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Curriculum Vitae
George Edwin Smith

Professor
Department of Philosophy
Tufts University
Medford, Mass. 02155

38 Willow Crescent
Brookline, Mass. 02445
(617) 734-9117

Education

Yale University (Philosophy and Mathematics) B.A. 1963
Rensselaer Polytechnic Institute (grad. Mathematics) 1963-64
Harvard University (grad. Philosophy) 1964-65
Massachusetts Institute of Technology (Philosophy) Ph.D. 1979
Dissertation: Rigid Designation, Scope, and Modality under
Professors Richard Cartwright and George Boolos

Employment

Tufts University: instructor, 1977-79 and assistant professor, 1979-84; associate professor, 1984-2001, professor, 2001-- and Chair 1992-1995, Interim Chair 2014-15 Philosophy Department. Director, Curricular Software Studio, 1985-2001.

Stanford University: Distinguished Visiting Professor, Department of Philosophy, Winter, Spring quarters, 2009; Winter, Spring quarters, 2013.

Dibner Institute for the History of Science and Technology (at Massachusetts Institute of Technology), Acting Director, 2001-06.

M.I.T.: lecturer, 1973 and 1975; Department of Political Science (taught a course in computer modelling in the social sciences).

Northern Research and Engineering Corporation (Woburn, MA): full time, 1965-73; half-time 1973-77; part-time as a consultant, 1977-- 2006. (Since June 2000 renamed, Concepts NREC.) Staff Consultant: specializing in fatigue failure analysis and mathematical modelling of vibration phenomena and fluid flow.

Pratt & Whitney Aircraft (East Hartford, CT): supervisor of the Math Analysis Group, 1962-64.

General Electric Company, Flight Propulsion Division (Evendale, OH): full-time, 1958-60; part-time 1960-62. Rotor Design Specialist.

Awards and Grants

Tufts University Summer Faculty Fellowship, 1980.

Awards and Grants, Cont'd

NEH Fellowship for Independent Study and Research, 1981-82.

Jointly with Daniel Dennett, Grant from Sloan Foundation for a Curricular Software Studio at Tufts, 1985-87.

U.S. Department of Education/FIPSE (Fund for the Improvement of Post Secondary Education), "A Software Package for Conceptualizing Statistics," 1987-89.

Jointly with Richard Chechile (Psychology Department Tufts University), U.S. Department of Education/FIPSE, "Detailed Evaluation of Novel Approach to Curricular Software," 1991-94.

Resident Fellow, Dibner Institute for the History of Science and Technology, 1995-96.

Lillian and Joseph Leibner Award for distinguished teaching and advising, Tufts University, 1997.

Senior Fellow, Dibner Institute for the History of Science and Technology, 2001-2002.

Tufts University School of Arts and Sciences Distinguished Scholar Award, 2008

Tufts University, Graduate Faculty Teaching and Mentoring Award, 2010 (inaugural recipient)

Tufts University, Seymour Simches Award for Distinguished Teaching and Advising, 2016

Other Professional Positions

Associate Editor, Archive for History of Exact Sciences, 2001- 2014.

Associate Editor, Perspectives on Science, 2002--.

Visiting Committee, Division of Humanities and Social Sciences, California Institute of Technology, 2001-2002, 2005-06.

General Editor, Dibner Institute Studies in the History of Science and Technology, MIT Press, 2001-10.

Visiting Committee, Institute for the History and Philosophy of Science, University of Toronto, 2002.

Advisor for and appearance in the television production "Brilliant Minds: Secrets of the Cosmos," prepared by Veriscope Pictures and shown on the DCI Channel

Advisor for NOVA, WGBH Boston, including appearance in "Newton's Dark Secret" which aired in November, 2005.

PhD Dissertation Advising

MIT Program in Science, Technology, and Society

Chen-Pang Yeang, 2004

Stanford University Philosophy Department

Teru Miyake, 2011

Sally Riordan 2013

Marcello Di Bello 2013

Dustin King, 2018

Adwait Parker, 2019

Jonathan Collier Ettel, current

Yafeng Wang, current

Notre Dame University HPS Program

Adriana Monica Solomon, 2017

University of Western Ontario Philosophy Department

Craig Fox, current

Publications

Several engineering papers and more than 140 engineering reports issued by various government agencies and by NREC and Turbomachinery Solutions, Inc.

M-L Kean and G.E. Smith, "Issues in Core Linguistic Processing," a commentary on M.A. Arbib and D. Caplan, "Neurolinguistics Must be Computational," The Behavioral and Brain Sciences, Volume 2, Number 3 (1979).

S.M. Kosslyn, S. Pinker, G. Smith, and S.P. Schwartz, "On Demystification of Mental Imagery," The Behavioral and Brain Sciences, Volume 2, Number 4 (1979).

S.M. Kosslyn, S. Pinker, G. Smith, and S.P. Schwartz, "The How, What and Why of Mental Imagery," The Behavioral and Brain Sciences, Volume 2, Number 4 (1979).

S.M. Kosslyn and G.E. Smith, "Theory Development in Cognitive Psychology: Mental Imagery. A Case Study," invited paper for the Seventh Biennial Meeting of the Philosophy of Science Association, Oct. 16-19, 1980, paper in PSA, 1980, Vol. 2.

