CURRICULUM VITAE

NAME: Robert W. Batterman
ADDRESS: Department of Philosophy
1029h Cathedral of Learning
The University of Pittsburgh
4200 Fifth Avenue
Pittsburgh, PA 15260
(412) 624-5775
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EDUCATION:

Ph.D.: University of Michigan (1987)
M.A.: University of Michigan (1984)
B.A.: Cornell University (1980)

GRANTS AND FELLOWSHIPS:

John Templeton Foundation Grant:
Bridging Across Scales: Emergence and Effective Theories (2013–2015)
Rotman Canada Research Chair in Philosophy of Science (2005–2010)
SSHRC Standard Research Grant (2008–2011)
NSF Research Grant (2000–2001)
NSF Research Grant (1996–1997)
NSF Research Grant (1992)
NSF Research Grant (1990)
NSF Postdoctoral Fellowship (1988), Declined
Rackham Pre-doctoral Fellowship (1985-1986)

HONORS:

2021 Provost's Award for Excellence in Doctoral Mentoring
Distinguished Professor of Philosophy,
University of Pittsburgh (Promoted, Fall 2019)
Adjunct Professor of Applied Mathematics,
University of Western Ontario, (2013–)

Fellow of the Royal Society of Canada, (Elected June, 2009)

AREAS OF SPECIALIZATION:
Philosophy of Physics, Philosophy of Science

AREAS OF COMPETENCE:
Epistemology, Metaphysics, Logic

PROFESSIONAL ACTIVITIES:

PUBLICATIONS:

- BOOKS:
  - *A Middle Way: A Non-Fundamental Approach to Many-Body Physics*, Oxford University Press (New York) July, 2021.
  - Editor, *The Oxford Handbook of Philosophy of Physics*, Oxford University Press (New York), 2013.
  - *The Devil in the Details: Asymptotic Reasoning in Explanation, Reduction, and Emergence*, Oxford University Press (New York), 2002.
  - *The Devil in the Details: Asymptotic Reasoning in Explanation, Reduction, and Emergence*, Oxford University Press (New York), paperback edition, 2007.
- ARTICLES:
  1. "Multiscale Modeling in Active and Inactive Materials," in *Levels of Organization in the Biological Sciences*, Ed. Brooks, D., DiFrisco, J., and Wimsatt, W. (2021).
  2. "Making Sense of Top-Down Causation: Universality and Functional Equivalence," with Sara Green. *Top-Down Causation and Emergence*, Eds. J. Voosholz and M. Gabriel (Springer), 2021.
  3. "Steel and Bone: Mesoscale Modeling and Middle-out Strategies in Physics and Biology," with Sara Green, *Synthese*, https://doi.org10.1007/s11229-020-02769-y, (Published online July 9, 2020).

4. "Universality," chapter in *Companion to Philosophy of Physics,* Routledge.
5. "Universality and RG Explanations," *Perspectives on Science, 27*, Issue 1, pp. 26–47 (2019).
6. "Biology Meets Physics: Reductionism and Multi-scale Modeling of Morphogenesis," with Sara Green, *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences, 61*, 2017, pp. 20-34.
7. "Autonomy of Theories: An Explanatory Problem," *Nous*, doi:10.1111/nous.12191, January, 2017.
8. "Philosophical Implications of Kadanoff's Work on the Renormalization Group," *Journal of Statistical Physics*, doi:10.1007/s10955-016-1659-9, November, 2016.
9. "Minimal Model Explanations," with Collin Rice. *Philosophy of Science, 81*, No. 3, pp. 349–376 http://www.jstor.org/stable/10.1086/676677 March 2014.
10. "Autonomy and Scales," in *Why More Is Different: Philosophical Issues in Condensed Matter Physics and Complex Systems*, edited by Brigitte Falkenburg and Margaret Morrison. (Springer, Heidelberg, 2015), pp. 115–135.
11. "The Tyranny of Scales," in R. W. Batterman, ed., *The Oxford Handbook of Philosophy of Physics*, Oxford University Press (2013), pp. 255–286.
12. "The Inconsistency of Physics (With a Capital 'P')," *Synthese, 191*, No. 13, 2014, pp. 2973–2992.
13. "Emergence, Singularities, and Symmetry Breaking," *Foundations of Physics, 41*, No. 6, 2011. pp. 1031–1050, (doi: 10.1007/s10701-010-9493-4).
14. "On the Explanatory Role of Mathematics in Empirical Science," *The British Journal for the Philosophy of Science, 61*, 2010, pp. 1–25. (doi:10.1093/bjps/axp018).
15. "Reduction and Renormalization," in A. Hüttemann and G. Ernst, eds. *Time, Chance, and Reduction: Philosophical Aspects of Statistical Mechanics*, Cambridge University Press, 2010, pp. 159–179.

