

Teru Miyake

Curriculum Vitae

48 Nanyang Avenue
School of Humanities #03-89
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EDUCATION

Ph.D. in Philosophy, Stanford University, 2011
Dissertation Title: *Underdetermination and Indirect Measurement*
Committee: Michael Friedman (chair), George Smith, Patrick Suppes, Helen Longino
M.A. in Philosophy, Tufts University, 2004
B.S. in Applied Physics, California Institute of Technology, 1994

ACADEMIC POSITIONS AND AFFILIATIONS

Associate Professor, Philosophy Programme, Nanyang Technological University (NTU),
Singapore, 2017-present
Associate Professor by Courtesy, History Programme, NTU, 2021-present
Head, Philosophy Programme, NTU, 2018-2021
Fellow, Radcliffe Institute for Advanced Study, Harvard University, 2017-2018
Assistant Professor, Philosophy Programme, NTU, 2011-2017
Predoctoral Fellow, Max Planck Institute for the History of Science, Berlin, 2011

AREAS OF SPECIALIZATION

Philosophy of Science, History and Philosophy of Science (HPS), Philosophy of Physics,
History of Philosophy of Science (HOPOS)

AREAS OF COMPETENCE

Logic, Philosophy of Mind, Philosophy of Technology, Philosophy of Data

AWARDS, GRANTS, AND HONORS

2019-2022	Singapore Ministry of Education AcRF Tier 1 Grant, “Reasoning from Residuals: A History and Taxonomy of Residual Phenomena” (28,032 Singapore dollars)
2017-2018	Beatrice Shepherd Blaine Fellow, Radcliffe Institute for Advanced Study, Harvard University, “Residual Phenomena and 19th Century British Philosophy of Science”
2016	CLASS Workshop Grant for NTU-Tokyo Workshop on Philosophy of Science, Mind, and Morality (1,000 Singapore dollars)
2014	CLASS Workshop Grant for Second Singapore Workshop on Integrated

2015-2019	History and Philosophy of Science (1,000 Singapore dollars) Singapore Ministry of Education AcRF Tier 1 Grant, “Earth Models and the Epistemology of the Earth’s Interior” (56,000 Singapore dollars)
2012-2015	NTU Startup Grant, “Underdetermination and the Epistemology of Partially Inaccessible Systems”, (34,000 Singapore dollars)
2011	Predocctoral Fellowship, Max Planck Institute for the History of Science, Berlin
2010-2011	Whiting Dissertation Fellow, Stanford University
2008-2010	Ric Weiland Fellow, Stanford University
2005-2010	Patrick Suppes Fellow, Stanford University
2005	Andrade Radway Vermillion Fellowship, Stanford University

PUBLICATIONS

1. Miyake, T. Forthcoming. “To Witness Facts with the Eyes of Reason: Herschel on Physical Astronomy and the Method of Residual Phenomena.” In *Theory, Evidence, Data: Themes from George E. Smith*, edited by Chris Smeenk and Marius Stan, Springer.
2. Miyake, T. 2023. “Progress in Seismology: Turning Data into Evidence About the Earth’s Interior.” In *New Philosophical Perspectives on Scientific Progress*, edited by Yafeng Shan, Routledge.
3. Miyake, T. 2022. “Reasoning from Narratives and Models: Reconstructing the Tohoku Earthquake”. In *Narrative Science*, edited by Mary Morgan, Kim Hajek, and Dominic Berry, Cambridge University Press.
4. Miyake, T. and George E. Smith. 2021. “Realism, Physical Meaningfulness, and Molecular Spectroscopy.” In *Contemporary Scientific Realism: The Challenge from the History of Science*, edited by Peter Vickers and Timothy Lyons, Oxford University Press.
5. Miyake, T. 2018. “Scientific Realism and the Earth Sciences.” In *Routledge Handbook of Scientific Realism*, edited by Juha Saatsi, Routledge. (Italian translation forthcoming)
6. Miyake, T. 2017. “Magnitude, Moment, and Measurement: The Seismic Mechanism Controversy and Its Resolution.” *Studies in History and Philosophy of Science Part A*, Vol. 65-66 (Oct-Dec 2017), 112-120.
7. Miyake, T. 2017. “Scientific Inference and the Earth’s Interior: Harold Jeffreys and Dorothy Wrinch at Cambridge.” In *Integrated History and Philosophy of Science, Vienna Circle Institute Yearbook 20*, edited by Friedrich Stadler, Springer.
8. Miyake, T. 2017. “Uncertainty and Modeling in Seismology.” In *Reasoning in Measurement*, edited by Nicola Moessner and Alfred Nordmann, Routledge.
9. Miyake, T. 2015. “Reference Models: Using Models to Turn Data Into Evidence.” *Philosophy of Science*, Vol. 82 (Dec 2015), 822-832.
10. Miyake, T. 2015. “Underdetermination and Decomposition in Kepler’s *Astronomia Nova*.”

