Philosophers' Imprint

volume 26, no. 9

february 2026

Three Ontological Options for the Laws of the Best System

Heather Demarest and Isaac Wilhelm

University of Colorado and National University of Singapore

doi.org/10.3998/phimp.6362

1. Introduction

There is a substantive ontological ambiguity lurking within the best system account of laws: it is unclear what sorts of objects the laws of the best system are. There is much discussion about how the best system account should be formulated—about the criteria, regarding simplicity and informativeness and so on, used to determine inclusion in the best system.[1] However, there is comparatively little discussion of what the ontology of the laws themselves might be. It is commonplace to see authors take the laws of the best system to be very different sorts of things: some take those laws to be sentences; others take those laws to be propositions; still others take those laws to be regularities, where regularities can be more worldly than sentences or more structured than sets of worlds (or both). Sometimes, authors seem to endorse more than one option within a single paper, taking laws to be sentences in one paragraph, and propositions in the next. In section 2, we present a variety of textual evidence to show how this ambiguity pervades the best system literature, from Lewis's account to more contemporary presentations.

To help clarify the issue, we assume that the best system is a set of sentences, and then we ask the further question of how those sentences are related to the laws of nature. In other words, are the best system sentences to be *identified* with the laws, so that the laws of nature are sentences? Or do the sentences *express* the laws, so that the laws of nature are propositions? Or might the sentences be *made true* by the laws, so that the laws of nature are something like states of affairs, or facts?[2]

1. For different approaches to best system accounts of lawhood, see (Demarest, 2015; Dorst, 2019; Hicks, 2018; Lewis, 1973; Loewer, 2012; Shumener, 2021).
2. Note that this way of framing the question assumes that it is sentences which are members of the best deductive system; this allows us to ask the further question of how those sentences are related to the laws. By contrast, one could reject that assumption, and ask which objects—sentences, propositions, or whatever—should be used to best balance simplicity and informativeness. For instance, one set of propositions might be stronger than another if the latter contains the former as a subset. Likewise, it would

We argue that these different ontologies of laws have surprisingly different costs and benefits, and so authors who endorse a best system account should be circumspect about which ontology to adopt. For instance, proponents of the best system account who take laws to be largely representational and pragmatic (Dorst, 2019) may prefer to identify laws with sentences in a language, while proponents of the best system account who think that the laws involve—in some fairly literal sense of 'involve'—properties that carve at metaphysical joints (Lewis, 1986) may prefer to identify laws with structured propositions. Moreover, the best system account is often touted as providing a less costly approach to laws than other accounts, like primitivist accounts (Maudlin, 2007), because the posits of the best system account are less mysterious and more epistemically accessible. But as this paper makes clear, not all best system laws are on a par in these respects.

In section 3, we formulate and evaluate three distinct options for the ontology of laws. The first option, which we explore in section 3.1, is that the laws are sentences. We argue that this view has serious problems—so serious, in fact, that we conclude it is untenable. In section 3.2, we consider laws as unstructured propositions, that is, sets of possible worlds. This view also faces a serious problem: the sets lack the lawlike structures that characterize the best system. In section 3.3, we develop the idea that the laws are structured propositions. Because the additional structure of these propositions can mirror that of the best system, it seems to us that, with some caveats, this view is stronger than the other two. Furthermore, some theories take structured propositions to be comprised of worldly entities rather than linguistic entities, which might appeal to those who think that laws are patterns in the world, rather than our representations of patterns in the world. In this section,

be interesting to see if structured propositions or states of affairs could be compared for simplicity or strength, or any of the additional virtues that have been proposed for best system laws. While we set this question aside, we encourage those who are drawn to such an approach to develop these different ontological options for laws—particularly in the context of balancing whatever virtues they think make for a best system. We think there is a rich landscape of possibilities here that should be explored.

we also briefly consider the related idea that laws are those worldly states which make best system sentences true.

Strikingly, the two views which appear most often in the best system literature—taking laws to be sentences and to be (unstructured) propositions—are weaker, we argue, than the view that laws are structured propositions. But regardless of whether readers agree with us about the relative merits of the different accounts, we hope to demonstrate that the ontological choice about best system laws is a substantive one, and that different options come with surprisingly different costs and benefits.

2. What Laws Are

In this section, we summarize a standard version of the best system account of laws. Then we show that defenders of the best system account are not always clear about what they take the laws to be: options range from sentences to propositions to regularities to generalizations.

To begin, we adopt a standard formulation of the best system account: the laws are given by the members of the true deductive systems which best balance theoretical virtues such as simplicity and strength (Lewis, 1973; 1983; Loewer, 2012). Some deductive systems are simpler than other deductive systems, in that the former posit fewer basic axioms than the latter posit. Some deductive systems are stronger than other deductive systems, in that the former rule out a superset of the possibilities that the latter rule out. These theoretical virtues may trade off against each other. For instance, stronger systems are generally less simple, and simpler systems are generally less strong. Take the deductive systems which achieve the best balance between these theoretical virtues. Then L is a law-sentence, according to the best system account just in case L is a member of each deductive system which achieves that best balance.[3]

3. Authors often add a further restriction on L: that it be formulated in terms of predicates that express perfectly natural properties. For non-deterministic systems, the best system also balances fit, where a better fit assigns chances that more closely match the frequencies of events.

Many different variants of the best system account have been proposed in the literature. Some variants invoke different theoretical virtues, or additional theoretical virtues, beyond simplicity and strength (Dorst, 2019; Hicks, 2018; Wilhelm, 2022b). Other variants relativize best systems to choices of primitive vocabulary (Cohen & Callender, 2009). Still other variants take the best deductive systems to summarize all possible distributions of dispositional properties (Demarest, 2017; Kimpton-Nye, 2017).

The issue on which we focus arises for all of these variants of the best system account. And that issue, to a first approximation, is this: what sorts of items are best system laws? In other words, supposing that some particular best system account is successful, and that some collection of statements best balances whatever virtues we take to be important for the laws, what should we say about the relationship between those statements and the laws themselves? Are the statements to be identified with the laws? Or do the statements merely express the laws? Or perhaps the statements are made true by the laws?

Lewis—by far the most influential author on best system accounts of laws—writes in a way that makes it difficult to tell exactly what he takes best system laws to be. In early work, Lewis claims that laws are theorems of each true deductive system that best balances simplicity and strength, where true deductive systems are "deductively closed, axiomatizable sets of true sentences" (1973, 73). So in this quote, Lewis takes best system laws to be sentences rather than propositions. This is somewhat surprising given that earlier, Lewis had quoted Ramsey as taking best system laws to be propositions rather than sentences. At any rate, in this passage, Lewis suggests that best system laws are sentences.