16. "Emergence in Physics," Batterman, Robert W. (2009). Emergence in physics. In E. Craig (Ed.), *Routledge Encyclopedia of Philosophy*. London: Routledge. http://www.rep.routledge.com/article/Q134
17. "Idealization and Modeling," *Synthese, 169*, 2009, pp. 427–446.
18. "On the Specialness of Special Functions (The Nonrandom Effusions of the Divine Mathematician)," *The British Journal for the Philosophy of Science, vol. 58,* No. 5, 2006, pp. 263–286.
19. "Hydrodynamics versus Molecular Dynamics: Intertheory Relations in Condensed Matter Physics," *Philosophy of Science vol. 73*, 2006, pp. 888–904.
20. "Reduction," Entry in Borchert, Donald, ed. *Encyclopedia of Philosophy*, 2nd edition. Detroit: Macmillan Reference USA, 2006.
21. "Critical Phenomena and Breaking Drops: Infinite Idealizations in Physics," *Studies in History and Philosophy of Modern Physics, Vol. 36*, No. 2, 2005, pp. 225–244.
22. "Response to Belot's 'Whose Devil? Which Details?', " *Philosophy of Science, Vol. 72*, No. 1, 2005, pp. 154–163.
23. "Falling Cats, Parallel Parking, and Polarized Light," *Studies in History and Philosophy of Modern Physics, Vol 34B*, No. 4, 2003, pp. 527–557.
24. "George Gabriel Stokes," *The Dictionary of Nineteenth-Century British Philosophers* (2002), Thoemmes Press, pp. 1082–1084.
25. "Asymptotics and the Role of Minimal Models," *The British Journal for the Philosophy of Science, Vol. 53*, No. 1, 2002, pp. 21–38.
26. "Intertheory Relations in Physics," The Stanford Encyclopedia of Philosophy (January, 2001), Edward N. Zalta (ed.), URL = http://plato.stanford.edu/entries/physics-interrelate/
27. "A 'Modern' (= Victorian?) Attitude Towards Scientific Understanding," *The Monist, Vol. 83*, No. 2, 2000, pp. 228–257.
28. "Multiple Realizability and Universality," *The British Journal for the Philosophy of Science, Vol. 51*, 2000, pp. 115–145.
29. "Why Equilibrium Statistical Mechanics Works: Universality and the Renormalization Group," *Philosophy of Science, Vol. 65*, No. 2, 1998, 183–208.

30. "Game Theoretic Explanations and the Evolution of Justice," with Justin D'Arms and Krzysztof Górny, *Philosophy of Science, Vol. 65*, No. 1, 1998, pp. 76–102.
31. " 'Into a Mist': Asymptotic Theories on a Caustic," *Studies in History and Philosophy of Modern Physics, Vol. 28*, No. 3, 1997, pp. 395–413.
32. "Chaos and Algorithmic Complexity," with Homer White, *Foundations of Physics, 26*, No. 3, 1996, pp. 307–336.
33. "Chaos: Algorithmic Complexity vs. Dynamical Instability," *Law and Prediction in the Light of Chaos Research*, Paul Weingartner and Gerhard Schurz (eds.), *Lecture Notes in Physics* (Springer, Berlin), 1996, pp 211–235.
34. "Theories Between Theories: Asymptotic Limiting Intertheoretic Relations," *Synthese, 103*, 1995, pp. 171–201.
35. "Defining Chaos," *Philosophy of Science, Vol. 60*, No 1, 1993, pp. 43–66.
36. "Explanatory Instability," *Nous, 26*, 1992, pp 325–348.
37. "Quantum Chaos and Semiclassical Mechanics," *PSA 1992, volume 2*, 1993, pp. 50–65.
38. "Chaos, Quantization, and the Correspondence Principle," *Synthese 89*, 1991, pp. 189–227.
39. "Randomness and Probability in Dynamical Theories: On the Proposals of the Prigogine School," *Philosophy of Science, Vol. 58*, No. 2, 1991, pp. 241–263.
40. "Irreversibility and Statistical Mechanics: A New Approach?," *Philosophy of Science, Vol. 57*, No. 3, 1990, pp. 395–419.

