Quine's critique of conventionalism

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One of the puzzling aspects of Ayer's discussion is that although he seems to lay great weight on the notion of truth in virtue of definitions and knowability in virtue of knowledge of definitions, he says very little about what, exactly, the relevant definitions are. Quine's article "Truth by Convention" is an attack on the explanation of a prioricity in terms of analyticity which takes as its starting point the nature of definition. Indeed, Quine claims that this view of mathematics and logic hardly makes sense:

> ". . . developments of the last few decades have led to a widespread conviction that logic and mathematics are purely analytic or conventional. It is less the purpose of the present inquiry to question the validity of this contrast than to question its sense." (70)

Quine begins by explaining one clear sense in which a sentence may be true by definition:

> "A definition, strictly, is a convention of notational abbreviation. . . . Functionally a definition is not a premise to a theory, but a license for rewriting theory by putting definiens for definiendum or vice versa. By allowing such replacements definition transmits truth: it allows true statements to be translated into new statements which are true by the same token." (71)

This shows us one way to define truth by definition in a *relative* sense. One sentence S can be true by definition relative to another sentence S$*$ if (i) S$*$ is true and (ii) S can be obtained from S$*$ by putting definiens for definiendum or vice versa. As Quine suggests, perhaps we could view truths of mathematics as true by definition relative to truths of logic. This would give us an explanation of both the necessity of mathematical truths and the fact that such truths can be known a priori given the fact that logical truths are necessary and knowable a priori.

But this raises an immediate problem. Ayer and the other positivists claimed, on the basis of their empiricism, that *all* a priori truths and necessary truths may be explained on the basis of their analyticity. But this means that if analyticity is truth by definition, we'll have to come up with some *non-relative* sense of 'truth by definition.' This is the problem that Quine has in mind at the end of §I when he writes,

> "If for the moment we grant that all mathematics is thus definitionally constructible from logic, then mathematics becomes true by convention in a relative sense: mathematical truths become conventional transcriptions of

> logical truths. Perhaps this is all that many of us mean to assert when we assert that mathematics is true by convention . . . But in strictness we cannot regard mathematics as true purely by convention unless all those logical principles to which mathematics is supposed to reduce are likewise true by convention. And the doctrine that mathematics is analytic accomplishes a less fundamental simplification for philosophy than would at first appear, if it asserts only that mathematics is a conventional transcription of logic and not that logic is convention in turn: for if in the end we are to countenance any a priori principles at all which are independent of convention, we should not scruple to admit a few more ...
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> But if we are to construe logic also as true by convention, we must rest logic ultimately upon some manner of convention other than definition: for it was noted earlier that definitions are available only for transforming truths, not for founding them." (80-1)

The question, then, is if we can make sense of the idea that logic is true by convention in some non-relative sense which would explain its status as necessary and a priori. In §II of 'Truth by Convention', Quine tries to do just this.

We arrived at definitional truths by giving the meaning of one expression in terms of another expression. This course will not be available for giving an account of the meanings of logical expressions, since these are supposed to be true by convention in an absolute rather than a relative sense. Quine's idea is that we can make sense of this absolute sense of truth by convention if we can imagine logical expressions being given their meaning, not by definition, but by stipulations of the following kind:

> Let 'x' have whatever meaning is required to make sentences of the form 'AxB' true.

Just as someone who understands an expression defined in terms of another might know its definition, so someone who understands the imagined logical expression 'x' might know the stipulation which determines its meaning. So, one might think, we would then, simply on the basis of this linguistic knowledge, be in a position to know a priori that any sentence we might encounter of the form 'AxB' is true; after all, we know that the meaning of 'x' was determined by a stipulation that it mean whatever is it must for sentences of this form to be true.

In practice, then, one would want to define all of mathematics in terms of truths essentially involving some small set of logical constants, or other expressions capable of having their meaning given in this way; Quine imagines that we have defined mathematics in terms of the universal quantifier, negation, and if-then. The next step would be to give stipulations for each of these constants from which all of the logical truths could be derived. Quine lays out some of these stipulations in detail; here we can just focus on one example, from p. 85:

> (II) Let any expression be true which yields a truth when put for 'q' in the result of putting a truth for 'p' in 'If p then q.'

