Do Counterfactuals Ground the Laws of Nature?

A Critique of Lange

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**Abstract**: Most philosophers of science hold that the laws of nature play an important role in determining which counterfactuals are true. Marc Lange reverses this dependence, arguing that it is the truth of certain counterfactuals that determines which statements are laws. I argue that the context sensitivity of counterfactual sentences makes it impossible for them to determine the laws. Next, I argue that Lange’s view cannot avoid additional counterexamples concerning nested counterfactuals. Finally, I argue that Lange’s counterfacts, posited as the ultimate ontological ground for the laws of nature, are unsuited to the role he demands of them.

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1 Counterfactual Sentences and Context

One reason to think counterfactuals are closely bound up with the laws of nature is that the laws seem to hold ‘no matter what’ or ‘come what may.’¹ Lange takes this to be an essential feature of the laws, and relies on it to ground the laws of nature. Lange’s central principle Nomic Preservation² is as follows:

\[(NP) \quad m \text{ is a law if and only if in any conversational context, and for any } p \text{ that is relevant as a counterfactual antecedent in that context and logically consistent with all of the laws (taken together), the proposition expressed by } \langle p \square \rightarrow m \rangle \text{ is true.} \quad \text{(Lange 2009, 15).}\³

Lange takes this principle to determine what the laws are at a world, \(w\). Thus, consider a candidate collection of laws, \(n = \{m_1, m_2, \ldots\}\), at \(w\). The basic idea of (NP) is that each member deserves to be in the collection if and only if every counterfactual is true that has a nomically contingent antecedent (relative to the candidate laws) and a nomically

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¹. This could be because the laws are true no matter what, or because the laws are laws no matter what. Lange defends the latter.

². While this early formulation differs slightly from later formulations, I use it because of its emphasis on context and its distinction between sentences and propositions (something that Lange elides in later formulations).

³. Also, Lange requires that \(p\) and \(m\) both be sub-nomic: not containing any nomic terms such as “is a law” or “necessarily.” For the purposes of this paper, I need not say anything more about this requirement.
necessary consequent (again, relative to \( n \)) in every context of \( w \). If so, then the collection \( n \) has earned its status of lawhood, and statements \( m_1, m_2 \ldots \) are each laws of \( w \). Lange’s view is particularly striking because these counterfactuals are not merely epistemically or heuristically useful for identifying the laws of nature, they \textit{ontologically ground} the laws of nature. And, according to Lange, the counterfactuals are, in turn, ontologically grounded in primitive counterfacts.

1.1 Semantics and Context

According to a traditional semantic picture, sentence types in contexts express propositions. For example, the sentence, “You are wearing an orange shirt,” in a context where Lee is the addressee, expresses the proposition that Lee is wearing an orange shirt. The very same sentence can express different propositions in different contexts. For example, the same sentence would express a proposition about Jones in a context where Jones is the addressee. A sentence in a context is true relative to a world, just in case the proposition expressed by the sentence in the context is true relative to that world.\(^4\)

When we apply this standard picture to counterfactuals, we don’t just need to interpret standard contextually sensitive terms, such as indexicals (“I,” “you,” “here,” etc.), we also need to interpret “if” and “would have,” which require \textit{additional} context sensitivity.

\(^4\) There may be additional indices, such as times and places. Also, for the purposes of this paper, I am putting aside recent proposed departures from this standard picture, such as non-indexical contextualism and relativism, according to which the truth values of propositions may still vary relative to contexts of assessment.
Recall the famous counterfactuals about what Caesar would have done in Korea. Depending on the context, either Caesar would have used the atom bomb or Caesar would have used catapults. There is a great deal of debate about how this added layer of counterfactual context sensitivity affects the propositions expressed by counterfactual sentences.\footnote{It is worth keeping in mind that some philosophers, such as Dorothy Edgington (Edgington 2008), argue that counterfactual sentences do not express propositions at all.}

