

## Curriculum Vitae

**Marina Baldissera Pacchetti**

University of Pittsburgh  
History and Philosophy of Science  
1017 Cathedral of Learning  
4200 Fifth Avenue  
Pittsburgh, PA, USA 15260

e-mail: [mab360@pitt.edu](mailto:mab360@pitt.edu)  
Phone: 412-608-7650  
Fax: 412-624-6825  
Skype: maribp

### Education

Ph.D., History and Philosophy of Science (Expected April 2018)  
University of Pittsburgh

Dissertation: *Spatiotemporal Scales in Scientific Modeling: Identifying Target Systems*  
Advisor: Prof. Robert Batterman

M.Sc., History and Philosophy of Science (2010)  
London School of Economics and Political Science  
Passed with First Class Honours

B.Sc., Mathematics and Physics (2009)  
University College London  
Passed with First Class Honours

### Areas of Specialization

Philosophy of Science, Philosophy of Climate Science

### Areas of Competence

History of Science (esp. Early Modern), Philosophy of Physics, Logic, Ancient Philosophy

### Dissertation Description

My dissertation is inspired, in part, by a lacuna in the literature on the role of idealization and abstraction in scientific modeling. Current debates about epistemic issues in modeling usually assumes that *what the model is a model of* is uncontroversial, or that it is beyond the scope of philosophical analysis. A standard line of argument is that we can gain knowledge of a target system simply by noting what aspects of the target are veridically represented in the model. My work takes a radically different approach, as the standard line misses important aspects of the epistemic role of modeling. I examine the processes by which phenomena are identified as targets. These phenomena are stable, recurrent features of the world. Building on the distinction between data and phenomena introduced by Bogen and Woodward, I analyze how scientists identify relevant aspects of the world to be modeled both from data and from basic theoretical principles. I show that there are two crucial empirical assumptions that are involved in identifying phenomena. These assumptions concern the conditions under which these phenomena

can be indexed to a particular length scale, and the conditions under which one can treat phenomena occurring at different length or time scales as distinct. The role of these assumptions in modeling provides the basis for a new argument that shows how, in many cases, idealizations and abstractions in models are essential for providing knowledge about the world in so far as they isolate relevant components of a phenomenon from irrelevant ones.

My work also clarifies a concept that is part of the growing philosophical literature on epistemic issues in climate science. This is the concept of structural uncertainty, that, somewhat unsatisfactorily, is defined as “uncertainty about the structure of the equations that represent the climate”. This definition is vague and as such cannot help in the mitigation of this kind of uncertainty; nor it can provide a clear communication of the limitations of current climate models to policy makers. My analysis of the identification of phenomena removes some of this problematic vagueness: one of the ways in which structural uncertainty arises in models is when the scale of a phenomenon of interest is not properly identified. This characterization provides a way to individuate where and to what degree structural uncertainty tied to the scales of phenomena arises in models, and possibly how to mitigate against it.

### **Peer Reviewed Journal Articles**

Baldissera Pacchetti, Marina, “A Role for Spatiotemporal Scales in Modeling”,  
forthcoming in *Studies in History and Philosophy of Science, Part A*.

### **Peer Reviewed Conference Presentations**

“A Role for Spatiotemporal Scales in Modeling”

The 18<sup>th</sup> UK and European Conference on Foundations of Physics, London  
School of Economics, UK. 16-18 July 2016

“In what sense is uncertainty intrinsic to climate science?”

British Society for the Philosophy of Science Annual Meeting, University of  
Manchester, UK. 2-3 July 2015

“In what sense is uncertainty intrinsic to climate science?”

Uncertainty in Climate Science and its Impact on Decision Making, Sorbonne-  
Universités (SND), University of Paris 4. 26-28 May 2015

“In what sense is uncertainty intrinsic to climate science?”

Algorithms and Complexity in Mathematics, Epistemology and Science, Rotman  
Institute, University of Western Ontario, May 4-5 2015

“Turning Music into Sound: Vincenzo Galilei’s contributions to acoustics”

Biennial Meeting of the History of Science Society, November 2014, Chicago

“Turning Music into Sound: Vincenzo Galilei’s contributions to acoustics”

167<sup>th</sup> Meeting of the Acoustical Society of America, Providence, Rhode Island.  
May 5-9 2014

“Idealization of Scales of Motion in Atmospheric Dynamics”

Second Irvine-Pittsburgh-Princeton Conference on the Mathematical and Conceptual Foundations of Physics, Department of Logic and Philosophy of Science, UC Irvine. March 20-21 2014

“Turning Music into Sound: Vincenzo Galilei’s contributions to the Science of Music”  
Galileo: Science, Faith and the Arts, St. Michael’s College, University of Toronto.  
October 3-4, 2013

## **Teaching Experience**

At the University of Pittsburgh, Department of History and Philosophy of Science:

*Independent Instructor*

Magic, Medicine and Science (History of science from Ancient Greek philosophy and science to the Early Modern period), Spring 2017

Myth and Science (History of Ancient Greek Philosophy and Science), Fall 2016

Principles of Scientific Reasoning (Critical Thinking), Spring 2015

*Teaching Assistant*

Magic, Medicine and Science, with Prof. Peter Machamer, Spring 2013

The Nature of Emotions, with Prof. James Lennox, Fall 2012

## **Workshops and Summer Schools Attended**

Utrecht Summer School on Physics of the Atmosphere at the Institute for Marine and Atmospheric Research. August 18-29, 2014

Research Methods Workshop for Early-Career Graduate Students on Music and Travel, 1500-1700. March 7<sup>th</sup> 2014

Vienna International Summer School / Scientific World Conception  
Summer 2013 July 1-14 Session on ‘Climate Studies’

## **Grants and Awards**

Newberry Renaissance Consortium Grant, 2014

Travel Grant to attend Second IPP conference at UC Irvine, 2014

Wesley C. Salmon Research Fund, 2014

Travel Grant for the Philosophy of Logic, Math and Physics Graduate conference and Metaphysics within and without Physics, University of Western Ontario, 2014

NSF Travel grant for HSS 2014, Chicago

Teaching award for excellent student reviews for the course HPS0515, Department of History and Philosophy of Science, 2013

### **Service to the Profession**

Co-organizer with Dr. Giovanni Valente, Workshop on Climate Models and Public Policy, Department of Philosophy, University of Pittsburgh, February 28<sup>th</sup>, 2015

Co-organizer with Elay Shech and Dr. Giovanni Valente, Workshop on Climate Models and Uncertainty, Center for History and Philosophy of Science, University of Pittsburgh, February 26<sup>th</sup>, 2015

### **Media Contributions**

Nature Podcast: *Music and the making of science*, Published March 12<sup>th</sup> 2015  
url: <http://www.nature.com/nature/podcast/index-audiofile-2015-03-12.html>

### **Languages**

Italian (native), English (fluent), German (fluent), Spanish (conversational), French (novice), Latin