Norman Daniels and George E. Smith, "The Plasticity of Human Rationality," The Behavioral and Brain Sciences, Vol. 6, No. 3 (September 1983).

G.E. Smith, "The Dangers of CAD," Mechanical Engineering, Vol. 108, No. 2 (February, 1986).

S. Cohen, G. Smith, R. Chechile, B. Cook, "Designing Software for Conceptualizing Statistics," Proceedings of the First Conference of the International Association of Statistics Education, University of Perugia, 1994.

S. Cohen, R. Chechile, G. Smith, F. Tsai, G. Burns, "A Method for Evaluating Instructional Software," Behavior Research Methods, Instruments, and Computers, Vol. 26, No. 2, 1994.

William Harper and G. E. Smith, "Newton's New Way of Inquiry," in The Creation of Ideas in Physics: Studies for a Methodology of Theory Construction, ed. Jarrett Leplin (Norwell: Kluwar, 1995), pp. 113-166.

S. Cohen, R. Chechile, G. Smith, "A Detailed Multisite Evaluation of Curricular Software," Assessment in Practice, ed. Trudy W. Banta *et al.*, (San Francisco: Jossey-Bass, 1996).

S. Cohen, G. Smith, R. Chechile, G. Burns, "Impediments to Learning Probability and Statistics from an Assessment of Curricular Software," Journal of Educational and Behavioral Statistics, Vol. 21, No. 1, 1996.

Publications, Cont'd

ConStatS: Software for Conceptualizing Statistics, by Smith, G. E., as lead author, with Lin Brown, Richard Chechile, Steve Cohen, Robert Cook, Jim Ennis, David Garman, and Sara Lewis, in conjunction with the publication of the ConStatS, Software for Conceptualizing Statistics (Englewood Cliffs: Prentice-Hall, 1996).

"Chandrasekhar's *Principia*," an essay review of S. Chandrasekhar's Newton's *Principia* for the Common Reader, The Journal for the History of Astronomy, xxvii, 1996, pp. 353-362.

Eric Schliesser and G. E. Smith, "Huygens' 1688 Report to the VOC," , De Zeventiende Eeuw, Cultuur in de Nederlanden in interdisciplinair perspectief, Vol. 12, No. 1, 1996, pp. 196-214.

J. Z. Buchwald and G. E. Smith, "Thomas S. Kuhn, 1922-1996," Philosophy of Science, Vol. 64, No. 2, 1997, pp. 361-376.

"J. J. Thomson and the Electron: 1897-1899: An Introduction," The Chemical Educator, Vol. 2, No. 6, 1997.

William Harper and G. E. Smith, "Isaac Newton," Encyclopedia of Philosophy (London: Routledge, 1998).

"Newton's Study of Fluid Mechanics," in Chandrasekhar Memorial Volume, International Journal of Engineering Science, Vol. 36, Nos. 10-12, 1998, pp. 1377-1390.

"The Achievements of Book 2," a note appended to I. Bernard Cohen's Guide to the PRINCIPIA, in Isaac Newton, Mathematical Principles of Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman (Los Angeles: University of California Press, 1999), pp. 188-194.

"The Motion of the Lunar Apsis," a note appended to I. Bernard Cohen's Guide to the PRINCIPIA in Isaac Newton, Mathematical Principles of Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman (Los Angeles: University of California Press, 1999), pp. 257-264.

"Planetary Perturbations: The Interaction of Jupiter and Saturn," a note appended to I. Bernard Cohen's Guide to the PRINCIPIA in Isaac Newton, Mathematical Principles of Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman (Los Angeles: University of California Press, 1999), pp. 211-217.

"Newton and the Problem of the Moon's Motion," a note appended to I. Bernard Cohen's Guide to the PRINCIPIA in Isaac Newton, Mathematical Principles of

Publications, Cont'd

Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman (Los Angeles: University of California Press, 1999), pp. 252-257.

"A Puzzle in Book 1, Prop. 66, Corol. 14," a note appended to I. Bernard Cohen's Guide to the PRINCIPIA in Isaac Newton, Mathematical Principles of Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman (Los Angeles: University of California Press, 1999), pp. 265-368.

"How Did Newton Discover Universal Gravity?," Beyond Hypotheses: Newton's Experimental Philosophy, The St. John's Review, vol. XLV, no. 2, 1999, pp. 32-63.

"Fluid Resistance: Why Did Newton Change His Mind?," in Foundations of Newtonian Scholarship, ed. Richard Dalitz and Michael Nauenberg, (Singapore: World Scientific, 2000), pp. 105-136.

G. E. Smith and David Mindell, "The Emergence of the Turbofan Engine," in Atmospheric Flight in the Twentieth Century, ed. Peter Galison and Alex Roland, Archimedes: New Studies in the History and Philosophy of Science and Technology (Dordrecht: Kluwer, 2000), pp. 107-155.

"The Newtonian Style in Book 2 of the *Principia*," in Isaac Newton's Natural Philosophy, ed. J. Z. Buchwald and I. B. Cohen, (Cambridge: MIT Press, 2001), pp. 249-297.

"Newton on Fluid Resistance in the First Edition: English Translations of the Passages Replaced or Removed in the Second and Third Editions," tr. I. B. Cohen, Anne Whitman, and G. E. Smith and Julia Budenz and G. E. Smith, in Isaac Newton's Natural Philosophy, ed. J. Z. Buchwald and I. B. Cohen, (Cambridge: MIT Press, 2001), pp. 299-313.