Ten years later, however, Lewis seems to suggest otherwise. He writes that "[d]ifferent ways to express the same content, using different vocabulary, will differ in simplicity. The problem can be put in two ways, depending on whether we take our systems as consisting of propositions (classes of worlds) or as consisting of interpreted sentences" (1983, 367). This quote suggests that Lewis is neutral about whether best system laws are propositions or sentences; or, at the very least, the quote indicates that he recognizes both as live options.[4] Interestingly, Lewis goes on to solve a particular problem—now known as the "predicate *F*" problem—by arguing that candidate best systems can be compared only when they are formulated linguistically and restricted to "eligible" primitive vocabulary (1983, 367–368). But if his solution to this problem appeals to linguistic criteria, it would seem that Lewis is committed to taking best system laws to be sentences after all.

Even so, in the same paper, Lewis offers a third interpretive option: namely, that best system laws are regularities. He writes that "[a] law is any regularity that earns inclusion in the ideal system" (1983, 367). It is worth quoting Lewis at length here, to show that he does not take regularities to be sentences.

> "If we adopt the remedy proposed, it will have the consequence that laws will tend to be regularities involving natural properties. Fundamental laws, those that the ideal system takes as axiomatic, must concern perfectly natural properties. Derived laws that follow fairly straightforwardly also will tend to concern fairly natural properties. Regularities concerning unnatural properties may indeed be strictly implied, and should count as derived laws if so. But they are apt to escape notice even if we someday possess a good approximation to the ideal system. For they will be hard to express in a language that has words mostly for not-too-unnatural properties, as any language must" (Lewis, 1983, 368).

A straightforward reading of the above passage indicates that Lewis takes best system laws to be regularities and not sentences. He draws a clear distinction between the regularities—which *are* best system laws—and the language, and so the sentences, of the ideal system—which are how we *express* those best system laws. On such a view, best

4. Urbaniak and Leuridan also note that Lewis recognizes both as options, though their central concerns are different from ours (2018, 1656–1657).

system laws are regularities *concerning* or *involving* perfectly natural properties, while the sentences that express those best system laws contain predicates that *express* perfectly natural properties.

An important aside: if Lewis does indeed think that best system laws are expressed by sentences, it is puzzling that he would use the term "regularities" rather than "propositions." As is well known, in his other work, Lewis takes sentences to express propositions, and he takes propositions to be sets of worlds. Perhaps Lewis thinks of regularities as propositions, and simply did not say this explicitly. However, the above passage leaves open the possibility that laws could be something like states of affairs, and that those states of affairs make certain propositions—the ones expressed by best system sentences—true. In other words, on such a view, sentences express propositions that themselves are made true by best system laws.

Following Lewis, other authors also endorse a range of different accounts about what best system laws are. To illustrate, we now present a variety of claims by authors who have developed accounts in the Lewisian tradition. In addition to the familiar differences between competing best system accounts, there are also differences in the ontology of the laws. It is clear that there is no univocal "best system" view about what sorts of objects, ontologically speaking, the laws are. In Section 3, we will argue that different answers come with distinctive costs and benefits. For now, we merely present examples of this ambiguity in the literature; note that the examples are meant to be representative, not exhaustive.[5]

To start, we present examples of authors who explicitly take best system laws to be sets of sentences.

- Demarest describes the simplicity of best system laws in terms of sentences' lengths (2015, 337; 2017, 29).
- Wheeler takes best system laws to be language-relative truths, so it is reasonable to assume Wheeler takes the laws to be sentences. (2016, 189–190)
- Hicks claims that laws are truths which jointly maximize strength and simplicity (2018, 986–987). Even though he uses the expression "truths," because Hicks defines the simplicity of a deductive system in terms of the lengths of the sentences which that system contains, Hicks's approach to strength and simplicity seems to require that the laws are sentences (2018, 987).
- Wilhelm describes some deductive systems, whose members are laws, as containing sentences (2022b, 3).
- Arguably, Bhogal and Perry also take each best system law to be a sentence, since they describe those laws as members of "axiom systems [formulated] in terms of the base language" (2017, 78).

Next, we present examples of authors who explicitly take best system laws to be propositions of some kind or other.[6]

- Loewer writes that "[a]ccording to the [best system account] laws are certain true propositions and equations that are entailed by the ideally best scientific systematization of the totality of fundamental truths of the world" (2012, 119).
- Roberts writes that "[t]he laws of nature are those generalizations that belong to the best deductively closed system of propositions" (1999, S502).
- Woodward writes that "[t]he best systemization (or systemizations) is (are) the one (or ones) that consist(s) only of true propositions and achieves an optimal balance of simplicity and strength" (2014, 95).
- Wilhelm writes that a chancy law is a "proposition which...follows from the best deductive systems" (2022a, 1026).

Finally, here are examples of authors who explicitly take best system

5. Note, also, that these quotations exhibit another ambiguity, corresponding to the question raised and set aside in footnote 2, about whether it is sentences or propositions (or something else) that are balanced in a best system.

6. In sections 3.2 and 3.3, we will disambiguate the proposition view and explore two different options: propositions that are unstructured sets of worlds and propositions that are structured complexes individuated by the objects and properties which they are about.

laws to be regularities or generalizations.

- Dorst writes that laws of nature are "the regularities of the simplest and strongest systematization of the Humean base" (2019, 878).
- Urbaniak and Leuridan write that laws of nature are "those regularities which earn inclusion in the ideal system(s) to which we aspire in science" (2018, 1650).
- Beebee writes that "laws are those generalizations which figure in the most economical true axiomatization of all the particular matters of fact that obtain" (2000, 571).
- Cohen and Callender write that "laws are true generalizations that best systematize knowledge" (2009, 1).
- Miller writes that physical laws are "special systematic generalizations" (2014, 579).

These authors do not say whether regularities and generalizations are sentences, propositions, or something else. All three options seem reasonable. Other options seem reasonable as well: perhaps laws are states of affairs, distinct from both sentences and propositions, for instance. We briefly discuss this later and think such an option is worth pursuing in future work.

To be clear: many of these authors do not have a univocal notion of a law even within their own work. Some describe best system laws as sentences and then later as regularities. Others describe best system laws as propositions and then later as generalizations. This lack of consistency provides even more evidence of just how pervasive the ambiguity is within the literature on best system laws. As we argue below, this is not a harmless ambiguity: different ontologies have different strengths and weaknesses. Defenders of the best system should be more careful in how they formulate their accounts of the laws.

3. Three Views of Laws

In this section, we examine three different views of what best system laws are: sentences (Section 3.1); unstructured propositions (Section 3.2); and structured propositions, or perhaps something more akin to states or facts (Section 3.3). After presenting each view, we discuss its benefits and costs, focusing especially on those that we think will be of particular relevance to defenders of best system accounts in general.

3.1 Laws as Sentences

The view that laws are sentences in a best system is a popular and plausible way to interpret Lewis, and is endorsed by many proponents of the best system account.

Sentence Law: Each law L is a sentence in a best system.

