*The Philosophical Quarterly, Vol. 50, No. 200* *July 2000*
*ISSN 0031–8094*



# TRUTH AND CONTRADICTION

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## I. INTRODUCTION

Dialetheists, such as myself, hold that some contradictions are true. The view is a contentious one, but producing cogent arguments against it is another matter. Some have felt that what makes the view untenable is something about the nature of truth itself. The point of this paper is to examine whether this is in fact the case.

Characterizing contradictions is relatively easy: contradictories are any things of the form $\alpha$ and $\neg\alpha$. This definition hides a difficulty, though. What sort of things are we talking about here – sentences, statements, propositions, beliefs? This is a thorny issue.[1] Fortunately, then, nothing much seems to turn on the niceties of the question for present purposes. I shall simply assume that $\alpha$ and its kin are truth-bearers, whatever those are required to be. I shall use angle brackets to refer to such bearers. Thus $<\alpha>$ is the name of the truth-bearer $\alpha$. If we write $T$ for 'is true', the question of whether there can be any true contradictions is that of whether there can be an $\alpha$ such that $T<\alpha>$ and $T<\neg\alpha>$.

Characterizing truth is much harder. Indeed this is an old philosophical chestnut. There are, of course, many theories of truth.[2] Each of them gives an account of the nature of the beast. What I shall do in this paper is look at a number of such theories to see whether there is anything in them inimical

[1] See, e.g., S. Haack, *Philosophy of Logics* (Cambridge UP, 1978), ch. 6.

[2] For surveys see, e.g., Haack, ch. 7; R.L. Kirkham, *Theories of Truth* (MIT Press, 1992); A.C. Grayling, *An Introduction to Philosophical Logic* (Oxford: Blackwell, 1997), chs 5, 6.

to dialetheism, that is, in favour of the law of non-contradiction. I should say straight away that one may certainly produce arguments for the law of non-contradiction which appeal to other considerations, but I shall not be concerned with these here.[3] The question on the agenda is whether there is anything about the nature of truth that rules out dialetheism; and if there is, this should follow from a theory that spells out that nature.

It would be impossible to look at all the theories of truth that have been given. I shall therefore restrict myself to the major ones. The traditional accounts are the correspondence, coherence and pragmatist theories of truth. More modern accounts include the deflationist, semantic and teleological accounts. It is these six theories that I shall discuss, starting with the newer ones. Naturally each of these accounts comes in different versions, sometimes very different versions; but in each case there is a main supporting idea, which different versions develop in different ways. Some of these ways may, in fact, build in the impossibility of true contradictions. But, I shall argue, in every case there is nothing about the *idée maîtresse* that requires this; and if there are particular versions that render dialetheias impossible, there are, equally, versions that do not. Finally, I emphasize that I am not at all concerned here with evaluating any of these accounts of truth or determining which theory, if any, is correct. My concern is solely with the bearing of each of these theories on dialetheism.

## II. THE DEFLATIONIST THEORY OF TRUTH

The first major proponent of the deflationist theory was Ramsey, and more modern versions have been endorsed by a number of people, notably by Horwich.[4] According to this account, to say that $\langle\alpha\rangle$ is true is to say neither more nor less than $\alpha$ itself. That is, truth is simply that property (or predicate) $T$ which satisfies the $T$-schema

$$T\langle\alpha\rangle \leftrightarrow \alpha$$

for every truth-bearer $\alpha$ and a suitable biconditional $\leftrightarrow$.

Is there anything inimical to dialetheism in this account? Not at all. The account is entirely neutral as to *what* things are true. Such matters of substance are deferred elsewhere. In particular, we have

$$T\langle\alpha\rangle \wedge T\langle\neg\alpha\rangle \leftrightarrow \alpha \wedge \neg\alpha.$$

[3] Some such arguments are discussed in my 'What's So Bad about Contradictions?', *Journal of Philosophy*, 96 (1998), pp. 410–26.

[4] P. Horwich, *Truth* (Oxford: Blackwell, 1990).