"J. J. Thomson and the Electron, 1897-1899," in Histories of the Electron: The Birth of Microphysics, ed. Jed Z. Buchwald and Andrew Warwick, (Cambridge: MIT Press, 2001), pp. 21-76.

"Discovery of the Electron" ["La Scoperta Dell'Elettrone"], Science in the 19th Century [La scienza dell'Ottocento], Vol. 7, History of Science [Storia della scienza], Istituto della Enciclopedia Italiana, 2001.

Eric Schliesser and G. E. Smith, "Huygens's 1688 Report to the Directors of the Dutch East India Company on the Measurement of Longitude at Sea and the Evidence it Offered Against Universal Gravity," Archive for History of Exact Sciences, forthcoming.

Publications, Cont'd

- "From the Phenomenon of the Ellipse to an Inverse-Square Force: Why Not?," in Reading Natural Philosophy: Essays in the History and Philosophy of Science and Mathematics ed. David Malament (La Salle: Open Court, 2002), pp. 31-70.
- "The Methodology of the *Principia*," in The Cambridge Companion to Newton, ed. I. B. Cohen and G. E. Smith (Cambridge: Cambridge University Press, 2002), pp. 138-173.
- I. B. Cohen and G. E. Smith (eds.), The Cambridge Companion to Newton, (Cambridge: Cambridge University Press, 2002).
- I. B. Cohen and G. E. Smith, "Introduction," The Cambridge Companion to Newton, (Cambridge: Cambridge University Press, 2002), pp. 1-32.
- Review of John Robert Christianson's On Tycho's Island: Tycho Brahe and His Assistants, 1570-1601, in The Journal of Interdisciplinary History, vol. 32, no. 1., Summer 2001, pp. 130-131.
- "Comments on Ernan McMullin's 'The Impact of Newton's *Principia* on the Philosophy of Science'," Philosophy of Science, Vol. 38, no. 3, September 2001, pp. 327-338.
- J. Z. Buchwald and G. E. Smith, "An Instance of the Fingerpost," a review of Maureen Christie, The Ozone Layer: A Philosophy of Science Perspective, American Scientist, Vol. 89, no. 6, November-December, 2001, pp. 546-549.
- I. B. Cohen and G. E. Smith, "Newton and the Lunar Motion," a brief review of Newton's Forgotten Lunar Theory: His Contribution to the Quest for Longitude by Nicholas Kollerstram, Journal for the History of Astronomy, vol. 33 (2002).
- J. Z. Buchwald and G. E. Smith, "Incommensurability and Discontinuity of Evidence," Perspectives on Science, Vol. 9, no. 4, 2002, pp. 463-498.
- Review of Meanest Foundations and Nobler Superstructures: Hooke, Newton, and "The Compounding of the Celestiall Motions of the Planetts", in Physics Today, vol. 56, no. 9, September 2003, pp. 61-62.
- S. R. Valluri, P. Yu, G. E. Smith, and P. A. Wiegart, "An Extension of Newton's Apsidal Precession Theorem," Monthly Notices of the Royal Astronomical Society, vol. 358, 2005, pp. 1273-1284.
- "Was Wrong Newton Bad Newton?," in Wrong for the Right Reasons, eds. J. Z. Buchwald and A. Franklin (Berlin: Springer, 2005), pp. 127-160.

Publications, Cont'd

- "The *Vis Viva* Dispute: A Controversy at the Dawn of Dynamics," *Physics Today*, October 2006, pp. 31-36.
- "Isaac Newton," an entry in *The New Dictionary of Scientific Biography*, ed. Noretta Koertge (Farmington Mills, MI: Charles Scribner's Sons, 2007), pp. 48-53.
- "Isaac Newton," an entry in the on-line Stanford Encyclopedia of Philosophy, <http://plato.stanford.edu>, 2007.
- "Newton's *Philosophiae Naturalis Principia Mathematica*," an entry in the on-line Stanford Encyclopedia of Philosophy, <http://plato.stanford.edu>, 2007.
- Jane Maienschein and G. E. Smith, "What Difference Does History of Science Make, Anyway?," *Isis*, vol. 99, 2008, pp. 318-321.
- Joseph W. Dauben, Mary Louise Gleason, and George E. Smith, "Seven Decades of History of Science: I. Bernard Cohen (1914-2003), Second Editor of *Isis*," in the 100th Anniversary Issue of *Isis*, vol. 100, 2009, pp. 4-35.
- "Revisiting Accepted Science: The Indispensability of the History of Science," *The Monist*, vol. 93, 2010, pp. 545-579.
- "How Newton's *Principia* Changed Physics," in *Newton And/As Philosophy*, ed. Andrew Janiak and Eric Schliesser, (Cambridge: Cambridge University Press, 2012).
- "On Newton's Method," a Book Symposium on William Harper's *Isaac Newton's Scientific Method*, *Metascience*, vol. 22, 2013, pp. 215-246.
- "Closing the Loop: Testing Newtonian Gravity, Then and Now," in *Newton and Empiricism*, ed. Zvi Beiner and Eric Schliesser, Oxford University Press, 2014, pp. 262-351.
- Rob Iliffe and G. E. Smith (eds.), The Cambridge Companion to Newton, 2nd edition, (Cambridge: Cambridge University Press, 2016).
- Rob Iliffe and G. E. Smith, "Introduction," The Cambridge Companion to Newton, (Cambridge: Cambridge University Press, 2016), pp. 1-32.
- Teru Miyake and G. E. Smith, "Realism, Physical Meaningfulness, and Molecular Spectroscopy," in *Contemporary Scientific Realism and the Challenge from the History of Science*, ed. Peter Vickers and Yafeng Shan, forthcoming 2019.

