

Week 6

Testability

Hanson, Quine

Slides for the lecture *Philosophy of Science* on 4 November 2014

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Outline

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1 Seeing and seeing as

'Seeing' and 'seeing as'

- You see two people staring at each other, I see a goblet.
- Do we have different sense-data? or different images on our retinas?
- Apparently not, but still we *see* different things.
- You do not see the Russian word **дюйм** presented in front of you (think of Japanese or Arabic!).
- So there is a sense in which you and a Russian speaker see different things.
- Moreover, we could only see these different things (a word or a goblet), if we have already been exposed to some.



Seeing women The old woman gestalt



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Phenomenal seeing

- There are circumstances where seeing seems to involve little conceptual organisation.
- A scientist may record the experimental results in his laboratory.
- But this typically happens when a stable conceptual framework is absent.
- It is appropriate then to ask, 'Just what exactly are we seeing here? what's going on?'
- So we perhaps could say that phenomenal seeing takes place (usually) at the time of a mini-crisis in scientific theorising when a major theory is under threat.
- It also requires advanced scientific training.
- Phenomenal seeing is nevertheless an unusual kind of seeing: usually, we see *this* and *that* as something *X*.

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Philosophical implications

- Seeing *X* requires some knowledge of *X*.
- There is no level of observation that can be purified of theoretical assumptions.
- Or at least, if there are instances of phenomenal seeing, then they are abnormal, likely to be practiced at a particular stage of scientific development ('unsettled experimental situation', p. 336).
- The positivist distinction between observation sentences and theoretical sentences is not sustainable.

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2 Background: analytic and synthetic

Analytic and synthetic

- The analytic/synthetic distinction is the distinction between two kinds of statements.
- Some are true or false by virtue of their own properties (A-statements).
- Others are true by virtue of the state of the world (S-statements).
- Of course, strictly speaking, every statement's truth is dependent on the statement's own properties (such as the property of containing a certain name).
- Nevertheless we could say that S-statements are true or false *also* by virtue of the state of the world.
- A-statements will be called 'analytic', S-statements are 'synthetic'.

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Analytic and synthetic (cont.)

- For Leibniz, *analyticity* went along with two other concepts: *necessity* and *apriority*.
- Apriority: The truth of analytic statement should be ascertained by reason (analysis) alone.

- But the truth of synthetic statements should be ascertained by perception (by looking at the world).
- Necessity: Analytic statements are true in every possible circumstance.

Analytic and synthetic

Compare the statements 'Triangle has three angles' and 'The Earth has one satellite.' The first is analytic, a priori, and necessary. The second is synthetic, a posteriori, and contingent.

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Kant and logical positivism

- Kant's innovation: to separate analyticity from necessity and apriority.
- There are synthetic statements that are a priori (and necessary).
- Three families of these statements are especially important: statements of geometry, of arithmetic, and of metaphysics.
- Fast forward to logical positivism: *there are no synthetic a priori statements*.
- There are, however, a priori statements, and all of them are analytic.
- These are statements of mathematics, logic, and their derivatives.

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3 Meaning and analyticity

Meaning

- Quine begins his essay with the claim that meanings are suspicious entities.
- First of all, meaning has to be separated from reference (or: intension from extension, connotation from denotation).
- Thus the theory of essences foreshadowed the theory of meaning, but once meaning and reference are kept apart, this link drops out.
- Analyticity is a proper locus of meaning.
- We say (compare above) that a statement is *analytic* iff it is true or false in virtue of its meaning alone.
- Analytic statements are to be contrasted with *synthetic* that are true or false in virtue of the state of the world.

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Logical truth and analyticity

- Analytic statements fall into two groups.
- One includes statements that have to be formalised by logical notation as tautologies. They are *logical truths*.

Question

Give an example of a logically *false* statement. Explain.

- The second group includes statements that resist direct transformation into tautologies.
- However, they can be so transformed if some of their parts were to be replaced by synonymous expressions.

Question

Give an example of an analytic statement other than (2) in the text. Explain.

- Quine believes that the notion of logical truth is unproblematic.
- However, he finds fault with the synonymy procedure and, correspondingly, with the second group of analytic statements.

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Definition

- A way for characterising synonymy may be suggested by using the idea of definition.
- We could say that ‘bachelorhood’ is defined to be ‘unmarried man-ness’.
- But how do we know what definitions are appropriate?
- If we look into the dictionary, we may find an entry for ‘bachelor’ containing reference to ‘unmarried man’.
- Yet the dictionary’s author himself is an empirical scientist registering facts of linguistic behaviour.
- So the entry reflects the fact of actual synonymy between the terms.
- We are still unable to clarify the concept of synonymy.

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Explication

- Another possibility is explication.
- Scientists achieve explication of familiar terms.
- One purpose of the theory of heat, for example, is to tell us ‘what heat really is’.
- That is, they explicate the term ‘heat’ by identifying heat with the motion of molecules.
- However, explication too is a way of reporting existent usage.
- In explicating ‘heat’ we preserve some contexts where ‘heat’ is used.
- Thus we do not alter the use of ‘heat’ in describing certain types of sensations.
- And so we still rely on synonymy exemplified by the explicated term.

Remark

As a matter of fact, this discussion of explication may appear superfluous. Hardly anyone, positivists included, would think that a statement ‘Heat is the motion of molecules’ should be regarded analytic.

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Convention

- There is an altogether different option: *convention*.
- Some definitions are not even supposed to reflect antecedent synonymies.
- They are introduced as a matter of stipulation.
- We have been exposed to this idea earlier in the course when we discussed conventionalism in geometry.

Example

I can say: let the number π have the value obtained by dividing the circumference by the diameter of the circle. So the statement ‘The number π is the fraction S/d ’ is analytic.

More generally, we can stipulate that inferences are valid if they were obtained from arbitrarily chosen axioms by using arbitrarily chosen logical rules (say, modus ponens).

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Definition as stipulation: economy in notation

- Quine elaborates on the 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

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

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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

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.

- 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.

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Definition as stipulation (cont.)

Example

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

$$'A \& B' \equiv '\sim(A \rightarrow \sim B)'$$

$$'A \leftrightarrow B' \equiv '(A \rightarrow B) \& (B \rightarrow A)'$$

The extended notation may allow a formula such as $(A \leftrightarrow B) \leftrightarrow C$. If we had to write it down in primitive notation containing only implication and negation, we would have written:

$$\sim(\sim(A \rightarrow B \rightarrow \sim(B \rightarrow A)) \rightarrow C \rightarrow \sim(C \rightarrow \sim(A \rightarrow B \rightarrow \sim(B \rightarrow A)))).$$

We can regard the two formulae 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.

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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.

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Interchangeability

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

Example

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).

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Interchangeability II

- Now such interchangeability must always be relativised to a particular language (348).
- 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

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

Question

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

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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?

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Objections

- 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.
- Also, 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.

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4 Verification and holism

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’).
- In short: it fails.

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Quine's alternative: holism and empiricism

- 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.