Laws of nature have long puzzled philosophers. What distinguishes laws from facts about the world that do not rise to the level of laws? How can laws be contingent and nevertheless necessary? In what sense are the laws necessary like the broadly logical truths, yet not as necessary as those truths? What are the “lawmakers”: the facts in virtue of which the laws are laws? This book offers provocative and original answers to these questions. It argues that laws are distinguished by their necessity, which is grounded in primitive subjunctive facts (expressed by counterfactual conditionals). This view avoids the notorious circularity afflicting the view that the laws are the truths that would still have held had things been different in any fashion that is logically consistent with ... the laws! While recognizing that natural necessity is distinct from logical, metaphysical, and mathematical necessity, the book explains how natural necessity constitutes a species of the same genus as those other varieties of necessity. The book discusses the relation between laws and objective chances, the completeness of the laws of physics, and the laws' immutability, as well as meta-laws such as the symmetry principles so prominent in contemporary physics. It is argued that David Lewis's Humean approach to law fails to do justice the laws' necessity, and that scientific essentialist approaches fail to accommodate the way certain laws transcend the details of others.
Natural necessity is analyzed in terms of “sub-nomic stability” (introduced in Chapter 1). The various species of necessity correspond to the various nonmaximal sets possessing sub-nomic stability. This approach explains what natural necessity has in common with other varieties of necessity by virtue of which they all qualify as varieties of the same thing. Necessities relative to some arbitrary class of facts (merely relative necessities) are thereby distinguished from genuine varieties of necessity (contrary to David Lewis's account of “must”). Different strata of natural law possess different grades of natural necessity. This approach explains what makes one variety of necessity “stronger” than another. Indeed, this approach explains why all varieties of necessity have characteristic places in a single, well-defined ordering from strongest to weakest. It is thus shown how natural laws can be genuinely necessary despite being contingent.

A World of Subjunctives
Marc Lange

in Laws and Lawmakers Science, Metaphysics, and the Laws of Nature

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The laws' necessity makes them laws. Their necessity consists of membership in a nonmaximal sub-nomically stable set. Therefore, the laws are laws in virtue of belonging to a nonmaximal sub-nomically stable set. What, then, is responsible for making true the various subjunctive conditionals rendering that set stable? With these subjunctive facts, ontological bedrock is reached. They (along with various sub-nomic facts) are primitive. They are the lawmakers. This proposal reverses the standard picture of laws supporting counterfactuals. It is argued that any view failing to locate subjunctive facts among the lawmakers (such as essentialism) will find it difficult to avoid adhocery in accounting for the laws' relation to counterfactuals. It is also argued that instantaneous rates of change (such as velocity and acceleration in classical physics) should be analyzed in terms of ontologically primitive subjunctive facts. Finally, this account entails that the laws of fundamental physics must be “complete.”
An analysis is provided of different kinds of necessity: logical necessity (or analyticity), a posterior necessity, the necessity of the past, causal ultimacy, everlasting existence, and physical necessity.

Against Necessitarianism
Jennifer McKitrick
in Dispositional Pluralism

The laws of nature are at most physically necessary, and they are not metaphysically necessary. Dispositional Essentialists claim that if natural laws derive from powers, then the laws of nature are metaphysically necessary. But the idea that properties have dispositional essences does not entail necessitarianism for several reasons. There might be no laws of nature. The laws might have exceptions, or be probabilistic. There are non-dispositional properties that could figure in contingent laws. The world might have contained different properties. Finally, even if a property has a dispositional essence, it might have had a slightly different causal profile. Furthermore, the Necessitarian’s views are less revisionary than they initially seem.