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Is Epimenides Still Lying?[1]

A popular and not implausible gambit for resolving the Paradox of the Liar is to reason that the sentence whose truth or falsity is in question lacks those minimal semantic properties which are prerequisite for an entity to have truth-value at all. Thus faced with the expression

This sentence is false

we apparently escape the paradox by recognizing that it is simply not the case that all symbol-sequences are meaningful, and then arguing either that this expression is not a well-formed sentence at all (depending upon how we construe the syntax of English), or that even if it is *syntactically* a sentence, it is not a cognitively meaningful sentence. We may then propose that "This sentence is false" is neither true nor false, in the same way that we say that "dog" or "All blurps farble" are neither true nor false, without thereby abandoning any of the classical laws of logic. Similarly, Bar-Hillel (1957) has recently contended that the symbol-sequence

The next sentence is true. The previous sentence is false

constitutes no genuine paradox because it is *statements*, not sentence-tokens, which are true or false, and that since a paradox would otherwise ensue, these symbol-sequences are not[2] statements.

While I am as appreciative as the next person of the need to convince ourselves that the languages we use, whether natural or formalized,[3] are free of logical anomalies, I fear that whatever is involved in the semantic paradoxes cuts too deeply to be effaced by this line of resolution. I shall present a form of the Liar's Paradox which does not appear to be touched by an appeal to "meaninglessness" or the like.

If there were no reason to heed the distinction between *statements* (or alternatively, though not necessarily synonymously, *meaningful sentences* or *propositions*)

[1] With apologies to Max Black.

[2] Or "do not express", or "are not tokens of", or "do not make", etc., depending upon how one construes the relation between sentence-tokens and statements.

[3] I am by no means convinced that contemporary formalisms have solved much with respect to the paradoxes. Syntactical Jim Crow legislation against sentence-forms which lead to paradox has been entirely too *ad hoc* for my liking.

on the one hand, and *sentence-tokens* on the other, I would present my version as follows. Consider the sentence P:

(P) There is a false sentence on this line.

We assume that a sentence may be true or false, though not both, but since "sentence" is a *syntactical* concept, that it need not be either. For simplicity, let us say that a sentence is "meaningless" when it is neither true nor false: Then, since P is the only sentence on its line, we observe that if P is true, it must be false; whereas if P is false, then it must be either true or meaningless. But if P is meaningless, then there is not a false sentence in the locus under consideration, and hence P is false. Thus given a scarcely questionable empirical premise, all three (logically exhaustive) alternatives, P is true, P is false, P is meaningless, lead to contradictions.

The force of this argument is attenuated, however, when we draw a distinction between statements and sentence-tokens. Since only sentence-tokens, not sentence-types, can have physical locus, it becomes apparent that the word 'sentence' in P must be interpreted as "sentence-token". But then two objections arise, (*a*) Not everyone would agree that sentence-tokens may be ascribed truth-values. This is in itself not too serious, since a suitable definition of truth and falsity as applied to sentence-tokens could be devised as soon as we agree on the relation between a sentence-token and whatever it is that has truth-value in the primary sense, and in any case, denial that sentence-tokens have truth-value impales one immediately on the third horn of the argument. However, (*b*) it is no longer clear how we pass from the statement, "There is not a false sentence(-token) in the locus under consideration", which says nothing about which sentence-tokens its truth would falsify, to the conclusion that P is false. To reach this conclusion, we would need to spell out the details of the conditions under which a sentence-token has truth-value. Because of this weakness in the preliminary formulation, I will attempt to develop the present version of the Paradox in a slightly more sophisticated form.

Since I do not wish, at least for the present, to become embroiled in analysis of the relations holding among sentences, sentence-tokens, and statements, I shall simply assume that we know what these are, and that it is sometimes the case that a sentence-token *conveys* a statement. (Assertion that a sentence-token "conveys" a statement is presumably elliptical for a rather complex statement about the effects of the token on a person with certain language habits.) I have chosen "conveys", rather than "exemplifies", "expresses", or simply "is", for expressing the relation between a sentence-token and a statement in order to remain as neutral as possible in regard to the nature of this relation. If the reader is suspicious of "statements" but has no qualms about "propositions", he may substitute 'proposition' for all appropriate occurrences of 'statement' throughout this paper.