For Robert Stalnaker and David Lewis,\footnote{See Stalnaker (1968) and Lewis (1973). Note that their views differ in some important respects. For instance, Stalnaker thinks there is only one closest world, while Lewis thinks there can be many closest worlds. However those differences are not important for the purposes of this paper.} the counterfactual sentence, “If you had worn an orange shirt, gravity would have held,” in a context where Jones is the addressee, expresses (very roughly) the proposition that the closest worlds in which Jones wears an orange shirt are worlds in which gravity holds. Whether such a proposition is true or false depends on what the closest orange-shirt worlds are like, as well as which worlds are closest for that context.\footnote{There is a very interesting, but entirely separate, question about how to think of these worlds, e.g. concrete, spatio-temporally disconnected worlds, ways the actual world could have been, or maximal sets of consistent propositions. Conveniently, the Stalnaker/Lewis possible world semantics of counterfactuals does not depend on any particular ontological account of possible worlds, so we can bracket this issue.}

This is how they can accommodate our changing intuitions about what Caesar would have done in Korea. The context changes which
worlds are closest: in one context, the catapult world is closer than the atom bomb, in
others, vice versa.

Lange does not want to commit himself to a specific view of counterfactual semantics,
but he does want to accommodate the fact that context can change the truth values of
some counterfactual sentences. For reference, we have the counterfactual sentence:

(1) “If you had worn an orange shirt, gravity would have held.”

which, in a context where Jones is the addressee, expresses the counterfactual proposition
that:

(2) If Jones had worn an orange shirt, gravity would have held.

Since (1) has the form of (NP), Lange insists that it is true in every context, even if that context varies due to counterfactual considerations. For instance, the truth-value of (1) should remain the same, even as the context shifts from the context of a physics classroom, to the context of an offhand conversation, to the context of a legal trial. But, sentences in different contexts

8. Technically, Lange insists that the proposition expressed by the sentence “p □→ m,”
is true. But, on the standard picture, the proposition is true if and only if the sentence, in
context, is true. Lange gives us no reason to reject the standard picture, so asking about
the truth of sentences in contexts is equivalent to asking about the truth of the propositions
they pick out. Of course, there is an entirely different view according to which it is the
counterfactual proposition that we should care about—a view I will come to in the next
section. But that is not Lange’s view.
can pick out different propositions, so we must proceed carefully. For instance, it is only because we have chosen a context where Jones is the addressee of sentence (1)Semantics and ContextItem.1, that it expresses (2)Semantics and ContextItem.2. In a different context, where Lee is the addressee, (1)Semantics and ContextItem.1 expresses the different counterfactual proposition that:

(3) If *Lee* had worn an orange shirt, gravity would have held.

So far, Lange is right: the sentence (1)Semantics and ContextItem.1 *is* true in the few contexts we’ve tested. It doesn’t matter who the addressee of sentence (1)Semantics and ContextItem.1 is. The sentence, in that context (as well as the corresponding proposition) is true. Surely, if Jones, Lee, Lopez, Cohen, or anyone else had worn an orange shirt, gravity would have held. Of course, there are many ways to vary the context, and below I argue that not all of them yield such favorable results.

### 1.2 The Problem

I argue that not all counterfactual sentences with law-statement consequents are true in every context, which is what Lange’s (NP) requires. Lange (2009, 197) offers an example in which a patient is accidentally injected with a syringe that a male doctor mistakenly believes to contain arsenic. Assume, for the sake of the example, that there are “arsenic laws,” which have as a consequence that if a normal human being takes arsenic, that person dies. Since the syringe does not, in fact, contain arsenic, the patient lives. The doctor, still believing the patient was injected with arsenic, is thrilled when the patient survives, and prepares to write up this surprising result for a journal. When the female
nurse discovers that the patient was not actually injected with arsenic, she says,

(4) “If the doctor had given the patient arsenic, he would be famous for discovering that arsenic doesn’t always kill human beings.”

Prima facie, the counterfactual sentence (4) is a counterexample to (NP), since the sentence, in this context, is true, but the antecedent is logically consistent with all of the laws (of physiology, etc.) taken together, while the consequent is a violation of the laws. More technically, this counterexample has the form, $p \square \rightarrow \sim m$, where $p$ is the contingent fact that the doctor injects the patient with arsenic, and $m$ is entailed by the arsenic laws. Lange’s principle (NP) requires that $p \square \rightarrow m$ is true in any context. But, if we posit that $p$ is contingent—not a vacuous antecedent, such as ‘if squares were circles’—then $p \square \rightarrow \sim m$ follows from (NP) and (4) is indeed a counterexample. Lange (2009, 24) agrees with the formal point, “we can demand not only that $p \square \rightarrow m$, but also that $\sim (p \square \rightarrow \sim m)$,” But, Lange argues that sentence (4) is not a counterexample because, “in this conversational context, the counterfactual’s antecedent is implicitly ‘Had the syringe used to inject the patient been filled with arsenic and the patient lived,’ which is logically inconsistent with the laws, so the truth of this counterfactual is no threat to NP.” (Lange 2009, 197, italics added).

