

Curriculum Vitae
GEOFFREY HELLMAN

Current Address

Department of Philosophy
University of Minnesota
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Personal

Birthdate: 16 August 1943
Citizenship: US

Education

Harvard College, A.B. honors, 1965
Harvard University, 9/67-6/72, Ph.D. in Philosophy

Academic Positions

University of Minnesota Department of Philosophy	1987-present, Professor, Scholar of the College
University of Otago	Spring, 2005, Visiting Professor
The Ohio State University	O'Donnell Chair in Philosophy (offered for 1999, declined)
University of California, Irvine	Spring, 1998, Distinguished Visiting Professor
Indiana University Department of Philosophy	1982-86, Professor 1978-82, Associate Professor 1972-78, Assistant Professor
University of Washington (Seattle, WA)	1975-76, Visiting Assistant Professor
Harvard University	1969-71, Teaching Fellow

Honors, Fellowships, and Grants

Fellow of the American Academy of Arts and Sciences (2007)
Who's Who in America (2008 edition)
National Science Foundation Scholars Award, 2004-05, "Aspects of Pluralism in the Foundations of Mathematics"
Scholar of the College, College of Liberal Arts, University of Minnesota (named 2003)
National Science Foundation Scholars Award, 1993-95, "Classicism, Constructivism and Scientific Indispensability Arguments"
National Science Foundation Scholars Award, 1990-91, "Classicism vs. Constructivism: On the Indispensability of Abstract Mathematics"

Visiting Scholar Exchange Program Fellowship, Committee on Scholarly

Communication with the Peoples' Republic of China (National Academy of Sciences),

lectures and seminars in China, October 9-December 5, 1987

National Science Foundation Scholars Award, 1985-86, "A Modal Interpretation of Mathematics"

Visiting Fellow, Wolfson College, Oxford, Trinity terms, 1983, 1985

National Science Foundation Grant, 1980-81, "Ultimate Physical Randomness"

National Endowment for the Humanities, Younger Humanist Fellowship, 1974-75

American Council of Learned Societies Study Fellowship (honorary), 1974-75

George Plimpton Adams Prize (Department of Philosophy, Harvard University), 6/73, for Ph.D. Thesis,
"Steps in the Theory of Radical Translation"

Harvard Graduate Prize Travelling Fellowship, 1970-71

Sheldon Travelling Fellowship (Harvard), 1970-71 (honorary)

Harvard Graduate Prize Fellowship, 1968-72

Publications

Books

**Mathematics and Its Logics: Philosophical Essays* (Cambridge University Press, forthcoming).

**Mathematical Structuralism*, with Stewart Shapiro (Cambridge University Press, 2019).

**Varieties of Continua: From Regions to Points and Back*, with Stewart Shapiro (Oxford University Press, 2018).

**Hilary Putnam on Mathematics and Logic*, coedited with Roy Cook (Springer Verlag, 2018).

Mathematics without Numbers: Towards a Modal-Structural Interpretation, (Oxford University Press, 1989), (paperback ed. 1993).

Quantum Measurement: Beyond Paradox, Minnesota Studies in Philosophy of Science (University of Minnesota Press, 1998) co-edited with Richard Healey.

Articles

* "Extending the Iterative Conception of Set: a Height-Potentialist Perspective", forthcoming in *Mathematics and Its Logics: Philosophical Essays* (*op. cit.*).

* "On the Gödel-Friedman Program", forthcoming in *Mathematics and Its Logics: Philosophical Essays* (*op. cit.*).

* "If 'If-Then' Then What?", forthcoming in *Mathematics and Its Logics: Philosophical Essays* (*op. cit.*).

* "Extendability and Paradox" (with Roy Cook), in *Putnam on Mathematics and Logic*, eds. Roy Cook and Geoffrey Hellman (Springer Verlag, 2018).

* "Predicativity and Regions-based Continua (with Stewart Shapiro), in a volume of essays honoring Solomon Feferman, *Feferman on Logic and Foundations* eds. Wilfried Sieg and Gerhard Jaeger (Springer Verlag, 2018).