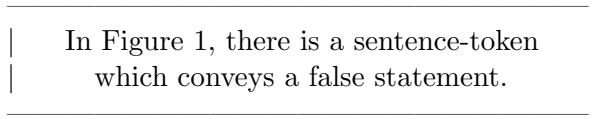

Figure 1. 'Figure 1' refers to the area enclosed in the box. The enclosed token of a symbol-sequence is designated in the text by 'S'.

Let us assume that the *expression*

(Σ) In Figure 1, there is a sentence-token which conveys a false statement

which we may designate by 'Σ', is a statement. By an "expression", I mean whatever it is that is common to those occasions on which a given simple or compound symbol-type occurs with the same linguistic import, where this may, but need not, have cognitive significance. Thus occurrences of 'All greener house than', though without cognitive content, involves something more, when produced or inspected by English-speaking persons, than when produced or inspected by persons to whom English is meaningless. The assumption that Σ is a statement will be re-examined later. For the moment, it may be supported by observing that if Figure 1 contained only the symbol-sequence, say, 'All snow is black', Σ would be true, and would hence qualify as a statement. Presumably the only conditions under which Figure 1's *not* containing this symbol-sequence could change the statemental status of Σ would be that Σ contained a definite description, the satisfaction of which depended on the contents of Figure 1, and this, of course, is not the case. Presupposing, then, that expression Σ is also a statement, we are now to determine whether or not Σ is true.

Consider the sentence-token, which we may designate by 'S', contained in Figure 1. S must carefully be distinguished from Σ. The latter is (presumably) a *statement*, or is in any case an *expression*, and hence has no spatio-temporal locus. On the other hand, S is a sentence-*token* (as is also the symbol-sequence in the preceding paragraph by which Σ was *conveyed*) which may or may not convey Σ. In virtue of the topography of Figure 1 and the linguistic habits of the reader, we have three factual premises:

(1) S is a sentence-token, and moreover the only sentence-token, in Figure 1.

(2) If Σ is a statement, S conveys Σ.

(3) S conveys no statement other than Σ.

We have already assumed that

(4) Σ is a statement.

Since 4 allows us to *use* Σ cognitively, as well as to talk about it, semantical principles and the facts about the English language give two further premises:

(5) Σ is true only if it is the case that in Figure 1, there is a sentence-token which conveys a false statement.

(6) Σ is false only if it is not the case that in Figure 1, there is a sentence-token which conveys a false statement.

Suppose we entertain the hypothesis,

(H_1) Σ is true.

Then from H_1, 2, and 4, it follows that S conveys a true statement. But from H_1, 5, and 1, it also follows that S conveys a false statement and hence, from 3, that Σ is false. Considering

(7) No statement is both true and false

we see that H_1, 1-5, and 7 yield a contradiction; hence, by *reductio ad absurdum*, 1-5 and 7 entail that 2 is not true.

Alternatively, consider the hypothesis,

(H_2) Σ is false.

Then H2, 2, and 4 imply that S conveys a false statement. From this, together with 1 and 6, it follows that Σ is not false. Thus by *absurdum*, 1, 2, 4, and 6 entail that Σ is not false. If we now adduce the Law of Excluded Middle,

(8) All statements are either true or false

we see, since 1-7 imply that Σ is a statement which is neither true nor false, that 1-8 are logically inconsistent.

But if we thus feel obliged to give up one or more of 1-8, which shall it be? Certainly not 1. The predicate, 'sentence-token' (interpreted in a suitably broad sense if necessary) is surely applicable to S, especially when 4 is accepted, and it is as indubitable as any empirical datum can be indubitable that there is no sentence-token other than S in Figure 1. As for 7 and 8, these are among the foundation principles of logical reasoning. So far as I am aware, no one has genuinely seen fit to question 7, especially since ambiguities in meaning may be written off to the statement-conveying properties of sentences rather than held against statements themselves. And while 8 has not been immune to criticism, its abandonment would necessitate too many profound changes in our habits of thought to make this a palatable solution except as a last resort.

What about 5 or 6? To be sure, it is not the case that expressions of the form

"p" is true (false) only if it is (is not) the case that p

where "p" is some English expression, are always true—for example

> "All greener house than" is true only if it is the case that all greener house than

is not true, but simply meaningless. However, given the truth of 4, both 5 and 6 are statements and hence, by 8, are false—a highly counterintuitive possibility in view of the meaning of Σ—if they are not true.