- REVIEWS:

1. *Philosophy and the Foundations of Dynamics* by Lawrence Sklar, *The British Journal for the Philosophy of Science, 66* pp. 701–705, 2015.
2. "Hydrodynamic History," review of *Worlds of Flow: A History of Hydrodynamics from the Bernoullis to Prandtl*, by Olivier Darrigol, *Metascience, 16*, pp. 475–477, 2007.

3. *Physics and Chance: Philosophical Issues in the Foundations of Statistical Mechanics*, by Lawrence Sklar, *The Philosophical Review, Vol. 104*, No. 4. 1995.
4. *Time, The Physical Magnitude*, by O. Costa de Beauregard *Philosophy of Science, Vol. 56*, No. 4, 1989.

WORK IN PROGRESS:

- None at the moment.

PAPERS PRESENTED:

1. "Relative Autonomy of Theories and Models," talk to Levin Biology Lab, Tufts University (February, 2021)
2. "Emergence and Universality," Emergence: Conceptual and Philosophical Aspects, DIEP Workshop, Amsterdam (May, 2019)
3. "Mesoscale Modeling of Materials," What is Theoretical Biological Physics in The Age of Quantitative Biology and Big Data?, Emory University, Atlanta (January, 2019).
4. "Explaining Universality," Symposium on Explanation, Universality, and Renormalization Across the Sciences, Philosophy of Science Association meeting in Seattle (November, 2018)
5. " Multi-scale Modeling in Inactive and Active Materials," Philosophy of Science Conference, Inter-University Centre for Postgraduate Studies, Dubrovnik, Croatia (April, 2018).
6. " Multi-scale Modeling in Inactive and Active Materials," Hierarchy and Levels of Organization Workshop, Konrad Lorenz Institute, Vienna (March, 2018)
7. "Universality, Stability, Autonomy, and Scales: Explanatory Lessons from Condensed Mater Physics", Center for the Philosophy of Science, Pittsburgh (September, 2017).
8. "Universality, Stability, Autonomy, and Scales: Explanatory Lessons from Condensed Mater Physics", *Unifying the Debates: Mathematical and Non-causal Explanations*, IHPST, Paris (June 2017).

9. "Universality, Stability, Autonomy, and Scales: Explanatory Lessons from Condensed Mater Physics", *Perspectives on Explanation* Institute of Philosophy, Czech Academy of Sciences, Prague (May 2017).

10. "As Common as Dirt: Scientific Idealizations of Everyday Stuff," Bryn Mawr College, March, 2017.

11. "As Common as Dirt: Scientific Idealizations of Everyday Stuff," Friday Faculty Lecture Honors College, University of Pittsburgh, November, 2016.

12. "Emergence, Autonomy, Multiscale Modeling," Philosophy of Science Association meeting, Atlanta, November, 2016.

13. "Emergence, Autonomy, Multiscale Modeling," ICAM Symposium on Emergence, "Compelling Examples and Unifying Approaches," University of Michigan, November, 2015.

14. "Multiscale Modeling in Developmental Biology and Physics: Lessons Across Disciplines," International Society for the History, Philosophy, and Social Studies of Biology, Montréal, July, 2015.

15. "Asymptotics, Minimal Models, Multiscale Techniques," Emergence in Materials Workshop, IHPST, Paris, May, 2015.

16. "Asymptotics, Minimal Models, Multiscale Techniques," ACMES/SONAD Workshop, University of Western Ontario, May, 2015.

17. "Multiscale Modeling: Explanation and Emergence," Department of Philosophy, University of Pittsburgh, April, 2015.