Publications, Cont'd

“Du Châtelet’s Commentary on Newton’s *Principia*: An Assessment,” with the assistance of Jeanne-Marie Musca, to appear in *Epoque Emilienne. Philosophy and Science 1700-1750*, ed. Ruth Hagengruber, Springer, forthcoming 2020.

“Newton’s Numerator in 1685: A Year of Gestation,” *Studies in History and Philosophy of Modern Physics*, vol. 68, 2019, pp. 163-177.

G. E. Smith and Raghav Seth, *Brownian Motion and Molecular Reality: A Study in Theory-Mediated Measurement*, Oxford University Press, forthcoming August, 2020.

“Experiments in the *Principia*,” a chapter in the *Oxford Handbook of Newton*, Oxford University Press, forthcoming 2020.

“The *Principia*: From Conception to Publication,” a chapter in the *Oxford Handbook of Newton*, Oxford University Press, forthcoming 2020.

“Newton’s Laws of Motion,” a chapter in the *Oxford Handbook of Newton*, Oxford University Press, forthcoming 2020.

Christopher Smeenk and G. E. Smith, "Newton on Constrained Motion: a commentary on Book 1, Section 10 of Newton's *Principia*," *Archive for History of Exact Sciences*, in preparation.

“Newtonian Relativity: A Neglected Manuscript and Understressed Corollary,” to appear in a book, *Newtonian Relativity*, with chapters by Rob DiSalle, Craig Fox, and Michael Friedman.

Isaac Newton’s De Motu Corporum, Liber Secundus: a Variorum Translation of the Manuscript and Related Manuscripts from 1685, tr. by George E. Smith and Anne Whitman, with commentary by Samia Hesni and G.E. Smith, in preparation.

Presentations and Conferences

participant, Three Symposia on Cognitive Science, M.I.T., January, June, and October, 1978.

"Rigid Designation and Some Variants," paper presented at The Graduate Center, CUNY, May, 1978.

"Some Remarks on Expert Testimony," paper presented at the University New Hampshire, May, 1981.

Presentations and Conferences Cont.

participant, A Symposium on Cell Multiplication and Cancer: Positive or Negative Control, Tufts University School of Medicine, May 1981.

"Expert Testimony," presented in Tufts Philosophy Colloquium, March, 1983.

participant, Gordon Research Conferences, Mammalian Genital Tract, July, 1984.

"The Modal Version of the Ontological Argument," paper presented at Dartmouth College, May 1986.

Opening address at SOFTWARE, IMAGINATION, EDUCATION Conference on Curricular Software, Tufts University, May 1988.

"Curricular Software: Revolution in Higher Education?" paper presented at Harvard University, December 1988.

Panel on Computers in Education, U.S. Department of Education, Washington, D.C., October, 1989.

"Newton on the Three-Body Interaction of the Earth, Moon and Sun," invited seminar at University of Western Ontario, November, 1989.

"The Empirical Assessment of Computational Fluid Dynamics," 3 talks sponsored by Northern Research & Engineering Corporation, in Boston, July 1989 and repeated in San Diego, January, 1990.

"Computers in Engineering: Some Pitfalls," invited lecture before Boston Section of IEEE, Social Implications of Technology, February, 1990.

"The Newtonian Conception of Idealization in Science," presented at the Conference, "Deduction from Phenomena," University of Western Ontario, October 1990.

Philosophy of Science Association, October 1990 (chaired session on Deductions from Phenomena, and commented on invited papers).

"Changing Conceptions of Evidence in Newton's De Motu Corporum," a seminar given at University of Western Ontario, January 13, 1992.

"Lunar Theory: Newton's Greatest Success?" a seminar given at University of Western Ontario, London, Ontario, March 16, 1992.

Presentations and Conferences Cont.

