

NECESSITIES OVERBOARD: A REPLY TO LANGE

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NP AND LP

LP If m is a law, n is not a law, and p is logically consistent with all of the r 's taken together where it is a law that r , then $p \Box \rightarrow (m \text{ is a law and } n \text{ is not a law})$.¹ (Lange, 2022, p. 4)

\leftrightarrow (a) Had there been nothing in the universe's history but a single electron existing forever then Coulomb's law would still be a law.

NP If m is a law, p is logically consistent with all of the r 's taken together where it is a law that r , and q is likewise, then $p \Box \rightarrow (q \Box \rightarrow m)$. (Lange, 2022, p. 5)

\leftrightarrow (b) Had there been nothing in the universe's history but a single electron existing forever, then had there been more electrons existing forever, they would have acted in accordance with Coulomb's law and repelled each other.

Humeanism, particularly the BSA, seems to be in conflict with (a) and (b) since Coulomb's law would not result from applying the BSA to a one-electron world.

MY (2020) VIEW

Lange rejects the Humean views of Dorst (2020), Loew and Jaag (2019), which accept **NP** but reject **LP**. This seems to be an unstable position.²

As Lange characterizes it, my (2020) view accepts both **NP** and **LP**.³ How does this work?

1. Distinguish Scientific and Metaphysical explanation⁴

- The aim of scientific explanation is unification
- The aim of metaphysical explanation is revealing the metaphysical dependence structure

2. Laws are metaphysically explained by the mosaic of non-modal facts. But, this metaphysical explanation doesn't count as a scientific explanation because it goes against the aim of scientific explanation – unification.

When we unify, we are trying to reduce the number of phenomena we accept independently by assimilating specific events to more general patterns. But the metaphysical explanation of the laws starts from the general patterns – the laws themselves – and reduces them to large numbers of specific facts – the facts about the mosaic. Clearly this procedure will not help unification. (Bhogal, 2020, p. 178)

¹ The lower-case letters here, and in **NP**, are restricted to 'sub-nomic' propositions – they don't include terms like 'it is a law that...' or 'modal' terms more generally. See (Lange, 2009, pp. 15-20) for further explanation.

² Consider: Why would electrons attract each other in a world where nothing like the laws of electromagnetism are laws?

³ This characterization isn't quite right – I think there are contexts where counterfactuals like (a) and (b) come out true, but some contexts where things are different.

⁴ Actually in (Bhogal, 2020) I distinguish metaphysical explanation from *nomothetic explanation* – a kind of law-driven scientific explanation. Here I'll just use the more familiar terminology of 'scientific' explanation.

3. Consequently, 'the metaphysical explanation of the laws from the mosaic is not part of the scientific theory of the world' (p. 184). In some contexts, then, it's appropriate for scientists to ignore this Humean reduction.
4. When we, in such contexts, consider suppositions like *had there been nothing in the universe's history but a single electron existing forever* then we do not hold fixed the Humean reduction. So, the closest relevant possible world is a one-electron world where Coulomb's law is still a law – a metaphysically impossible world.⁵

⁵ More generally, I argue for a distinction between scientific and metaphysical possibility where some scientific possibilities are metaphysically impossible.

LANGE'S OBJECTION

Do other metaphysical necessities besides the Humean reduction of lawhood get thrown overboard so easily under such counterfactual antecedents? Plausibly, the fundamental moral law (if there is one) is metaphysically necessary. Suppose that utilitarianism determines morally right actions. Do any counterfactual antecedents that are metaphysically possible (such as 'Had Jones pulled the trigger...') lead us to metaphysically impossible worlds where utilitarianism is violated? It seems not. Take another example: Plausibly, pure mathematical and logical facts are metaphysically necessary. Do any counterfactual antecedents that are metaphysically possible evoke metaphysically impossible worlds where pure mathematical and logical facts are not preserved? Again, it seems not. So carving out an exception for lawhood's Humean reduction seems ad hoc. (p. 24)

METAETHICAL REDUCTIONS

It's wrong to kill people for fun. But what should I do if I prefer to kill people for fun? Answer: I still shouldn't kill. The true moral theory says that I shouldn't kill, even in these circumstances.

But imagine that the true metaethical theory is one where the actual moral facts are metaphysically determined by my preferences. In some contexts, it will be right to say that if I were to prefer killing for fun then it's ok for me to kill.