18. "Problems with Scientific Reductionism: The Objection from Multiple Realizability," *Approaches to Scientific Method: Pluralism vs. Reductionism*, University of A Coruña, Spain, March, 2015.

19. "Multiscale Modeling: Explanation and Emergence," *Approaches to Scientific Method: Pluralism vs. Reductionism*, University of A Coruña, Spain, March, 2015.

20. "Universality, Renormalization Group, and Minimal Models," Foundations of Statistical Mechanics Workshop, University of Michigan (February, 2015)

21. "Relative Autonomy and Minimal Modeling: Explaining the Robustness of Theories at Continuum Scales," Emergence and Reduction in Science, IHPST, Paris (October 2014)

22. "Relative Autonomy and Minimal Modeling: Explaining the Robustness of Theories at Continuum Scales," Durham Emergence Summer School, University of Durham, Durham UK (July 2014)

23. "The Mathematics of Autonomy and Minimal Modeling," ZiF Workshop: Philosophical Perspectives on Mathematics as a Tool, University of Bielefeld, Bielefeld Germany (July 2014)

24. "Minimal Model Explanations," Bergen Philosophy of Science Workshop, University of Bergen, Bergen Norway, (June 2014)

25. "Bridging Scales," Physics of Emergence Conference, University of Pittsburgh (February 2014)

26. "Minimal Model Explanations," Department of Philosophy University of Illinois, University of Illinois, Urbana-Champaign (October 2013)

27. "The Devil in the Details: A Philosopher Looks at The Renormalization Group," Institute for Condensed Matter Theory, Department of Physics, University of Illinois, Urbana-Champaign (October 2013)

28. "Autonomy and Scales," Simon Fraser University Workshop on the Applicability of Mathematics (September 2013)

29. "Minimal Model Explanations," Simon Fraser University (September 2013)

30. "Minimal Model Explanations," Mind and Life: Mechanistic and Topological Perspectives, University of Belgrade, Serbia (May 2013)

31. "Autonomy and Scales", Bucharest Colloquium in Analytic Philosophy: New Directions in the Philosophy of Physics, Bucharest, Romania (May 2013)

32. "Minimal Models" Invited comments Author meets critics on Chris Pincock's *Mathematics and Scientific Representation*, Pacific APA (May 2013)

33. "Bridging Across Scales: Emergence and Effective Theories" at LeoFest 2012 (Outcomes of Graduate Education: from Condensed Matter to Biological Physics) the University of Chicago on October 6-7, 2012, in honor of Leo Kadanoff's 75th birthday.

34. "The Tyranny of Scales," Ohio State University (March, 2012)

35. "The Tyranny of Scales," Mathematical and Geometrical Explanations in Physics, The Autonomous University of Barcelona (March, 2012)

36. "The Tyranny of Scales," Stanford University (November, 2011)

37. "The Tyranny of Scales," The plurality of numerical methods in computer simulations and their philosophical analysis, *IHPST*, Paris (November, 2011)

38. "The Tyranny of Scales," Emergence and Effective Field Theories, Perimeter Institute and Rotman Institute of Philosophy Co-sponsors, Waterloo, Ontario (October, 2011)

39. "Bridging Scales: Statistical to Continuum Theories," Larryfest, University of Michigan, Ann Arbor (May 2011)

40. "A Methodology for Applied Mathematics: The Important Role of Fixed Points," Pacific Division Meetings of the American Philosophical Association, San Diego, (April, 2011)

41. "A Methodology for Applied Mathematics: The Important Role of Fixed Points," Missouri Philosophers of Science Workshop (MOPS), Columbia, Missouri (March, 2011)

42. "A Methodology for Applied Mathematics: The Important Role of Fixed Points," Saint Louis University, Saint Louis (February, 2011)

43. "Explaining Regularities," Carnegie Mellon University, Pittsburgh (September, 2010)

44. "Physics and Philosophy in a Messy World," Wimsatt Fest, University of Chicago, Chicago (April, 2010)

45. "Singularities and Explanation," Pacific Division Meetings of the American Philosophical Association, San Francisco (March, 2010)

46. "Explaining Regularities: The Need for Singular Behavior," University of Chicago—HPSS Workshop, Chicago (March, 2010)

47. "Mathematical Explanations: Geometric Phases and Singular Idealizations," University of Bristol, Bristol (December, 2009)

48. "Explaining Regularities: The Need for Singular Behaviour," European Philosophy of Science Association Meeting, Amsterdam (October, 2009)

49. "Singularities and Divergences: Philosophical Lessons from Condensed Matter Physics", 7 Pines Symposium on *Effective Field Theories in Condensed Matter Physics*, The Outing Lodge, Stillwater, Minnesota (May 2009).