* "Reflections on Reflection in a Multiverse" in a *Festschrift* in honor of W.W. Tait, Erich Reck ed. (College Publications, London, 2018).

* "Carnap* Replies" *Monist* **101** (2018): 388-393.

“Points, Gunk, Boundaries, and Contact” (with Stewart Shapiro), *Logica Yearbook* 2014.

*“An Aristotelian Continuum” (with Øystein Linnebo and Stewart Shapiro), *Philosophia Mathematica*.

* “Regions-based Two Dimensional Continua: The Euclidean Case” (with Stewart Shapiro). *Logic and Logical Philosophy* (published 2015).

**“Points as Abstracts: Frege Meets Aristotle” (with Stewart Shapiro) *Philosophia Mathematica* 2016.

“The Classical Continuum without Points” (with Stewart Shapiro)

[The Review of Symbolic Logic](#) / [Volume 6](#) / [Issue 03](#) / September 2013, pp 488 – 512.

“Neither Categorical nor Set-theoretic Foundations”, [The Review of Symbolic Logic](#) / [Volume 6](#) / [Issue 01](#) / March 2013, pp 16 - 23

“Towards a Point-free Account of the Continuous”, *Iyyun • The Jerusalem Philosophical Quarterly* 61 (January–July 2012): 263–287 (with Stewart Shapiro).

“Infinite Possibilities and Possibilities of Infinity”, *The Philosophy of Hilary Putnam*, R.E. Auxier, Editor, Library of Living Philosopher (La Salle, IL: Open Court, forthcoming).

“On the Significance of the Burali-Forti Paradox”, *Analysis* 71 (4) 2011: 631-637.

“Foundational Frameworks”, G. Sommaruga (ed.), *Foundational Theories of Classical and Constructive Mathematics* The University of Western Ontario Series in Philosophy of Science, 2011, Volume 76, Part 1, pp. 53-69.

“Mereology in Philosophy of Mathematics”, *Handbook of Mereology*, H. Burkhardt, J. Seibt, G. Imaguire, and S. Gerogiorgakis, eds. (*Philosophia Verlag*, 2009), pp. 412-424.

“Interpretations of Probability in Quantum Mechanics”, in *Quantum Reality, Relativistic Causality, and Closing the Epistemic Circle: essays in honour of Abner Shimony*, J. Christian and W. Myrvold, eds. Springer: 2009).

“Five Questions”, in V. F. Hendricks and H. Leitgeb, eds. *Philosophy of Mathematics* (Automatic Press, 2008), Ch. 12, pp. 145-163.

“Mathematical Pluralism: The Case of Smooth Infinitesimal Analysis”, *Journal of Philosophical Logic* (2006) 35: 621-651.

“Against ‘Absolutely Everything’!” in A. Rayo and G. Uzquiano, eds. *Absolute Generality* (Oxford University Press: 2006).

“What is Categorical Structuralism?” in J. van Benthem, G. Heinzmann, M. Rebuschi, H. Visser, eds. *The Age of Alternative Logics. Assessing philosophy of logic and mathematics today* (Dordrecht: Springer, 2006).

“Pluralism and the Foundations of Mathematics”, in C.K. Waters, H. Longino, and S. Kellert, eds. *Scientific Pluralism, Minnesota Studies in Philosophy of Science*, **XIX**, with J. L. Bell (University of Minnesota Press: 2006).

“Structuralism, Mathematical”, in *The Encyclopedia of Philosophy*, ed. Donald M. Borchert. Vol. 9. 2nd ed. Detroit: Macmillan Reference USA, 2006, pp. 270-273.