One benefit of Sentence Law is that sentences are relatively uncontroversial metaphysical posits. While some philosophers may be unwilling to posit abstract meanings which sentences express—that is, to posit propositions (Quine, 1969, 21–22)—few philosophers would deny the existence of a string of symbols. Since defenders of the best system are often skeptical of metaphysical posits in general, less committal metaphysical accounts of laws may be more appealing. So identifying best system laws with sentences is a natural choice for such philosophers. They need not posit anything beyond the linguistic structure of the best system.

Unfortunately, there are three serious problems with Sentence Law. The first problem, discussed occasionally in the literature, is this: if best system laws are sentences, then arguably, assessments of those systems' theoretical virtues must be relativized to languages (Cohen & Callender, 2009, 5; Lewis, 1983, 367; Loewer, 1996, 109). And that has struck many proponents of the best system account as problematic.

The second problem for Sentence Law is, we feel, even worse. An example will illustrate it. Consider a best system law '$\forall x(Ex \to Mx)$', formulated in some language $\mathcal{L}_M$, which says that all electrons are massive. $\mathcal{L}_M$ contains, among other symbols, the one-place predicate 'E' which expresses the property of being an electron, and the one-place predicate 'M' which expresses the property of being massive. Now consider a language $\mathcal{L}_P$ which is exactly like $\mathcal{L}_M$ in all respects except one: whereas $\mathcal{L}_M$ contains the one-place predicate 'M', $\mathcal{L}_P$ contains the one-place predicate 'P', which also expresses the property of being massive. Because $\mathcal{L}_P$ lacks the predicate 'M', the sequence '$\forall x(Ex \to Mx)$' is not a sentence of $\mathcal{L}_P$. Instead, $\mathcal{L}_P$ contains the sentence '$\forall x(Ex \to Px)$'. Now intuitively, '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' are the same best system law: they both say that all electrons are massive. But if best system laws are sentences, then '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' are not the same best system law since they are numerically distinct sentences. The sentential objects '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' are distinct because (i) sentences are standardly taken to be sequences of symbols (Enderton, 2001, 12) and (ii) the sequence corresponding to '$\forall x(Ex \to Mx)$' is distinct from the sequence corresponding to '$\forall x(Ex \to Px)$', since the former sequence contains 'M' and not 'P'.[7] And so given Sentence Law, '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' are numerically distinct laws as well. And that is an unacceptable result.

Demarest makes a version of this point. As she writes, "[i]t seems that, 'gravity is inversely proportional to the square of the distance', states the very same law as, 'la gravité est inversement proportionnelle au carré de la distance'. But [given a view like Sentence Law] they would be different laws, since they are different sentence types" (2019, 392). In other words, given Sentence Law, the best system laws written in English are different from the best system laws written in French. Translate the Latin of Newton's *Principia* into German, and you will thereby have discovered a new law. That is problematic.

Note that this problem is distinct from the first problem we mentioned. Previous authors have objected to the idea that lawhood is language-relative. That objection might be described as a rejection of the idea that lawhood is, for instance, a two-place relation which obtains between a sentence and a chosen language. The problem we raise here is much worse than that. Given Sentence Law, '$\forall x(Ex \to Mx)$' is a different best system law from '$\forall x(Ex \to Px)$', despite the fact that they make the very same claims about electrons and mass. Even if we treat lawhood as a one-place property of sentences, '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' are distinct laws.

This argument is based on the view that in philosophical theorizing, ontological posits should always be accompanied by clear, reasonable identity conditions: as Quine puts it in slogan form, "no entity without identity" (1969, 23). So any view which posits laws, as the best system account does, must also propose reasonable identity conditions for lawhood. Given Sentence Law, the identity conditions for laws just are the identity conditions for sentences. And as the above argument shows, those identity conditions face problems when it comes to laws.

So the issue, here, is related to—but ultimately different from—the fact that Sentence Law fails to respect certain intuitive locutions about law individuation, like "the law that $\forall x(Ex \to Mx)$ is the law that $\forall x(Ex \to Px)$"; though the failure to respect such locutions is, arguably, a problem for Sentence Law as well. The issue is that in order for laws to be reasonable ontological posits, they must be accompanied by reasonable identity conditions: but given Sentence Law, the identity conditions for lawhood are unreasonable.

One might object by claiming that fans of the best system account should not care too much about whether sentences, taken to be laws, have the kinds of identity conditions which we intuitively associate with lawhood. Perhaps what matters most is whether (i) nomological necessity operators can be placed in front of certain true claims to get other true claims, (ii) certain counterfactual conditions can be truly asserted, and (iii) certain inferences count as valid. So long as an account of laws allows for that, all is fine—regardless of considerations concerning identity conditions.

We offer two different responses to this objection, based on two different ways of understanding the basic concern. Understood one way,

7. The problem here arises regardless of whether sentences are taken to be sequences of symbol tokens or sequences of symbol types. One could take '$\forall x(Ex \to Mx)$' to be a sequence consisting of a token instance of '$\forall$', followed by a token instance of 'x', and so on. Or, one could take it to be a sequence consisting of the type of the symbol '$\forall$', followed by the type of the symbol 'x', and so on. Either way, it follows that the sentence '$\forall x(Ex \to Mx)$' is numerically distinct from the sentence '$\forall x(Ex \to Px)$'.

this objection endorses an account that posits entities which themselves (i) license placing nomological necessity operators in front of certain true claims to get other true claims, (ii) underwrite true assertions of certain counterfactual conditionals, and (iii) render certain inferences valid. If so, then by Quine's slogan, this account of laws should be accompanied by identity conditions for the entities posited. And if those identity conditions have unreasonable implications, then that is a cost of the associated theory; and if the identity conditions of other theories—positing other sorts of entities—have more reasonable implications, while still facilitating the use of nomological necessity operators and true assertions of counterfactual conditionals and valid inferences, then those other theories are preferable.

Understood another way, this objection remains neutral, or quietist, on whether any entities should be identified with laws at all. So understood, this objection takes a more pragmatic, linguistic, inferential approach to lawhood: rather than positing entities which are laws, it seeks to reproduce our law-practices. There is, of course, nothing wrong with developing this sort of approach. But this approach addresses questions different from those addressed in this paper. Our central question, which arises throughout the literature on best system accounts, concerns exactly what sorts of items the laws are. Developing a theory of lawhood along purely pragmatic, linguistic, inferentialist lines is certainly worth doing—but that is a project for another time.

The third problem for Sentence Law is that, given our standard formulation of the best system, the existences of multiple languages may preclude the existence of any laws at all. Recall that if there is more than one best system, each law is a member of each deductive system which best balances various theoretical virtues. But because they are written in different languages, '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' do not both appear in every single best system. So neither sentence can be a law; an unacceptable result.[8]

One might respond to these problems by identifying laws with equivalence classes of sentences, rather than with sentences themselves. This response faces its own difficulties, however, stemming from the equivalence relation which it invokes. Is that equivalence relation defined over the class of all actual sentences in all actual languages, or is that equivalence relation defined over the class of all possible sentences in all possible languages? If the former, then this response implies that if we had spoken a non-actual but still possible language, then the laws would have been different. For if we had spoken such a language, then the class of actual sentences would have been different, and so the equivalence classes of sentences would have been different, and so the laws would have been different too; and that is implausible.

