

“The Metaphysics of Relations” & “Objections to Ontic Structural Realism”

(from Ladyman & Ross’ *Every Thing Must Go: Metaphysics Naturalized*)

- “There are no things. Structure is all there is.” (p. 130) — But what is “structure”?
- Max Tegmark’s Mathematical Universe Hypothesis:
“Our external physical reality is a mathematical structure” (Tegmark, 2008).
- Ladyman & Ross argue for a metaphysical thesis.
- A class of facts X *supervenies on* a class of facts Y iff: there cannot be any difference in X-facts without there being a difference in Y-facts.
- Ontic Structural Realism (OSR): “the world has an objective modal structure that is ontologically fundamental, in the sense of not supervening on the intrinsic properties of a set of individuals” (p. 130).

What sort of metaphysics?

A vision for the unification of science; metaphysics is to be *naturalized*, with fundamental physics as our guide (“Principle of Naturalistic Closure,” p. 37)

An empirically-informed metaphysics, against centuries of “armchair philosophizing.”

Intuitions Betrayed

The end of the metaphysics of “things”: contemporary physics indicates that we can no longer posit fundamental self-subsistent individuals.

That’s against intuitions that have been dominating metaphysics for centuries, e.g.

Humean Supervenience: There are only concrete particulars. Any abstract relations that externally link those particulars are neither fundamental nor necessary — they merely supervene on intrinsic or relational properties of individuals.

This thesis, Ladyman & Ross argue, is falsified by contemporary scientific results. They propose a new metaphysics of “objective modal relations.”

“Things” are just “locally focused abstractions from modal structure” (p. 153).

Objections to OSR & Structuralist Replies

(1) Relations are impossible without relata.

Reply: The objects of a relation do exist; they are derived from the relation.

Logical variables & constants are “mere placeholders” (p. 155) — epistemologically, not ontologically fundamental.

Quine, “Variables Explained Away”: translating variable-talk into pure relations-talk.

Example: “whatever lives, changes” says the same as “doesn’t just self-respectively live and not change” (Burgess, 2008, pp. 99-100).

(2) Structural realism collapses into standard realism.

“[T]he nature and the structure of a physical entity form a continuum” (Psillos, 1995, p. 31). If structuralism is intelligible, it becomes identical to scientific realism.

Reply: “Nature” simply denotes individuality.

OSR rejects the claim that individuals are part of the fabric of the universe.

Realists’ fixation with concrete particulars indicates their commitment to the traditional metaphysics that contemporary physics has overthrown.

(Question: Is OSR’s “nature” too “thin” to work here?)

(3) If there is no non-structure, there is no structure either.

“[...] the difference between mathematical (uninstantiated) structure and physical (instantiated) structure cannot itself be explained in purely structural terms” (p. 158).

Reply: Rather unclear in the text; “modal force”?

“What makes the structure physical and not mathematical? That is a question we refuse to answer. In our view, there is nothing more to be said about this [...]” (p. 158)

(Is this obvious?)

(4) What happens to “structure” amid theory change?

Reply: Theoretical structure is preserved in future theories.

(Yes, but what exactly specifies the kind of structure to be retained?)

(5) Causation?

Reply: If causal structure is a species of “modal structure,” then structural realists are happy to accommodate it.




Further Reflections

Can structural realism be informative?

The proper reading (in my view): structural realism not as a fixed body of doctrine but rather, as a promising philosophical program.

“If structuralism is correct, it follows that the [perfect] computer simulation makes the physical theories true. [...] If we’re in a simulation, the physical world around us is real.” (Chalmers, 2022, p. 413).

Gems & Coal:

-  Moving away from armchair philosophizing; 21st-century metaphysics should be open-minded and empirically-informed.
 -  Correct insight regarding the non-necessary status of logical objects and variables.
 -  A general sense of refusing to accept that the structuralist proposal is not complete and might need further development.
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References

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