- "Fluid Resistance: Newton's Greatest Failure?" a seminar given at University of Western Ontario, London, Ontario, March 17, 1992.
- "Newton's Impact on Orbital Astronomy," invited talk presented at the Workshop on the "Teaching of Astronomy," Tufts University, June, 1992.
- "Orbital Astronomy: Two Eighteenth Century Questions Finally Answered," presented at the 1993 Space Science and Aerospace Engineering Workshop, sponsored by the Dudley Wright Center, June, 1993.
- "Humanitarian Intervention in Internal Conflicts: The Moral Question," Opening talk at the Conference of the same name, sponsored by the Tufts Philosophy Department, International Relations Program, and EPIIC, March, 1994.
- S. Cohen and G. Smith, "ConStats: Software for Conceptualizing Introductory Statistics," presented at the National Education Computing Conference, June 1994.
- "Why Do Materials Suffer Fatigue?", a lecture given in the Dudley Wright Open House Lecture Series at Tufts University, January 11, 1995.
- "High-Cycle Fatigue in Turbomachinery," Invited Talk at a One-Day Seminar in Honor of the Retirement of Professor Regis Pelloux, at Massachusetts Institute of Technology, 26 June 1995.
- "Huygens' 1688 Report to the V.O.C.," (jointly with Eric Schliesser) at the Christiaan Huygens 1695-1995 Congress, at Leiden, The Netherlands, 7 July 1995.
- "Huygens' Empirical Challenge to Universal Gravity," at the Christiaan Huygens 1695-1995 Congress, at Voorburg, The Netherlands, 8 July 1995.
- "Huygens' Empirical Challenge to Universal Gravity," at a Dibner Institute Tuesday Luncheon Colloquium, the Dibner Institute, Massachusetts Institute of Technology, 19 September 1995.
- "Huygens's Contribution to Universal Gravity," at the Huygens Legacy Session, 1995 Annual Meeting of the History of Science Society, Minneapolis, MN, 28 October 1995.
- "The Newtonian Style in Book 2 of the *Principia*," at a Dibner Institute Symposium on Isaac Newton's Natural Philosophy, at the Dibner Institute, Massachusetts Institute of Technology, 10 November 1995.
- "Idealizations in Science," a Philosophy Department Colloquium at Brandeis University, 15 February 1996.

Presentations and Conferences Cont.

- "Newton's Research in Fluid Mechanics," presented at the Chandrasekhar Memorial Seminar, Society of Engineering Science, October, 1996.
- "Parameters of Change," a working paper presented at a Daedalus conference on "Stability and Change in Vital American Institutions," October, 1996.
- "Fluid Resistance: Why Did Newton Change His Mind?," at Symposium on the Foundations of Newtonian Scholarship, The Royal Society, London, March 21, 1997.
- "The Emergence of the Turbofan Engine," (jointly with David Mindell) at workshop on The Evolution of Atmospheric Flight, Dibner Institute for the History of Science and Technology, Cambridge MA, April 3, 1997.
- "Establishing a Working Hypothesis: J. J. Thomson 100 Years Later," for Program in the Conceptual Foundations of Science, University of Chicago, April 25, 1997.
- "NACA Research on Axial Compressors," at workshop on research in history of NASA, NASA Langley Research Center, July 16, 1997.
- "Continuity and Discontinuity in Science," (jointly with Jed Buchwald), at symposium on The Legacy of Thomas S. Kuhn, Dibner Institute for the History of Science and Technology, Cambridge MA, November 22, 1997.
- "Huygens' Empirical Challenge to Universal Gravity," at Philosophy Department, University of Western Ontario, November 28, 1997.
- "The Challenge of Education," talk presented at the annual Academic Awards Convocation, Tufts University, April 24, 1998.
- "Newton's Laws of Motion -- The Question of Evidence," talk presented at the Reunion of Dibner Fellows, May 22, 1998.
- "How Did Newton Discover Universal Gravity?," talk presented at a conference on Newton at St John's College in Annapolis, Maryland, on March 20, 1999.
- "The Emergence of the Turbofan Engine," talk presented at the New England chapter of the American Institute of Aeronautics and Astronautics, at Massachusetts Institute of Technology, May 5, 1999.
- "From the Phenomenon of the Ellipse to an Inverse-Square Force: Why Not?," talk presented at the University of Chicago as part of the celebration of Howard Stein's 70th birthday, May 21, 1999.

Presentations and Conferences Cont.

"From the Phenomenon of the Ellipse to an Inverse-Square Force: Why Not?," talk presented at the Philosophy Department, University of Western Ontario, September 24, 1999.

"Newton's Laws of Motion -- The Question of Evidence," talk presented at the Philosophy Department, University of Western Ontario, September 25, 1999.

"How Did Newton Discover Universal Gravity?," talk presented at the Philosophy Department, University of Western Ontario, September 25, 1999.

"Huygens' Empirical Challenge to Universal Gravity," at the Program in Philosophy and History of Science, Colorado University, Boulder, Colorado, October 11, 1999.

From the Phenomenon of the Ellipse to an Inverse-Square Force: Why Not?," talk presented at the Joint Seminar for the History of the Physical Sciences, Harvard University, Cambridge MA, October 29, 1999.

Participant and Session Chairman at "Methods of Understanding in Art and Science: The Case of Duchamp and Poincaré" Symposium, held at the American Academy of Arts and Sciences and Harvard University, November 5-7, 1999.

"*Techne* and Ignorance: How Engineering Differs from Science," a "Friday Evening Lecture" to the community of St. John's College, Annapolis MD, January 14, 2000.

"Newton's *Principia* in the Philosophy Curriculum," presented at the Fourth British-North American Joint Meeting of the British Society for the History of Science, the Canadian Society for the History and Philosophy of Science, and the History of Science Society, St. Louis MO, August 4, 2000.

"Newton's *Principia* and the Foundations of Mechanics," a seminar in two parts given jointly by I. B. Cohen and G. E. Smith, Applied Mechanics Colloquium, Harvard University, Cambridge MA, December 20, 2000.

"How Did Newton Discover Universal Gravity?," a seminar presented at the Department of History and Philosophy of Science, Indiana University, March 21, 2001.

"How Newton Changed Physics," a lecture given at the Department of History and Philosophy of Science, Indiana University, March 22, 2001.