Hence the contradictories $<\alpha>$ and $<\neg\alpha>$ are true iff $\alpha$ and $\neg\alpha$. If we are looking for arguments against the possibility of this, we shall have to look elsewhere, perhaps to a theory of negation.[5]

As a matter of fact, the deflationist account is not simply neutral on the issue of dialetheism: it actually has a tendency to favour it. This is because of the well known fact that the *T*-schema itself seems to give rise to contradictions. Given self-reference of any number of different kinds, it is easy enough to construct a truth-bearer $\beta$ of the form $\neg T<\beta>$. The *T*-schema gives us

$$T<\beta> \leftrightarrow \beta$$

that is,

$$T<\beta> \leftrightarrow \neg T<\beta>$$

whence by the law of excluded middle or *consequentia mirabilis* ($\alpha \rightarrow \neg\alpha \vdash \neg\alpha$) we have $T<\beta>$ and $\neg T<\beta>$. Writing $\gamma$ for $T<\beta>$, the instances of the *T*-schema for $\gamma$ and its negation give us $T<\gamma>$ and $T<\neg\gamma>$.

This is of course the Liar paradox. Naturally one may try to avoid it by rejecting the principles of logic employed.[6] Typically, however, contemporary deflationists have not taken this line. Here, for example, is Horwich (p. 41):

> Indeed – and for that reason [the Liar paradox] we must conclude that permissible instantiations of the equivalence schema [*sc.* the *T*-schema] are restricted in some way to avoid paradoxical results.

Though this is of course a possible move, it is also clear that it goes completely against the spirit of deflationism, whose prime thought is, after all, that '$\alpha$' and '$<\alpha>$ is true' just amount to the same thing. It is thus a quite *ad hoc* manœuvre. *Honest* deflationism is not only compatible with dialetheism, it leads in its direction.

## III. THE SEMANTIC THEORY OF TRUTH

The semantic theory derives from Tarski's famous work on truth.[7] Tarski showed how to give a theory of a truth predicate (for a given language), or, more generally, a satisfaction predicate (truth being a special case of

[5] For a dialetheist theory of negation, see my 'What Not? a Dialetheic Theory of Negation', in D. Gabbay and H. Wansing (eds), *Negation* (Dordrecht: Kluwer, 1999).

[6] How successful this may be is another matter. Such moves always seem to succumb to extended paradoxes. See my *In Contradiction* (Amsterdam: Nijhoff, 1987), ch. 2.

[7] A. Tarski, 'The Concept of Truth in Formalized Languages', in his *Logic, Semantics, Metamathematics* (Oxford UP, 1956), pp. 152–278.

satisfaction, when there are no free variables in the formula concerned). The theory is a recursive one, in the sense that the truth of any compound sentence is specified in terms of the truth of its parts. The *T*-schema – or rather its slight generalization $T\langle\alpha\rangle \leftrightarrow \alpha'$, where $\alpha'$ is a suitable translation of $\alpha$ – is not one of the axioms of the theory itself, but follows from them in a natural way. The exact details of the Tarskian construction are well known, and need no rehearsal here. The question at hand is whether there is anything in it which precludes contradictions from being true.

One immediate thought to this effect is as follows. Given that the Tarskian theory delivers the *T*-schema, if there were an $\alpha$ such that $T\langle\alpha\rangle$ and $T\langle\neg\alpha\rangle$, then it would follow that $\alpha'$ and $\neg\alpha'$, assuming that $(\neg\alpha)'$ is $\neg(\alpha')$. If an explosive logic is used (in which a contradiction entails everything), then truth would be reduced to triviality. Of course a similar argument can be deployed concerning any theory that delivers the *T*-schema. The answer would be the same in every case: use a paraconsistent logic (one in which contradictions do not entail everything). After all, no other logic makes much sense if you are a dialetheist. This answer might be thought to be unsatisfactory in the case of a Tarskian theory of truth, though. For it is sometimes said that a Tarskian theory must be based on classical logic: this logic is required for the construction to be performed. This claim is just plain false, however. It can be carried out in intuitionist logic, paraconsistent logic and, in fact, most logics. A version of the construction based on a paraconsistent logic can be found in my *In Contradiction* ch. 9. In fact very little propositional logic is required to implement the Tarskian construction, hardly more than the substitutivity of provable equivalents.[8]

It might be thought that truth-conditions for negation of the form

A. $T\langle\neg\alpha\rangle \leftrightarrow \neg T\langle\alpha\rangle$

would rule out the possibility of true contradictions in a Tarskian theory. But, for a start, such conditions are not mandatory in the construction. For example, it is possible to give *joint* recursive conditions for the predicates *T* and *F* ('is false') – or, strictly speaking, their counterparts for satisfaction – where the conditions for negation are the pair

$$T\langle\neg\alpha\rangle \leftrightarrow F\langle\alpha\rangle$$
$$F\langle\neg\alpha\rangle \leftrightarrow T\langle\alpha\rangle.$$

Moreover, even a dialetheist *may* employ (A) as the truth-conditions for negation. Such conditions merely mean that any contradiction shown to be true, $T\langle\alpha\rangle \wedge T\langle\neg\alpha\rangle$, turns into an explicit contradiction of the form

[8] This does rule out certain paraconsistent logics, however, notably those of da Costa's C family.

