



## ***Causal Powers and Relational Ontology***

Organized by Rani Lill Anjum (Universitetet for miljø- og biovitenskap, Norway)

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### **Abstracts**

#### **Causation, Tendency, and Dispositional Ontology**

*Rani Lill Anjum* (Universitetet for miljø- og biovitenskap, Norway)

In the book, *Getting Causes from Powers* (OUP 2011), we develop a theory of causation based on an ontology of dispositions or causal powers. In this talk I will present the main idea of this theory and show how it differs from the standard two event model of David Hume. In particular I will argue that causation is a primitive notion that cannot be reductively analysed into some other notions, such as Hume's constant conjunction, temporal priority and contiguity.

The theory of causation that will be defended is called causal dispositionalism. It includes a *sui generis* modality of tendency rather than necessitation. Essential for causation on this conception, it will be argued, is that any causal process can be counteracted and interfered with. Other essential features is complexity, context-sensitivity, compositional pluralism and simultaneity.

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#### **Compositional pluralism, Emergence, and Relational Ontology**

*Gil C. Santos* (Centre for Philosophy of Science of the University of Lisbon, Portugal)

I propose to discuss the 'compositional pluralism' advocated by Mumford and Anjum in their book, *Getting Causes from Powers* (chapter four, "Reductionism, Holism and Emergence"), focusing particularly on strong emergence as a mode of composition of causes.

I will defend that strong (ontological) emergence should be distinguished from cases of mere epistemological complexity (weak emergence). Furthermore, I will argue that from an ontological point of view, only strong emergence differs from the atomistic principle of additive composition of causes.

Furthermore, I will argue that ontological emergence, and therefore any ontology of powers able to account for ontological emergence, can only be founded on a 'cons-

constructivist relational ontology', as opposed both to atomism and to holism (Santos, 2013). In this sense, the existence, the identity and the behavior or causal role of each entity (a thing, a property, etc.) are always to be conceived as constructed by specific systems of qualitatively transformative relations, that is, as generated by specific relational contexts, and not as deterministic, self-sufficient and *a priori* essences.

Santos, G. (2013). Ontological Emergence: how is that possible? Towards a Constructivist Relational Ontology. *Kairos*, Special Issue (1): Emergence and Non-Fundamentalist Metaphysics (forthcoming).

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## **Relational Ontology and Contemporary Physics at the Quantum Level**

*João Cordovil* (Centre for Philosophy of Science of the University of Lisbon, Portugal)

I will analyze the metaphysical premises and consequences of three recent approaches in Physics – Quantum Gravity, Nonlinear Quantum Physics, and Quantum Field Theory – from an ontological point of view, and in the light of the debate about realism. Through this analysis, I will defend that those three approaches are best viewed from the point of view of a relational ontology, against any atomistic or holistic perspective, according to which the ontological primacy is not to be given to individual entities, as self-sufficient elements with their own intrinsic and immutable identities, nor to structures, as self-imposed entities that come into existence in an unexplainable way, but to relations themselves. In this sense, structures are born as complex and mutable networks of relations, and the individuals are entities whose identities and behaviors are qualitatively transformed by their very relations. Finally, I will try to show how Quantum Gravity, Nonlinear Quantum Physics, and Quantum Field Theory, as well their ontological meanings, can be equated in the context of the debate about Structural Realism.