

## Research Statement

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My research program concerns connections between central issues in metaphysics and *the new mechanical philosophy* (*NMP*)—a philosophical framework that is firmly rooted in science. By using this framework to answer foundational questions of metaphysics, my research program develops a set of interconnected metaphysical theories that derive from *NMP*, and thus from its basis in science. I argue that because these theories are inherently science-based, they are superior alternatives to rival, standard theories of metaphysics that neglect or conflict with science.

### **Dissertation Research**

Much of the thought that underlies my current research originates in my dissertation. My dissertation explores the connection between causation, which is central to philosophy of science, and grounding, which is central to metaphysics. Like causation, grounding is understood as a relation of dependence. Thus, just as effects depend upon causes, grounded entities depend upon the entities that ground them. But unlike causation, which holds *across* time, grounding holds *at* a time (i.e., synchronically), between the less fundamental and the more fundamental. For example, assuming that mental states synchronically depend upon and are less fundamental than brain states, it can be said that mental states are grounded by brain states.

Although it is commonly recognized that grounding and causation are similar, the connection between these relations has proved to be elusive. In my dissertation, I remedy this by providing a thorough analysis of the connection between grounding and causation, and I use this analysis as the basis for developing not only a revisionary conception of grounding, but also a revisionary conception of the world's structure. I argue that the resemblance between grounding and causation is so strong and systematic that these relations must be more robustly connected than typically thought. I compare a variety of views that offer different ways to understand the connection between grounding and causation, and I propose the view that the connection between these relations is that of identity, i.e., these relations are one and the same. As unorthodox as this view is, I show that it can be defended just as cogently and elaborately as the standardly assumed view that grounding and causation are distinct. Further, I argue that this view carries the profound ramification that the world's causal structure is fundamentally unified with the world's *hierarchical* or *levelled* structure. Just as the world's causal structure is built from causal relations, it is thought that the world's hierarchical structure is built from grounding relations. Since my view suggests that grounding and causation provide the world with the same kind of structure, it follows that the world's structure is of one basic nature. Thus, the world's structure is fundamentally unified.

### **Current Research Program: New Frontiers of Mechanistic Philosophy**

My current research program aims to produce a series of publications that develop a system of science-based theories of metaphysics. To develop this system of theories, I employ the framework of *NMP*, a framework founded upon extensive examination of the explanatory practices used across

the sciences. *NMP* holds that scientific explanation most often consists in the elucidation of a phenomenon *P* by appeal to the *mechanism* that produces *P*; i.e., a collection of entities whose organization and activities cause or give rise to *P*. For example, in neuroscience, the organization and activities of neurons are treated as the mechanisms that produce—and thus explain—memory retention, emotional response, perceptual representation, and so on. Because the central explanatory practice of science is to explain phenomena by appeal to mechanisms, *NMP* suggests that the chief task of science is to provide *mechanistic explanations*. Further, because scientific explanations portray the world in terms of mechanisms, science portrays the world as a collection of mechanisms, the components of mechanisms, and the phenomena produced by mechanisms. Hence, *NMP* holds that the ontology of science is a mechanistic ontology.

*NMP* has proven to be an enormously resourceful framework for thinking about many issues in philosophy of science (e.g., causation, scientific change, laws of nature, and the unity of science). My research program—titled “New Directions of Mechanistic Philosophy”—seeks to use *NMP* as a basis for theorizing about issues it has yet to be applied to: central issues in metaphysics. In so doing, this research project will produce a set of metaphysical theories that stem from, and are tailored to, *NMP*’s conception of scientific ontology, scientific explanation, and the nature of mechanisms. For example, using *NMP*’s framework as my background, I formulate mechanistic theories of grounding and metaphysical dependence, the world’s metaphysical structure, material composition, individuation, metaphysical explanation, and metaphysical laws. Hence, for each publication produced via this research program, I develop a theory that concerns one of these issues in metaphysics by proposing what *NMP* implies about how that issue is to be understood. Since these metaphysical theories each stem from *NMP*, they turn out to be mutually supportive. Thus, they form a system of interconnected theories—a family of “mechanistic-metaphysical” theories—that originate in the same framework and reinforce one another. As I argue, insofar as these metaphysical theories derive from *NMP*, and thus derive from *NMP*’s basis in science, these metaphysical theories are inherently science-based. Therefore, they are superior alternatives to rival, standard theories of metaphysics that neglect or conflict with science.

By producing the publications that develop this system of theories, this research program will contribute to, and tie together, several threads of philosophical literature. First, by producing novel views on grounding, metaphysical laws, and the rest of the issues in metaphysics mentioned above, this research program produces novel contributions to threads of literature that are central to metaphysics. Secondly, by expanding *NMP*’s mechanistic conception of scientific ontology, this research program contributes to the development of the *NMP* framework, and thus, the body of literature devoted to it. Lastly, by developing theories of metaphysics that are inherently science-based, this research program contributes to the emerging literature on “naturalized metaphysics” and “the metaphysics of science,” which seeks to elucidate scientific ontology and formulate metaphysical theories centered on and constrained by science.

## **Future Research**

Close to completing my research on *NMP*, I will begin a new research program titled “New Directions of Essentialism,” which will focus upon on a view called “dispositional essentialism” (*DE*). *DE* is a view of properties on which a given property’s disposition to produce specific casual

effects is what makes the property the property it is. Thus, a property's essence or identity consists in its causal dispositions. *DE* serves as the basis of a broad conception of nature: the *essentialist* conception. This conception is profoundly compelling since it gives credence to scientific realism in a variety of ways. I aim to produce a series of publications that offer new ways to defend the essentialist conception of nature, and which explore ramifications of *DE* that shed light on issues in philosophy of science, metaphysics, and epistemology. For example, within this research program, I seek to explore the following themes: how the epistemological ramifications of *DE* support rationalism, how the essentialist conception of nature sheds light upon the unity of science, how the functionalist theory of mind provides support for the essentialist conception of nature, and the implications of *DE* concerning the metaphysics and epistemology of identity and individuation.

Additionally, I have a strong interest in the connections between virtue ethics and moral psychology, which I plan to eventually pursue with future research. Specifically, I'm interested in exploring the view that virtue ethics complements, and is supported by, scientific research on psychological health and interpersonal relationships. Lastly, I plan to eventually pursue research that explores connections between analytic metaphysics and eastern metaphysics. Specifically, I'm interested in exploring the extent to which these distinct frameworks support the same conception of the world's fundamental nature and, thus, the extent to which these frameworks theoretically converge.