$T\langle\alpha\rangle \wedge \neg T\langle\alpha\rangle$. And whilst there may be arguments against the possibility or desirability of this (see, e.g., my *In Contradiction* 4.9), there is none such intrinsically deriving from the Tarskian construction itself. (*In Contradiction* ch. 9 shows how to give a truth theory in each of the above ways.)

There is nothing, then, in the semantic account of truth which in itself is inimical to the possibility of true contradictions. Moreover, like the deflationist account, the semantic account actually leads in this direction. For truth-theories of a Tarskian kind deliver the *T*-schema, and this produces contradictions in a very simple way, as we have already seen.[9] Tarski blocked off this consequence by insisting that the truth predicate for a language must not occur in that language, and hence that appropriate self-referential sentences cannot be formulated. But, first, this is not essential to the construction. It is quite possible to give a paraconsistent Tarskian truth theory for a language which contains its own truth predicate. *In Contradiction* ch. 9 does just that.[10] Worse, for a formal language that is supposed to behave in any way like a natural language, Tarski's restriction seems entirely implausible and *ad hoc*, a restriction which it is difficult to defend successfully, as most would now agree.[11] Like the redundancy theory, then, the semantic account of truth is not just compatible with dialetheism: it actually leads in its direction.

## IV. THE TELEOLOGICAL THEORY OF TRUTH

The last modern account of truth that I shall discuss is less well known than either of the preceding accounts. It arises out of some comments made by Dummett,[12] and is advocated as an account of truth in my *In Contradiction* ch. 4. This is the teleological theory of truth.

The account starts by noting that 'is true' is a predicate with a *point*. Even if one knew the entire extension of the predicate, one would not understand what it was for something to be true unless one knew that it is the truth that one aims at, in a certain sense. In the same way, one could know the extension of 'is a winning position' without understanding what winning is. One could know that a winning position in chess is when the opponent's

[9] The fact that it may not be the truth-bearer $\alpha$ that occurs on the right-hand side of the *T*-schema, but a translation $\alpha'$, is of no significance. For since translation preserves meaning, we have $\alpha \leftrightarrow \alpha'$.

[10] This does mean that the theory of truth cannot be turned into an explicit definition of truth. But since the theory entails all instances of the *T*-schema, it none the less provides a characterization of truth that is 'materially adequate'.

[11] See, e.g., my *In Contradiction* ch. 2 for discussion and references.

[12] M. Dummett, 'Truth', *Proceedings of the Aristotelian Society*, 59 (1959), pp. 141–62.

king cannot avoid being taken on the next move, a winning position in bridge is when one scores more points than one's opponents, etc.; but one would not know what winning is unless one understood that it is winning that is, generically, what one aims to do in playing games: it is the *telos* of games-playing. In a similar way, truth is the *telos* of certain cognitive activities, notably, assertion (and related things such as belief). When one asserts, one aims, generically, to speak truly. If, for example, everyone started to aim to speak falsely, and this became common knowledge, then what was false would become the truth. It would be as if every utterance were prefixed with a tacit 'it is not the case that'.[13]

There is nothing in this account which tells against dialetheism. It is, in fact, neutral as to what *is* true. For what it is that fixes the extension of 'is true' we must, as in deflationist accounts, look elsewhere. Moreover, it may well be that there is no uniform answer to this question.[14] One sort of answer (the physical world) may be appropriate in dealing with assertions of the natural sciences; another (the existence of certain proofs) may be appropriate in dealing with statements of pure mathematics; another (certain kinds of social *fiat*) may be appropriate in dealing with discourse about legal rights, etc. And some of these possibilities also lead in the direction of dialetheism. In the last of these cases, for example, if a duly constituted legislature passes legislation which makes it illegal for a certain person to do something (under one description) and makes it legally required of that person (under another), this determines a true contradiction.[15]

The teleological account of truth may well, then, be a friend of dialetheism; it is certainly no enemy.