- "Predicativism as a Philosophical Position", *Revue Internationale de Philosophie* (special issue ed. by P. Rouilhan) **58**, 3 (2004): 295-312.
- "Does Category Theory Provide a Framework for Mathematical Structuralism?", *Philosophia Mathematica* **11** (2003) : 129-157.
- "Structuralism", S. Shapiro, ed. *Oxford Handbook for Philosophy of Mathematics and Logic* (Oxford University Press, 2005), pp. 536-562.
- "Russell's Absolutism vs. (?) Structuralism", in G. Link, ed. *One Hundred Years of Russell's Paradox* (Berlin: de Gruyter, 2004), pp. 561-575.
- "On Nominalism", *Philosophy and Phenomenological Research*, **LXII**, 3 (2001): 691-705.
- "Maximality vs. Extendability: Reflections on Structuralism and Set Theory", in D. B. Malament, ed. *Reading Natural Philosophy: Essays in the History and Philosophy of Science and Mathematics*, (La Salle, IL: Open Court, 2002): 335-361.
- "Three Varieties of Mathematical Structuralism", *Philosophia Mathematica* (3) **9** (2001): 184-211.
- "Challenges to Predicative Foundations of Arithmetic," in G. Sher and R. Tieszen, eds., *Logic and Intuition* (Cambridge University Press, 2000): 317-338 (with Solomon Feferman).
- "Reduction to *What?*", *Philosophical Studies* **95** (1999): 203-214.
- "Some Ins and Outs of Indispensability," in A. Cantini, E. Casari, P. Minari, eds., *Logic and Foundations of Mathematics* (Dordrecht: Kluwer, 1999): 25-39.
- "Mathematical Constructivism in Space-Time," *British Journal for Philosophy of Science* **49** (1998): 1-26
- "Bayes and Beyond," *Philosophy of Science*, Vol. **64**, (June, 1997): 191-221.
- "Responses to Maher and to Kelly, Schulte, and Juhl", *Philosophy of Science* **64**, 2 (1997): 317-322.
- "Quantum-mechanical Unbounded Operators and Constructive Mathematics--A Rejoinder to Bridges," *Journal of Philosophical Logic*, Vol. **26**, 2 (1997): 121-127.
- "Structuralism without Structures," *Philosophia Mathematica* (3) **4** (1996): 100-123.
- "Beyond Definitionism--But Not Too Far Beyond," in M. Schirn, ed., *Philosophy of Mathematics Today* (Oxford: Oxford University Press, 1998): 215-225.
- "Predicative Foundations of Arithmetic," *Journal of Philosophical Logic* **24** (1995): 1-17 (with Solomon Feferman).
- "Real Analysis without Classes," *Philosophia Mathematica* (3) **2** (1994): 228-250.
- "On the Scope and Force of Indispensability Arguments," *PSA 1992*, Vol. **2** (East Lansing, MI: Philosophy of Science Association, 1993): 456-464.
- "From Constructive to Predicative Mathematics," in John Earman and John Norton, eds., *The Cosmos of Science*, (University of Pittsburg Press, 1997): 153-179.
- "Gleason's Theorem is Not Constructively Provable," *Journal of Philosophical Logic*, **22**, 2 (1993): 193-203.

