

Edited by Hakob Barseghyan, Paul Patton, Gregory Rupik, Jamie Shaw

# Scientonomy

*The Challenges of Constructing a Theory of Scientific Change*

SERIES IN PHILOSOPHY OF SCIENCE

## About the editor

**Dr. Hakob Barseghyan** is an assistant professor at Victoria College, University of Toronto. His research interests reside at the intersection of integrated history and philosophy of science and digital humanities. In 2015, Barseghyan proposed a general descriptive theory of scientific change that has since become the basis of a newly emerging empirical study of science, scientonomy. He developed a new academic workflow and implemented it by cofounding the online encyclopedia and the peer-reviewed journal of Scientonomy as digital means for a fruitful integration of the history and philosophy of science. Barseghyan currently leads a team of scholars that work on advancing our understanding of scientific change by developing a diagrammatic notation for visualizing worldviews, refining and propagating the new workflow, and creating a database of intellectual history.

**Dr. Paul Patton** is currently a research fellow at Victoria College, University of Toronto. He holds a doctorate in neuroscience from the University of Chicago, and has research experience concerning sensorimotor control, multisensory integration and the lateral line sense of blind cavefish. His philosophical research concerns the philosophy of perception, perceptual 'directness', and perspectival realism. Patton has published several articles on epistemic tools, authority delegation, and disciplinary dynamics in science. Patton is the co-editor-in-chief of the online encyclopedia of Scientonomy, and an editor of the journal of Scientonomy.

**Gregory Rupik** is completing his PhD in history and philosophy of science at the University of Toronto. His research explores the relevance of the 19th century German Romantics' philosophy of biology for current organism-centered approaches to evolution theory. A founding member of the scientonomy community, Rupik has published and presented internationally on the topic of Scientonomy. Rupik is also an editor of the journal of Scientonomy.

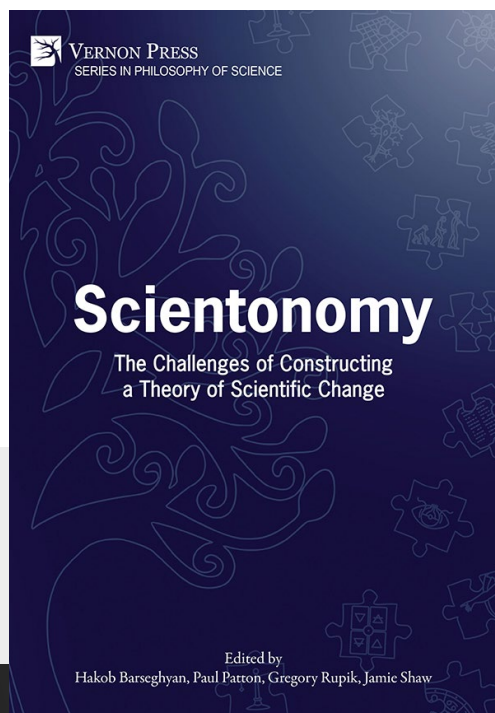
**Dr. Jamie Shaw** is currently an SSHRC-sponsored postdoctoral fellow at the Institute for the History and Philosophy of Science and Technology, University of Toronto. He completed his PhD in 2018 at the University of Western Ontario.

His research interests fall within the history of philosophy of science and science funding policy. He has published numerous papers in top-tier journals and is the co-editor of an edited collection of papers on the philosophy of Paul Feyerabend. Shaw is also an editor of the journal of Scientonomy.

## Summary

During the so-called 'historical turn' in the philosophy of science, philosophers and historians boldly argued for general patterns throughout the history of science. From Kuhn's landmark "Structure of Scientific Revolutions" until the "Scrutinizing Science" project led by Larry Laudan, there was optimism that there could be a general theoretical approach to understanding the process of scientific change. This optimism gradually faded as historians and philosophers began to focus on the details of specific case studies located within idiosyncratic historical, cultural, and political contexts, and abandoned attempts to uncover general patterns of how scientific theories and methods change through time. Recent research has suggested that while we have learned a great deal about the diversity and complexity of scientific practices across history, the push to abandon hope for a broader understanding of scientific change was premature. Because of this, philosophers, historians, and social scientists have become interested in reviving the project of understanding the mechanism of scientific change while respecting the diversity and complexity that has been unveiled by careful historical research over the past few decades.

The chapters in this volume consider a particular proposal for a general theory of how scientific theories and methods change over time, first articulated by Hakob Barseghyan in "The Laws of Scientific Change" and since developed in a series of papers by a variety of members of the scientonomy community. The chapters consider a wide range of issues, from conceptual and historical challenges to the posited intellectual patterns in the history of science, to the possibility of constructing a general theory of scientific change, to begin with. Offering a new take on the project of constructing a theory of scientific change and integrating historical, philosophical, and social studies of science, this volume will be of interest to historians, philosophers, and sociologists of science.



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