It is likewise difficult to see how we could possibly deny 3. For S and the sentence-token by which the expression Σ was conveyed are tokens of the same sentence-type. While it is possible that S might fail to convey Σ at all, it would be highly arbitrary to claim that S does convey a statement, but that this differs from what is conveyed by the other occurrences of S's type in this paper. Such a move would be acceptable only if we could produce a sentence-token X, of a type *other* than that by which Σ was conveyed, and then find grounds on which to argue that S and X convey the same statement. Hence, it. must surely be the case that S conveys no expression, and *a fortiori* no statement, other than Σ, whether Σ is itself a statement or not.

Thus we are left with 2 or 4 as our tentative source of error, and to be sure, neither of these carries quite as much intuitive conviction as the others. But shall we deny 2 while retaining 4? If so, we are claiming that while "In Figure 1, there is a sentence-token which conveys a false statement" is indeed a statement, S does not convey it. But if the sentence-token enclosed in quotes in the previous sentence conveyed a statement to the reader—as indeed it must have if 4 is correct and the preceding sentence was read with understanding—then how can it be that S does not also convey this statement? It seems most implausible that of a set of similarly situated sentence-tokens, all of which exemplify the same sentence-type, the mere physical locus of one could emasculate it of its power to convey the statement conveyed by its brothers. If this be possible, the principles of language are more recondite than anyone has suspected.

But is the one remaining alternative, that Σ is not a statement, any more plausible than the ones already rejected? For if Σ is not a statement, then by 3, S does not convey a false statement, and hence from 1, *it is not the case that in Figure 1, there is a sentence-token which conveys a false statement.* The assumption that Σ is not a statement is apparently inconsistent in that it leads, by impeccable logic from what appear to be empirically true statements, to a conclusion which is the negation of Σ. Hence if we are to deny 4, we must be prepared to maintain either that the negation of an expression can be a statement even though the expression is not itself one, or that assertions about the existence of sentence-tokens which convey statements, at least as used in this paper, are generically meaningless, and that the fact we can apparently use such assertions in a meaningful way is only illusory.

As a matter of fact, the beginnings of an argument for the last alternative can be made by invoking a theory of *statement-types* (not to be confused with the "types" in the type-token distinction) or *language-hierarchie*s, analogous to the ramified theory of predicate-types of *Principia* fame. I will not attempt to develop the theory here—it rapidly becomes complicated, and I would argue that it does not achieve the end for which it is invoked. For its crucial premise is that a statement about statements can only be about a proper subclass of statements (from which it would follow that expressions such as Σ and 3, which profess to quantify existentially over *all* statements, are syntactically ill-formed). This is a premise which I would brand as simply false, if not absurd. (Actually, in the form I have given it, it implies its own meaninglessness, and it is not at all certain that this can be circumvented.) For given, say, an expression E which is syntactically ill-formed, it violates commonsense in the most outrageous way to claim that the statemental status of E can be described only by a transfinite set of assertions, each of which denies that E is a statement of a certain proper subclass of types. When I assert that the English expression, "All greener house than" is not a statement of any type, I feel just as confident that I have uttered a cognitively significant, and in fact true, statement as I do when I assert that not all snow is black. Similarly, once I convince myself that "Some swans are white" s a true statement (say, of type i) conveyed (to *me*, at time t) by the sentence-token

(T) Some swans are white

I am unable to see anything amiss about concluding that if s is a statement of *any* type conveyed (to *me*, at time t) by T, s is true.

It may indeed be true that expressions such as Σ (and hence also 3, since 1 and 3 entail the negation of Σ) are not genuine statements. However, the only reason which can at present be offered in support of such a counterintuitive belief is the dilemma posed by 1-8 when 4 is accepted. Until semiotical explorations more penetrating than any accomplished to date reveal some linguistic *principle* according to which Σ stands revealed as illegitimate, renunciation of 4 is no more a satisfactory solution to the incompatibility of 1-8 than is any of the other alternatives.

If the reader is expecting me to supply a happy ending to this unpleasant little tale, I am forced to disappoint him. While my feeling is that the difficulty lies somewhere between 4 and 8 (depending in part upon certain definitional stipulations), my present thoughts on the matter are too unclear to be of much help. But if I cannot supply a happy ending, at least I can draw a moral. The moral is that it is *not* the case that the semantic paradoxes are now only of historical or didactic interest. There are apparent inconsistencies in our use of language which are not going to be clarified until we achieve a much better understanding of what semantical concepts such as "statement", "proposition", "truth", and the like are

all about.

