Metaphysical necessity

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Motivation I: The issue of modal knowledge

- The problem of apriority:
  - The instability of modal intuition.
  - No analogy with mathematics.
- The problem of metaphysical necessity (possibility): is it a distinct kind of necessity (possibility)?

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Motivation II: Friedman's tripartite distinction

At the **base level** are the concepts and principles of natural science, which face the 'tribunal of experience' via a rigourous process of empirical testing. At the **second level** are the constitutively a priori principles that define the fundamental spatiotemporal framework within which the formulation and testing of empirical principles is possible. At the **third level** are philosophical meta-paradigms. [Friedman, 2001, 45-6]

What kinds of necessity are applicable at those three levels?

▸ Go to Kripke-inference ▸ Go to Metaphysical=Logical

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Example: Ordinary statements of possibility

Conjecture

Not all modal statements should be known in the same way. Some are known a priori, and some are known empirically.

'Napoleon might have won at Waterloo.' How is its knowledge guaranteed?

- Known by intuition.
- Known algorithmically:
  1. Determine the propositional form of A.
  2. Attempt its transformation into $\alpha \wedge \neg\alpha$:
     2.1. If successful, A is false;
     2.2. Else A is true.

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Metaphysical is not logical?

Contrast ‘Water is H_2O’ and ‘Water is water’.

- Metaphysical necessity is empirical. Logical necessity is a priori.
- Metaphysical necessity is known by imagination. Logical necessity known algorithmically.
- Metaphysical necessity is restricted (by metaphysical laws). Logical necessity is unrestricted.

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- 'Madonna is a woman who gave birth to thirty children.': physically, metaphysically, logically contingent falsehood.
- 'Madonna is a woman who gave birth to one hundred children.': physical impossibility; metaphysically, logically contingent falsehood. (Compare to Abraham's Sarah.)
- 'Madonna is a woman who gave birth to three billion children.': physical impossibility; metaphysical possibility? logical possibility? Required: a woman to survive for 1.25×10^7 years.

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Logical necessity by logical form

The set $\{Fa.\ Ga.\}$ is logically consistent. Hence the set Γ=$\{$Madonna is a woman. Madonna gave birth to *n* children.$\}$ is consistent too.

But what about Γ'=$\{$Arnie is a man. Arnie gave birth to *n* children.$\}$ or Γ''=$\{$The ball *a* is blue all over. The ball *a* is red all over.$\}$? They apparently have the same logical form.

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Three reactions

Minimal View: There are restricted and unrestricted necessities. Metaphysical necessity is an unrestricted kind of necessity. Logical necessity is simply another kind of unrestricted necessity.

Weak Identity View: *S* is metaphysically necessary iff *S* is logically necessary. Still, the two notions are distinct.

Strong Identity View: *S* is metaphysically necessary iff *S* is logically necessary; and the two notions are the same.

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Kripke's examples

Distinct names or common nouns flank the identity verb within one sentence.

1. 'Napoleon is the first French Emperor.': contingent a posteriori (trivially).
2. 'Leningrad is St Petersburg.': rigid designation..
3. 'Water is H_2O.': the necessity of substance.
4. 'Napoleon is a son of Letizia Bonaparte.': the necessity of origin.

The statements like #2 owe their necessity to the peculiar semantic properties of proper names.
The statements ##3–4 are not statements of identity.

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My strategy w.r.t. Kripke

- Claims about artifacts ignored.
- The theory of proper names as rigid designators ignored.
- Metaphysical necessity is not derivable merely by invoking the logic of identity (i.e. by adding $x = x$ and $x = y \supset (\Phi(x) \supset \Phi(y))$ to modal predicate calculus).
- There is a link between the necessity of substance and the necessity of origin.

Conjecture

The necessity of origin (of X) is to be *explained* by the necessity of substance (of X).

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Proving that water is H_2O by necessity

1. Necessarily, *x* (a sample) is water iff *x* is an instance of *dthat* (the same natural kind of which the stuff in this glass is);
2. The sample in the glass has the molecular structure H_2O;
3. Being of the same natural kind with something else is to share the same molecular structure with that something;
4. Therefore, necessarily all samples of water are H_2O.