If the latter, then a separate issue arises. Basically anything could serve as a linguistic expression in some possible language or other. Any arbitrary squiggle on a page, any sequence of smoke signals, any random flags used in naval communication—even my coffee mug, or a patch of grass, or whatever, is a piece of vocabulary in some possible language. So the class of all possible sentences is just the class of all possible sequences of everything whatsoever. And so this response implies that laws are just sets of all possible sequences; again, an implausible result.[9]

8. In response, one might relativize lawhood to languages: the laws, relative to a language L, are members of each system—formulated in L specifically—which best balances various theoretical virtues (thanks to an anonymous reviewer for this point). Then even if the systems formulated using the languages $\mathcal{L}_M$ and $\mathcal{L}_P$ are best in those respective languages, '$\forall x(Ex \to Mx)$' and '$\forall x(Ex \to Px)$' could still count as laws, despite the fact that those sentences do not feature in each of the best systems: for each sentence could be a law relative to the language $\mathcal{L}_M$ and $\mathcal{L}_P$, respectively. For reasons mentioned earlier, however, fans of the best system account may not want to accept such language-relativity of lawhood.

9. Another point worth flagging: in this paper, we assume that the target analysis of best system accounts has a certain form. In particular, we assume that laws are ontological items which the best system account seeks to analyze. Alternatively, one might think that the target analysis of the best system account is not an item at all, but rather, a locution of the form 'sentence S is an axiom of the best system relative to language L if and only if $\cdots$'. In this case, the purpose of the best system account is to (i) fill in the '$\cdots$', and (ii) satisfy certain related desiderata, such as providing truth conditions for the 'it is a law that' operator. Interestingly, if the relevant

Overall, we take these to be strong reasons to reject Sentence Law. Fortunately, there are other views of best system laws for which these problems do not arise. That is what the next few sections are about.

3.2 *Laws as Unstructured Propositions*

The following view denies that best system laws are sentences, and claims instead that best system laws are what sentences mean.

> *Unstructured Proposition Law*: Each law L is an unstructured proposition expressed by a sentence in a best system.

According to the orthodox account, endorsed by Lewis, unstructured propositions are sets of worlds (1986, 53). For the purposes of evaluating Unstructured Proposition Law, we adopt that account here. Therefore, if it is a best system law that all emeralds are green, then according to Unstructured Proposition Law, this law is numerically identical to a set of worlds: in particular, the set of worlds at which, intuitively, all emeralds are green.

For starters, the benefits. Unstructured Proposition Law avoids the serious problems for Sentence Law. Unstructured propositions are not language-relative, so the laws are not language-relative either. Furthermore, recall that numerically distinct sentences like '$\forall x(Ex \rightarrow Mx)$' and '$\forall x(Ex \rightarrow Px)$'—despite making the same claim about electrons and mass—are different laws according to Sentence Law. However, according to Unstructured Proposition Law, the sentences '$\forall x(Ex \rightarrow Mx)$' and '$\forall x(Ex \rightarrow Px)$' are not themselves laws at all. Rather, those sentences express laws. In this case, they express the very same law, which is the unstructured proposition that all electrons are massive. And because we take unstructured propositions to be identical to a set of worlds, this law is the set of worlds in which all electrons are massive. So while we might use either the sentence '$\forall x(Ex \rightarrow Mx)$' or the sentence '$\forall x(Ex \rightarrow Px)$' to express the law in question, that law itself is not to be identified with either sentence. Rather, the law is the common item, the unstructured proposition, which those sentences mean. Similarly for all other cases.

This also demonstrates how Unstructured Proposition Law avoids the third problem for Sentence Law. For two sets of distinct sentences can nevertheless pick out the same set of propositions. When there are ties for the best system, on Unstructured Proposition Law, it would be more accurate to require that a law, L, must be a member of the set of propositions expressed by each deductive system which achieves the best balance.

Unstructured Proposition Law faces some problems, however. The first problem is that sets of possible worlds are more metaphysically committal than sentences. Lewis, for instance, famously defends the idea that possible worlds are real and concrete (1986). While few philosophers endorse that view, anyone drawn to Unstructured Proposition Law should have something to say about the ontology of worlds.[10]

The second problem for Unstructured Proposition Law is particularly significant. To set the problem up, let L be Newton's universal law of gravitation. According to Unstructured Proposition Law, L is an unstructured proposition, and so a set of worlds. There are many different ways to express L; here are a few.

- L can be expressed by an equation like '$\vec{F}_{21} = G\frac{m_1 m_2}{|\vec{r}_{21}|^2}\hat{r}_{21}$'.
- L can be expressed by a suitably sophisticated version of the En-

truth conditions for the 'it is a law that' operator were sensitive to more than just propositional content—perhaps because they invoke apt translations between sentences which count as laws relative to different languages, where the notion of an apt translation is defined in terms of sentential structure that propositions lack—then this operator would be opaque; and that might have complicated, and potentially unattractive, implications for lawhood identity conditions. For lack of space, we cannot discuss this alternative approach to the best system here. But this approach is certainly worth developing. The present investigation draws attention to the differences between these various approaches to the best system account, and in so doing, creates space for exploring them.

10. Note that this problem does not arise for views which identify worlds with sets (Roper, 1982), or pluralities (Wilhelm, 2024), of sentences. Though of course, if one identifies worlds with sets or pluralities of sentences, one might have to answer analogous challenges to the ones we raised for Sentence Law.

glish sentence 'gravity is inversely proportional to the square of the distance'.

- L can be expressed by a definite description, such as 'our tenth favorite law'.
- L can even be expressed by a simple name: for instance, in the present example, we used the name 'L' to denote L directly.

And of course, by invoking gerrymandered predicates, we can construct many more ways to express L. One such expression might involve 'is a Newtonian grorce' and 'is grassive'.[11]

This generates a problem for Unstructured Proposition Law. The problem—which is different from the predicate F problem mentioned earlier—is a dilemma between two different interpretations of what the best system account is able to provide for us. According to the first interpretation, the best system account provides a theory of the nature of lawhood: it provides an account of what it is for thus-and-so set of worlds to be a law. According to the second interpretation, the best system account provides an extensionally adequate theory of lawhood: it merely provides a rubric for picking out the sets of worlds which happen to be laws. And on either interpretation, a problem arises.