"How Newton Changed Physics," a Physics and Astronomy Colloquium given at Tufts University, March 30, 2001.

Presentations and Conferences Cont.

- "Kuhn and Incommensurability," (jointly with Jed Z. Buchwald), invited plenary session lecture at the Annual Meeting of the Canadian Society for the History and Philosophy of Science, Université Laval, Quebec, May 26, 2001.
- "How Newton's *Principia* Changed Physics," at a Dibner Institute Tuesday Luncheon Colloquium, the Dibner Institute, Massachusetts Institute of Technology, 19 September 25, 2001.
- "How Newton's *Principia* Changed Physics," a Physics Department Seminar, University of California at Santa Cruz, October 4, 2001.
- "How Newton's *Principia* Changed Physics," a Physics Department Colloquium, University of Colorado, October 31, 2001.
- "Newton's Research in Fluid Mechanics," a Department of Mechanical Engineering Seminar at Tufts University, November 14, 2001.
- "Curtis Wilson: A Tribute": Opening Remarks at the Festschrift Celebration of the 81st Birthday of Curtis Wilson, St. John's College, Annapolis MD, April 13, 2002.
- "How Newton's *Principia* Changed Physics," a History of Science and Technology Colloquium, University of Minnesota, October 4, 2002.
- "How Newton's *Principia* Changed Physics," a Philosophy Department Colloquium, University of Western Ontario, November 15, 2002.
- "Kinds in Evidential Reasoning," presented at a Conference on "Spaces of Classification" at the Max Planck Institute for the History of Science, Berlin, Germany, December 13, 2002.
- "Simon Newcomb and the Underlying Logic of Celestial Mechanics," a talk presented at the Joint Seminar for the History of the Physical Sciences, Harvard University, Cambridge MA, March 21, 2003.
- "The Challenges of Mechanical Engineering," an after dinner talk given at the Regional Students Conference of the American Society of Mechanical Engineers, held at Tufts University, Medford MA, March 29, 2003.
- "Detecting Substantive Error: Newton and Huygens," a talk presented at the Dibner-Israel Conference on *Going Wrong and Making It Right: Error as a Crucial Feature of Concept Adjustments in Experimental Contexts*, Aegina Greece, April 5, 2003.

Presentations and Conferences Cont.

- "Historical Perspective on the Concept of Scientific Certainty: Causation and Scientific Uncertainty," Keynote Address at the Flaschner Judicial Institute Conference *Causation: Scientific and Legal Certainty*, held at the Massachusetts Medical Society Conference Center, Waltham MA, April 11, 2003.
- "The Historiography of Recent Science: Reaction Kinetics as a Paradigm," lunchtime talk at the Chemical Heritage Foundation, Philadelphia PA, April 24, 2003.
- Organizer and moderator of two-day conference, "The History of Science and Technology: Where We Are," held at the ten-year reunion of the Dibner Institute for the History of Science and Technology, Dedham MA, May 8-11, 2003.
- "On the Origins of Book 2 of Newton's *Principia*," a talk given at the History of Science Department of Harvard University, October 28, 2003.
- "Newton's Misleading Initial Pendulum Experiment," a paper presented at the History of Science Society 2003 Annual Meeting, Cambridge MA, November 20, 2003.
- "Centennials of Flight," a talk given at an assembly of Roxbury Latin High School, West Roxbury, MA, 12 April 2004.
- "Newton's Empirical Challenge to the Mechanical Philosophy," a paper presented at the biennial conference of the Society for the History of Philosophy of Science, San Francisco, CA, June 24-27, 2004.
- "Vistas, Short and Long, Narrow and Wide," an invited lecture given as part of the 9th International Summer School in History of Science, "Current Approaches to the History of Science," held at the University of Bologna, Bologna, Italy, 30 August - 3 September, 2004.
- "How Newton's *Principia* Changed Physics," an invited lecture given at the New York Academy of Sciences, New York, NY, October 27, 2004.
- "Simon Newcomb and the Underlying Logic of Celestial Mechanics," a talk presented in the Philosophy Department of the University of Western Ontario, London, Ontario, November 25, 2005.
- "Evidence in Gravitational Research," a paper presented at a conference on "Assessing Evidence in Physics" at the University of Western Ontario, London, Ontario, May 13-15, 2005.

Presentations and Conferences Cont.

