Philosophy of Science // Fall 2015

Handout 12

Analyticity: Quine (cont.)

Definition as stipulation: economy in notation. The next step is to examine the actual role of definition in logic and mathematics. Definition in these disciplines serves chiefly the purpose of economy. But economy can be of two kinds. In some cases we are simply looking for concise notation to save us the trouble of using more complex notation.

Example 1. We express intersection between sets thus: $S \cap T$. Its definition is: $S \cap T = \{x \mid x \in S \text{ and } x \in T\}$.

Definition as stipulation: economy in concepts. In other cases we wish to have economy in our basic concepts. Having the inventory of few such concepts, we will be able to express with the their aid many other concepts.

Example 2. We can express any formula of classical propositional logic with the aid of only two connectives: e.g., negation and implication. Though many other connectives can be introduced, it is convenient to develop a whole system of propositional logic by using just these two. See Example 3.

Quine then distinguishes between two languages, one containing primitive notation, and the other containing extended notation created out of primitive notation. Definitions are rules of translation between these two languages.

Example 3. Let the primitive notation of our propositional logic contain only the connectives of negation and implication. Then we may introduce these definitions:

$$`A \,\&\, B\text{'} \equiv `{\sim}(A \to {\sim}B)\text{'}$$
$$`A \leftrightarrow B\text{'} \equiv `(A \to B) \,\&\, (B \to A)\text{'}.$$

The extended notation would allow a formula such as:

$$(A \leftrightarrow B) \leftrightarrow C. \tag{12-1}$$

If we had to write (12-1) down in primitive notation containing only implication and negation, we would have written:

$${\sim}({\sim}(A \to B \to {\sim}(B \to A)) \to C \to {\sim}(C \to {\sim}(A \to B \to {\sim}(B \to A)))). \tag{12-2}$$

We can regard (12-1) and (12-2) as belonging to two distinct languages. And then the definitions of the bi-conditional and conjunction will be regarded as rules of translation from one language to another.

Stipulation and analyticity. Recall now that at this point in the discussion Quine argues that analyticity relies on synonymy, but synonymy cannot be made sense of. However, as Quine himself recognises (at the bottom of 345 and top 346), the cases of stipulation do *not* rely on prior synonymy. So why could not we say that analyticity is revealed at least in these stipulations? Well, in these cases one part of the putative analytic statement is, strictly speaking, meaningless. For it is assigned meaning with that very statement. So the whole of the stipulation (such as the definition of conjunction) is meaningless. Therefore, stipulation cannot gain us entry into analyticity.

Interchangeability. Quine next asks whether we could explicate synonymy by using the idea of interchangeability *salva veritate* ('truth preserving').

Example 4. Suppose 'bachelors' and 'unmarried men' are interchangeable *salva veritate*. Then it is also the case that: 'There are five hundred bachelors in Turkey' is true if and only if 'There are five hundred unmarried men in Turkey' is true. And so is the case for every other statement containing 'bachelors' and 'unmarried men'.

After initial clarifications Quine goes on to say that we are interested in cognitive, rather than psychological, synonymy. This is spelt out exactly as interchangeability preserving truth (rather than, say, interchangeability preserving psychological imagery).

Now such interchangeability must always be relativised to a particular language (30). But suppose we have an extensional predicate language. Such a language does not contain 'intensional' expressions such as 'necessarily', or 'known', or 'believed'. Then every two predicates satisfying the statement:

All F's are G's, and all G's are F's

will be interchangeable *salva veritate*. But this would not guarantee the analytic relation between them.

Question 5. Why is the analytic relation not guaranteed? Explain. Provide an example to illustrate your explanation.

Question 6. Why do we require an extensional language in the first place?

Semantic rules. In a most curious section on semantic rules, Quine complains that he would not accept explication of analyticity by semantic rules. Here we restrict ourselves to artificial (formal) languages. Semantic rules tell us how to form expressions (rules of formation) and how to correlate them with entities (rules of designation). On their basis we come to the definition of truth for a given expression, as well as to the notion of analytic truth. But, Quine asks, how do we know which rules are *semantical rules*? All we have is a heading in a book calling them so. What other guidance do we have for recognising semantic rules?

Objections. Let us mention a couple of objections to this part of Quine's argument. (1) It is unclear whether Quine's demands are reasonable. Is it a blemish that we recognise semantic rules by the heading in the book? What about sentence forms? Or axioms? We similarly recognise them by the headings in the book. (2) We can make sense of analytic sentences if we connect them to necessity. These statements will be true no matter what state the world is in. Appropriate tests can be devised: we could ask speakers whether they think the truth value changes if the world changes.

Verification theory of meaning. This view associates the meaning of a sentence with a verification procedure for confirming or disconfirming it. But how can we achieve that with a fairly complex sentence in a developed scientific theory? The answer is reductionism. We should be able to reduce such a sentence to a sentence about observations. This programme, as mentioned before, was carried out by Carnap in the *Logical Structure of the World* (so called 'Aufbau'). The programme, Quine maintains, has failed. It could not provide reductions for the expression 'Quality q at point-instant x, y, z, t.' And this particular failure is taken as a sign that reductionism should fail in general. But if it fails, then the VTM is no longer tenable, since it cannot account for confirmation of theoretical sentences.

Holism and empiricism. Quine's proposal is to adopt confirmation holism. Sentences do not face the tribunal of experience: they are not examined individually. We examine the whole theories. This is a slogan, but what exactly does it mean? Some sentences are closer to observations (on the outer edges of the field of force, in Quine's metaphor). Other sentences are more theoretical in nature. They contain reference to 'posits', physical objects that are ultimately fictions. That is, they are designed to make the theory work. When a conflict arises in the periphery, adjustments have to be made to the more theoretical sentences. There is in principle no limit on how far the adjustments can go.

Also of note is the commitment to meaning holism. The VTM has not been entirely abandoned. Since the whole theories—even 'the whole of science' (42)—are subject to confirmation, individual sentences acquire meaning only as part of the larger body of sentences, i.e. of theories. Quine, therefore, remains a verificationist, but of a holistic variation.

Recapitulation. The first dogma of empiricism is the analytic/synthetic distinction. But this distinction, once we have surveyed different attempts to elucidate it, is simply unintelligible. In a sense, this is an inductive argument against analyticity.

The second dogma of empiricism, the VTM, leads to the claim that sentences are confirmed and disconfirmed ('infirmed') individually. Analytic sentences are exactly those that cannot be disconfirmed by any possible experience. The VTM can be implemented only if meaning reductionism is implemented. But this latter goal cannot be met. Instead we have to adopt confirmation holism. Science as a whole is the subject of empirical test. Hence the analytic/synthetic distinction, when drawn along the lines of different behaviour in confirmation procedures, is empty. Herein is the connection between the two dogmas.

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