Regarding the first interpretation: the problem stems from the bizarreness of the claim that what it is for an unstructured set of worlds—namely, L—to be a law, is for L to be expressible by a sentence with various linguistic structures. For this claim endorses the view that lawhood is, constitutively, such that certain sorts of sets are expressible by certain sorts of sentences. And that seems quite strange. Facts about which sentences express which sets are relevant, arguably, to the constitutive natures of semantic and syntactic notions, like expression or reference or the like. But lawhood is more of a worldly matter—and less of a semantic or syntactic matter—than that. And if laws are structureless sets, then laws lack any analogs of the semantic or syntactic structures of the corresponding best system sentences. In other words, what it is for a structureless set L count as a law is not, presumably, for L to be expressible by a sentence in a best system whose predicates refer to perfectly natural properties, or whose length is sufficiently short, or which satisfies any other structural constraints drawn from language.

Here is another way to put the point. The best system account, according to the first interpretation, endorses substantive structural constraints on what it is to be a law, on the constitutive nature of lawhood. Those structural constraints are defined at the level of sentences: they concern the linguistic structures of the sentences which the best system includes. But Unstructured Proposition Law identifies laws with objects—sets of worlds—that are totally structureless. So there is a displeasing mismatch here: to be a law is to be expressible by structured sentences, according to the first interpretation of the best system account; but to be a law is also to be a structureless set, according to Unstructured Proposition Law. This is not a contradiction, but it does seem like an unattractive implication for an account of laws to have. If the structures of sentences are relevant to the constitutive nature of lawhood, it would be better to adopt an account which identified laws with objects whose structures correspond to the structures of the associated sentences.

In the next section, we consider the view Structured Proposition Law: that the best system laws are better thought of as structured propositions. This allows that the structures which the laws themselves have, namely their propositional structure, can 'match' the relevant sentential structure. However, there could be a position that occupies a middle ground between Unstructured Proposition Law and Structured Proposition Law. Suppose there are ways to recover 'structure-like' aspects of unstructured propositions, by relating those unstructured propositions to structured items which could serve as surrogates for them. For example, perhaps the unstructured proposition "Susie is tall" stands in some sort of structure-securing relation R—the aboutness relation, or maybe something less representational—to the structured pair $\langle \mathit{Susie}, \mathit{tall} \rangle$. Then those structured surrogates might help bridge the gap between (i) the structured sentences which characterize the

11. See Goodman (1983, 59–83) for a discussion of how 'is grue' and 'is an emerose' gruify the predicates 'is green' and 'is an emerald'.

constitutive nature of lawhood, and (ii) the structureless propositions with which laws are identified. Those structured surrogates might make the mismatch, between (i) and (ii), less displeasing: for those structured surrogates might at least secure a kind of somewhat pleasing match between (i) the structured sentences which characterize what it is to be a law, and (ii) the structured surrogates of structureless propositions. This idea is interesting, since it raises questions pertaining to exactly what is so problematic about a mismatch between the structured items used to analyze lawhood —that is, the sentences—and the structureless items which are in fact laws—that is, the unstructured propositions. So this idea deserves more discussion; for lack of space, however, we do not explore it further here (thanks to an anonymous reviewer for this idea).

Yet another way of conveying this issue with identifying laws with unstructured propositions begins by considering the relevant set of worlds. If that set is to be identified with the best system laws, one would think that our best system sentences are best because, among other things, they pick out the right worlds. Indeed, this judgment likely underlies the claim in the previous section that different linguistic items—equations like '$\vec{F}_{21} = G\frac{m_1 m_2}{|\vec{r}_{21}|^2}\hat{r}_{21}$', definite descriptions like 'our tenth favorite law', names like 'L', and so on—should be able to express the same law. By contrast, this first interpretation reverses the order of explanation: the relevant worlds are the 'right ones' not because of their intrinsic features, but because of purely extrinsic facts about how they can be linguistically represented. Constitutive accounts of an item generally aspire to characterize that item intrinsically: they aspire to specify what that item is, in and of itself. This is not an objection to every extrinsic feature of best system laws. Indeed, Humeans are fine with holistic laws in the sense that the laws depend on the whole mosaic and so are in that sense extrinsic; see, for instance, Miller (2020) on Humean holism. Even so, it is less plausible that Humeans would accept linguistic extrinsicness, where the structure of language would determine the law-facts. We think that a charitable interpretation of the Humean project takes the linguistic structure of law-sentences to mirror or represent the worldly, language-independent patterns in the mosaic. Lewis, for instance, insists on using privileged predicates because they refer to perfectly natural properties, and not vice versa. On this first interpretation in the dilemma, the order of dependence is reversed: the law-entities are what they are because of our linguistic practices. Thus, a challenge for anyone defending such an interpretation would be to explain why we should adopt a linguistically extrinsic characterization of the laws, rather than an objective—if holistic—constitutive account. We suspect that if one is drawn to a linguistically extrinsic characterization of the laws, one should simply endorse Sentence Law or a suitably fixed-up version of it.

Regarding the second interpretation: the problem stems from how unambitious it is to merely seek an extensionally adequate account of laws. The best system account purports to offer more than just a way of picking out what the laws are. There are many ways of picking out the law L, and according to the best system account, not all of those ways are on a par. So the best system account purports to offer insight into what it is to be a law, into the constitutive nature of lawhood itself. Dorst makes this point when writing that the epistemic principles which scientists use to discover laws are constitutive of lawhood (2019, 878). For if the best system account merely aspired to extensional adequacy, then we would be left wondering why this set of worlds, rather than any other set of worlds, is the lawful one. That would leave us wondering what further facts explain the nomological character of that particular set of worlds. Few proponents of the best system account should be happy to settle for mere extensional adequacy.

This is a significant dilemma for any defender of Unstructured Proposition Law. It is not, we feel, as bad as the problems which Sentence Law faces. But it is troubling enough to motivate looking for another view of what sorts of items the laws are.

3.3 Laws as Structured Propositions

Now we consider another view which takes laws to be propositions. But in this case, propositions have complex structure; they are not structureless sets of worlds.

> *Structured Proposition Law*: Each law L is a structured proposition expressed by a sentence in a best system.