Studies in History and Philosophy of Science Part A, Vol. 50 (April 2015), 20-27.

11. Miyake, T. 2013. "Underdetermination, Black Boxes, and Measurement." *Philosophy of Science*, Vol. 80, No. 5 (Dec 2013), 697-708.
12. Miyake, T. 2013. "Essay Review: *Isaac Newton's Scientific Method*." *Philosophy of Science*, Vol. 80, No. 2 (April 2013), 310-316.

WORK IN PROGRESS

Monograph on history of seismology with a focus on epistemological problems

Paper on measurement of the fundamental physical constants in the 20th century

Reasoning from Residuals, monograph on the history of the concepts of residual phenomena and systematic error, with George E. Smith

BOOK REVIEWS

1. 2023. *The Instrument of Science*, by Darrell Rowbottom. *Studies in History and Philosophy of Science*.
2. 2018. *Rock, Bone, and Ruin: An Optimist's Guide to the Historical Sciences*, by Adrian Currie. *BJPS Review of Books*. <https://bjpsbooks.wordpress.com/2018/11/06/adrian-currie-rock-bone-and-ruin/>

SELECTED PRESENTATIONS

1. May 2023. "The Mill that Works Both Ways: Data, Theory, and Evidence in Geophysics." Boston University Colloquium for the Philosophy of Science. Boston University, USA. Invited Talk.
2. November 2021. "Measurement Discrepancies and the Interlinking of the Fundamental Constants." Philosophy of Science Association (PSA 2021). Baltimore, USA. Online via Zoom.
3. March 2021. Integrating HPS: Teru Miyake (Zoom workshop). Cambridge University. Online workshop where a particular author is chosen, all participants read three of that author's work, and their work is discussed in a Q&A format. I was the author chosen for this particular session.
4. September 2020. "Reasoning from Narratives and Models: Reconstructing the Tohoku Earthquake." Workshop on Narrative Science, London School of Economics, UK. Online via Zoom. Invited Talk.