Note. Since this MS was submitted for publication, I have learned that what I thought to be a new vein of the Liar's lode was actually first explored by Ushenko (1941, 1971) almost two decades ago, and has recently been mined fairly extensively by Toms (1956, 1958). However, as Encarnacion (1955) has pointed out, Ushenko's formulation has technical errors, and Toms' efforts to tidy up the corners of the argument have been somewhat piecemeal and not wholly satisfactory: (a) Toms' account of the Paradox is not fully formalized. In particular, all premises about the truth-conditions of sentences are suppressed (Premises 5 and 6 in the present version), and he has failed to indicate the role of Excluded Middle, which comes in essentially, either as a direct premise or used as a logical axiom along with sufficiently strong assumptions about truth-conditions. (In the present version, Excluded Middle is introduced as Premise 8, while the formal deductions do not depend on this somewhat controversial principle.) (b) Toms dismisses the argument from statement-types as irrelevant to his version of the Paradox. Unfortunately, his conclusion is not sound, though to show why, it would be necessary to recapitulate the details of his analysis. Actually, the theory of statement-types *would* provide a satisfactory resolution for the Paradox, were not the cure less tolerable than the disease, (c) In attempting to parry certain criticisms by Donnellan (1957) along the type-token dimension, Toms (1958, p. 101, n. 3) ascribes truth-values (and also Excluded Middle, if his argument is to work) to sentence-*types*. But taken literally, this will never do, for as Toms himself recognizes, the various tokens of a given sentence-type can be used in widely divergent senses.

It is also worthwhile, perhaps, to comment on Toms' attempted solution to the Liar's Paradox. He proposes (1958, p. 101, n. 2) that the sentence in question ambiguously expresses two propositions. I am not wholly able to follow his argument; however, this line of resolution applied to the present version of the Paradox must suppose either (h_1) that S conveys at least one statement other than Σ, or (h_2) that Σ is itself ambiguous. The first alternative, denial of Premise 3, has already been discussed, so we may confine attention to the second. To begin with, it may be taken as a necessary condition for an expression to be a statement that the expression be unambiguous. (This assumption is not really essential, but it seems reasonable and simplifies the discussion.) Then h_2 entails that Σ is not a statement. Now, as seen earlier, Premises 1 and 3, together with denial that Σ is a statement, logically entail what appears to be the negation of Σ. Since the logical implicates of true statements are also statements (if this is not so, then we are *really* in trouble), and since presumably an expression must be a statement if its negation is to be a statement, h_2 leads to a dilemma: (h_{21}) either occurrences in the present context of the sentence-type, 'It is not the case that in Figure 1, there is a sentence-token which conveys a false statement', do not convey the negation of Σ, or (h_{22}) Premises 1 and 3 not both true statements. Now if, as implied by

h_{21}, the various tokens of a given sentence-type can differ in what they convey to an attentive, educated inspector of them within a narrowly circumscribed context of discourse, we might as well reject Premise 2 out of hand. But then we have also abandoned all hope for effective (i.e., semantically stable) discourse of any kind, unless we can adduce some *principle* according to which two tokens of the same symbol-type convey different expressions. As for h_{22}, Premise 1 seems unassailable, while 3 was defended earlier. I conclude that we are not going to find any cheap resolution of the Liar in terms of ambiguity. It should be noted, incidentally, that the classical laws of logic cannot be expected to hold for anything which is semantically ambiguous. Therefore, any semantic paradox which arises with respect to the truth-status of an entity to which the ascription of ambiguity is a live option merely shows that this entity is not the sort of thing to which the classical laws of logic apply.

The special virtue of the present formulation of the Liar's Paradox is that apart from the lack of symbolic abbreviation, the argument appears to be fully formalized. The trouble with a paradox which really *is* paradoxical is that we tend not to take it too seriously—since we know *something* is wrong, but don't offhand see what, it is easy to think we have merely unwittingly violated some rule already known to be necessary for correct argumentation. But in the present instance we have not a genuine paradox but simply eight premises which jointly entail a contradiction by the most respectable of logical principles; hence one or more of the premises must be written off as either false or cognitively meaningless. The difficulty is that it does not seem possible to discard any of these without jeopardizing belief either in one or more of what we have come to regard as linguistic principles, or in our ability to perceive reality. At least one premise has to go, but which one? And why?

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