- "Constructive Mathematics and Quantum Mechanics: Unbounded Operators and the Spectral Theorem," *Journal of Philosophical Logic*, **22**, 3 (1993): 221-248.
- "The Boxer and His Fists: The Constructivist in the Arena of Quantum Physics," *Proceedings of the Aristotelian Society, Supplement*, **LXVI** (1992): 61-77.
- "Bell-Type Inequalities in the Non-Ideal Case: Proof of a Conjecture of Bell," *Foundations of Physics*, **22**, 6 (1992): 807-17 (special issue in honor of Henry Margenau).
- "Supervenience-Determination a Two-Way Street? Yes, but One of the Ways is the *Wrong Way*," *Journal of Philosophy* **89**, 1 (1992): 42-47.
- "Toward a modal-structural interpretation of set theory," *Synthese*, **84**, (1990): 409-443.
- "Never say 'never'! On the communication problem between intuitionism and classicism", *Philosophical Topics* **17**, 2 (1989): 47-67.
- "Modal-structural mathematics," in A. Irvine, ed., *Physicalism in Mathematics* (Kluwer, 1989): 303-327.
- "The many-worlds interpretation of set theory," *Proceedings of the Philosophy of Science Association*, 1988, Vol. 2 (East Lansing, MI: PSA), 445-455.
- "EPR, Bell, and collapse: A route around 'stochastic' hidden variables," *Philosophy of Science*, **54**, 4 (1987): 558-576.
- "Dualling: A critique of an argument of Popper and Miller" (with J. Michael Dunn), *The British Journal for Philosophy of Science*, **37** (1986): 220-223.
- "Logical Truth by Linguistic Convention," in *The Philosophy of W. V. Quine*, L. E. Hahn and P. A. Schilpp, eds. (LaSalle: Open Court, 1986), pp. 189-205..
- "Determination and logical truth," *The Journal of Philosophy*, **82** (1985): 607-616.
- "Realist Principles," *Philosophy of Science*, **50** (1983): 227-249.
- "Stochastic Locality and the Bell Theorems," *PSA 1982*, Vol. 2, P. D. Asquith and T. N. Nickles, eds. (East Lansing, MI: Philosophy of Science Association, 1983) .601-615.
- "Stochastic-Einstein-Locality and the Bell Theorems," *Synthese*, **53**, 3 (1982): 461-504.
- "Einstein and Bell: Strengthening the Case for Microphysical Randomness," *Synthese*, **53**, 3 (1982): 445-460.
- "Quantum Logic and the Projection Postulate," *Philosophy of Science*, **48**, 3 (1981): 99-115.
- "How to Gödel a Frege-Russell: Gödel's Incompleteness Theorems and Logicism," *Noûs*, **XV**, 4 (1981): 451-468.
- "Quantum Logic and Meaning," *Philosophy of Science Association Proceedings*, 1980, Vol. 2, P. D. Asquith and R. Giere, eds. (East Lansing, MI: PSA, 1980), 493-511.
- "Physicalism and the Mind-Body Problem," *VIth International Congress for Logic, Methodology, and Philosophy of Science, Abstracts*, 1979 (Hannover, West Germany).

- "Historical Materialism" in *Issues in Marxist Philosophy*, Vol. II, J. Mepham and D. H. Ruben, eds. (Harvester, 1979), pp. 143-170.
- "Randomness and Reality," *Philosophy of Science Association Proceedings* 1978, Vol. 2, P. D. Asquith and I. Hacking, eds. (East Lansing, MI: PSA, 1978), 79-97.
- "Accuracy and Actuality," *Erkenntnis*, **12** (1978): 209-228.
- "Symbol Systems and Artistic Styles," *Journal of Aesthetics and Art Criticism*, Spring, 1977, 279-292.
- "Physicalist Materialism," *Noûs*, **11**, 4 (1977): 309-345 (with F. W. Thompson).
- "Physicalism: Ontology, Determination, and Reduction," *Journal of Philosophy*, **71**, 17 (1975): 551-564 (with F. W. Thompson).
- "The New Riddle of Radical Translation," *Philosophy of Science*, **41**, 3 (1974): 227-246.
- "Finitude, Infinitude, and Isomorphism of Interpretations in some Nominalistic Calculi," *Noûs* **III**, 4 (1969), 413-425.

Reviews, Critical Studies and Introductions

- *Critical Study of Hartry Field, *Science without Numbers* (Oxford University Press, 2018), *Philosophia Mathematica* (3) (2019): 139-148 (with Mary Leng).
- Critical Study of Solomon Feferman, *In the Light of Logic* (Oxford University Press, 1998), *Philosophia Mathematica* (3) **9** (2001): 231-237.
- Review of Stewart Shapiro, *Philosophy of Mathematics: Structure and Ontology* (Oxford, 1997), *The Journal of Symbolic Logic* **64**, 2 (1999): 923-926
- "Maoist Mathematics?" Critical study of John Burgess and Gideon Rosen, *A Subject With No Object: Strategies for Nominalist Interpretation of Mathematics* (Oxford, 1997), *Philosophia Mathematica* **6** (1998): 357-68.
- Review article of Charles Chihara, *Constructibility and Mathematical Existence* (Oxford, 1990), *Philosophia Mathematica* (3) **I** (1993): 75-88.
- Review of Stewart Shapiro, "Second-order languages and mathematical practice," *Journal of Symbolic Logic*, **54**, 1 (1989): 291-3.
- Review article of work on truth theory: Martin and Woodruff [1975], Kripke [1975], Gupta [1982], and Herzberger [1982], *The Journal of Symbolic Logic*, Vol . **50**, No. 4, (1985): 1068-1071.
- Introduction to a special issue of *Noûs* on foundations of quantum mechanics, *Noûs* **18**, 4 (1984), pp. 557-567.
- Introduction to Nelson Goodman, *The Structure of Appearance*, Third Edition (Dordrecht): Reidel, 1976), pp. xix-xlvii.
- "Against Bad Method," Review article of Paul K. Feyerabend, *Against Method* (London, N.L.B., 1975), with a reply by Feyerabend and my rebuttal, "From Bad to Worse," in *Metaphilosophy*, 10, 2, (1979): 190-207.

