LOGICAL TRUTH AND LOGICAL FORM*

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Summary

According to a criterion of logical truth, presented by Quine (in “Carnap and Logical Truth”, and similarly also in “Truth by Convention” and in Mathematical Logic), every sentence which is purely logical (i.e., contains no other expressions or symbols but purely logical ones), such as \( \exists x \exists y (x = y) \) or \( \neg \exists x \exists y (x = y) \), must be logically determinate (i.e., either logically true or logically false). This odd consequence was even canonized by Carnap as a theorem in his Logical Syntax of Language. The paper shows how to avoid it by shifting from the skeleton view to the mould view of logical form.

1. Quine’s criterion of logical truth

In “Carnap and Logical Truth” (from now on: CLT) W. V. O. Quine attacks a view called the “linguistic doctrine of logical truth”. He concedes that this doctrine may be more epistemological than linguistic in nature (cf. CLT 388), and ventures to say that it might be better not to attribute it to Carnap, though he thinks that it corresponds to “Carnap’s own orientation and reasoning” (cf. CLT 385).

Quine begins the discussion by presenting a pretheoretical “mark” of logical truth as the first step in the later development of the linguistic doctrine of logical truth. He introduces the criterion in the following passage:

* In the bibliography of Wolfgang Künne’s book Versuche über Bolzano/Essays on Bolzano (Sankt Augustin: Academia, 2008) there is a reference to my unpublished paper “Quine on Carnap on Logical Truth”. This paper is still unpublished, although I had revised and expanded it some time ago due to an exchange of thoughts with Karel Lambert. (During this course of revision I gave the paper also a new title.) Since Wolfgang Künne found it worthy of being mentioned, I hope he will be kind enough to let me dedicate it to him on the occasion of his 65th birthday.
Without thought of any epistemological doctrine, either the linguistic doctrine or another, we may mark out the intended scope of the term ‘logical truth’, within that of the broader term ‘truth’, in the following way. First we suppose indicated, by enumeration if not otherwise, what words are to be called logical words; typical ones are ‘or’, ‘not’, ‘if’, ‘then’, ‘and’, ‘all’, ‘every’, ‘only’, ‘some’. The logical truths, then, are those true sentences which involve only logical words essentially. What this means is that any other words, though they may also occur in a logical truth (as witness ‘Brutus’, ‘kill’ and ‘Caesar’ in ‘Brutus killed or did not kill Caesar’), can be varied at will without engendering falsity. (CLT 387)

Now this criterion is one with which Carnap is assumed to agree. Indeed, it is still adopted in textbooks, and even now influences and misleads quite a few people. But it is not adequate, even for elementary logic, i.e. first order predicate logic with identity, for which at least it is intended to work. This can be shown by means of simple examples. Consider the following sentence of everyday language: ‘There are at least two things’. Within the language of first order predicate logic with identity, this sentence from everyday language is paraphrased as follows:

\( (1a) \exists x \exists y \neg(x = y) \)

Within the language of second order predicate logic, the sentence may be paraphrased as follows:

\( (1b) \exists x \exists y \exists F(Fx \land \neg Fy) \)

Most people will take such a sentence to be true and its negation—(2a) or (2b), respectively—to be false:

\( (2a) \neg \exists x \exists y (x = y) \)
\( (2b) \neg \exists x \exists y \exists F(Fx \land \neg Fy) \)

Similarly for sentences such as ‘There are at least three things’, ‘There are at least four things’ etc. and their negations, as well as for the paraphrases of these sentences and their negations in the language of first order predicate logic with identity or in the language of second order predicate logic.

Hardly anybody, however, will take one of these sentences to be either logically true or logically false.\(^1\) It seems to be beyond doubt that which-

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\(^1\) Carnap, as we will see at the end of this paragraph, is an exception in this regard. More