The third premiss is crucial.

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Proving that Napoleon is necessarily a son of Letizia

1. Necessarily, Napoleon Bonaparte is *dthat* (that person);
2. That person is a son of Letizia Bonaparte;
3. Being the same individual consists in having the same origin (the same parent);
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The necessity of origin, at least when not coupled with the physicalism about personal identity, is the necessity of substance in disguise.

Scenario I

Zeus creates everything, including hydrogen and oxygen. During the first day of creation the substance phenomenally resembling our actual water (i.e. the water in @) has the structure H_2O (call it 'water'). During the second day the molecules of water are gradually supplanted with the third atom of hydrogen: some oceans and seas acquire it later than the other. By the third day all the stuff phenomenally resembling water has the structure H_3O (call it 'water-3').

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The necessity of substance involves a certain conception of substance.

Scenario II

Zeus creates everything. In particular, he created two substances, which he called '**hydor**' and '**mayim**'. The substance **hydor** has the structure H_2O, and **mayim** has the structure H_2O. Or so we are told by the chemists. Yet **hydor** occurs in the northern hemisphere, and **mayim** occurs in the southern hemisphere. That is determined by their substantive nature. For if a sample of **mayim** is moved across the Equator, it turns into stone. And if a sample of **hydor** is moved across the Equator, it turns into stone, too.

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Three alternatives

The question about the source of metaphysical necessity is being reduced to the question about the way of choosing between alternative physical theories.

- A priori basis (Kant, Friedman; Kripke)
- Conventional basis (Poincaré; Sidelle)
- Empirical basis (Quine, Kuhn(?); Donnellan)

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Physical is metaphysical

Conjecture

There must be a link between metaphysical necessity and physical necessity. The appeal of Kripke-inference is subject to the endorsement of a certain view of nature.

> [S]tatements representing scientific discoveries about what this stuff *is* are not contingent truths, but necessary truths in the strictest possible sense. It's not that it's a scientific law, but of course we can imagine a world in which it would fail. Any world in which we imagine a substance which does not have these properties is a world in which we imagine a substance which is not gold, provided these properties form the basis of what the substance is. [Kripke, 1980, 125]

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Theory adjustment

Clearly not any scientific discovery of any property of any object (or class of objects) should be elevated to the status of metaphysical necessity.

Is 'Light travels with $c' \neq c$' a metaphysical impossibility? If it is true:

- Newtonians: not much should be changed in the theory. The speed of light is as contingent as the fact that the Solar system has nine planets.
- Einsteinians: the speed of light is installed into the principle of relativity. If something can move with $c' > c$, the basic equations of the relativity theory must be re-written. The theory must be abandoned.

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Direction I: The continuous spectrum

No cleavage between physical and metaphysical necessity.

- Physical necessity: a restricted one, because we could specify a law which had to be rejected in a counterfactual situation.
- Metaphysical necessity: much the same, but restricted by *deeply* entrenched (=well-confirmed, revision-resistant) laws.

Example

The source of a disagreement over the modal status of 'Light travels with the constant speed *c*' lies in physical competence.

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No cleavage between physical and metaphysical necessity.

- Physical necessity: a restricted one, because we could specify a law which had to be rejected in a counterfactual situation.
- Metaphysical necessity: much the same, but restricted by *deeply* entrenched (=well-confirmed, revision-resistant) laws.

Example

The source of a disagreement over the modal status of 'Light travels with the constant speed *c*' lies in physical competence.

Direction II: The gap between physical and metaphysical modality

Some claims play the role of a priori constitutive (coordinating) principles.

- Physical necessity: a restricted one, because we could specify an *empirically verifiable* law which may be rejected in a counterfactual situation.
- Metaphysical necessity: closely linked to the a priori principles.

Example

The source of a disagreement over the metaphysical necessity of 'Light travels with the constant speed *c*' lies in the a priori (=non-verifiable empirically) decision.

References


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