5. November 2019. "The Anomalous Magnetic Moment of the Electron: Measurement, Experimental Access, and Realism." Workshop on Physical Constants: Between Observation and Theory. University of Edinburgh. Invited Talk.
6. May 2019. "Temporal Detail and Evidence in Seismic Source Reconstruction." Invited Talk, Workshop on Temporalities in Scientific Narratives, Narrative Science Project, London School of Economics. Invited Talk.
7. November 2018. "Seismic Source Reconstruction: Models, Theory, and Data in a Changing Epistemic Environment." Inaugural Meeting of the Department of Philosophy of Science and Logic, Fudan University, Shanghai, China. Invited Talk.
8. November 2018. "Model-Data Symbiosis in Seismology." Philosophy of Science Association 2018, Seattle, USA.
9. June 2018. "Residual Phenomena in the Investigation of Molecular Structure." (Co-lecture with George E. Smith) Sixth of a series of seven invited lectures over three weeks. Stanford University, USA.
10. June 2018. "Residual Phenomena in Seismological Investigation of the Deep Structure of the Earth." Fifth of a series of seven invited lectures over three weeks. Stanford University, USA.
11. May 2018. "William Whewell and John Stuart Mill on Residual Phenomena." Third of a series of seven invited lectures over three weeks. Stanford University, USA.
12. May 2018. "John Herschel on Residual Phenomena." Second of a series of seven invited lectures over three weeks. Stanford University, USA.
13. May 2018. "Residual Phenomena and Optics in the Early Nineteenth Century." Invited Talk, On the Question of Evidence: A Celebration of the Work of George E. Smith, Tufts University, USA.
14. April 2018. "Theory-Mediated Measurement: A Taxonomy." Invited Talk, 45th Annual Philosophy of Science Conference, Inter-University Centre, Dubrovnik, Croatia.
15. January 2018. "Reasoning from Residuals: The Methodology of Global Seismology 1906-1940." Invited Talk, Realism and the Rocks: A Workshop on Contemporary Scientific Realism and the Earth Sciences, Durham University, UK.
16. November 2017. "Reasoning from Residuals: Residual Phenomena and 19th Century British Philosophy of Science." Invited Talk, Radcliffe Institute for Advanced Study, Harvard University.
17. August 2017. "Gaining Access to Atomic and Molecular Structure." Quo Vadis Selective Scientific Realism, Workshop on Scientific Realism, Durham University, UK.
18. November 2016. "Inaccessibility and the Growth of Knowledge About the Earth's Deep Interior." Philosophy of Science Association 2016, Atlanta, USA.

19. August 2016. "From the Ether to the Earth's Interior: Realism, Inaccessibility, and the Theory of Waves in Elastic Media." Workshop on Scientific Realism, Kyoto University, Japan.
20. July 2016. "The Structure and Growth of Evidence about the Earth's Deep Interior." &HPS6, University of Edinburgh, UK.
21. June 2016. "Herschel and Whewell on Residual Phenomena." HOPOS 2016, Minneapolis, USA.
22. June 2016. "Residual Phenomena and the Mechanism of Deep Earthquakes." Society for the Philosophy of Science in Practice 2016, New Jersey, USA.
23. June 2016. "Scientific Change: Considering a New Approach" (in Japanese). School of Integrated Human Sciences, University of Tokyo, Japan.
24. March 2016. "Magnitude, Moment, and Measurement: The Seismic Mechanism Controversy and Its Resolution." Model(ing) Controversies, NUS.
25. March 2016. "The Seismic Mechanism Controversy and Its Resolution." NTU-Tokyo Workshop on Philosophy of Science, Mind, and Morality, NTU.
26. July 2015. "On Theory and Operationalization: The Seismic Mechanism Controversy and its Resolution." The Making of Measurement, Cambridge University, UK.
27. June 2015. "The Epistemological Role of Systematic Discrepancies." Society for the Philosophy of Science in Practice 2015, University of Aarhus, Denmark.
28. April 2015. "Understanding Scientific Change: Theory as Tool." Invited Talk, Hong Kong University.
29. January 2015. "Understanding Scientific Change: A Complexity Approach?" Tokyo Colloquium for Cognitive Philosophy, University of Tokyo, Invited Talk.
30. November 2014. "Reference Models: Using Models to Turn Data into Evidence." Philosophy of Science Association 2014, Chicago, USA.
31. July 2014. "Operationalization and Visualization in the Development of the Theory of Flight." HOPOS 2014, University of Ghent, Belgium.
32. June 2014. "Scientific Inference and the Earth's Interior: Harold Jeffreys and Dorothy Wrinch at Cambridge." &HPS5, University of Vienna, Austria.
33. October 2013. "Dealing with Underdetermination: Inverse Problems, Eliminative Induction, and the Epistemology of Global Seismology." University of Tokyo.
34. August 2013. "Earth Models and the Epistemology of Seismology." The Graduate University for Advanced Studies, Hayama, Japan.