- "The Science Wars: A Newtonian Perspective," the Stillman Drake Lecture, given at the Annual Meeting of the Canadian Society for the History and Philosophy of Science, London, Ontario, May 29-31, 2005.
- "Testing Newton, Then and Now: The Logic of Evidence in Gravity Research from Newton Through the 20th Century," a lecture given under the Auspices of the Center for Philosophy of Science, University of Pittsburgh, Pittsburg PA, November 11, 2005.
- "Testing Newton, Then and Now: The Logic of Evidence in Gravity Research from Newton Through the 20th Century," a Philosophy Department lecture at UCLA, Los Angeles CA, October 12, 2006.
- "Messages from the Inside of the Earth: A Century of Seismographic Research," a talk at the annual meeting of the History of Science Society, Vancouver BC, November 4, 2006.
- "Testing Newton, Then and Now: The Logic of Evidence in Gravity Research from Newton Through the 20th Century," The Howard Stein Lecture in the Philosophy of Science, the Division of Humanities and the Department of Philosophy, University of Chicago, November 10, 2006.
- "Closing the Loop: Testing Newtonian Gravity, Then and Now," the first of three lectures entitled "Turning Data into Evidence: Three Lectures on the Role of Theory in Science," presented at Stanford University under the auspices of the Patrick Suppes Center for the Interdisciplinary Study of Science and Technology, Stanford CA, February 22, 2007.
- "Getting Started: Building Theories from Working Hypotheses," the second of three lectures entitled "Turning Data into Evidence: Three Lectures on the Role of Theory in Science," presented at Stanford University under the auspices of the Patrick Suppes Center for the Interdisciplinary Study of Science and Technology, Stanford CA, March 1, 2007.
- "Gaining Access: Using Seismology to Probe the Earth's Insides," the third of three lectures entitled "Turning Data into Evidence: Three Lectures on the Role of Theory in Science," presented at Stanford University under the auspices of the Patrick Suppes Center for the Interdisciplinary Study of Science and Technology, Stanford CA, March 8, 2007.
- "Asking Questions Beyond the Norm: Three Examples from the *Principia*," an invited talk presented at the international workshop "Newton in Pursuit of the Secrets of God and Nature," at the Van Leer Jerusalem Institute, Jerusalem Israel, June 18, 2007.

Presentations and Conferences Cont.

Christopher Smeenk and G. E. Smith, "Newton on Constrained Motion," a talk presented (by Smeenk) at the international workshop "Newton And/As Philosophy" sponsored by the Department of Philosophy, Leiden University, Leiden, The Netherlands, June 22, 2007.

"The Question of Mass in Newton's Law of Gravity," invited concluding lecture at the international workshop "Newton And/As Philosophy" sponsored by the Department of Philosophy, Leiden University, Leiden, The Netherlands, June 24, 2007.

Christopher Smeenk and G. E. Smith, "Measurement and Limits in the *Principia*, X," presented (by Smeenk) at the Conference in Integrated History and Philosophy of Science at the University of Pittsburgh, October 11-14, 2007.

"Theory Enters Measurement: 17th Century Experiments in the Mechanics of Motion," keynote address for EVIDENCE, The 24th Regional Conference on the History and Philosophy of Science, University of Colorado, Boulder, October 10-12, 2008.

"The Mathematics of Newton's *Principia Mathematica*," invited talk before AMS-MAA Special Session on History of Mathematics, at the Joint Mathematics Meeting of American Mathematical Society and the Mathematical Association of America, Washington DC, January 7, 2009.

"Revisiting Accepted Science: The Indispensability of History of Science," invited paper at the workshop, *The Relations Between History and Philosophy of Science*, organized by the Centre for Contemporary Studies of Università degli Studi di Bergamo in Bergamo, Italy, May 20-22, 2009.

"Theory Enters Measurement: 17th Century Experiments in the Mechanics of Motion," a paper presented at Stanford University under the auspices of the Patrick Suppes Center for the Interdisciplinary Study of Science and Technology, Stanford CA, May 28, 2009.

Commentator on Mary Domski, "Locke's Qualified Embrace of Newton's *Principia*," at *Nature and Purpose in Early Modern Philosophy*, the Syracuse Philosophy Annual Workshop & Network of 2009, August 9-11, 2009.

"The Mathematics of Newton's *Principia Mathematica*," a three-hour "short course" given at the annual Joint Mathematics Meetings of the American Mathematical Society and the Mathematical Association of America, San Francisco, January 11, 2010.

"The Ratio of Specific Heats: What Does It Measure?," an invited talk presented at the conference *Conceptions of Empirical Science* in honor of the retirement of William Harper, at the University of Western Ontario, May 8, 2010.

Presentations and Conferences Cont.

- "From Traces to Sources: Reconstructing Unobserved Events, " an invited talk presented at the ISHPSSB Off-Year Workshop *Integrating Complexity: Environment and History*, October 7-10, 2010 at the University of Western Ontario, October 10, 2010.
- "An Alternative Agenda for Philosophy of Science," keynote address for the annual Graduate Student Conference on Logic, the Philosophy of Mathematics, and the Philosophy of Science, University of Western Ontario, May 15 and 16, 2011.
- "Indirect Measurement as Evidence" at the three-day Celebration of the 90th birthday of Professor Patrick Suppes, Stanford University, March 9-12, 2012.
- Commentary on a paper by Bryan Wesley Hall on Kant and Newton at the American Philosophical Association Pacific Meeting, Seattle WA, April 5, 2012.
- "Newtonian Relativity," an invited talk for the History of Science Program, University of Minnesota, September 27, 2012.
- "An Alternative Agenda for Philosophy of Science," an invited talk for the Philosophy Department, University of Minnesota, September 28, 2012.
- "Kuhn's Predicament," an invited talk for the conference, Carnap and Kuhn, Center for Philosophy of Science, University of Pittsburgh, October 20-21, 2012.
- "Post-*Principia* Evidence in Orbital Astronomy" at the conference "Evidential Reasoning in Astronomy and Cosmology," an ISLA workshop at Notre Dame University, South Bend, IN, February 22-24, 2013.
- "Newtonian Relativity, A Neglected Manuscript and Understressed Corollary," a talk at a Symposium on Newton on Space and Time at Stanford University, sponsored by the Patrick Suppes Center for the History and Philosophy of Science and Technology, Stanford University, Stanford CA, 6 June 2013.
- "25 Years of Second Thoughts: Substantive Changes in the 1713 Edition," a talk presented at the Royal Society of London as part of a conference entitled "'A great variety of admirable discoveries': Newton's *Principia* in the Age of Enlightenment," London, England, 12 December 2013.
- "Newtonian Relativity, A Neglected Manuscript and Understressed Corollary," an invited talk given at the Institute for the History and Philosophy of Science and Technology, University of Toronto, Toronto, Ontario, Canada, April 9, 2014.

