless, on his account, it is fair to say that truth is neither a complex, nor a natural property.

2.2 Propositions, utterances, sentences

On the minimalist theory of truth, propositions are the bearers of truth. This presents problems. Hartry Field rightly remarks that even though Horwich professes neutrality about what sort of things propositions are, there are certain coherent conceptions of propositions that Horwich really needs to reject if he wants to avoid a collapse of the minimalist conception in a correspondence theory of truth.[5] But if Horwich would include a definite theory of propositions in his theory of truth, then there would be the danger that the resulting conception would cease to deserve the label 'minimalist'. Field proposes to reformulate minimalism in such a way that truth is applicable in the first place to utterances (i.e. sentence *tokens*).[6] But from our perspective this would still be unsatisfactory. For in the logical literature on truth, *sentences* are usually taken to be the bearers of truth values. So in order to bring to bear theories of the semantical paradoxes on the minimalist conception of truth, I am going to modify the T-equivalence scheme so that it talks about sentences instead of propositions. The T-equivalence scheme becomes:

The sentence $\underline{A}$ is true if A,

where $\underline{A}$ is a name for the sentence A. This is the version of the minimalist theory that will be discussed in the sequel. And as before, the minimalist conception is the conception that this is all there is to truth.

From the following passage it seems that Horwich might even forgive me this modification of the minimalist conception:

> ... the view that truth is not strictly speaking attributable to utterances, or to linguistic or mental acts, is not substantial and nothing of importance in what follows will depend on it. If someone holds that an utterance may be 'true', in a certain sense, then he can simply regard my claims about the

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[5] For Field's argument to this effect, see (Field, 1992: 322-324).

[6] For an exposition of Field's deflationist theory of meaning and truth, see (Field, 1994).

> property of *expressing truth* as claims about 'truth' in his sense. Similarly for those who think that a truth predicate may be applied to acts of asserting, states of believing, etc. (Horwich, 1990: 18)

If the 'etc.' in this passage also covers "sentences", then I am content. And since utterances are O.K., sentences might be too. For as Field notes, as long as we restrict ourselves to a fragment of the language that does not contain indexicals or demonstratives or ambiguous sentences, we can attribute truth and falsehood to sentences (Field, 1994: 267). So let us make this idealizing assumption.

3 Objections against the minimalist theory

3.1 The neutrality of minimalism

I want to take issue with the contention that there can be no interesting problems and discussions in the philosophy of science in which the concept of truth plays an essential role.

Let us turn again to Horwich's position on this issue:

> A deflationary attitude towards truth is inconsistent with the usual view of it as a deep and vital element of philosophical theory. Consequently the many philosophers who are inclined to give the notion of truth a central role in their reflections on metaphysical, epistemological and semantic problems must reject the minimalist account of its function. Conversely those who sympathize with the deflationary ideas will not wish to place much theoretical weight on it. They will maintain that ... theoretical problems must be resolved without it. (Horwich, 1990: 54)

An argument by Vann McGee (McGee, 1991: 76-78) provides a counterexample to Horwich's claim.[7] Take a language which consists of the basis vocabulary of physics (i.e. the vocabulary that talks about physical objects and properties), plus the vocabulary of the language of set theory.

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[7] I do not know whether McGee would agree with this use of his argument.

This means that we can talk in this language about physical objects and about sets constructed on the basis of physical objects. Let us call this language *the language of physics*. And let us formulate Tarski's implicit truth definition for the language of physics: add a new predicate T(x) to the language, and write down the T-sentences for the language of physics. (We recall that a T-sentence (i.e. an instance of the Tarski scheme) is a sentence which is of the form $A \leftrightarrow T(|A|)$ for some A, where $|A|$ is a term referring to the gödel number of A.) Now consider the doctrine which states that every (genuine) property can be described with the language of physics. McGee calls this doctrine *linguistic physicalism*. This may be a vague doctrine, but surely it implies the following precise statement:

> Every scientifically legitimate general term is coextensive with some open sentence of the language of physics.

But Tarski's theorem on the indefinability of truth implies that the term "true sentence of the language of physics" is not coextensive with any sentence of the language of physics. And since "coextensive" and "true" are interdefinable, the same holds for the term "coextensive". So it seems that linguistic physicalism forbids the notions that are needed for its own expression.

Horwich is not a physicalist. This is shown by his insistence that truth is a property, but not a natural property. But that is not the point here. McGee's argument shows that the notion of truth can play a role in substantial discussions in the philosophy of science. Maybe one could reply that linguistic physicalism is a semantic theory rather than a theory from the philosophy of science. But this would amount to excluding from the philosophy of science theories that have traditionally been taken to belong to it (e.g. theories about the meaning of theoretical terms). It would amount to excluding all semantical terms from the discourse of the philosophy of science.