Thus, properly understood, (4) is really, or ‘implicitly,’

(5) “If the doctor had given the patient arsenic and the patient had lived, then he would be famous for discovering that arsenic doesn’t always kill human beings.”
But, it’s difficult to see what Lange could mean by this. Lange cannot have thought that the sentence (4) expresses a different sentence, such as (5). While context can disambiguate lexical or structural features of sentences, as in, “visiting relatives can be annoying,” it cannot change one clause such as “if the doctor had given the patient arsenic” into a radically different one that conjoins another clause, such as “if the doctor had given the patient arsenic and the patient had lived.” And recall that the context sensitivity specific to counterfactuals, as in, “If Caesar had fought in Korea,” allows a single sentence to designate different propositions, depending on the context of utterance. It does not allow one sentence to somehow be a different sentence. But what, then, are we to make of Lange’s claim?

One option that suggests itself is that (4) expresses the proposition that:

(5*) If the doctor had given the patient arsenic and the patient had lived, then he would be famous for discovering that arsenic doesn’t always kill human beings.

Indeed, this seems plausible. Semantic theories can be quite complicated, and propositions need not mirror the surface structure of the sentences that express them.9 For instance, Lewis would argue that (5*) is a proposition involving possible worlds and their relations in modal space. Kratzer would argue that (5*) is a proposition involving a set of worlds restricted by the antecedent and

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9. This is especially clear once we clearly separate the goals of an adequate semantic theory from the goals of a truthmaker theory—what a sentence expresses need not be the same as the metaphysical state of affairs makes it true.
other contextual factors. But these theories can be of no help to Lange, since, if (4)The ProblemItem.4 expresses the proposition (5*)The ProblemItem.6, then Lange has successfully explained why (4)The ProblemItem.4 is true in that context, which is just what his theory needs him to deny. Recall that it is a consequence of (NP) that any sentence of the form “$p \rightarrow \sim m$” is false. Therefore, if Lange is correct, (4)The ProblemItem.4 must be false. But, if (4)The ProblemItem.4 expresses the proposition (5*)The ProblemItem.6, then we have just shown it is true. After all, sentences that express true propositions are likewise true. Thus, Lange has not only given us a counterexample to his own theory, but he has also motivated the very interpretation of the counterexample that makes it a counterexample to his account.10

1.3 Two Possible Responses

In the face of these considerations, Lange could develop an error theory for this kind of problematic counterfactual. Rather than arguing that sentence (4)The ProblemItem.4 is

10. There is another worry about which clauses need to be ‘implicitly’ included in the antecedent. Lange (2009, 197-8, endnote 29) is able to answer the worry by offering the following test: if a counterfactual, $p \rightarrow m$, is true because $q$, then $q$ is ‘implicitly’ in the antecedent iff $p \rightarrow q$ is false. For example, It is because the patient survived that the doctor would have been famous had the injection contained arsenic. But, this counterfactual is false: “If the patient had been injected with arsenic, he would have survived,” so the survival clause is ‘implicit’ in the original counterfactual. While this test tells us which clause is implicit, crucially, it does not tell us what “implicit” means.
implicitly’  (5)The ProblemItem.5, Lange could bite the bullet and say that strictly speaking, (4)The ProblemItem.4 is false. We mistakenly believe it to be true because we have in mind a different counterfactual, namely, (5)The ProblemItem.5. Indeed, I find this solution most promising. However, Lange (personal communication) thinks this response has too high a cost and prefers to take our intuitions about the truth or falsity of such sentences at face value. But because a standard semantics does not include any notion of “implicitly,” according to which (4)The ProblemItem.4 is ‘implicitly’ (5)The ProblemItem.5, appealing to such a notion won’t help unless Lange can say more about it. Thus, this paper could be read as an invitation for Lange to motivate an interpretation of “implicitly” that is able to do the work he envisions.\textsuperscript{11}

Another way of responding to the above objection, is to give up on sentences altogether. Indeed, finicky linguistic items are an odd choice for grounding the laws of nature. John Carroll, (2011, 14), agrees, “On the face of it, [Lange’s account] is troubling. What regularities are laws is tied to whether certain sentences are true in all contexts. This is startling; I find myself imagining Kip Thorne phoning Robert Stalnaker for a consult on the laws of quantum gravity!”