## V. THE PRAGMATIST THEORY OF TRUTH

Important advocates of versions of the pragmatist theory include the founding fathers of American philosophy, Peirce, James and Dewey. According to pragmatism, something is true if it 'works'. The variations in the theory arise because of the different ways in which one may interpret the notion 'works'. A central idea has always been that something works if it is verified in practice, and specifically by our sensory observations. This is how I shall interpret the notion here.

[13] A similar account of truth is given by Grayling, pp. 179ff. According to the account given there, to call something true is to evaluate it positively in a certain way. What is the end of such an evaluation? Grayling lists a number of ends, but notes (p. 182) that assertability may be seen as fundamental to all the others cited.

[14] As Grayling notes, pp. 180–1.

[15] See my *In Contradiction* ch. 13, esp. p. 232.

The first thing to note about this conception of truth is as follows. Only a very limited number of truth-bearers can be verified directly by observation. Though the early logical positivists claimed that all meaningful statements were, or were reducible to, ones that are directly verifiable, this idea ended in failure. We have to admit that there are meaningful statements that are not directly verifiable. How are we to understand talk of verification in these cases? The now familiar answer to this question is that a statement is verified if it has consequences that are in fact observed, and falsified if it has observable consequences that are not. An immediate consequence of this is that it makes little sense to talk of individual truth-bearers as being verified. The consequences of any one belief depend on what other things one believes. Our beliefs face the tribunal of empirical enquiry collectively, as Quine most famously observed. Hence it is better to talk of the truth of *theories* – deductively closed collections of truth-bearers.

Can inconsistent theories, i.e., theories that contain contradictory truth-bearers, be verified? The simple answer to this is 'Yes'. Many have been. Bohr's original theory of the atom was inconsistent; yet it had striking observational confirmations. Newtonian dynamics was, for a long time, based on an inconsistent theory of infinitesimals. All of this is well known.[16] Of course, if a theory is inconsistent its underlying logic had better not be explosive. For we certainly do not perceive that everything of an observable kind is the case. But provided that a paraconsistent logic is used, there is absolutely no reason why a theory should not contain inconsistent statements of a non-observable kind, yet have quite consistent observable consequences, verified in the standard fashion.

One might argue at this point that a theory is not a candidate for being the truth unless all its observable consequences under standard, classical, logic are observed – which no inconsistent theory's could be. Whatever the force of this philosophical move, it is out of place here. For pragmatism has no criterion for the truth of a theory other than verification, i.e., confirmed observable consequences. How such consequences are determined is of no relevance. If the theory works in practice, then it is true.

One might also try to argue that no inconsistent theory can be a candidate for the *real* truth: its acceptance can only ever be a temporary expedient. Bohr's theory, for example, was later replaced by another theory, as was the inconsistent infinitesimal calculus. These theories certainly were replaced,[17] but it can hardly be claimed in this context that the acceptance

[16] For references and discussion of most of the points in this section, see my 'Inconsistency and the Empirical Sciences', in J. Meheus (ed.), *Inconsistency in Science* (Kluwer, forthcoming).

[17] Though the consistency of the replacement for Bohr's theory of the atom, based as it is on modern quantum mechanics, is still moot.

of an inconsistent theory *must* be a temporary expedient. According to this account of truth, expedience is truth! And whilst an inconsistent theory, and indeed any theory, may eventually be replaced, the claim that an inconsistent theory that has been verified is not a candidate for the truth makes no sense, unless one has criteria for the truth *other* than verification, which the pragmatist does not have.

The upshot of this discussion is that a pragmatic account of truth is not only quite compatible with the possibility that inconsistent theories are true, it actually protects inconsistent theories from important attacks to the effect that they cannot be true.

The preceding discussion relied on the fact that an inconsistent theory can have quite consistent observational consequences, if its underlying logic is paraconsistent. Before we leave the pragmatist theory of truth, let us ask what one would say of a theory whose observational consequences were themselves inconsistent. Could such a theory be verified? The answer, in fact, is still 'Yes', provided that the consequences are of an appropriate kind. For inconsistent states of affairs *are* observed sometimes. For example, in visual illusions of certain kinds we perceive contradictory situations, as with 'impossible objects' like cubes whose struts assume impossible orientations. Such perceptions are not veridical, which we can tell, for example, by shifting the angle of perception. But I see no reason why a theory might not predict that an object had inconsistent properties, which were verified by perception 'from all angles'. And if so, it too would be verified *ceteris paribus*, and, assuming the pragmatic account of truth, would be true.