There are several different accounts of structured propositions in the literature (Bacon, 2023; Cresswell, 1985; King, 2007; Russell, 1903/2010; Salmon, 1986; Soames, 1987). A particularly simple account—call it the ‘tuple’ account—identifies structured propositions with certain sorts of n-tuples, where n-tuples are defined as structured sets of items in the usual set-theoretic way (Salmon, 1986, 156–157; Soames, 1987, 72–73). According to the version of the tuple account formulated by Soames, the structured proposition expressed by the sentence “Snow is white,” for instance, is the pair $\langle\langle snow\rangle, white\rangle$. The structured propositions expressed by sentences with quantifiers are somewhat more complex: a complete description of them would require introducing lambda abstraction, higher-order quantification, variable assignments, and more. But roughly put, the idea is this: the structured proposition expressed by the sentence ‘$\forall x(Ex \rightarrow Mx)$’—which says that all electrons are massive—is the pair $\langle ALL, g_M\rangle$, where (i) ALL is, roughly, the property of being everything whatsoever, and (ii) g_M is, roughly, a function from individuals to the propositions which, relative to various variable assignments, the open formula ‘$Ex \rightarrow Mx$’ expresses (Soames, 1987, 73).[12]

Structured Proposition Law enjoys several benefits. Structured Proposition Law, like Unstructured Proposition Law, avoids the serious problems for Sentence Law. First, structured propositions are not language-relative. Second, according to Structured Proposition Law, the sentences ‘$\forall x(Ex \rightarrow Mx)$’ and ‘$\forall x(Ex \rightarrow Px)$’ are not laws themselves. Rather, ‘$\forall x(Ex \rightarrow Mx)$’ and ‘$\forall x(Ex \rightarrow Px)$’ express the structured propositions $\langle ALL, g_M\rangle$ and $\langle ALL, g_P\rangle$ respectively. Moreover, since ‘M’ and ‘P’ express the same property—namely, the property of being massive—a simple but tedious proof shows that $\langle ALL, g_M\rangle$ and $\langle ALL, g_P\rangle$ are one and the same.[13] So Structured Proposition Law respects the fact that the law is not the sentence ‘$\forall x(Ex \rightarrow Mx)$’ or the sentence ‘$\forall x(Ex \rightarrow Px)$’, but rather the common item, the structured proposition, which those sentences mean. And third, the same set of structured propositions can be picked out by different, equally good sets of best system sentences.

In addition, Structured Proposition Law does a nice job of respecting the claims, frequently made throughout the best system literature, that laws are regularities or generalizations. Some structured propositions have the structure of regularities, and so can be reasonably

12. More precisely, a version of the tuple account along the lines of a view developed by Soames (1987) implies this. Let $\mathfrak{c}$ be a context, and let $\mathfrak{f}$ be a variable assignment. Then the proposition expressed by the open formula ‘Ex’, relative to $\mathfrak{c}$ and f, is the tuple $\langle\langle o\rangle, E^*\rangle$, where E^* is the property of being an electron and o is the individual to which $\mathfrak{f}$ maps the variable ‘x’. Similarly, the proposition expressed by ‘Mx’, relative to $\mathfrak{c}$ and f, is $\langle\langle o\rangle, M^*\rangle$, where M^* is the property of being massive and o is as before. The proposition expressed by ‘$Ex \rightarrow Mx$’, relative to $\mathfrak{c}$ and f, is the tuple $\left\langle Cond, \left\langle\langle\langle o\rangle, E^*\rangle, \langle\langle o\rangle, M^*\rangle\right\rangle\right\rangle$, where Cond is the truth function for the conditional, and E^*, M^*, and o are as before. And finally, the proposition expressed by ‘$\forall x(Ex \rightarrow Mx)$’, relative to $\mathfrak{c}$ and f, is $\langle ALL, g_M\rangle$, where ALL is the property of being the entire set of individuals, and g_M is the function which maps each individual o' to the proposition which, relative to $\mathfrak{c}$ and relative to the variable assignment $\mathfrak{f}'$ which differs from $\mathfrak{f}$ at most by assigning o' to ‘x’, is expressed by ‘$Ex \rightarrow Mx$’ relative to $\mathfrak{c}$ and $\mathfrak{f}'$. In other words, relative to $\mathfrak{c}$ and f, ‘$\forall x(Ex \rightarrow Mx)$’ expresses the proposition $\langle ALL, g_M\rangle$, where ALL is the property of being the entire set of individuals, and g_M is the function which maps each individual o' to the proposition $\left\langle Cond, \left\langle\langle\langle o'\rangle, E^*\rangle, \langle\langle o'\rangle, M^*\rangle\right\rangle\right\rangle$. For similar reasons, relative to context $\mathfrak{c}$ and variable assignment $\mathfrak{f}$, ‘$\forall x(Ex \rightarrow Px)$’ expresses the proposition $\langle ALL, g_P\rangle$, where ALL is the property of being the entire set of individuals, g_P is the function which maps each individual o' to the proposition $\left\langle Cond, \left\langle\langle\langle o'\rangle, E^*\rangle, \langle\langle o'\rangle, P^*\rangle\right\rangle\right\rangle$, E^* is as before, and P^* is the property of being massive.

13. The proof follows directly from the definitions in footnote 13.

identified with regularities. Given the tuple account, the regularity that all electrons are massive, for instance, is $\langle ALL, g_M \rangle$. Similarly for generalizations: structured propositions are well-equipped to be the generalizations that proponents of the best system account often identify with laws. For instance, given the tuple account, the generalization that all electrons are massive can be identified with $\langle ALL, g_M \rangle$ too.

Moreover, Structured Proposition Law avoids the serious problem which Unstructured Proposition Law faces. The problem, recall, could be phrased as a dilemma: the best system account provides either (i) a constitutive theory of lawhood, or (ii) a merely extensionally adequate theory of lawhood. If (i), and if Unstructured Proposition Law holds, then the lawhood of a certain set is constitutively a matter of that set being expressible by sentences with certain linguistic structures—and that is bizarre. But if (ii), and if Unstructured Proposition Law holds, then the best system account is unambitious, since it fails to provide a theory of what it is to be a law.

Structured Proposition Law avoids all this. For given Structured Proposition Law, there is nothing bizarre about endorsing (i), and so the best system account provides more than a merely extensionally adequate theory of lawhood. And there is nothing strange about claiming that structured propositions are structured in ways which make them particularly well-suited for being expressed by sentences with various linguistic structures. That is, in large part, what structured propositions were posited to do. Much of the initial motivation for positing structured propositions in the first place, is that they are structured items "looking something like the sentences which express them" (Kaplan, 1989, 494). So if Structured Proposition Law holds, then proponents of the best system account can claim to have given a constitutive theory of lawhood by identifying laws with propositions that are particularly well-suited to being expressible by sentences with the linguistic structures corresponding to inclusion in a best system.

There are different accounts of structured propositions, so the defender of the best system account who wishes to identify best system laws with structured propositions will have to say which account they prefer. Some accounts, such as King's (2007), take structured propositions to be partially composed of linguistic items.[14] On such accounts, Structured Proposition Law implies that existential generalizations over contexts, and languages, and lexical items, are constitutive of lawhood. But one of the central motivations for exploring Unstructured Proposition Law and Structured Proposition Law is to avoid the pitfalls of identifying laws with linguistic items, and so to move towards an account that identifies laws with metaphysical items in the world which are not themselves linguistic. So it seems to us that King's view of structured propositions is not a good match for the best system laws.

Other accounts, such as Salmon's (1986) and Soames's (1987), take structured propositions to be constituted by objects, properties, and relations. This would seem to be a better match for the best system laws of nature. For instance, consider Lewis's requirement that the best system's predicates be restricted to those that express perfectly natural properties. While the restriction is stated in terms of linguistic items (predicates), it is appealing if that restriction is reflected in the ontological composition of the laws themselves, such that the laws are partially constituted by perfectly natural properties.