Review of S. Blackburn, "Reason and Prediction" (Cambridge University Press, 1973), *Philosophical Review*, **84**, 2 (1975): 273-276.

Invited Presentations (selected)

- *"Extending the Iterative Conception of Set: a Height-Potentialist Perspective", presented at a special session on recent work in philosophy of mathematics at the American Mathematical Society meeting at Univ. of Wisconsin, Madison, 9/14/19.
- * "Extending the Iterative Conception of Set: a Height-Potentialist Perspective", Conference honoring the centennial of Hermann Weyl's *Das Kontinuum*, Dep't of Mathematics, University of Leeds, Sep. 2018.
- **"Hilary Putnam on Mathematics, Logic, and Philosophy Thereof", memorial symposium honoring Hilary Putnam, Harvard University, Dep't of Philosophy, Sep. 18, 2016.
- **"Modal Mathematics in a Multiverse", Conference on Structuralism in Mathematics, Ludwig-Maximilian Universität, Munich, Oct. 12-14, 2016.
- **"Modal-Structural Mathematics", Symposium on the Foundations of Mathematics, Gödel Institute, University of Vienna, Sep. 21-23, 2015.
- "Regions-based Two-Dimensional Continua: The Euclidean Case", Joint Philosophy of Mathematics-Philosophy of Science Association biennial meeting Symposium on Perspectives in Phil of Maths, Chicago, Nov. 9, 2014.
- "The Classical Continuum without Points" Department of Philosophy, Ohio State Univ., May 21, 2012.
- "The Classical Continuum without Points", Philosophy of Science Association biennial meetings, Symposium on Continuity, San Diego, Nov. 17, 2012.
- "On the Significance of the Burali-Forti Paradox", Philosophy Colloquium, University of California, Davis, April 29, 2011.
- "On the Significance of the Burali-Forti Paradox", "Philosophy in an Age of Science", a conference in honor of Hilary Putnam, Harvard and Brandeis Universities, May 31-June 3, 2011.
- "On the Axiom of Infinity", Symposium on Philosophy of Mathematics, CNRS, REHEIS, University of Paris-Diderot, 25 June, 2010. (Precursor of "Infinite Possibilities...", listed above.)
- "Reflections on Replacement and Reflection: The Axioms in a Structuralist Setting", presented at "Trends in the Philosophy of Mathematics" *Studia Logica* and the Goethe University, Frankfurt, Germany, Sep. 1-4, 2009.
- "Does Geometry Need Ontology", workshop "Ontological Shifts in Geometry", CNRS, REHEIS, University of Paris, June 4-6, 2009.
- "On the Gödel-Friedman Program", Conference in honor of Harvey Friedman, Ohio State University, May 15-16, 2009.
- "What Can We Expect of a Foundational Framework for Mathematics?" Association of Symbolic Logic, Symposium on Philosophy of Mathematics, Pasadena, CA, March, 2008.

"Uses of Mereology in Philosophy of Mathematics", Midwest Philosophy of Mathematics Workshop", Notre Dame, October 26, 2007.

"Interpretations of Probability in Quantum Mechanics", Symposium in honor of Abner Shimony, Perimeter Institute, Waterloo, Ontario, Canada, July 19, 2006.

"Against 'Absolutely Everything'!", keynote speaker at Logica 2006, Hejnice, Czech Republic, June 22, 2006.

