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# A Place for Levels-Thinking in Science and Philosophy

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## Abstract

”Session: From Neurons to Knowledge (Elisa Frasnelli, Paola Hernandez Chavez, Isabella Sarto-Jackson, Katherina Zakravsky, Daniel S. Brooks)”

Representing the world as hierarchically organized into a number of discrete levels is so deeply embedded in biological science, it is rarely merited explicit attention by working scientists. Similarly, philosophers of science routinely make reference to this stratified picture of the world for many topics, such as scientific explanation, the nature of causation, and theory structure in science. Despite this ubiquity in science and philosophy, there remain ‘levels skeptics’, who claim that the concept of organizational levels is a misleading, or even vacuous, notion for understanding how scientists produce knowledge about the natural world. Arguments to this effect usually focus, quite correctly, on the lack of clarity with which levels-talk is applied in the literature: ‘Levels’ can simply mean too many things.

The purpose of this talk is to offer a response to this skepticism of levels by articulating more precisely the general role that levels-thinking plays in investigating complex phenomena inherent to the biological sciences, especially neuroscience. The primary feature that levels-thinking introduces into scientific practice is an emphasis on explicating *organization*, both of natural phenomena and of the research efforts that seek to explain these phenomena. While it is doubtful that a singular concept of levels can adequately capture both kinds of organization simultaneously, a plurality of more particular, mutually complementary levels concepts is possible. In other words, what the critics charge as vacuous in the hierarchical view of the world, proponents may defend as the virtue of flexibility in the concept’s range of application.

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