3.2 Minimalism and the paradoxes

Horwich expresses his attitude towards the semantical paradoxes in most detail in the following passage:

> Given our purposes it suffices to concede that certain instances of the equivalence schema are not to be included as axioms of the minimal theory, and to note that the priniciples governing our selection are, in order of priority: (a) that the minimal theory does not engender 'liar-type' contradictions; (b) that the set of excluded instances be as small as possible; and - perhaps just as important as (b) - (c) that there be a constructive specification of the excluded instances that is as simple as possible (Horwich, 1990: 42)

Now (a) is surely a reasonable request. McGee has argued (roughly) that (b) does not make any distinction between theories of truth beyond the distinctions that are already made by (a). And I will argue that (c) could undermine the centrality of the T-equivalences in a theory of truth.

McGee's objection is based on the following simple theorems (McGee, 1992: 237, 239), which we state here without proofs:

Theorem 1 Let Δ be a set of sentences which is consistent with a given theory S, formulated in a language $\mathcal{L}$ which contains the predicate T(x). Then there is a set Γ of T-sentences such that (1) all elements of Δ in S follow from Γ, (2) Γ is consistent with S, (3) every set of T-sentences of which Γ is a proper subset is inconsistent with S, and (4) from $\Gamma \cup$ Robinson arithmetic we can deduce either Ψ or $\neg \Psi$ for every formula Ψ of $\mathcal{L}$.

We hereby recall that Robinson Arithmetic is a weak formalization of elementary arithmetic.[8]

Theorem 2 Even if we strenghen the notion of consistency to "consistency in ω-logic", theorem 1 holds.

Let us see what these theorems mean. The moral of theorem 1 is that if you do not impose any restrictions on your truth predicate except to "maximalize the set of T-sentences", then you have insufficient means to choose between correct and manifestly wrong theories of truth. Suppose, for instance, that Δ_k is a deductively complete (i.e. one can deduce either Ψ or $\neg\Psi$ from Δ_k for every formula Ψ), consistent theory which states all

[8] For a formulation of Robinson Arithmetic, see (Boolos and Jeffrey, 1989: 158).

kinds of falsehoods about the truth predicate. Then Δ_k will still imply a large number of T-sentences. It will even imply so many of them, that even independent of the theory Δ_k, it is impossible to add even one T-sentence to the T-sentences that are entailed by Δ_k without making the resulting theory inconsistent (the set of T-sentences is maximal consistent, and all maximal consistent sets are "of equal size"). McGee puts this point succinctly:

> ... the mere desire to preserve as many [T-sentences] as possible gives us too little to go on in constructing a consistent alternative to the naive theory of truth. (McGee, 1992: 237)

The second theorem is a strengthening of this result. It says that even if we had supernatural capacities (i.e. if we could use the ω-rule), principle (b) would leave us just as blind in our search for a satisfactory theory of truth.

Let us now turn to (c). I do not think that it is reasonable to ask of a theory of truth that it meets this requirement. Take for example Kripke's theory of truth, surely one of the best that are around these days.[9] More precisely, let us take the minimal fixed point M of Kripke's construction (with the natural number structure as ground model) as our theory of truth. What corresponds to the accepted T-equivalences here, are those T-sentences $A \leftrightarrow T(\lceil A \rceil)$ such that both A and $T(\lceil A \rceil)$ obtain a truth-value in M (their truth-values will be identical). And a T-sentence $A \leftrightarrow T(\lceil A \rceil)$ is rejected if both A and $T(\lceil A \rceil)$ are not assigned a truth-value by M. Kripke's inductive construction can be seen as a way of generating a large collection of sentences belonging to the extension of the truth predicate, and, consequently, as generating a large set of accepted T-sentences. In fact, the T-sentences are the driving force behind the inductive construction. But Kripke's theory gives us no constructive procedure for generating the rejected T-sentences. Indeed, there seems no reason to expect that there exists such a procedure. And no one regards this as a deficiency of Kripke's theory. Nor should they.

