Reducing F to G

PHIL3083: Causation and Modality
Vanessa Carr 28/11/16

- What would it be to reduce causation to modality?

- Similarly, what would it be to reduce modality to causality?

What kind of thing are we reducing, and what kind of thing are we reducing to? (What are the relata?)

Concepts (e.g. the concepts of causation, causing, cause, effect): Reduction as reductive conceptual analysis.[1]

Sentences (e.g. 'The electric spark caused the fire.'): Reduction as semantic analysis.

Universals, i.e. *properties* or *relations* (e.g. the causal relation that is instantiated in the world): Ontological reduction.

Facts (e.g. the fact that the electric spark caused the fire): Reduction as grounding (explanatory/ontological reduction).

Theories (e.g. electric sparks cause fires when oxygen is present, rain causes flooding when the earth is saturated etc.): Explanatory reduction, specifically: inter-theoretic explanation.

What kind of relation is reduction?

Symmetric? A relation is symmetric just if, if the relation holds one way, it also hold the other way. (E.g. identity, correlation, co-extension, synonymy).

Asymmetric? A relation is asymmetric just if, if the relation holds one way, it does not hold the other way. (E.g. explanation, constitution, determination).

Non-Symmetric? If a relation is non-symmetric just if it is neither symmetric nor asymmetric, i.e. it can hold both ways, or just one way (E.g. supervenience, necessitation, entailment).

- Reduction seems to be an *asymmetric* relation; if one holds that F reduces to G then it seems that one should not also hold that G reduces to F.

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[1] For distinction between reductive and non-reductive conceptual analysis see Strawson 1992, ch. 2: 'Reduction and Connection: Basic Concepts'.

Reductive Conceptual Analysis₁:

- The concept of F *just is* the concept of G. *Identity* of concepts F and G, and *constitution* of F by the concepts that make up the concept of G.

- E.g. our concept of causation *just is* the concept of counterfactual dependence between distinct actual events.

- The identity statement should be informative, so it should not be trivial. This means that we should be able to understand the components that make up the reducing concept (G) without appeal to the reduced concept (F).

- But, if the bi-conditional (e.g. something is F if and only if it is G) is informative, can the concepts of F and G be identical? Tricky issue of individuating concepts! (cf. Cassam 2009, pp. 18-19).

Semantic Analysis₁:

Goes hand-in-hand with Reductive Conceptual Analysis₁, if concepts are word meanings.

- Sentences in F-terms can be translated without loss of meaning into sentences in G-terms. F-sentences are synonymous with G-sentences (see challenge from Quine 1951).

- E.g. Causal sentences can be translated (without loss of meaning) into modal sentences. Causal sentences are synonymous with modal sentences.

Reductive Conceptual Analysis₂:

- The concept of F is such that we apply it just when we apply the concept of G (they are *co-extensive*), which fully *explains* why we apply the concept of F when we do.

- E.g. our concept of causation is such that we apply it (we take something to be a cause of some result) just when we apply the concept of counterfactual dependence between distinct actual events, and this fully explains why we apply the concept of causation when we do.

- Contrast: the concepts 'equilateral triangle' and 'equiangular triangle'.

- This avoids the problem faced by Reductive Conceptual Analysis 1.

- This kind of conceptual analysis still enables the idea that to think of *x* as *F just is* to think of *x* as *G*, even if the concept of *F* is not just the concept of *G*.

- In order for our application of concept G to fully explain our application of concept F, it must not be the case that our application of concept F explains our application of concept G. "From the perspective of reductive conceptual analysis, circularity is a major issue. If one analyses one concept C in terms of another concept D, it must not turn out that D cannot be explained without reference to C." (Cassam 2009, p. 24).

Semantic Analysis$_2$:

Goes hand-in-hand with Reductive Conceptual Analysis$_2$, if concepts are word meanings.

- An F-sentence is true just when a certain G-sentence is true (*correlation*), and that the G-sentence is true *explains* why the F-sentence is true.

- E.g. 'C caused E' is true iff 'C and E are distinct events and E counterfactually depends on C' is true, and that the latter is true explains why the former is true.

- Grice, who holds that analysing expressions is the best way of analysing the concepts that those expressions express, states that "to be looking for a conceptual analysis of a given expression E is to be in a position to apply and withhold E in particular cases, but to be looking for a general characterization of the types of cases in which one would apply E rather than withhold it" (Grice 1989, p. 174).

Ontological Reduction$_1$:

- The F-property/relation is *identical* to the G-property/relation.

- E.g. The causal relation is identical to the relation of counterfactual dependence that holds between distinct events.

- But, identity is a symmetric relation, so if we hold that F ontologically reduces to G, shouldn't we also hold that G ontologically reduces to F? N.B. Common idea that "[A] reduction (in Huw Price's phrase) 'identifies the entities of one domain with a subclass of entities of another'." (Crane 2001, p. 54).

- Connection to Reductive Conceptual Analysis$_1$ and Reductive Conceptual Analysis$_2$? N.B. Descriptive vs Revisionary Metaphysics (Strawson 1959, pp. 9-12).

Ontological Reduction$_2$:

- That x is G *non-causally determines* that x is F. (Grounding, as some think of it, e.g. Audi 2012.)

- E.g. That C and E are distinct actual events and E counterfactually depends on C determines that C causes E.

- Connection to Reductive Conceptual Analysis$_1$ and Reductive Conceptual Analysis$_2$? N.B. Descriptive vs Revisionary Metaphysics.

Explanatory Reduction:

- The G-facts *non-causally explain* the F-facts (the fact that x is G explains the fact that x is F), and/or the truth of the G-sentences non-causally explains the truth of the F-sentences (that 'x is G' is true explains why 'x is F' is true). (Grounding, as some others think of it, e.g. Fine 2001, 2012; Kment 2014, ch. 6.)

- E.g. the fact that E and C are actual distinct events and E counterfactually depends on C explains the fact that C is a cause of E. *Or:* That 'E and C are actual distinct events and E counterfactually depends on C' is true explains why 'C is a cause E' is true.

- Inter-theoretic explanatory reduction as a special case: theories as classes of statements (See Nagel 1935).

- Connection to Reductive Conceptual Analysis$_1$ and Reductive Conceptual Analysis$_2$? Connection to Ontological Reduction$_1$ and Ontological Reduction$_2$?

Qus:

- What kind(s) or reduction are Lewis (1973, 2004), Mackie (1965, 1974), and Kment (2014) aiming for?

- What kind(s) of reduction is Edgington (2011) challenging?

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