To keep the spirit of Lange’s account, if not the letter, we could reformulate (NP) in terms of propositions rather than sentences:

\textbf{(NPP)} A proposition \textit{m} is a law if and only if for any proposition \textit{p} that is logically consistent with all of the laws (taken together), the counterfactual proposition

\textsuperscript{11} Lange (2009, 197, endnote 29) also uses the term “tacitly,” which likewise requires elaboration.
$p \Box \rightarrow m$ is true.

Lange can avoid the counterexample raised above by maintaining that the sentence

(4) The ProblemItem.4 is true because it expresses the counterfactual proposition (5*) The ProblemItem.6, which has an antecedent proposition that is incompatible with the laws. Therefore, (5*) The ProblemItem.6 is no threat to (NPP).

By characterizing laws of nature in terms of propositions, Lange would avoid the objection raised above, but he would not escape a second objection that I raise for his view below.

2 Nested Counterfactuals

In this section, I will argue that another feature of Lange’s account, namely, his theory of nested counterfactuals, admits of counterexamples as well.

Recall, Lange maintains that if $p$ is compatible with all of the laws taken together, and $m$ is a law, then $p \Box \rightarrow m$. While this guarantees that $m$ is counterfactually true, it does not guarantee that $m$ is counterfactually a law, which is a further requirement of Lange’s. Since all laws obey the principle $p \Box \rightarrow m$, then if $m$ is counterfactually a law, it must be the case that $q \Box \rightarrow (p \Box \rightarrow m)$. For instance, if Jones had worn an orange shirt, gravity would have held. Additionally, Lange requires that if Jones had worn an orange shirt, then gravity would still have been a law, and wouldn’t have held merely accidentally.

In order to secure this result by applying Lange’s theory of counterfactually grounded laws, it must be true that if Jones had worn an orange shirt, then *if any other contingent*
thing had happened, the law would still have held.¹² For that, Lange needs \( m \) to counterfactually satisfy (NP) as well. This Lange achieves by nesting counterfactuals.

Thus, if \( p \) and \( q \) are each individually compatible with all of the laws taken together, and \( m \) is a law, then \( p \rightarrow (q \rightarrow m) \) must be true. In other words, if it were that \( p \), then if it were that \( q \), it would be that \( m \). As discussed above where \( p \) and \( q \) are each possibly true (i.e. the antecedents are not vacuous), Lange’s principle entails \( \neg (p \rightarrow (q \rightarrow \neg m)) \). It is this second formulation that I will argue against below.

Lange is at pains to emphasize that \( p \) and \( q \) need not be jointly compatible with the laws or even logically consistent with one another. “For example, consider the nested counterfactual ‘Had the object been entirely made of rubber, then here’s a counterfactual conditional that would have been true: had it been entirely made of copper, it would have been electrically conductive.’”(Lange 2009, 23) While this example may be favorable to Lange’s theory, there are many other examples that are not. For example, recall

(5) If the doctor had given the patient arsenic and the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings.

¹² Of course, Lange need not require that laws are counterfactually \textit{laws}. Many philosophers, such as Loewer (2007) and Hall (2010), think that laws need only be \textit{true} at nomologically possible worlds. If Lange gave up this feature of his view, it would avoid the objections I raise in this section, but he would have to substantially modify other aspects of his account, the details of which would take us too far afield.
Lange is happy to concede that (5) is true. Since it has an antecedent that contradicts the ‘arsenic laws,’ it is no threat to his theory. But, suppose we modify it by turning it into the following nested counterfactual:\(^{13}\)

\[
(5') \text{ If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings.}
\]

(5') also seems true, and if so, it is a counterexample to (NP). To see this, note that it is compatible with the laws that the doctor gives the patient arsenic, it is compatible with the laws that the patient lives, and yet the consequent is contradicted by the arsenic laws. It is easy to design a formula for producing such counterexamples. Take \(p\) and \(q\) to be jointly though not individually incompatible with some law of nature \((m)\). Then, in general, \(p \rightarrow (q \rightarrow \sim m)\) will be true, and a counterexample to Lange’s theory. Consider another example:

\[
(6) \text{ If the earth were twice as massive, then if the moon’s orbit were the same as it is now, gravity (as it is now) would not hold.}
\]

The above nested counterfactual seems true, but Lange’s theory requires it to be false. To defend his theory, Lange must argue that despite appearances, (6) is false. CounterfactualsItem.9 and all other nested counterfactuals of the form \(p \rightarrow (q \rightarrow \sim m)\) are false.