Presentations and Conferences Cont.

- “On Michael Friedman’s *Kant’s Construction of Nature: A Reading of the Metaphysical Foundations of Natural Sciences*,” a talk given at a session devoted to the book at the annual New England Conference on Early Modern Philosophy, Brown University, Providence RI, May 10, 2014.
- “Newton’s Evolving Conceptualization of Gravity in 1685,” an invited talk at a workshop, “The Mechanization of Geometry, From Antiquity to the Modern Age,” held at the Max Plank Institute for the History of Science, Berlin, Germany, June 23-25, 2014.
- “The Question of Mass in Newton’s *Principia*,” a Physics Colloquium, the Physics Department, University of Texas, Austin, TX, September 24, 2014.
- “An Alternative Agenda for Philosophy of Science,” an invited talk for a History and Philosophy of Science Colloquium, the University of Texas, Austin, TX, September 26, 2014.
- “Newtonian Relativity, A Neglected Manuscript and Understressed Corollary,” a talk given at the session, “Newtonian Relativity,” at the annual meeting of the Philosophy of Science Association, Chicago, IL, November 7, 2014.
- “The Other Half of Newton’s Evidence: Deducing Phenomena from Forces,” an invited talk given for the Department of Philosophy, Johns Hopkins University, Baltimore MD, November 20, 2014.
- “Tom Kuhn’s Predicament: A Response,” an invited public lecture given at Ghent University, Ghent, Belgium, July 13, 2015.
- Two Master Classes on my “Closing the Loop” monograph and its relation to the lecture given on July 13, Ghent University, Ghent, Belgium, July 14 and 15, 2015.
- “How Newton’s *Principia* Changed Philosophy,” invited keynote address for the South Central Seminar in Early Modern Philosophy, Austin, TX, October 16, 2015.
- “Newton’s *Principia*: Myth and Reality,” invited talk in conjunction with the award of the Abraham Pais Award to Allan Franklin by the American Physics Society, at the APS April Meeting, Salt Lake City, Utah, April 18, 2016.
- “Galileo’s Contribution to Mechanics,” invited talk given at the conference, “The Italian Roots of Modernity: Machiavelli and Galileo,” sponsored by the Philosophy Department of Tufts University and the Classics Department of Harvard University, at Harvard University, November 11, 2016.

Presentations and Conferences Cont.

- “How Much Did She See: Du Châtelet’s Commentary on Newton’s *Principia*,” an invited talk given at the celebration, “Émilie Du Châtelet: 310 Anniversary,” sponsored by the Boston University Center for the Philosophy of Science, at Boston University, November 18, 2016.
- “The Subsequent Fate of Two of Galileo’s ‘True’ Principles,” an invited talk given at the conference, “Physics Old and New: Historical and Critical Perspectives of Physics and the Philosophy of Nature Workshop in Honor of Katherine Brading,” at Notre Dame University, March 24, 2017.
- “Newton’s Numerator in 1685: A Year of Gestation,” presented at *The Philosophy of Howard Stein: A Conference at the University of Chicago*, June 9-11, 2017, June 10, 2017.
- “Gaining Access to Atomic and Molecular Structure,” jointly with Teru Miyake, presented by Miyake at the Conference, *Selective Scientific Realism*, Durham, UK, August 5-7, 2017.
- “Reading Newton’s *Principia*? Anachronistic Renderings of Newton’s Mathematics,” presented at the Bacon Conference on *Anachronism in the History of Mathematics*, California Institute of Technology, April 14-15, 2018, April 15, at Pasadena CA.
- “Émilie Du Châtelet and Newton’s *Principia*,” presented at the conference, *Émilie Du Châtelet’s Foundation of Physics: A conference celebrating the complete English translation*, April 26-28, 2018, Notre Dame University, South Bend, IN, April 28.
- “Residual Phenomena,” a four week course given jointly with Teru Miyake in the Philosophy Department of Stanford University, Palo Alto CA, May 24-June 14, 2018.
- “The Mysteries of Liquids and Viscosity, as Confronted by Newton,” presented at the Du Châtelet Prize Workshop, April 4-5, 2019, Duke University, Durham NC, April 5, 2019.
- “Theory Mediated Measurement of Interlinked Constants: Evidence of a Different Kind?,” presented in the Logic Colloquium of Harvard University, Cambridge MA, November 20, 2019.
- “Theory Mediated Measurement of Interlinked Constants: Evidence of a Different Kind?,” Keynote address at a conference on *Physical Constants between Observation and Theory* at the University of Edinburgh, Edinburgh, Scotland, December 5-6, 2019, December 6. https://www.youtube.com/watch?v=Zb26LFIL1_I