35. July 2013. "Indirect Measurement, Exploration, and the Problem of Quantity Individuation." Australasian Association of Philosophy, University of Brisbane, Australia.
36. June 2013. "Successive Refinement of Earth Models." Society for the Philosophy of Science in Practice 2013, University of Toronto, Canada.
37. March 2013. "Modeling and Uncertainty in Seismology." Dimensions of Measurement 2013, University of Bielefeld, Germany.
38. November 2012. "Underdetermination, Black Boxes, and Measurement." Philosophy of Science Association 2012, San Diego, California.
39. July 2012. "Confirmation and Exploration in Newton's *Principia*." Australasian Association of Philosophy, University of Wollongong, Australia.
40. March 2012. "Underdetermination and Decomposition in Kepler's *Astronomia Nova*." &HPS4, Athens, Greece.
41. February 2011. "Gaining Access: Indirect Measurement in Astronomy and Geophysics." Logic and Philosophy of Science Colloquium, University of California, Irvine.
42. November 2010. "Underdetermination in Geophysics." Philosophy of Science Association Biennial Conference 2010 (PSA 2010), Montreal, Canada.
43. June 2010. "Three Notions of Underdetermination in Duhem." International Society for the History of Philosophy of Science Biennial Conference 2010 (HOPOS 2010), Budapest, Hungary.
44. June 2008. "Was Newton at Variance with Himself?" International Society for the History of Philosophy of Science Biennial Conference 2008 (HOPOS 2008), Vancouver, Canada.

PROFESSIONAL SERVICE

Associate Editor, *HOPOS: The Journal of the International Society for the History of Philosophy of Science*, 2022-present

Editorial Board Member, *Philosophy of Science*, 2023-present

Editorial Board Member, *Studies in History and Philosophy of Science*, 2023-present

Editorial Board Member, *Review of Analytic Philosophy*, 2020-present

Member, Philosophy of Science Association International Relations Committee, 2021-present

Referee for the following journals:

Philosophy of Science; *British Journal for Philosophy of Science*; *Synthese*; *Studies in History and Philosophy of Science*; *Studies in History and Philosophy of Modern Physics*; *European Journal for Philosophy of Science*; *Philosophy Compass*; *East Asian Science, Technology, and Society*; *Minerva*

Manuscript Reviewer for:
Pickering & Chatto, Routledge

Program Co-Chair, PSA Around the World 2023
Organizer, NTU-Tokyo Workshop on Philosophy of Science, Mind, and Morality, 2016
Organizer, Second Singapore Workshop on Integrated History and Philosophy of Science in Practice, 2014
Head of Local Organizing Committee and member of Program Committee, Biennial Conference of the International Society for History of Philosophy of Science (HOPOS 2020). Cancelled due to COVID pandemic.
Organizing Committee, Critical Conversations Conference, Stanford University, 2007

Programme Committee, BSPS 2023 (British Society for the Philosophy of Science Annual Meeting)
Programme Committee, BSPS 2022
Programme Committee, BSPS 2021
Programme Committee, BSPS 2020
Program Committee, Models and Simulations 2018

Grant Reviewer, Radcliffe Institute for Advanced Study, Harvard University, 2019-present
External Assessor, Addison Wheeler Fellowship, Durham University, 2020
Project Team, *Our Knowledge of Reality Through Fundamental Physical Constants*, Eidy Research Centre, University of Edinburgh, 2019-present
Japanese Language Editor, *Teach 3.11*, multi-language website for teaching resources on 2011 Fukushima earthquake and tsunami, 2012-2016
Co-President, Hume Society (Graduate Student Society in Philosophy at Stanford University) 2006-2007

UNIVERSITY SERVICE

Philosophy Programme Undergraduate Coordinator, 2022-
Head of Philosophy Programme, 2018-2021
Head, Philosophy Programme Curriculum Committee, 2013-2016
NTU Teaching Council Member and Teaching Peer Reviewer, 2018-2021