\(^{13}\) Note that neither Lange nor I endorse the much stronger import/export principle, according to which \(p \rightarrow (q \rightarrow m)\) is logically equivalent to \((p \& q) \rightarrow m\).
Additionally, since $p \square \rightarrow (q \square \rightarrow m)$, the only way for Lange to deny that these are counterexamples, is to say that if $p$ were to hold, then if $q$ were to hold, then something about $p$ wouldn’t hold (otherwise, if $p$ held, we would have a consequent that violated $m$). In general, when $p$ and $q$ are jointly incompatible with $m$, Lange has to say $p \square \rightarrow (q \square \rightarrow \sim p)$, a very counterintuitive result indeed! Thus, the following counterfactuals, though they seem false, according to Lange’s account, must be true:

(7) If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would not have given the patient arsenic.

(8) If the earth were twice as massive, then if the moon’s orbit were the same as it is now, the earth would not be twice as massive.

And, Lange says just that, arguing that when you say, or think about, counterfactuals such as (5’)Nested CounterfactualsItem.14 or (6)Nested CounterfactualsItem.9 with the right emphasis, they *do* sound false. Similarly, when you say, or think about, counterfactuals such as (8)Nested CounterfactualsItem.11, they *do* sound true.\textsuperscript{14} Thus, he asks us to consider the following alternative, but arguably equivalent formulations of (5’)Nested CounterfactualsItem.14 and (6)Nested CounterfactualsItem.9:

\textsuperscript{14} Since (7)Nested CounterfactualsItem.10 is a *backtracking* counterfactual—the consequent occurs before the second antecedent—Lange argues it has no truth value. While I still consider this a cost of his view, since (7)Nested CounterfactualsItem.10 sounds false, not truth-valueless, it will not be of any help with (8)Nested CounterfactualsItem.11, which is not backtracking.
(5”) Suppose the doctor gave the patient arsenic, then here’s a counterfactual that would be true: if the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings.

(6”) Suppose the earth were twice as massive, then here’s a counterfactual that would be true: if the moon’s orbit were the same, gravity would not hold.

Lange (personal communication) claims that when we think carefully about these nested counterfactuals, they sound false. But what counts as ‘thinking carefully?’ One tempting option is to use the theoretical structure of the Stalnaker/Lewis semantics for counterfactuals, supplemented with an ordering on worlds, such as a closeness metric.

On such an account, evaluating counterfactuals requires a kind of world-hopping tour. We begin at the actual world, then go to the closest first-antecedent world, for instance, the closest world where the doctor gives the patient arsenic. Next, we go to the closest second-antecedent world, from the first-antecedent world, namely, the closest world where the patient lives. Finally, we check whether the consequent is true or false in the final world, i.e. to see whether or not the doctor is famous for discovering that arsenic doesn’t always kill human beings. It is arguable that, with the right closeness metric, a world where the doctor is mistaken about injecting arsenic is closer to the world where the doctor injects arsenic than a world where arsenic doesn’t always kill human beings. Therefore, the whole nested counterfactual is false, and Lange’s prediction is borne out.

But, there are two problems with this option. First, Lange (2009, 198) says that he does not want to commit himself to this picture. He claims that such talk is merely a
“metaphor” and uses scare quotes when he says, “the ‘metric’ determining the ‘closest possible world’ where that antecedent obtains.” And it would be a mistake to lean too heavily on a metaphor when evaluating the metaphysical plausibility of Lange’s theory.

The second problem is that, though it is tempting to use the theoretical structure of a semantic theory to inform our intuitions about which counterfactual sentences are true, such a use misunderstands the point of a semantic theory, which is merely to capture common usage. A semantic theory should not be in the business of determining usage. Semantic theories are evaluated by how well they predict linguistic data; they should not generate linguistic data. Therefore, taking our pre-theoretic intuitions about such sentences seriously, and unless Lange can say more about what ‘thinking carefully’ amounts to in such cases, we have every reason to think that (5’)CounterfactsItem.14, (6)Nested CounterfactualsItem.9, (7)Nested CounterfactualsItem.10, and (8)Nested CounterfactualsItem.11 are counterexamples to (NP).