## VI. THE COHERENCE THEORY OF TRUTH

Versions of the coherence theory of truth were endorsed by idealists such as Blanshard, and by some of the positivists, such as Neurath.[18] According to this theory, a truth-bearer is true if it belongs to a coherent, or perhaps better, maximally coherent, set of bearers. Just as with the pragmatist theory of truth, it is therefore more appropriate to talk of truth as applied to sets of truth-bearers in the first instance.

Of all theories of truth, the coherence theory is perhaps the most difficult to deal with here; but this difficulty arises because the notion of coherence

[18] Standardly, Bradley is also cited as a coherence theorist; but this is severely misleading, if not plain false. He is more plausibly seen as subscribing, together with the early Moore and Russell, to a quite different theory, the identity theory. This can be thought of as an extreme form of the correspondence theory, where the correspondence is constituted by the identity relation. See S. Candlish, 'The Truth about F.H. Bradley', *Mind*, 98 (1989), pp. 331–48; and T. Baldwin, 'The Identity Theory of Truth', *Mind*, 100 (1991), pp. 35–52.

itself has never really been satisfactorily spelt out. It is usually taken that consistency is a necessary condition for coherence. I shall return to this later. No one has taken it to be a sufficient condition also. The reason is obvious. It is far too weak: any consistent truth-bearer is a member of some (maximally) consistent set of sentences. Some kind of deductive relationship is usually also required for coherence, for example, that each truth-bearer must be entailed by others in the set. This is also a very weak condition, satisfied by any deductively closed set of sentences (or theory). For if $\alpha$ and $\beta$ are in a theory, so is $\alpha \wedge \beta$, which entails each of them. There must therefore be stronger criteria than this.

To understand what they might be, one needs to look at the rationale for the coherence theory of truth. Typically, those who endorsed the theory have held that it makes no sense to define truth in terms of some objective reality independent of our cognitive functioning: there is no such thing, or if there is, we have no access to it. If we are to have any meaningful notion of truth, this can be defined only in terms of what we are justified in believing (maybe in the ideal limit). The criteria of coherence are therefore the criteria of justification.

Now an important part of justification of any overall theory is empirical adequacy, that is, consonance with observation. This does not mean that a coherent set must include a statement describing *every* observation we make. Observation, as all admit, is fallible. For example, we all sometimes see things that are not really there. Hence individual observation statements need not be in a coherent set if they fit ill with other aspects of the theory. This notion of fitting ill requires yet other criteria. (Again consistency is not enough, since consistency may be produced in many ways, as Quine has always emphasized, some ways including the obdurate observation statements, some not.) And here the floodgates open: simplicity, explanatory power, not being *ad hoc*, unity – whatever these things amount to. The upshot of all this for the present concern is that coherence is to be determined by a number of features, including those of the kind I have just listed, plus consistency (maybe) and empirical adequacy.

Now let us return to the question of whether consistency is a necessary condition for coherence. However one cashes the above criteria, it is clear that they may not all issue in the same verdict. One theory may be consistent, but complex and highly *ad hoc*; another may be inconsistent, but simple and unified. Which theory is the most coherent in this situation? The only plausible answer seems to be that it is the theory that is *overall* most satisfactory.[19] That is, the most coherent theory is that which comes out best

[19] The issue is discussed in my 'Paraconsistent Belief Revision', *Theoria*, forthcoming..

on most of the criteria. This is vague, but sufficient for present purposes. For it is clear that if this is the case, consistency may be trumped by other considerations. (This was exactly what happened in the case of the Bohr theory of the atom, for example.) Hence consistency is not a necessary condition for coherence, merely one of a number of desiderata, and one that may be overridden by other factors.

One may even raise the question of why consistency ought to be on the list at all. Of course other desiderata require certain amounts of consistency. A theory could hardly be empirically adequate if it contained everything. But this does not require consistency as a *separate* desideratum.

One might argue that consistency is required because an inconsistent theory entails everything, which would certainly violate empirical adequacy. But this is a poor reply. For a start, if inconsistency is ruled out because it would violate empirical adequacy, it is hardly required as a separate criterion. More importantly, there is no reason to suppose that the underlying logic of the theory must be explosive. If coherence is our only criterion of truth, the true logic is to be determined holistically with the rest of the package, and it may well be that a theory based on a paraconsistent logic is overall simplest, least *ad hoc*, etc. Similarly, trying to justify consistency by appealing to the law of non-contradiction will not work: there is no *a priori* reason why the most coherent theory must contain this law.[20]

We see, then, that the coherence theory of truth does not mandate that the true (= most coherent) theory must be consistent. Consistency may not even be a desideratum at all, except for such aspects of it as are required to fulfil other desiderata of coherence.