50. "Essential Models and Explanatory Mathematics", Philosophy of Science Association Meeting, Pittsburgh (November, 2008)

51. "Reduction and Emergence in Physics", Emergence in the physical and biological world: A notion in search of clarification, Erice Italy (April 2008).

52. "Mathematical Asymptotics and Explanation", Séminaire d'histoire et philosophie de la physique, Paris (February, 2008)

53. "Idealization and Modeling", Department of Physics, University of Guelph (January 2008)

54. "Mathematical Asymptotics and Explanation", Department of Applied Mathematics, University of Western Ontario (January 2008)

55. "As Common as Dirt: Scientific Idealizations of Everyday Stuff" Library Lecture, London, Ontario Public Library (October 2007)

56. "Controllable vs. Uncontrollable Idealizations", Idealizations in Science Workshop, University of Tilburg, The Netherlands (October 2007)

57. "Essential Models and Explanatory Mathematics," Models and Simulations II, University of Tilburg, The Netherlands (October 2007)

58. "Mathematical Asymptotics and Explanation," Boston Colloquium for the Philosophy of Science, Boston University (April 2007).

59. "Idealization and Modeling," Department of Physics, University of Western Ontario, (February 2007).

60. "On the Specialness of Special Functions (The Nonrandom Effusions of the Divine Mathematician)," Department of Applied Mathematics, McGill University, (January 2007).

61. "Idealization and Modeling," University of Toronto, (December, 2006)

62. "Reduction and Renormalization," Philosophy of Science Association Meetings, Vancouver (November 2006).

63. "Idealization and Modeling," University of Waterloo, (October, 2006).

64. "Idealization and Modeling," Models and Simulations Conference, Paris, France (June, 2006)

65. "Reduction and Renormalization," The Robert and Sarah Boote Conference in Reductionism and Anti-Reductionism in Physics, University of Pittsburgh (April, 2006).

66. Comment on Mathias Frisch, *Inconsistency, Asymmetry, and Non-Locality*, Pacific Division Meetings of the American Philosophical Association, Portland, OR (March, 2006).

67. "Reduction and Renormalization," Workshop on *Time, Chance, and Reduction: Philosophical Aspects of Statistical Mechanics*, Munich, Germany (March, 2006).

68. " 'Fundamental' Theory: Molecular Dynamics vs. Hydrodynamics," University of Michigan (October, 2005).

69. "On the Specialness of Special Functions (The Nonrandom Effusions of the Divine Mathematician)," University of Western Ontario (September, 2005).

70. "Questions about Evidence in Condensed Matter Physics," Assessing Evidence in Physics Conference, University of Western Ontario (May, 2005).

71. " 'Fundamental' Theory: Molecular Dynamics vs. Hydrodynamics," Central Division Meetings of the American Philosophical Association, Chicago, IL (April, 2005).

72. " 'Fundamental' Theory: Molecular Dynamics vs. Hydrodynamics," Philosophy of Science Association Meetings, Austin, TX (November, 2004).

73. "Phase Transitions and Breaking Drops: Infinite Idealizations in Physics," Invited paper for The European Science Foundation Network for Philosophical and Foundational Problems of Modern Physics: ESF Conference on Philosophical and Foundational Issues in Statistical Physics, Utrecht, The Netherlands (November, 2003).

74. "Phase Transitions and Breaking Drops: Infinite Idealizations in Physics," at Indiana University Department of History and Philosophy of Science (October, 2003).

75. "Limiting Models," Invited paper for the conference on *Models, Simulation, and the Application of Mathematics*, ZiF Universität Bielefeld, (June, 2003).

