



## Is it time for a Nietzschean genealogy of laws of nature?

Walter Ott, Lydia Patton (eds.): *Laws of nature*. Oxford: Oxford University Press, 2018, x+264pp, \$65 HB

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Published online: 20 April 2019  
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*Laws of Nature* edited by Walter Ott and Lydia Patton is a collection of 12 previously unpublished papers on laws of nature. What makes this book unique among the existing collections on laws is its composition. The first six chapters focus on serious and novel historical engagement with early modern work on laws, and the latter six consist of cutting-edge engagement with specific contemporary debates. There is no ideological or thematic common thread running through the collection as a whole. The book manifests a wide diversity of viewpoints and approaches. The articles themselves are timely and of a consistently very high quality, which speaks to the virtues of Ott and Patton's editorial work, and the book can truly be said to have something for everyone who is interested in laws of nature.

At the same time, few readers will likely wish to read the book start to finish, because each article appeals to such a specific audience, often making contributions to very specific debates without saying much in the way of introduction to them. Different chapters often make different assumptions and use terminology differently. Often, in a collection such as this, editors will compensate for such discontinuities by providing an introductory chapter, or an introduction to each chapter, that contextualizes the individual contributions and describes how they fit into a larger picture and relate to one another. Unfortunately, no such thing can be found in this book.

The book begins with a chapter by Ott and Patton that provides a particular take on the debate about laws of nature as a whole, and does not comment on the book itself or its other articles. In that chapter, Ott and Patton argue that the debate over laws of nature has been guided by four intuitions—that laws govern, laws explain, laws enable prediction, and laws are universal—but that such intuitions are historically conditioned by tradition in a way that makes the concept of a law of nature more artificial than other debated concepts in philosophy like responsibility or justice. Whereas our core intuitions about responsibility and justice might be argued to be “permanent and necessary features of everyone's conceptions of the world,”

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the guiding intuitions about laws of nature more likely have their origins in “outmoded theories or world views” (3). Ott and Patton argue that what is needed is a genealogy of laws of nature to serve a purpose similar to Nietzsche’s genealogy of morals—to help us think about what the rules and goals of the debate are, how they got that way, and whether they are what they should be.

I find Ott and Patton’s discussion illuminating, not just for its historical insights but in its diagnosis of the contemporary debate and its skillful and lucid marshaling of historical insights for the latter purpose. However, I suspect that such a genealogy may not be as effective for resolving an even deeper chasm of intuitions that has had key influence on the debate but that may be less historically conditioned. I have in mind the division between those who believe that what is actual can be “modally loaded,” the “Aristotelian” intuition, and those to whom this seems like nonsense or anti-naturalistic mysticism, the “Humean” intuition.

I suspect that the book may have been originally conceived with the hope of putting historical and contemporary work together to facilitate the kind of analysis that can allow us to place the intuitions guiding contemporary debates into the historical context of their origins, but the rest of the book does not really follow this theme in any consistent way. Chapter 2 by Helen Hattab traces the evolution of three aspects of Descartes’ understanding of a law of nature—that laws are *universal*, *causal*, and *determinative*—in the thought of earlier, lesser known thinkers that Descartes was likely influenced by. In Chapter 3, Mary Domski is concerned with the sense in which Newton considered his laws of nature to be certain and “true.” She argues that for Newton, laws of nature are known with a certainty that goes beyond mere generalization from observations, but that is strengthened by the fact that such laws were derived from within a formal mathematical system. Chapter 4 is by Ott. Though we often think of the early modern philosophers as moving away from an ontology of powers as fundamental to an alternate ontology of laws as fundamental, Ott argues that this is not the path taken by Bacon and Spinoza. Even though both Bacon and Spinoza write in terms of laws, Ott argues that for both of them, laws are ontologically secondary to powers. They both therefore endorse a “bottom-up” metaphysics of causation.

In Chapter 5, Stathos Psillos explores the history of different ways of conceptualizing laws in early modern philosophy and the kind of necessity with which they were taken to hold. But Psillos’ goal is not merely to present the history of how laws were conceptualized. His chapter concludes with the claim that by the empiricists’ own epistemic principles, while we can fallibly discover the laws, we have no way of empirically verifying whether they do in fact hold with any kind of necessity. In the next chapter, the discussion turns to Kant. It has often been thought that on Kant’s view, we cannot acquire knowledge of necessary, universal laws of nature from experience. Angela Breitenbach argues that this is mistaken, and argues for a quite revisionary reading on which Kant thinks we *can* derive such knowledge from experience. Breitenbach argues that while Kant does not believe such knowledge rises to the level of being “absolutely certain,” it is Kant’s view that we can yet have “ordinary” empirically derived knowledge of the necessity of such laws—knowledge that “asymptotically approaches” absolute certainty (119).

In Chapter 7, John Carroll entertains a version of Humeanism about laws that he takes to be immune to his own previous arguments against Humeanism. The view is

essentially that our language constrains us to adopt standards for what counts as true in virtue of laws versus what is true accidentally. These standards may change depending on the conversational context, but reality itself does not determine that any one standard is the “right” one. Chapter 8, by Michela Massimi, defends a “perspectival” best system account similar to that of Halpin. The main difference between hers and Halpin’s is that on Massimi’s account, the perspectives that lawhood is grounded in are historically real ones, not ideal ones.

James Woodward’s main goal in Chapter 9 is to clarify what he considers the relation to be between his invariance-based account of laws and other accounts on offer. It has often been argued that since Woodward’s approach is primarily concerned with explicating the nature of causal scientific reasoning, it is not concerned with the same kinds of questions as views like those of Lewis and Armstrong, and so it should not be seen as a direct competitor. This type of argument is what Woodward primarily intends to counter in his chapter. In Chapter 10, Marc Lange is concerned with the question of “what makes certain reducible physical properties but not others natural” (187), where by ‘natural’ he means “eligible to figure in explanations” (188). His answer to this question is that there must exist an explanation for some law into which “the expression for P [the property in question] enters as a unit” (188). Lange spells this out by saying that a property P is natural if its mathematical expression occurs within the mathematical expression of a law.

In Chapter 11, Stephen Mumford provides a motivation for his view that laws of nature, rather than holding with necessity, instead have “only a dispositional import” (207). In other words, laws of nature concern only what *tends to be*, not what *must be*. They are universal statements about how dispositions will manifest, *when they do* manifest. What are generally considered to be “exceptions” to laws of nature, then, are not really exceptions. They are cases when the dispositions fail to manifest. He argues that his dispositional account of laws is superior to other accounts because it avoids the need to resolve the paradox of laws of nature both being universal and having exceptions.

In the debates over laws of nature, it has often been argued that certain accounts will lead to a picture of laws as holding with necessity, and others will inevitably lead to an account on which laws are contingent. Some philosophers might for this reason endorse one view or another because it seems to fit their own inclinations about what kind of modal force, if any, laws hold with. In the final chapter, Cartwright and Merluzzi closely examine some of the most popular accounts of laws: the “Humean” best systems accounts, laws as relations among universals, and dispositional accounts, and argue that various forms of contingency are compatible with each of the accounts they examine.

In conclusion, while this is indeed a collection of very high quality articles, it is not clear that it makes sense to package this particular set of articles together in the same book. But because it includes original articles that will appeal to so many different kinds of specialists, no one that works on laws of nature will want to miss it.