## VII. THE CORRESPONDENCE THEORY OF TRUTH

The correspondence theory of truth, the most traditional theory, had its roots in ancient and mediaeval philosophy, but flowered in early twentieth-century British philosophy. According to the correspondence theory, a true truth-bearer is one that corresponds to reality. A central problem in its articulation has always been how to spell out this notion of correspondence.

I have saved this theory till the last because it is the one, I think, that puts up the stiffest resistance psychologically to the idea that there might be true contradictions. For it entails that reality itself is inconsistent in a certain sense; and how could that be? Reality is all there together; how could parts of it possibly contradict other parts?

[20] For more on the question of when consistency is a desideratum, see my 'Inconsistency and the Empirical Sciences'.

One should note, for a start, that if one supposes reality to be constituted solely by (non-propositional) objects, like tables and chairs, it makes no sense to suppose that reality is inconsistent *or* consistent. This is simply a category mistake. But the most natural understanding of the correspondence theory of truth requires that there be more to reality than such objects. 'Brisbane is in Australia' is true because it corresponds to Brisbane's actually being in Australia. There must therefore be, in some sense, things like Brisbane's being in Australia, whether they are called facts or states of affairs or whatnot. A correspondence theory of truth requires an account of things of this kind. One of the most sophisticated accounts ever given is undoubtedly that of Wittgenstein's *Tractatus*. And certainly, according to this, there are no contradictory facts.

But other accounts are possible. Here is one. The constituents of reality include a set of properties and relations $R$, a set of objects $D$, and a set of polarities $\pi=\{0, 1\}$. Each property $r \in R$ has an adicity $n$. I shall indicate this with a subscript, thus: $r_n$. A (potential) atomic fact is a tuple $<r_n, d_1, ..., d_n, i>$, where $r_n \in R$; $d_1, ..., d_n \in D$; $i \in \pi$. One can think of the fact $<r_n, d_1, ..., d_n, 1>$ as the fact that $d_1, ..., d_n$ are related by $r_n$ (in that order), and $<r_n, d_1, ..., d_n, 0>$ as the fact that $d_1, ..., d_n$ are not related by $r_n$ (in that order). Reality itself, $W$ (the world), is just a certain set of atomic facts, the actual ones.

Given this account, it is a simple matter to articulate a correspondence notion of truth. Let $L$ be the language obtained by closing atomic predications under negation, conjunction and disjunction and let $\delta$ be an assignment of meanings to the predicates and constants of $L$. Specifically, for each $n$-place predicate $P_n$, $\delta(P_n)$ is an $n$-place relation in $R$; and for every constant $c$, $\delta(c)$ is in $D$. We define what it is for a sentence $\alpha$ to be true in $W$ ($W \vDash_T \alpha$) and false in $W$ ($W \vDash_F \alpha$) by standard recursive clauses:

$W \vDash_T P_n a_1 \ldots a_n$ iff $<\delta(P_n), \delta(a_1), ..., \delta(a_n), 1> \in W$
$W \vDash_F P_n a_1 \ldots a_n$ iff $<\delta(P_n), \delta(a_1), ..., \delta(a_n), 0> \in W$

$W \vDash_T \neg\alpha$ iff $W \vDash_F \alpha$
$W \vDash_F \neg\alpha$ iff $W \vDash_T \alpha$

$W \vDash_T \alpha \vee \beta$ iff $W \vDash_T \alpha$ or $W \vDash_T \beta$
$W \vDash_F \alpha \vee \beta$ iff $W \vDash_F \alpha$ and $W \vDash_F \beta$.

The truth and falsity conditions for $\wedge$ are the obvious dual ones. $\vDash_T$ is a correspondence relation; it holds between just those sentences that are true and the world. Moreover, as should be clear, it is quite possible for contradictions to be true. Ultimately this is because $W$ may contain both a 'positive' fact, $<r_n, d_1, ..., d_n, 1>$, and the 'negative' fact which corresponds to it, $<r_n, d_1, ..., d_n, 0>$.

The above theory is, in fact, a very well known one. It is essentially a simple part of situation semantics, where atomic facts are more usually called 'states of affairs' or 'situation types', and sets of facts are called 'situations'.[21] A pair $<W, \delta>$ is also essentially a Dunn four-valued interpretation for the relevant logic of first-degree entailment.[22] Hence defining validity in terms of truth preservation over all such pairs characterizes validity in this paraconsistent logic.

