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## Introduction to Special Issue of *Synthese*: Dispositions and Laws of Nature

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## Introduction to Special Issue of *Synthese*: Dispositions and Laws of Nature

Jennifer McKittrick

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I'd like to say a few words about the genesis of this collection. In May 2002, Harold Kincaid, the chair of my department at the University of Alabama at Birmingham, attended a conference in Ghent on Explanation and Causation in the Natural and Social Sciences. There, he met Alice Drewery, and in conversation discovered that she, like his junior colleague back in Alabama, works on dispositions. Upon his return, he mentioned her to me as a possible contact. Almost as an afterthought, he mentioned "You could have a small conference on dispositions, and invite her." "Great!" I was off and running.

Marc Lange and Erik Anderson had both recently published papers on dispositions, so I began there. I send them "feeler" emails, and they both expressed enthusiasm about the idea of a conference on dispositions. Next, I contacted David Armstrong and Stephen Mumford, and got them on board as well. As I was working to fill out the participant list, I noticed that many philosophers who had worked on dispositions worked on laws of nature as well, and were interested in the interconnection. I then decided to expand the scope of the conference to include laws. I sent out invitations, and all were immediately accepted. It seemed like the right topic at the right time.

Participants asked me if I wanted them to speak on dispositions, laws of nature, or both. I said any of those would be fine. Given the amount of latitude speakers had, it was remarkable how nicely the papers covered the issues, and interrelated in interesting, non-redundant ways. The bases were covered, the central questions addressed, including: What is a disposition? How should we characterize the categorical/dispositional distinction? How are dispositions related to counterfactuals? (Heil/Cross) To what extent are properties dispositional? (Armstrong/Heil) Are dispositions causally relevant? (Heil/McKittrick) Do laws govern nature? (Mumford) How should we characterize laws of nature? (Roberts) How can we distinguish laws from other truths? (Roberts/Lange) How are laws related to counterfactuals?

(Lange) Are the laws of nature necessary? Do natural kinds have the dispositions they do as a matter of necessity? (Armstrong/Anderson/Drewery).

The Conference on Dispositions and Laws of Nature was held at the University of Alabama at Birmingham in February 2003, and by all accounts was a great success. Upon seeing the program for the conference, John Symons of *Synthese* thought the papers would make an excellent special issue, and so here we are.

Roughly speaking, dispositions are tendencies or powers—a fragile glass's disposition to break when struck. Laws of nature, like Newton's laws of motion, are commonly thought to be true generalizations that supports counterfactuals, play an important role in scientific explanation, and can be inductively confirmed by their instances. Dispositions and laws are components of different, perhaps competing, metaphysical views regarding the source of power and activity in the universe. Supposing that dispositions and laws of nature exist, in some sense, I see two basic options as to how they are related:

1. Laws give otherwise inert particulars their dispositions.
2. Particulars have certain dispositions, and general truths about these dispositions constitute the laws of nature.

I suppose one could have a mixed view, whereby laws of nature govern particulars, but particulars also have some powers that determine what they do. However, it seems that any mixed view is likely to clash internally. Either powers fall within the province of laws of nature, or they do not. If they do not, then the particulars with those powers are not fully governed by laws, and may even violate them. If powers are governed by laws, then in what sense do powers determine what particulars do? Both of the basic options above construe one of the pair, either dispositions or laws, as primary, the other member being derivative, reducible, or perhaps even eliminable. Is either view correct? Is there anything to decide between them?

The nature of properties is fundamental to these issues, so we start off with David Armstrong, "Four Disputes about Properties." Armstrong examines four fundamental disagreements that philosophers have about the nature of properties, including universals versus tropes, and "properties as attributes of particulars" verses "particulars as bundles of properties." Of central concern is the dispute between those who hold a categorical or quality account of properties, as apposed to those who see properties as dispositions or powers to act or be acted upon. Another central question is the following: If a property attaches to a particular, is this predication contingent, or is it necessary? Armstrong's own answers carve out a view according to which properties are categorical, but they stand in necessary relations, and thereby bestow powers on particulars.

The next three papers primarily concern dispositions. Troy Cross addresses the basic question, "What is a Disposition?" He argues that attempts to reductively explain the dispositional/categorical distinction fail. Cross concludes by suggesting an account of dispositionality that is nonreductive, and yet interesting and informative. In "Dispositions," John Heil articulates a particular account of dispositions, according to which dispositions (or powers) are actual, intrinsic, irreducible, necessary, first-order features of the world. Heil goes on to show the implications of his view for philosophy of mind and for primary and secondary qualities. In my paper, I consider a particular question regarding dispositions, "Are Dispositions Causally Relevant?" I begin by focusing on a prior question, "what is causal relevance?" Some philosophers appeal to laws of nature to answer that question, which again demonstrates the interconnection between the issues. I critique various accounts of causal relevance, and explore their implications for dispositions.

The next three papers involve both laws and dispositions. In "How General is Generalized Scientific Essentialism?" Erik Anderson assesses the case for essentialism—the doctrine according to which the laws of nature are necessary. In terms of dispositions, it is the doctrine according to which natural kinds have all of their powers, capacities and propensities as a matter of necessity. In "Essentialism and the Necessity of the Laws of Nature," Alice Drewery challenges essentialism by questioning the idea that kinds have essences that serve as the basis for exceptionless laws of nature. It is unclear, according to Drewery, that essences are more basic than laws, or that properties have their associated powers essentially. In "Laws and Lawlessness," Stephen Mumford criticizes Humean and epistemic arguments against laws, as well as realism about laws. Mumford develops an alternative lawless position called "realist lawlessness," according to which distinct properties have necessary connections, which render laws superfluous and unwarranted.

Two final papers primarily concern laws of nature. In "Laws and Their Stability," Marc Lange explores the relation between laws of nature and counterfactual truths. Laws of nature are supposed to differ from accidental truth in their invariance under counterfactual suppositions. Lange develops the notion of "stability" in order to delimit the range of relevant counterfactuals without circularity. John Roberts proposes a "Measurability Account" of fundamental physical laws. Robert's primary nomological concept is that of a law relative to a given theory. What makes a proposition a law relative to a theory is that it plays an indispensable role in demonstrating that some quantity posited by that theory is measurable.

Thanks to all the participants of the conference, including commentators Eric Loomis, Michael Watkins, Roderick Long, Eric Marcus, Candace Upton, Chase Wrenn, and Michael Patton; the faculty and staff at the University of Alabama at Birmingham, especially Minnie Randle, Harold Kincaid, and Sara Vollmer; and Meredith Enish and John Symons of *Synthese*. I hope you enjoy the collection.