Chair, PhD Oral Examination Panel for Alexa Nord-Bronzyk, 2021
Chair, PhD Oral Examination Panel for Jacob Bender, 2021
Chair, PhD Confirmation Panel for Peng Yuqi, 2021
Chair, PhD Confirmation Panel for Kong Solsar, 2020
Chair, PhD Oral Examination Panel for Mu Xiaofeng, 2020
Chair, PhD Oral Examination Panel for He Fan, 2018

Search Committee Member, NTU Faculty Search, 2018
Panelist and Judge, Nanyang Graduate Student Colloquium, 2017
Official Mentor for over 30 undergraduate students between 2014-2021
Wrote original proposals for the following NTU courses: “Kant”, “Philosophy of Technology”, “Great Ideas and Innovations”, “Ancient Philosophy”, “Philosophy of Mind”, “First Order Logic”

Participant, NTU-Warwick Winter School on Complexity, 2014
Nominated for Nanyang Education Award for Teaching, 2012
Faculty Advisor, NTU Student Philosophy Club
Participant, Humanities, Science, and Society Research Cluster, NTU

OUTREACH AND COMMUNITY SERVICE

Speaker, NTU Open House, 2023
Speaker, JC Poly Day, 2021
Speaker, NTU Open House, 2021
Speaker, JC Poly Day, 2020
Guest Lecturer, Harvard University Graduate School of Design, for course “Interface Design: Integrating Material Perceptions”, May 2018
Speaker, NTU Enthuse! 2018
Speaker, Singapore Ministry of Education Knowledge and Inquiry Symposium, 2016
Speaker, TEDxNTU World of Wisdom, 2014

TEACHING

Nanyang Technological University

Philosophy of Science, 2021, 2018, 2017, 2016, 2015, 2014, 2013, 2011
Philosophy of Technology, 2021, 2020 (2x), 2019, 2016, 2015
Philosophy of Mind, 2022, 2018, 2015, 2013, 2012
First Order Logic, 2017, 2016, 2014, 2013
Logic and Critical Thinking, 2014, 2012 (2x)
Introduction to Philosophy, 2013
Special Topics in Philosophy of Science: Philosophy of Data, 2022
Graduate Seminar: History of Analytic Philosophy, 2014
Independent Study: Metaphysics and Science, 2019

Stanford University

Undergraduate Honors Seminar in Philosophy, 2010
Teaching Assistant for: Philosophy of Science, Philosophy of Physics, First Order Logic, Basic Mathematical Logic, Medical Ethics, 2007-2008

Tufts University

Teaching Assistant for: Metaphysics, Language and Mind, 2003-2004

Graduate Students Supervised:

Chew Sihao, NTU Masters Thesis: “Correlative Thinking in Wang Yangming”.
Currently in D. Phil programme in Oriental Studies at Oxford University.

Sharad Pandian, Postgraduate Researcher, NTU Tier 1 Grant “Earth Models and the Epistemology of the Earth’s Interior”. Completed an MA in History and Philosophy of Science at Cambridge University.

Undergraduate Students Supervised:

NTU Philosophy Major Final Year Project (FYP): Joseph Chua, Sarah Ng, Siti Ayeeshah Binte Muhamad Zaki, Siti Rauzah, Sonya Ng, Nur Amirah Rosman, Toh Qian Hui, Ashley Boey, Germaine Goh, Patrina Quek, Aaron Low

Peh Yee Jie, NTU Philosophy Major, Undergraduate Research Experience on Campus (URECA) Program, Academic Year 2020-2021.

Racher Du, NTU Philosophy Major, Undergraduate Research Experience on Campus (URECA) Program, Academic Year 2018-19. Winner of URECA Undergraduate Research Excellence Award 2019.

SGUnited Traineeship Programme: Cheng Ker Xi, Esther Goh, Ivan Ho Kun Jie