Nevertheless, there is a sense here in which some sort of simplicity is a

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[9] Here I presume that the reader is familiar with (Kripke, 1975). Cf. (Cortois, *this vol.*: 24f).

virtue. If one just looks at the set of accepted T-sentences, or at the set of rejected T-sentences according to a theory of truth, it is likely to look like a horribly complicated one (this is not so if one accepts Tarski's implicit definition of truth as the correct theory of truth, but since Kripke's work, hardly anyone takes this position anymore).[10] It is the job of a theory of truth to give a systematic description of these sets which is simple, elegant, flexible, "natural", and which has an underlying philosophical picture which has a reasonable degree of initial intuitive plausibility. But there is no guarantee that in a theory that meets these conditions, the T-sentences will be absolutely central. I will again illustrate this on the basis of Kripke's theory of truth. Kripke's theory of truth is not self-contained: it is formulated in an essentially richer metalanguage. One way of making it self-contained is to formalize it in the object language.[11] This was done by Solomon Feferman. He wrote down a very natural set of axioms for the notion of truth, which resulted in a system (known in the literature as KF) of which the models are precisely the fixed points of Kripke's inductive constructions.[12] Roughly, the axioms of KF express how the truth conditions of complex sentences are compositionally determined by the truth conditions of their components. A large set of T-sentences is provable in KF, but no T-sentences occur among the axioms of KF! Now suppose we came to the conclusion that KF is our best theory of truth.[13] From the perspective of this theory, the claim that the T-sentences *define* the notion of truth would not seem plausible. For this reason, I am suspicious of the preoccupation in much of the more philosophical literature on truth with the T-equivalences, and of the claim that they somehow define truth.

In sum, the point I want to make is this. The paradoxes teach us that

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[10] The arithmetical complexity of the fixed points of Kripke's constructions was investigated by John Burgess (1986).

[11] Some authors argue that there is no reason to require of a theory of truth that it is self-contained (see for instance (Gupta and Belnap, 1993: 257-259)). This is fine with me, as long as it is recognized that taking this position amounts to taking sides in the debate about the correct solution of the semantical paradoxes.

[12] This theory was investigated in some detail in (Reinhardt, 1986).

[13] It isn't, for it is haunted, like so many contemporary theories of truth, by the problem of the strengthened liar. (Reinhardt, 1986) describes a way to get around this. The point that is made here also applies to Reinhardt's theory of truth.

only a proper subset of the set of T-sentences is acceptable. And this subset is, because of its complexity, strongly in need of systematization. But this need for systematization itself at least to some extent dislodges the T-sentences from their absolutely central place in the theory of truth. In the light of this need, it does not seem reasonable to take the T-sentences to exhaust the content of the notion of truth.

3.3 The truth predicate as a quantifier

Horwich takes the use of the truth predicate to be exhausted by its quantificational function.[14] The truth predicate enables one to refer to an infinite conjunction or disjunction of sentences. It even allows a person to evaluate a sentence of which she does not remember the exact content (as in: "What Evelyn said must have been true"). This is undoubtedly a central function of the truth predicate. But this does not accord well with another property that Horwich ascribes to the truth predicate, namely its neutrality with respect to problems and puzzles in other domains (such as metaphysics, epistemology,...).

Here is why. Introducing new quantifiers - second-order quantifiers, say - generally increases the expressive power of theories. But this is so only in virtue of accompanying *new axioms* governing the new quantifiers. In the case of second-order logic, for instance, these are the introduction and elimination axioms for second-order quantifiers, and the comprehension axiom. The situation is similar for truth predicates. Whether a truth predicate can be thought of in a minimalist way depends, I think, on the proof-theoretic strength of the axioms by which it is governed. The minimalist theory entails that a truth predicate should be *conservative* over a given theory that is stated without the truth predicate (or any other semantical notions).[15] That is, every formula of the language of the old theory that is provable in the new theory (i.e. the old theory plus the new

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[14] Quine and Kripke have also emphasized this function of the truth predicate.

[15] Maybe I am wrong here. But if I am, then I do not see what the neutrality of the notion of truth according to deflationism amounts to. In any case, this is an issue which I think should be addressed by defenders of deflationist theories of truth.

truth axioms) must already be provable in the old theory.[16] Otherwise the truth predicate "inflates" the theory to which it is applied. But whether that is so depends on the precise form of the truth axioms. And this is a question that is at this moment not settled. Some theories of truth that have been proposed are not conservative over elementary arithmetic.

To show this, we again turn to Feferman's formalization of Kripke's theory of truth: the system KF. KF consists of the axioms of Peano arithmetic, with the induction scheme ranging also over the sentences that contain occurrences of the truth predicate, plus a set of axioms governing the notion of truth.[17] Feferman has given a characterization of the class of arithmetical sentences (i.e. sentences not containing occurrences of the truth predicate) that are provable in KF.[18] This class turns out to coincide with the class of arithmetical consequences of a certain system of analysis, which proves a much larger collection of arithmetical truths than Peano arithmetic does. So KF is not even close to being conservative over Peano arithmetic: there are purely arithmetical sentences that are provable in KF, but not in Peano arithmetic. The notion of truth inflates the mathematical theory to which it is applied, and this seems to accord ill with *any* version of the deflationary theory of truth.