"Reduction, Determination, Explanation", special series on Reduction in the Sciences and Philosophy, Ludwig Maximilians Universität, Munich, Germany, Jan. 9, 2006.

"Structuralism and the Open-endedness of Mathematics, I and II", Philosophy Seminars at the University of Otago, Dunedin, NZ, Mar. 9, 16, 2005.

"What Is Categorical Structuralism?", Symposium, Association for Symbolic Logic and American Philosophical Association, Chicago, April 24, 2004.

"Does Category Theory Provide a Framework for Mathematical Structuralism?", International Symposium on Philosophical Insights into Logic and Mathematics, Archives Henri Poincaré, University of Nancy, France, Sep. 30-Oct. 4, 2002.

"Predicativity as a Philosophical Position", Symposium on Predicativity, Association for Symbolic Logic and American Philosophical Association, Seattle, Mar. 28, 2002.

"Russell's Absolutism vs. (?) Structuralism", International Symposium: One Hundred Years of Russell's Paradox, University of Munich, Germany, June 2-5, 2001.

"All-Embracing Completeness and Creative Progress: Zermelo (1930) and a Structuralist View of Set Theory", Philosophy of Mathematics Conference, University of California at Santa Barbara, Feb. 4-6, 2000.

"On Nominalism", Symposium in honor of Nelson Goodman, American Philosophical Association, Chicago, April 23, 2000.

"Maximality vs. Extendability: Reflections on Structuralism and Set Theory", presented at the Steinfest symposium honoring Howard Stein, at the University of Chicago (May 21-23, 1999).

"Mathematical Constructivism in Space-Time", Philosophy Colloquium, University of California, Santa Barbara (April 24, 1998).

_____, Philosophy Colloquium, University of California, San Diego (May 8, 1998).

_____, Philosophy Colloquium, University of California, Irvine (May 20, 1998).

"On the Interplay of Differing Mathematical Conceptions of the Continuum and Space-Time Physics", read at the Seven Pines Symposium II (May 14-16, 1998, Lewis, WI).

"Predicative Foundations of Arithmetic", Logic Colloquium, Department of Mathematics, University of California, Los Angeles (June 5, 1998).

"Three Varieties of Mathematical Structuralism", Philosophy colloquium, The Ohio State University, Columbus, OH (October 23, 1998).

"Reduction (?) to What?", comments on L. Sklar's "The Reduction (?) of Thermodynamics to Statistical Mechanics", presented at the Oberlin Colloquium in Philosophy, Apr. 4-6, 1997.

University of Cambridge, U.K., Lecture to the Department of History and Philosophy of Science, December 18, 1996, "Some Ins and Outs of Indispensability."

Carnegie Mellon University, Logic and Philosophy Colloquium, October 10, 1996, "Predicative Foundations of Arithmetic and Its Challenges."

Association for Symbolic Logic, Annual Meeting, Madison, WI, March 11, 1996, Invited Address: "Indispensability Arguments in the Philosophy of Mathematics."

Minnesota Philosophical Society, Annual Meeting, St. Olaf College, October 21, 1995, Keynote Address: "On Content in Music."

Indiana University Logic Colloquium, Bloomington, IN, September 20, 1995: "Structuralism without Structures."

University of Chicago, Committee on Conceptual Foundations of Science Colloquium, February 24, 1995, "Mathematical Structuralism and Nominalism."

University of California, Berkeley, Philosophy Colloquium, May 5, 1994: "The Ins and Outs of Indispensability."

University of California, Berkeley, Logic Colloquium (Department of Mathematics), May 6, 1994: "Predicative Dedekind Arithmetic" (based on joint work with Solomon Feferman, recently appeared in the *Journal of Philosophical Logic*).

International Conference "Philosophy of Mathematics Today" *Deutsche Forschungsgemeinschaft*, Munich, Germany, June 28-July 4, 1993, "Beyond Definitionism--but Not Too Far Beyond."