The theory can be extended to handle more complex grammatical constructions, such as quantifiers and intensional operators, but the details of this are irrelevant to my present purpose, which is simply to illustrate what a correspondence theory of truth which allows for the possibility of true contradictions might be like. It is not metaphysically unproblematic. For example, one obvious question is what makes an atomic fact (such as $<r_n, d_1, \ldots, d_n, 1>$) a single entity and not a mere congeries. This is a question that Wittgenstein struggled with in the *Tractatus*,[23] and one may simply run the same line as he did. Indeed, as far as I can see, one could simply rewrite *Tractatus* substituting the above theory of facts for the one given there. The result would be almost exactly the same, except that the logic of the world would be first-degree entailment and not classical logic.[24]

Are there any reasons for supposing that the above theory is metaphysically incoherent – or, at least, metaphysically incoherent in a way in which the *Tractatus* is not? A correspondence theory of truth needs to suppose that there are, in some sense, facts in the world; it does not, though, have to suppose that there are facts corresponding to all true sentences – disjunctive facts, general facts, etc. (though it may).[25] The truth of disjunctions, generalizations, etc., can simply be defined in terms of more basic facts. The account just given does not have disjunctive facts or conjunctive facts, but it does have negative facts of a kind (things of the form $<r_n, d_1, \ldots, d_n, 0>$). Now

[21] See, e.g., J. Barwise and J. Perry, *Situations and Attitudes* (MIT Press, 1983), esp. ch. 3.

[22] See, e.g., my 'Paraconsistent Logic', in D. Gabbay and F. Guenthner (eds), *Handbook of Philosophical Logic*, 2nd edn (Kluwer: forthcoming), 6.4, though things are set up slightly differently there. To translate: the extension of a predicate E($P$) is simply $\{<d_1, \ldots, d_n>; <d(P), d_1, \ldots, d_n, 1> \in W\}$; and the anti-extension A($P$) is $\{<d_1, \ldots, d_n>; <d(P), d_1, \ldots, d_n, 0> \in W\}$. $1 \in v(\alpha)$ iff $W \models_T \alpha$, and $0 \in v(\alpha)$ iff $W \models_F \alpha$.

[23] Not very successfully, I think. See my *Beyond the Limits of Thought* (Cambridge UP, 1995), ch. 12.

[24] There are a few inessential differences. For example, the above account distinguishes between properties and objects, whilst Wittgenstein talks just of objects. For him, however, objects have possibilities of combination internal to them. These possibilities will not be the same for all objects. It is therefore quite possible that properties form a distinct subclass of Wittgensteinian objects.

[25] Bas van Fraassen, in his 'Facts and Tautological Entailments', *Journal of Philosophy*, 66 (1969), pp. 477–87, gives a fact-based semantics for first-degree entailment that has facts corresponding to all true sentences.

many have felt a great reluctance to admit the existence of negative facts. For example, in his lectures on logical atomism, Russell, who did in fact accept the existence of negative facts at the time, wrote:

> Are there negative facts? Are there such facts as you might call 'Socrates is not alive'? ... One has a certain repugnance to negative facts, the same sort of feeling that makes you wish not to have a fact '*p* or *q*' going about the world. You have a feeling that there are only positive facts, and that negative propositions have somehow or other got to be expressions of positive facts.[26]

What is this repugnance? One source of it is, I suspect, the obvious truth that everything that exists *is*. Add to this the thought that negative facts *are not*, and it follows that no such facts exist. This is a confusion, however, as old as Parmenides: negative facts are *not*, in the sense that they ground truths of the form 'It is not the case that so and so', but they *are* in exactly the same way as all existent things are, *viz*., they are part of reality.

An explicit argument against the possibility of negative facts was given by one of the people who heard Russell's lectures. According to Demos, negative facts are not to be countenanced since they are 'nowhere to be met with in experience'.[27] Now it is not clear that we meet *any* facts in experience. We meet people, stars, chairs, and other objects, but not facts or states of affairs. And if this is so, and the objection is cogent, it tells against all correspondence theories of truth. But, it might be argued, we do see facts: we see, e.g., that the sun is shining; but we never see negative facts, e.g., that it is not shining. This is a dubious argument, though: one *can* see negative facts. I can see, for example, that there is no one in the room when I walk through the door. Moreover, to be translucent is not to be opaque, and *vice versa*; yet I can see that something is translucent, and see that something is opaque. Whichever, then, is the negative fact, it can be seen.[28] In any case, Demos' objection is flawed by its simple empiricism. Why should one suppose that the mere fact that one cannot perceive a kind of entity entails that it does not exist? For no reason that I can see, especially if one is a metaphysical realist of a kind to whom the correspondence theory is likely to appeal.