So there are problems in arithmetic that can be solved by reflecting on the properties of the truth predicate. But if that is so, then again, why could there not be problems in philosophy that can be solved by reflecting on the notion of truth? Horwich owes an explanation about what makes philosophy in this respect different from arithmetic.[19]

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[16] The question whether a truth predicate should be conservative in this sense was raised by Michael Sheard (Sheard, 1994: 1053).

[17] If the induction scheme is restricted to the fragment of the language that does not contain the truth predicate, then the resulting theory is conservative over Peano arithmetic (Sheard, 1994: 1047).

[18] See (Feferman, 1991).

[19] So the argument developed here is intended to provide further support for the thesis that was argued for in section 3.1.

4 Concluding remarks

Horwich has advanced a theory of truth which purports to be neutral in two ways. His minimal theory does not want to take a stand on the question what the best solution to the semantical paradoxes is. And he argues that the notion of truth is itself neutral with respect to substantial problems in philosophy of science, metaphysics, epistemology. I have taken issue with both of these aspects of his theory.

It is undoubtedly true that philosophers have often used philosophical theories about truth in an illegitimate and misguided way in the discussion of philosophical problems which do not hinge on any properties of the notion or property of truth. And there is the intuition that given a problem in, say, the philosophy of science, you are in general not likely to be able to solve it by thinking about the properties of truth. Horwich is to be commended for bringing this intuition to the forefront. But as far as I can see, Horwich's theory does not provide a satisfactory way of justifying this intuition or of explicating what lies behind it (see sections 3.1, 3.3). Perhaps there is a way of characterizing in a general and interesting way the class of philosophical questions on which no progress can be made by thinking about the notion of truth. If such a characterization can be found, it will be of obvious interest to epistemologists, philosophers of science,... But I have no idea even where to begin to look for such a characterization.

It is hard for me to see how a philosophical theory of truth *can* remain completely neutral about the solution to the semantic paradoxes. In any case, Horwich's theory of truth does not accord well with some proposed solutions of the semantical paradoxes (see sections 3.2, 3.3).

Now most theories belonging to the philosophical literature on truth do not claim to be neutral with respect to the correct solution of the semantical paradoxes. Many of them do not entail the conservativeness property for the notion of truth that was discussed in section 3.3. And for some of them there seems no reason (at least prima facie) to suppose that they are incompatible with the theories of the semantic paradoxes that have been mentioned in this paper so far. Take for instance Donald Davidson's the-

ory of truth.[20] Even though he assigns great importance to Tarski's work on truth, he takes there to be more to the notion of truth than is contained in Tarski's formal theories.[21] Unlike the deflationist theories of truth, he takes truth to be a primitive concept. And he seems to advocate an axiomatical investigation of the notion of truth (he regards the T-equivalences as axioms about truth). It is not clear how on this theory an argument can be constructed to the effect that the role of the concept of truth in epistemological, metaphysical,... questions is fundamentally limited. And it is not clear that Davidson's theory entails a conservativeness property of truth in the way that minimalism seems to do. But it is hard to be sure. Is Davidson's theory of truth compatible with Kripke's theory of truth?[22] Should (or can), on Davidson's view, a theory of truth be self-contained? I have no idea. Yet these are important questions. Even here, then, a closer connection to questions related to the semantical paradoxes seems highly desirable.

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[20] This theory is described in (Davidson, 1990). I find it hard to get a grip on Davidson's theory of truth. Sometimes I have the feeling that Davidson's theory of truth does not go far beyond giving a way of reading Tarski's truth definitions as a theory of truth, and that therefore, from a modern perspective, it may be fair to say that Davidson's theory of truth barely comes out of the starting blocks. Yet at the same time, I have the feeling that Davidson's way of interpreting the significance of Tarski's work is right on the mark (*especially* from a modern perspective). So I am not quite sure of the remarks that follow. In any case, I am well aware that they are too brief to be convincing.

[21] 'My own view is that Tarski has told us much of what we want to know about the concept of truth, and that there must be more' (Davidson, 1990: 295).

[22] Davidson's theory of truth does *not* seem to accord well with the revision theory of truth (as described in (Gupta and Belnap, 1993)).

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