

Description of Research Program

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Nothing can have mass 5kg and also mass 10kg. Nothing can be both positively and negatively charged. This illustrates a general point: there are incompatibilities between certain properties. In my work, I defend the claim that incompatibilities between fundamental properties form the metaphysical basis for all truths about necessity and possibility. My view is a version of *modal primitivism*, on which some modal features of the world cannot be reduced to the non-modal. Modal primitivism is often identified with *modalism*, the view that all modal truths are primitively true. Many have rightly rejected modalism on the grounds that it is unsystematic and leaves too much unexplained. The view that I defend assigns a central role to properties and relations, thus providing a systematic and explanatory basis for modality generally. My work in this topic has also led me to deep questions about the nature of properties and fundamentality, as described below.

(1) Incompatibilism

According to *incompatibilism*, there are primitive incompatibilities between properties. The source of primitive modality is thus located at the level of properties rather than sentences, propositions, or states of affairs. Primitive incompatibilities provide the basis for a systematic theory of *de dicto* modality, where *de dicto* modal claims are those in which the modality attaches to sentences or propositions, e.g. “Possibly, there is a philosophical astronaut.” One main objection to modal primitivism is that it requires primitive notions that modal reductionists can dispense with. I argue in “From Combinatorialism to Primitivism” (*AJP* 2013) that David Armstrong’s *combinatorialism*, a modal reductionist view on which possibilities are recombinations of certain basic elements, requires its own primitive ideology that incompatibilists can do without.

While I work with primitive incompatibilities, other modal primitivists appeal to primitive dispositional properties. According to *dispositionalism*, a state of affairs is possible just in case it is the manifestation of some disposition. For instance, it is possible that some glass breaks because the breaking of the glass is a manifestation of the glass’s fragility. While such an explanation might seem plausible in some cases, attempts at generalization fail, as I show in “The Modal Limits of Dispositionalism” (*Noûs* 2015).

(2) Counterpart theory

It still needs to be shown that a properties-focused modal theory can handle *de re* modality, where *de re* modal claims concern possibilities and necessities for individuals, e.g. “Socrates could have been an astronaut.” Many think that Socrates could have been an astronaut just in case he is an astronaut in some possible world. However, few are willing to accept the existence of concrete worlds inhabited by flesh-and-blood philosopher astronauts. In “Actualist Counterpart Theory” (*JPhil* 2015), I defend a counterpart-theoretic version of *ersatzism* on which ersatz possible worlds and

individuals represent qualitative properties that could have been jointly instantiated. I then provide a non-standard counterpart semantics for modal claims. This theory of *de re* modality does not require any more primitive modality than that which appears in the theory of *de dicto* modality. The resulting picture is one in which primitive incompatibilities (and other non-modal second-order relations) form the basis for all of modality.

(3) Fundamentality and necessary connections

Many have been attracted to the idea that certain features of the world are more fundamental than others, and that there is a fundamental level of reality. While I like this idea, I am skeptical of the common assumption that there are no necessary connections between fundamental entities. In “Fundamentality and Modal Freedom” (*Phil Perspectives* forthcoming), I survey and argue against positive reasons for believing this claim. Rejecting it paves the way for various views, like incompatibilism, on which we look to the sciences to supply our fundamental ontology.

(4) Fundamental properties

The rejection of the claim that there are no necessary connections between fundamental entities also paves the way for a promising theory of the nature of fundamental properties. Here are two main competing theories. According to *causal essentialism*, to be a certain property just is to play a certain causal or nomic role; thus, properties play their causal or nomic roles essentially. According to *quidditism*, properties have intrinsic natures that “float free” of their causal or nomic roles. They are said to have “trivial essences”, or “primitive identity conditions”. Causal essentialism and quidditism are often presented as mutually exclusive and exhaustive choices. But as I argue in “Fundamental Essences” (under review), there is a plausible alternative view.

The motivation for an alternative to causal essentialism and quidditism stems from consequences of a plausible bridge principle, the *Essence-Dependence Link*: If entity *x* “figures in” the essence of entity *y*, then *y* is dependent upon *x*. Given the Essence-Dependence Link, the essences of fundamental properties cannot involve by other properties. But this *prima facie* rules out causal essentialism, leaving the property theorist with an austere quidditism on which there are no necessary connections between properties and their causal or nomic roles. I propose a view on which properties play their causal or nomic roles necessarily, but not essentially. As it turns out, this view just is incompatibilism.

Future work will explore the following issues:

(5) The alleged asymmetry of ontological dependence

It is often assumed that ontological dependence is asymmetric: if *x* depends upon *y*, then *y* does not depend upon *x*. In earlier work, I have conceded this assumption, while

noting that it deserves more attention. I will explore an idea suggested by Kit Fine: that there are two notions of dependence, an asymmetric notion that tracks constitutive determination, and a symmetric notion that tracks essence or identity. I will examine whether the latter may be used to reconcile Elizabeth Barnes's proposed counterexamples to the asymmetry of dependence.

(6) Reduction of dispositions

I have argued that appeal to primitive dispositional properties cannot account for all of modality. In fact, I suspect that the notion of dispositional properties is reducible. Some have tried to reduce dispositions using counterfactual conditionals or habitals. While I do not reject these accounts *per se*, I will look for a reduction that appeals to the nature of causation.

(7) Epistemology of fundamentality

My work makes use of methodological principles that I would like to examine in more detail. For instance, I have appealed to fundamental physics as a reason for believing certain properties and relations to be fundamental. On the other hand, I do not think that theorizing about fundamentality in metaphysics consists in only this. Some story of (i) which theoretical virtues are relevant to fundamentality and (ii) how to weigh them against each other is required.