

# Explaining New Phenomena in Terms of Previous Phenomena

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## Abstract

It has become increasingly clear that natural phenomena cannot be formally deduced from laws but that almost every phenomenon has its own particular way of being linked to higher-level generalizations, usually via approximations, normalizations and corrections. This article deals with the following problem: if there are no general principles to link laws to phenomena, and if each phenomenon has its own way of being explained, how can we -- or how can a theory -- explain any new phenomenon? I will argue that while particular explanations only apply to the specific phenomena they describe, parts of such explanations can be productively reused in explaining new phenomena. This leads to a view on theory, which I call maximalism, according to which new phenomena are understood in terms of previous phenomena. On the maximalist view, a theory is not a system of axioms or a class of models, but a dynamically updated corpus of explanations. New phenomena are explained by combining fragments of explanations of previous phenomena. I will give an instantiation of this view, based on a corpus of phenomena from classical and fluid mechanics, and show that the maximalist approach is not only used but also needed in scientific practice.

**Keywords:** particularism, exemplar-based explanation, model-based reasoning, analogy-based explanation, maximalism

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