76. Author Meets Critics: *The Devil in the Details: Asymptotic Reasoning In Explanation, Reduction, and Emergence*, Pacific Division Meeting of the American Philosophical Association (March, 2003).

77. "Gibbs and Asymptotic Relations Between Theories," Invited paper for the Symposium *J. Willard Gibbs and his Legacy: A Double Centennial*, University of Maryland (March, 2003).

78. "Asymptotics: Explanation and Reduction," Invited paper for Computations in Science Seminar, University of Chicago Dept. of Physics (February, 2003).

79. "Falling Cats, Parallel Parking, and Polarized Light", University of California, Irvine (November, 2002).

80. "Limiting Reductions and Emergence": University of Wisconsin, Madison (December, 2001), Universität Düsseldorf (July, 2002).

81. "Asymptotics and the Role of Minimal Models," Invited Symposium paper, Philosophy of Science Association Meetings, Vancouver, BC (November, 2000).

82. "Asymptotics and Explanation," Invited paper for the U. C. Irvine Conference on the Philosophy of Physics, Laguna Beach, CA (February, 2000).

83. "Multiple Realizability and Universality," at the University of Illinois, Champaign-Urbana (October, 1998);

84. "Multiple Realizability and Universality," University of Pittsburgh (March, 1999).

85. "Multiple Realizability and Universality," University of Alberta (March, 1999).

86. "Multiple Realizability and Universality," University of Minnesota (November, 1999).

87. "Explanation and Understanding: G. G. Stokes and Asymptotic Reasoning," Invited paper for Stokes Summer School 98, in Skreen, County Sligo, Ireland (August, 1998).

88. "Game Theoretic Explanations and the Evolution of Justice," with Justin DArms, Invited paper for Author Meets Critic Session on Brian Skyrms book, Evolution of the Social Contract at the American Philosophical Association Group meeting of the Society for Value Inquiry, Pacific Division Meetings, Los Angles, CA (March, 1998).

89. "Why Equilibrium Statistical Mechanics Works: Universality and the Renormalization Group," Invited Paper; Conference: "New Trends in the Foundations of Physics"; Universiteit Utrecht, Netherlands (March, 1998);

90. "Why Equilibrium Statistical Mechanics Works: Universality and the Renormalization Group," Invited Symposium Paper; American Philosophical Association, Central Division Meetings, Pittsburgh, PA (April 1997).

91. "Universality, Unification, and Understanding," at the University of Oklahoma (November, 1997).

92. "'Into a Mist': Asymptotic Theories on a Caustic," presented for the 1995-96 Annual Lecture Series, Center for Philosophy of Science, University of Pittsburgh, (January 1996).

93. "Between Theories," at The University of Texas, Austin (March 1995).

94. "Unpredictability and Chaos": University of Dayton (February, 1995); Kenyon College (February, 1995).

95. "Chaos: Algorithmic Complexity vs. Dynamical Instability," at the Conference on Law and Prediction in (Natural) Science in the Light of Our New Knowledge from Chaos Research, Internationales Forschungszentrum für Grundfragen der Wissenschaften, Salzburg, Austria (July 1994).

96. "Defining Chaos": Indiana University (February, 1993); University of Chicago (January, 1993); University of California, Irvine (January, 1992); University of Western Ontario (October, 1991); American Philosophical Association, Pacific Division Meetings, San Francisco, CA (March 1991).

97. "Quantum Chaos and Semiclassical Mechanics": University of Illinois, Urbana-Champaign (September, 1992); Philosophy of Science Association, (October. 1992).

98. "Explanatory Chaos": University of California at Davis (January, 1990); Duke University (January, 1990).

99. "Laws, States, and Irreversibility": Northwestern University (January, 1988); Case Western Reserve University (February, 1987); University of Illinois at Chicago (October, 1987).

100. "Irreversibility, Statistical Mechanics, and Physical States": Johns Hopkins University (April, 1986).

INVITED COMMENTS:

1. Andrew Wayne, "Explanation, Idealization, and Successful Representation," Canadian Philosophical Association, Montreal (June, 2010).