Another objection to a theory with negative facts might focus on the polarity objects 0 and 1. What strange beasts are these? Of course the use of 0 and 1 themselves here is purely conventional. Nor does one have to think of these things as objects. They simply code the fact that there are two ways

[26] D. Pears (ed.), *Russell's Logical Atomism* (London: Fontana, 1972), p. 67.

[27] R. Demos, 'A Discussion of a Certain Type of Negative Proposition', *Mind*, 26 (1917), pp. 188–96, at p. 189.

[28] For further discussion, see my 'Inconsistency and the Empirical Sciences'. It may also be worth noting that one of the purposes of situation semantics was to give an account of the semantics of verbs such as 'sees that', and this explicitly allows for seeings to have negative contents. See, e.g., Barwise and Perry, pp. 182, 204.

in which $r_n$, say, may relate to $d_1$, ..., $d_n$, namely, positively or negatively. It is certainly the case that this polarity is built into reality. But there are lots of polarities built into physical reality (like, for example, being a left hand or a right hand, or the spin of an atomic particle). I do not see why metaphysical polarities should be any worse than these.

A final objection to the theory is possible because there are *two* relations of correspondence, $\models_T$ and $\models_F$. Given the symmetry between these, what makes *one* of these the truth? A first answer is that $\models_T$ is truth because of its relation to the positive polarity 1. But this just defers the question. 1 and 0 are symmetric, too. What makes one of them the one relevant to truth? The only answer that a correspondence theorist can give, as far as I can see, is simply that it is a brute fact. But more importantly here one should note that *exactly* the same problem besets a theory where there are only positive facts. There is still a symmetry between truth and falsity in this. What makes one of these the truth? A first answer is that one is truth because of its relation to *existent* facts; falsity relates to non-existent facts. But again this just defers the question. Existence and non-existence are symmetric too. What makes existence relevant to truth? Again the only answer that a correspondence theorist appears to be able to give is simply that it is a brute fact.

Maybe there are other arguments against negative facts,[29] but as far as I can see this notion is in no way more problematic than the notion of a fact in general.

Even given the legitimacy of the notion of negative facts, one might still object that the above account does not make true contradictions possible, simply because this requires the world $W$ to contain a positive fact and its corresponding negative fact, which cannot happen. But why not? The theory of facts itself delivers a *prima facie* presumption that this is perfectly possible. All the atomic facts, whether positive or negative, are independent entities, and can be mixed and matched at will.[30] It is of course possible that there are considerations that override this presumption (for example, considerations which support the law of non-contradiction for other reasons), but these are not arguments that derive from the theory of facts itself, or from the correspondence theory of truth, which, as we have seen, is quite compatible with the existence of true contradictions.

[29] There is only one part of the *Tractatus* I am aware of which may be interpreted as an argument to the effect that there are no negative facts. At 4.0621 Wittgenstein says 'It is important that "$p$" and "$\sim p$" can say the same thing. For it shows that nothing in reality corresponds to the sign "~".' What Wittgenstein is pointing to here, I take it, is that $p$ and $\sim p$ have the same content, in that what one affirms the other denies. But this community of content is explained on the present account by the fact that $\langle r_n, a_1, ..., a_n, 1\rangle$ and $\langle r_n, a_1, ..., a_n, 0\rangle$ share everything but their polarity bit.

[30] As Wittgenstein puts it, *Tractatus* 1.2, 1.21: 'The world divides into facts. Each item can be the case or not the case while everything else remains the same.'

## VIII. CONCLUSION

We have now considered six accounts of truth. There are certainly others, but at any rate these exhaust the major views on the subject. As we have seen, none of them provides any reason for rejecting dialetheism; a number of them even point in its direction. If there are arguments against dialetheism, the friends of consistency will therefore have to look elsewhere to find them.[31]

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[31] I am indebted to Stewart Candlish for his comments on a first draft of this essay. Versions of this paper were given at a meeting of the Australasian Association of Philosophy in Sydney in July 1998, and to the Departments of Philosophy at Stanford University and MIT in February 1999. I am grateful to those present on these occasions for their probing comments.