Unfortunately, the most straightforward formulations of such structured propositions leaves them vulnerable to the Russell-Myhill argument. This argument shows that these accounts—as well as natural generalizations of them—are inconsistent with plausible principles of higher-order logic (Dorr, 2016; J. Goodman, 2017; Myhill, 1958).

To illustrate, one of the key principles—related to lambda abstraction

14. According to King's account, the sentence "Snow is white" expresses a structured proposition which includes, within it, existential generalizations over contexts and languages and lexical items. In particular, King's account implies that the structured proposition expressed by "Snow is white" is the following fact: there exists a context $\mathfrak{c}$, and there exists a language $\mathcal{L}$ with lexical items a and b, such that the semantic value of a in $\mathfrak{c}$ is snow, the semantic value of b in $\mathfrak{c}$ is the property of being white, and a occurs at the left terminal node of the sentential relation which in $\mathcal{L}$ encodes the instantiation function while b occurs in the right terminal node of that sentential relation (2007, 39).

and beta equivalence—has implications like this: given a predicate 'F', variable 'x', and singular term constant 'a', '$(\lambda x.Fx)a$' is true if and only if 'Fa' is true (Dorr, 2016, 52; Goodman, 2017, 44). This implication is extremely plausible because lambda expressions like '$\lambda x.Fx$' are predicates often used to mimic, truth-functionally, predicates like 'F'. So it makes sense to claim that the truth value of the sentence which results from predicating '$\lambda x.Fx$' of a constant is identical to the truth value of the sentence which results from predicating 'F' of that same constant. But principles like these, when formulated in higher-order languages, imply that propositions cannot be individuated in the fine-grained way which many accounts of structured propositions require.

Bacon formulates an account of structured propositions that avoids the Russell-Myhill argument (2023, 206–211). Very roughly put, Bacon's account restricts the kinds of predicates which lambda abstraction can be used to form. This is accomplished by allowing free variables to be introduced in argument positions without introducing those variables into predicate positions as well (Bacon, 2023, 209–210). The resulting account supports fairly fine-grained principles for structured propositions without generating inconsistencies.

Many higher-order resources of Bacon's account are not needed, in order to represent the propositions which Structured Proposition Law identifies with laws. Just take a fragment of Bacon's language containing only the constants, variables, and logical expressions which scientific theories need. Plausibly, this fragment will include first-order quantifiers, and maybe some higher-order quantifiers for regimenting claims about all functions: for instance, claims about all wavefunctions in a quantum theory, or claims about all tensor fields in a general relativistic theory. This fragment might also include propositional quantifiers, for regimenting claims about lawhood itself.

To illustrate, consider the claim that lawhood is factive. This claim could be regimented as follows. Let '$\mathcal{L}$' be a one-place predicate which takes terms of type t—for instance, propositional variables, well-formed formulas, and sentences—as arguments: intuitively, for any ϕ of type t, '$\mathcal{L}\phi$' says that ϕ is a law. In addition, let 'p' be a propositional variable, and let '$\forall_t$' be the universal propositional quantifier. Then the factivity of lawhood is expressed by the principle below.

$$\forall_t p(\mathcal{L}p \to p)$$

Other principles of lawhood, endorsed by fans of the best system account, could be formulated in this fragment of Bacon's account too.

This relates to another benefit of Structured Proposition Law. When combined with an appropriate fragment of Bacon's account, Structured Proposition Law facilitates the formulation of many different principles which fans of the best system account endorse. The higher-order vocabulary used to define the structured propositions which are identified with laws, in other words, can also be used to rigorously regiment the principles of the best system account more generally. For these reasons, we think that structured propositions provide a promising avenue for further research.

One more approach to lawhood is worth mentioning, although we cannot develop it in detail here. The idea is to accommodate the metaphysical structure of laws by taking them to be truthmakers for best system sentences. That is, identify laws with something like Armstrong's states of affairs (1997; 2004), or Fine's fact-like entities (2017), or Jago's states of affairs defined in terms of mereological fusions (2018). This proposal takes seriously the idea that best system laws are nothing more than the patterns that exist in, say, the Humean mosaic. And these patterns exist independently of any linguistic or propositional representation of them.

Such a proposal would take some worldly entities—namely, states—to be the laws which make best system sentences or propositions true. And so fans of the best system account who dislike identifying laws with representational items may find such an approach attractive. Because state laws would not have linguistic items as components, they would avoid the objections to Sentence Law, as well as the objections to a King-style version of Structured Proposition Law. Because state laws would contain the metaphysical structure required to make the best system sentences true, they could potentially avoid the objections to Unstructured Proposition Law. And because state laws are not propositions, they might avoid the logical inconsistencies of certain versions of Structured Proposition Law generated by higher-order resources.

Having said that, we are not sure what the details of such an account would look like. Armstrong, Fine, and Jago offer very different accounts of states, and each account faces its own unique challenges. For instance, on Fine's view, states may lack the metaphysical structure required to avoid the kind of objections that face Unstructured Proposition Law. And Armstrong's view of states, like his account of laws, posits necessary connections between distinct existences—namely, between states on the one hand, and the objects and properties that comprise those states, on the other. Note that while this is an unwelcome posit for those who defend Humean best system accounts, it may be acceptable to those who defend powers best system accounts (Demarest, 2017; Kimpton-Nye, 2017).

Regardless, any defender of such a view will have to be precise about their ontology of states, and they will have to provide arguments that show why that ontology is the best thing to identify with the laws that make the best system sentences true. One cost that applies to any version of state law is that states are not the sorts of items which can be true or false: states obtain, or fail to obtain, instead. This conflicts with existing views of best system laws, which near-universally stipulate that the laws are true. We leave the further exploration of state laws to future work.

4. Conclusion

Defenders of the best system account have been unclear about exactly what sorts of items the laws are. After demonstrating this trend throughout the literature, we proposed and evaluated three different options—that the laws are sentences, unstructured propositions, or structured propositions. Sentence Law has some very serious costs; so serious, in fact, that we found it untenable. That is a significant result, since a version of Sentence Law appears frequently in the best system literature. Likewise, it was striking to find that Unstructured Proposition Law also has serious costs. These costs, though not decisive, motivate exploring alternative views of what the laws are, like Structured Proposition Law. We are cautiously optimistic that this latter view can be worked out in more detail with some success. We also suggested that a fourth view—based on states—may be worth developing, though that is left for future work.

Since each view has distinctive costs and benefits, the question of ontology is a substantive one for defenders of the best system. Significantly, the two most popular accounts—Sentence Law and Unstructured Proposition Law—fared the worst, which shows that those writing on the best system can no longer uncritically assert that their laws are sentences or propositions that best balance their preferred criteria. The question of the laws' ontology should be taken seriously by proponents of the best system account.