2. Professor Sir Michael Berry, "Asymptotic Relations Between Theories" Plenary Session, British Society for the Philosophy of Science, Glasgow, Scotland (July, 2002).

3. Alexander Rueger, "Limits for Reductive Explanations," American Philosophical Association, Pacific Division Meetings, San Fransisco, CA (March, 2001).

4. Tim Maudlin, "The Character of Chaos," American Philosophical Association, Eastern Division Meetings, New York, NY (December, 2000).

5. Peter Vranas, "Epsilon-Ergodicity and the Success of Equilibrium Statistical Mechanics," American Philosophical Association, Pacific Division Meetings, Los Angeles, CA (March 1998).

6. Mariam Thalos, "Explanatory Asymmetry and Humean Empiricism," American Philosophical Association, Central Division Meetings, Chicago, IL (April, 1995).

7. Alberto Cordero, "Working-Level Science and the Individuation of Theories: The Case of Quantum Mechanics," American Philosophical Association, Central Division Meetings, Chicago, IL (April, 1989).

OTHER PROFESSIONAL ACTIVITIES:

- External Reviewer, Department of Philosophy University of Illinois, Urbana-Champaign (January 2013)

- Program Committee for FOUNDATIONS OF PHYSICS 2013, The 17th UK and European Meeting LMU Munich 29-31 July 2013

- Member of the Board of Governors of the Philosophy of Science Association (2011–2013)

- Officer and Member of the Advisory Committee, Center for Philosophy of Science, University of Pittsburgh (2010–)

- Co-founder, Rotman Institute of Philosophy at the University of Western Ontario (2008)

- Member of the Editorial Advisory Board for *Oxford Studies in The Philosophy of Science*, Series Editor: Paul Humphreys (2008–2019)

– Associate Editor *Canadian Journal of Philosophy* (2007–2009)

– Editiorial Board, *Philosophy of Science* (2004–)

– Editorial Advisory Board, *Studies in the History and Philosophy of Modern Physics* (2001–)

– Panel Member, National Science Foundation—Science and Technology Studies (1998–2001)

– Program Committee Member, Central Division, American Philosophical Association (1996, 2001)

– Program Committee Member, Philosophy of Science Association (PSA 2002), (PSA 2006)

– Proposal evaluator for National Science Foundation (1994, 1996, 1998, 2001, 2002, 2003, 2004. 2005)

– Referee for *Philosophy of Science* (1988, 1989, 1991, 1993, 1996, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2017, 2018, 2019)

– Referee for *European Journal for Philosophy of Science* (2010, 2012, 2013)

– Referee for *Nous* (1994, 2001, 2003, 2005, 2008, 2012)

– Referee for *Studies in History and Philosophy of Modern Physics* (1995, 1996, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2011, 2013, 2015)

– Referee for *Synthese* (1996, 2000, 2001, 2003, 2004, 2007, 2008, 2010, 2011, 2012, 2013, 2018, 2019)

– Referee for *Foundations of Physics* (1997, 1998, 2010, 2011)

– Referee for *Ethics* (1998)

– Referee for *British Journal for the Philosophy of Science* (1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012)

– Referee for *The American Philosophical Quarterly* (1999, 2009)

– Referee for *Canadian Journal of Philosophy* (2003)

– Referee for *Erkenntnis* (2008,2010, 2019)

– Referee for *Philosophical Studies* (2010)

ACADEMIC WORK EXPERIENCE:

The University of Pittsburgh (2019–) Distinguished Professor of Philosophy
The University of Pittsburgh (2015–2019) Chair Department of Philosophy
The University of Pittsburgh (2010–) Professor of Philosophy
The University of Pittsburgh (2011–) Secondary Appointment
Professor of History and Philosophy of Science
The University of Western Ontario (2005–2010) Professor
Rotman Canada Research Chair in Philosophy of Science
Ohio State University, (2002–2005) Professor
Ohio State University, (1995–2002) Associate Professor
Ohio State University, (1990–1995) Assistant Professor
University of Illinois at Urbana-Champaign, (1988–1990)
Visiting Assistant Professor
University of Illinois at Chicago, (1987–1988)
Visiting Assistant Professor
University of Michigan, (1981–1987) Teaching Assistant