3 Counterfacts

If I am right and Lange’s account cannot answer these objections, there is one final retreat available. We could give up on counterfactual sentences and counterfactual propositions in favor of ontologically primitive counterfacts. While Lange posits these entities as truthmakers for counterfactual propositions, the above counterexamples show that he must make a choice: either the counterfacts ground the counterfactuals, or they ground the laws, but not both. To see this, recall the true counterfactual:
(5’) If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings.

Now, if counterfacts are truthmakers for counterfactuals, then the following counterfact obtains:

(9) [If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings.]

But, if the counterfacts are also grounding the laws, then the following counterfact obtains as well:

(10) [If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would NOT be famous for discovering that arsenic doesn’t always kill human beings.]

But, (10)CounterfactsItem.16, as a counterfact, makes true the following counterfactual:

(11) If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would NOT be famous for discovering that arsenic doesn’t always kill human beings.

So (9)CounterfactsItem.15 and (10)CounterfactsItem.16 cannot both obtain or they would make true two contradictory counterfactuals, (5’)CounterfactsItem.14 and

15. I will use square brackets to distinguish counterfacts from other entities.
Thus, if we are positing counterfacts to ground the laws of nature, they cannot also be truthmakers for counterfactual propositions. To avoid confusion, I will reserve the term “counterfact” and square brackets for the truthmakers of counterfactual propositions, and use the term “Lange-fact” and angle brackets for the ontological ground of the laws.

Once we have disconnected the Lange-facts from counterfactual sentences and propositions, we see that there can be no objections to the view based on our intuitions about counterfactual sentences or propositions. Thus, it doesn’t matter that the following is true: “If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would be famous for discovering that arsenic doesn’t always kill human beings,” because the following Lange-fact can still obtain: ⟨If the doctor had given the patient arsenic, then if the patient had lived, then the doctor would NOT be famous for discovering that arsenic doesn’t always kill human beings⟩.

We can formulate a revised nomic preservation for the Lange-facts, according to which the laws are states of affairs that obtain in the world, M, rather than law-statements or law-propositions.

\[(\text{NPC})\quad M \text{ is a law if and only if for any } P \text{ that is possibly co-instantiated with all of the laws (taken together), the Lange-fact } \langle P \rightarrow M \rangle \text{ obtains.}\]

As far as I can tell, such an account is clear and consistent. Nevertheless, we should strive for more than clarity and consistency when grounding the laws of nature. I have argued that Lange-facts bear no relation to counterfactual sentences or propositions, so we cannot use our “great confidence” in counterfactual facts to help us determine the
Lange-facts, which makes them awfully mysterious. And, since the Lange-facts are primitive, there is no further story to tell about them. In the end, such a theory would be plausible only if the Lange-facts were simpler or more explanatory than the laws they were postulated to ground.

But, this does not seem to be the case. There are many unanswered questions about them. For instance, is there a distinct Lange-fact for every possible co-instantiated state of affairs? Do the Lange-facts bear any logical relations to one another, and if so, what are they? Lange gestures toward answers to these questions. But much more needs to be said in order to make the Lange-facts stand on their own, since on this particular formulation, they are independent of the counterfactuals. Consequently, our only access to which Lange-facts obtain and which do not is via the laws of nature.

Lange rightly points out, “That we figure out which counterfactuals are true by consulting what we already know about the laws (among other things) does not at all support the idea that the truths about the laws are ontologically prior to the subjunctive truths.” (2009, 136, original emphasis). But, as I have argued, on this final view, the only access we could have to primitive Lange-facts is through the laws of nature making them an ontological extravagance. If the Lange-facts have no theoretical virtues, but add a significant ontological cost, we should not accept them.

16. For more on these questions, see Loewer (2011).
4 Conclusion

In this paper, I have argued that, because of context sensitivity, Lange cannot characterize his view of lawhood in terms of stable sets of counterfactual sentences. I have also argued that his account predicts the wrong results for many nested counterfactuals. I conclude that the laws of nature cannot depend on stable sets of counterfactuals, whether construed as sentences, the option he endorses, or alternatively, as propositions or primitive facts. While I agree with Lange that there are some important connections between laws and counterfactuals, I think he is wrong about what those connections are.
References