But in 'first-order' contexts it's natural to say that if I were to prefer killing for fun, I still shouldn't kill. This counterfactual takes us to a world where the reduction of morality to preferences is thrown overboard.⁶

⁶ This line of thought is interestingly related to classic 'rigidification' defenses of subjectivism and other response-dependent metaethical views (e.g. Dreier (1990)).

RELATIONALISM

Dasgupta (2020) argues, in a structurally similar way, that defending relationalism about quantities like mass, about motion, and about chirality involve us 'throwing overboard' certain metaphysically necessary reductions – for example, the reduction of facts about mass to facts about mass relationships between objects.

SPECIAL SCIENCES

There are contexts where the reduction of special sciences to physics gets ignored under relevant counterfactual suppositions

Consider: What happens if information moves instantaneously and costlessly? Among other things, there are economic models about how the prices of assets would fluctuate in such a case.⁷

When we investigate these models in the context of economic theorizing, we don't care that the world is physically impossible and that information would be constituted differently. And we don't assume that the economic facts are reduced to the physics in some other way. We ignore the reduction. This is part of the *autonomy* of economic methodology from the physics.

More generally, when domain X is reduced to a domain Y the range of possibilities associated with X can outstrip those associated with Y. We can reason about the higher-level domain and how they can interact in accordance with higher-level principles, without worrying about how such possibilities would look reflected back down to the lower-level domain.⁸ I think something similar is going on with the Humean reduction of laws.

Another case: Imagine talking to an economist about the business model of a casino. They tell you about the expected return of the casino, based on current probabilities. *If someone were to play the slot machine 100 million times in a row then the casino would make, on average, \$28,361,121.*⁹

The relevant counterfactual world is one where the slot machine does not degrade and the physical probabilities do not change over the 100 million plays. But the physical laws would have to be different in the counterfactual world where slot machines are so resilient.

Further, we don't imagine that different physical laws hold and try reason about those. Rather we simply ignore the reduction of the economics to the physics.

My strategy is not *ad hoc*, it fits with a natural way to think about a variety of reductive metaphysical accounts.

THE MODAL AND THE POSTMODAL

Bhagal's account does not seem to treat metaphysical necessity with the respect it is due. Necessity has long been understood as a kind of inevitability, unavoidability, 'that which will be whatever supposition we make with regard to other things' (Mill [1874], book 3, chap. 5, sect. 6). Moreover, metaphysical necessity is supposed to be one of the strongest varieties of necessity. (Lange, 2022, pp. 23-24)

I'm happy to disrespect metaphysical necessity like this. My view fits naturally with a 'postmodal' approach to metaphysics – an approach characterized by deemphasizing modal issues and claiming that the central metaphysical issues are about actual world relations.

This approach is naturally combined with a somewhat deflationary approach to metaphysical possibility – where metaphysical necessity is not a deep part of the world, but a mere symptom of underlying metaphysical structure.

For example, a postmodal theorist might naturally accept a conventionalism about metaphysical modality, in the spirit of Sider (2011) and Cameron (2009,

⁷ The commonly discussed idea that stock prices are a random walk derives from the assumption of instantaneous and costless information transfer.

⁸ It's familiar that in some contexts when considering a counterfactual antecedent *p* we are disinclined to 'backtrack' and reason that the facts causally prior to *p* would have been different. The cases suggest that, analogously, we are sometimes disinclined to 'downtrack' and reason that the facts *metaphysically* prior to *p* would have been different.

⁹ This discussion is inspired by Holguín and Teitel (2024).

I don't think I'll have time to get to this section!

2010). Or they might take modality to be closely connected to explanatory structure so that if there are there are multiple types of explanation then there are multiple types of modality and there is no single ‘absolute’ necessity (Bhogal (2020, pp. 187-8), Dasgupta (2020, section 7)).

My strategy involves decentralizing metaphysical modality – metaphysical modality isn’t always the right tool in representing our discourse and thought in scientific practice. If we already think of metaphysical modality as more deflated or less central to our theorizing then such an approach seems natural.

This is very different from Lange’s preferred modal metaphysics.¹⁰ Much of the dispute might come down to this disagreement.

¹⁰ Roughly, that there are primitive counterfactuals, and the set of counterfactuals is structured so that they can be used to define up the difference between genuine and non-genuine modalities. See Lange (2018, section 1) for a summary.

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