Acknowledgements

We would like to thank Chris Dorst, Katrina Elliott, Alison Fernandes, Jackie Han, Michael Townsen Hicks, Christian Löw, Elizabeth Miller, the audiences at the 2024 Laws and Quantities in Physics Conference in Glasgow and at the 2025 Society for the Metaphysics of Science Conference in Lugano, the participants in the 2024 seminar on laws and causation at the University of Colorado, and two anonymous referees for helpful feedback on this paper.

References

Armstrong, D. M. (1997). *A World of States of Affairs*. Cambridge University Press.

Armstrong, D. M. (2004). *Truth and Truthmakers*. Cambridge University Press.

Bacon, Andrew (2023). A theory of structured propositions. *The Philosophical Review*, 132(2), 173–238. doi: 10.1215/00318108-10294409

Beebee, Helen (2000). The non-governing conception of laws of nature. *Philosophy and Phenomenological Research*, 61(3), 571–594.

doi: 10.2307/2653613

Bhogal, Harjit, & Perry, Zee R. (2017). What the Humean should say about entanglement. *Noûs*, 51(1), 74–94. doi: 10.1111/nous.12095

Cohen, Jonathan, & Callender, Craig (2009). A better best system account of lawhood. *Philosophical Studies*, 145(1), 1–34. doi: 10.1007/s11098-009-9389-3

Cresswell, M. J. (1985). *Structured Meanings: The Semantics of Propositional Attitudes*. MIT Press.

Demarest, Heather (2015). Fundamental properties and the laws of nature. *Philosophy Compass*, 10(5), 334–344. doi: 10.1111/phc3.12222

Demarest, Heather (2017). Powerful properties, powerless laws. In Jonathan D. Jacobs (Ed.), *Causal Powers* (38–53). Oxford University Press.

Demarest, Heather (2019). Mentaculus laws and metaphysics. *Principia: An International Journal of Epistemology*, 23(3), 387–399. doi: 10.5007/1808-1711.2019v23n3p387

Dorr, Cian (2016). To be F is to be G. *Philosophical Perspectives*, 30(1), 39–134. doi: 10.1111/phpe.12079

Dorst, Chris (2019). Towards a best predictive system account of laws of nature. *The British Journal for the Philosophy of Science*, 70(3), 877–900. doi: 10.1093/bjps/axy016

Enderton, Herbert Bruce (2001). *A Mathematical Introduction to Logic* (2nd ed.). Academic Press.

Fine, Kit (2017). A theory of truthmaker content I: Conjunction, disjunction and negation. *Journal of Philosophical Logic*, 46(6), 625–674. doi: 10.1007/s10992-016-9413-y

Goodman, Jeremy (2017). Reality is not structured. *Analysis*, 77(1), 43–53. doi: 10.1093/analys/anw002

Goodman, Nelson (1983). *Fact, Fiction, and Forecast* (4th ed.). Harvard University Press.

Hicks, Michael Townsen (2018). Dynamic Humeanism. *The British Journal for the Philosophy of Science*, 69(4), 983–1007. doi: 10.1093/bjps/axx006

Jago, Mark (2018). *What Truth Is*. Oxford University Press.

Kaplan, David (1989). Demonstratives. In Joseph Almog, John Perry, & Howard Wettstein (Eds.), *Themes from Kaplan* (481–563). Oxford University Press.

Kimpton-Nye, Samuel (2017). Humean laws in an unHumean world. *Journal of the American Philosophical Association*, 3(2), 129–147. doi: 10.1017/apa.2017.19

King, Jeffrey C. (2007). *The Nature and Structure of Content*. Oxford University Press.

Lewis, David K. (1973). *Counterfactuals*. Blackwell.

Lewis, David K. (1983). New work for a theory of universals. *Australasian Journal of Philosophy*, 61(4), 343–377. doi: 10.1080/00048408312341131

Lewis, David K. (1986). *On the Plurality of Worlds*. Blackwell.

Loewer, Barry (1996). Humean supervenience. *Philosophical Topics*, 24(1), 101–127. doi: 10.5840/philtopics199624112

Loewer, Barry (2012). Two accounts of laws and time. *Philosophical Studies*, 160(1), 115–137. doi: 10.1007/s11098-012-9911-x

Maudlin, Tim (2007). *The Metaphysics Within Physics*. Oxford University Press.

Miller, Elizabeth (2014). Quantum entanglement, Bohmian mechanics, and Humean supervenience. *Australasian Journal of Philosophy*, 92(3), 567–583. doi: 10.1080/00048402.2013.832786

Miller, Elizabeth (2020). Two notions of holism. *Synthese*, 197(10), 4187–4206. doi: 10.1007/s11229-018-1710-2

Myhill, John (1958). Problems arising in the formalization of intensional logic. *Logique et Analyse*, 1(1), 74–83. doi: 10.2307/2272577

Quine, Willard Van Orman (1969). *Ontological Relativity and Other Essays*. Columbia University Press.

Roberts, John T. (1999). "Laws of nature" as an indexical term: A reinterpretation of Lewis's best-system analysis. *Philosophy of Science*, 66(Supplement), S502–S511. doi: 10.1086/392748

Roper, A. (1982). Towards an eliminative reduction of possible worlds. *The Philosophical Quarterly*, 32(126), 45–59. doi: 10.2307/2219000

Russell, Bertrand (2010). *The Principles of Mathematics*. Routledge. (Original work published 1903)

Salmon, Nathan (1986). *Frege's Puzzle*. MIT Press.

Shumener, Erica (2021). Humeans are out of this world. *Synthese*, 198(6), 5897–5916. doi: 10.1007/s11229-019-02439-8

Soames, Scott (1987). Direct reference, propositional attitudes, and semantic content. *Philosophical Topics*, 15(1), 47–87. doi: 10.5840/philtopics198715112

Urbaniak, Rafal, & Leuridan, Bert (2018). Challenging Lewis's challenge to the best system account of lawhood. *Synthese*, 195(4), 1649–1666. doi: 10.1007/s11229-016-1287-6

Wheeler, Billy (2016). Simplicity, language-dependency and the best system account of laws. *Theoria*, 31(2), 189–206. doi: 10.1387/theoria.14558

Wilhelm, Isaac (2022a). Centering the Everett interpretation. *The Philosophical Quarterly*, 72(4), 1019–1039. doi: 10.1093/pq/pqab068

Wilhelm, Isaac (2022b). Tractability and laws. *Synthese*, 200(318), 1–17. doi: 10.1007/s11229-022-03638-6

Wilhelm, Isaac (2024). Worlds are pluralities. *Australasian Journal of Philosophy*, 102(1), 221–231. doi: 10.1080/00048402.2022.2106498

Woodward, James (2014). Simplicity in the best systems account of laws of nature. *The British Journal for the Philosophy of Science*, 65(1), 91–123. doi: 10.1093/bjps/axt026