This would be one of the stipulations used to define 'if-then.' How might this explain our a priori knowledge of some logical truths? Suppose we are given that 'x' and 'if x, then y' are true. It seems that we can deduce a priori from this that 'y' is true as well.

The idea is that our ability to carry out this a priori deduction might be explained by our knowledge of the linguistic stipulation (II). For, after all, (II) tells us that 'if-then' sentences are to have that meaning which guarantees that any expression 'q' be true whenever the expressions 'p' and 'if p then q' are true. We might then be able to go on to give similar stipulations which would provide similar explanations of our ability to know truths of logic a priori.

About this way of explaining our a priori knowledge of logic, Quine says

> "In the adoption of the very conventions ...whereby logic itself is set up, however, a difficulty remains to be faced. Each of these conventions is general, announcing the truth of every one of an infinity of statements conforming to a certain description; derivation of the truth of any specific statement from the general convention thus requires a logical inference, and this involves us in an infinite regress." (96)

We can see the point Quine is making here by laying out the above line of reasoning more explicitly. We are given as premises the following two claims:

P1. x

P2. If x then y

from which we can derive a priori the conclusion

C. y

The aim is to explain this bit of a priori knowledge; the suggestion is that we do so by appealing to knowledge of the linguistic stipulation (II); this is equivalent to adding (II) as a premise to the argument, so that we have the following chain of reasoning:

P1. x

P2. If x then y

> P3. Any expression is true which yields a truth when put for ‘q’ in the result of putting a truth for ‘p’ in ‘If p then q.’

from which we conclude

> C. y

Suppose for the sake of discussion that this argument is valid. The problem is that this is still a logical inference. We were trying to explain how we were able to derive C from P1 and P2 a priori; we tried to do this by adding our knowledge of P3. But now we just have a new bit of a priori knowledge to explain: the inference from P1, P2, and P3 to C. This is Quine’s regress. He states it succinctly as follows:

> “In a word, the difficulty is that if logic is to proceed mediately from conventions, logic is needed for inferring logic from the conventions. ” (97)

There are an infinite number of logical truths; our stipulations, if such there be, do not concern each of this infinity of truths, but rather general claims about these truths. But then to derive a truth from these stipulations, we will always need a logical inference which cannot itself be explained by stipulation, even if the inference is the trivial one from ‘If S is a sentence of such-and-such form then S is true’ and ‘S is a sentence of such-and-such form’ to ‘S is true.’ The moral of the story is that logic cannot all be true by convention.

The similarity of Quine’s argument to Carroll’s ‘What the tortoise said to Achilles’ (as Quine notes in fn. 21).

As Quine also notes, the same regress can be restated as a problem about the definition of logical constants. We try to make logic true by convention by saying that we assign meanings to its expressions by stipulating that certain forms of sentences should be true. But

> “the difficulty which appears thus as a self-presupposition of doctrine can be framed as turning upon a self-presupposition of primitives. It is supposed that the if-idiom, the not-idiom, the every-idiom, and so on, mean nothing to us initially, and that we adopt conventions . . . by way of circumscribing their meaning; and the difficulty is that [these conventions] themselves depend upon free use of those very idioms which we are attempting to circumscribe, and can succeed only if we are already conversant with the idioms.”

The examples of defining ‘and’ using a truth table, or defining the universal quantifier.

A further problem for the idea that we can define logical expressions by giving rules of inference which we stipulate to be valid: Prior’s example of the connective TONK.

Quine's moral is that we can make no sense of the claims of positivists to explain the necessity and a prioricity of logic in terms of convention. If he is right, then Ayer's attempt to make mathematics and logic safe for empiricism fails.

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A further, separate worry about the positivist program of reducing the a priori and the necessary to the conventional (which postdates these papers by Ayer & Quine) is raised by Godel's proof of the incompleteness of arithmetic. Why this seems to show that not all arithmetic truths can be "true by definition." Color incompatibilities as another plausible counterexample to the equivalence of the necessary/apriori with that which is true by definition.