Nomic Essentialism

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Structuralism seminar

1. "Natural necessity"

- Law of nature
- Causation
- Counterfactual
- Disposition
- Chance

Rough unifying idea: these are modal, in that they involve tendencies and not just what actually happen, but they're scientific and worldly, in opposition to, e.g., paradigm instances of logical or metaphysical necessity.

2. Quidditism vs nomic essentialism

Quidditism (Scientific) properties are "independent" of the laws of nature in which they figure.

Nomic essentialism Properties are not independent of the laws in which they figure.

Examples of quidditism: Lewis, Armstrong

3. Nomic vs causal vs dispositional essentialism

4. Arguments for nomic essentialism

1. If quidditism is true, then properties could have swapped their nomic roles.

2. But properties couldn't have swapped their nomic roles

3. So quidditism isn't true

Arguments for 2:

A. Swapping nomic roles is a distinction without a difference, so it's not possible

B. If swapping nomic roles were possible then we would lack certain kinds of knowledge that we in fact have

5. Modal nomic essentialism

Call the "lawbook" the conjunction of all the laws of nature:

$$L_1(P,Q,R\dots)\wedge L_2(P,Q,R\dots)\wedge\cdots \tag{$\mathscr{L}$}$$

Replace all the names of properties with variables, and then prefix existential quantifiers for all variables except the one that took the place of P:

$$\exists q\exists r\dots(L_1(p,q,r\dots)\wedge L_2(p,q,r\dots)\wedge\cdots) \tag{$\mathscr{L}(p)$}$$

This is P's "nomic role".

Nomic roles are necessary A property has the same nomic role in every world in which it exists. That is, for any property P with nomic role $\mathscr{L}(p)$, Necessarily (if P exists then) P has $\mathscr{L}(p)$

Nomic roles are locally sufficient If two properties (perhaps in different worlds) share their nomic profile then they are identical. That is, for any property P with nomic role $\mathscr{L}(p)$, Necessarily, for any property P', if P' has $\mathscr{L}(p)$ then $P' = P$

> The following seems to me to be a perfectly possible causal structure: There are four properties, call them A, B, C, D . Here are the laws governing them: A N C, B N C, A and B N D. It is crucial to this structure, note, that A and B are distinct. Their coinstantiation has different effects (the addition of D to the world) than is produced by either being instantiated alone. (Hawthorne, 2001, p. 373)

The example threatens only *local* sufficiency, not *global* sufficiency:

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Nomic roles are globally sufficient If two worlds share their nomic profile then they share their lawbook.

where the nomic profile of a *world* is the result of taking that world's lawbook, replacing all the names with variables, and then prefixing existential quantifiers for *all* the variables:

$$\exists p \exists q \exists r \ldots (L_1(p,q,r\ldots) \wedge L_2(p,q,r\ldots) \wedge \cdots)$$

6. Nomic essentialism and ground

$$\exists p(\mathscr{L}(p) \wedge a \text{ has } p) \Rightarrow a \text{ has } P \qquad\qquad \text{(ground-theoretic NE)}$$

"*a* has *P* because *a* has some property with nomic role $\mathscr{L}$"

This contradicts the standard logic of ground:

1. $\mathscr{L}(P) \wedge a \text{ has } P$ (suppose)

2. $\exists p(\mathscr{L}(p) \wedge a \text{ has } p) \Rightarrow a \text{ has } P$ (1, ground-theoretic NE)

3. $(\mathscr{L}(P) \wedge a \text{ has } P) \Rightarrow \exists p(\mathscr{L}(p) \wedge a \text{ has } p)$ (1, existentials)

4. $\mathscr{L}(P), a \text{ has } P \Rightarrow (\mathscr{L}(P) \wedge a \text{ has } P)$ (1, conjunctions)

5. $a \text{ has } P \rightsquigarrow (\mathscr{L}(P) \wedge a \text{ has } P)$ $(4, \Rightarrow / \rightsquigarrow)$

6. $(\mathscr{L}(P) \wedge a \text{ has } P) \rightsquigarrow \exists p(\mathscr{L}(p) \wedge a \text{ has } p)$ $(3, \Rightarrow / \rightsquigarrow)$

7. $\exists p(\mathscr{L}(p) \wedge a \text{ has } p) \rightsquigarrow a \text{ has } P$ $(2, \Rightarrow / \rightsquigarrow)$

8. $a \text{ has } P \rightsquigarrow a \text{ has } P$ (5, 6, 7, transitivity)

9. $\perp$ (8, irreflexivity)

Reponses:

- Deny the existentials principle?

- Reformulate the view, to say that facts about laws ground something other than *instantiations* of properties?

7. Nomic essentialism and essence

$$\Box_P \mathscr{L}(P) \qquad \text{(``$\mathscr{L}(P)$ holds in virtue of the nature of P'')}$$

- Fits rhetoric of laws coming from the "identity" of properties

- Fits much of what NEists say. Bird (2007, p. 2): "…laws are not thrust upon properties, irrespective, as it were, of what those properties are. Rather the laws spring from within the properties themselves."

- Note the properties-to-laws direction of explanation-

My complaint: unsatisfying, even if true. It says that "something flows from the essence of P", without saying *how* that something flows.

Compare Wilson's (2014) critique of ground.

8. Ungrounded or fundamental existentials?

Note: it's not enough to deny the principle at the nonfundamental level.

But what arguments in favor of the principle? "Existentials are analogous to disjunctions, and thus behave analogously with respect to ground. So, since disjunctions are grounded in their true disjuncts, existentials are grounded in their true instances."?

9. The Tractarian and the semi-Tractarian

Tractarian view the fundamental facts are all atomic

- But how to ground negations?

Semi-Tractarian view the fundamental facts are all either atomic or negations of atomic facts

- But how to ground the universally quantified fact $\forall x F x$?

- In its instances $F a_1, F a_2 \ldots$?

- But if $Fa_1, Fa_2 \cdots \Rightarrow \forall x Fx$, then $\Box((Fa_1 \wedge Fa_2 \wedge \cdots) \to \forall x Fx)$ (ground implies necessitation). And that's not true—$\forall x Fx$ could have been false even if all of $Fa_1, Fa_2 \ldots$ had been true, if there had existed an extra object b that wasn't F.

- Timothy Williamson's (2013) defense of necessitism threatens this argument, but perhaps not the underlying problem.

9.1 Grounding-qua

An old debate between David Armstrong (1989) and David Lewis (1992):

Armstrong: "All truths require a truthmaker; so we must accept states of affairs, totality facts, etc."

Lewis: "I see the itch you're trying to scratch; but it can be scratched just as well with a weaker principle that doesn't require those things, namely, the principle that truth supervenes on being: two possible worlds with the same individuals and distribution of natural properties and relations over those individuals are alike in every way."

- Intuitive underlying idea of Lewis's move: what we recognize at the fundamental level doesn't have to *say* it's complete (by including negative or totality facts); it just has to *be* complete.

- Problem: the ground-theoretic analog of Lewis's way of cashing this intuitive idea out, namely "truth supervenes on being", is modal, which causes familiar problems.

- Possible solution: the semi-Tractarian might say that the fact that $\forall x Fx$ is grounded in its instances, *qua* their being all its instances.

  Grounding qua would need to be regarded as sui generis. That is, $f_1 \cdots \Rightarrow_R g$, i.e., "$f_1 \ldots$ qua standing in R ground g", does *not* reduce to: "$f_1 \ldots$, together with the fact that $R(f_1 \ldots)$, ground g".

  But.

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