Seventeenth Annual Greensboro Symposium in Philosophy, Greensboro, NC, March 19-21, 1993, "Empirical Equivalence and The Underdetermination of Theories," comments on James Cushing's "Is Quantum Mechanics an Interesting Case of Underdetermination?"

Philosophy of Science Association Biennial Meetings, Chicago, October 28-November 1, 1992, Symposium "Is foundational work in mathematics relevant to the philosophy of science?," presented "On the Scope and Force of Indispensability Arguments," (co-symposists Solomon Feferman, Harvey Friedman, John Burgess).

Chapel Hill Philosophy Colloquium, October 11, 1992, Comments on Penelope Maddy, "Naturalizing Mathematical Methodology."

Joint Session of the Aristotelian Society and the Mind Association, Reading, England, July 14-17, 1992, Symposium "Constructive Mathematics, Quantum Physics, and Quantifiers," presented "The Boxer and His Fists: The Constructivist in the Arena of Quantum Physics."

9th International Congress of Logic, Methodology and Philosophy of Science, August 7-14, 1991, Uppsala, Sweden, Special Symposium on Constructive Mathematics and Quantum Mechanics (with commentators P. Martin-Löf, E. Nelson, and R. Penrose).

University of Pittsburgh, Center for Philosophy of Science lecture series (1989), lecture on the classicism/constructivism controversy in mathematics.

- Princeton University Philosophy Colloquium, "Modal mathematics and material reality" (1988).
- Philosophy of Science Association, Symposium on Set Theory, with John Burgess and W. W. Tait (1988).
- APA Eastern Division Meetings (Boston), Workshop on Bell's Theorem, with Howard Stein and Abner Shimony (Dec. 1986).
- APA Eastern Division Meetings (Washington, D.C.), symposium on "Supervenience" (Dec. 1985).
- Cambridge University, two seminars to the History and Philosophy of Science Department, on philosophy of mathematics and philosophy of quantum mechanics (May, 1985).
- Oxford University, Seminar on Philosophy of Mathematics (Daniel Isaacson), "Mathematics without objects" (May, 1985).
- Interuniversity Course in Philosophy of Science, Dubrovnik, Yugoslavia, lecturer (April, 1985).
- McGill University, Workshop on Aesthetics, "Expression in musical analysis" (April, 1985).
- University of California, Berkeley, Logic Group Colloquium (Department of Mathematics), "Mathematics without objects," (February, 1985).
- Conference on Philosophy of Mathematics, Indiana University, "Mathematics without numbers" (Nov., 1984).
- University of London (Chelsea College), lecture on Hidden Variables and the Bell Theorems, (Oct., 1983).
- Oxford University, Lectures in philosophy of mind and philosophy of science, Trinity Term (May-June), 1983, as Visiting Lecturer, Philosophy Subfaculty.
- Philosophy of Science Association Biennial Meetings, Philadelphia, PA, Symposium: Quantum Mechanics and Locality (Oct., 1982).
- Center for Philosophy of Science, University of Minnesota, March 8-12, 1982: one lecture on physicalism and the mind-body problem; two lectures on Bell's Theorem and implications (Philosophy of Quantum Mechanics).
- Seminar on the Foundations of Quantum Mechanics, David Malament, University of Chicago, Spring 1981: "The Quantum Logic Interpretation."
- APA Western Division Meetings (Milwaukee), Apr. 1981: Symposium on Philosophy of Physics, commentator on Paul Teller, "Is the Projection Postulate a Mistake?"
- Philosophy Colloquium, Center for Philosophy of Science, University of Pittsburgh, Feb., 1981: "Einstein, Bell, and the Case for Microphysical Randomness."
- Philosophy of Science Association Biennial Meetings (Toronto, Canada), Oct., 1980: Symposium on Quantum Logic and Quantum Mathematics: "Quantum Logic and Meaning."
- Committee on the Conceptual Foundations of Science, University of Chicago, April 24, 1979: "Randomness and Reality."
- XIth Annual Chapel Hill Philosophy Colloquium (Chapel Hill, N.C.), Oct. 1977: "Randomness and Reality."

American Philosophical Association, Eastern Division Meetings, New York City, Dec., 1975: Symposium on Physicalism

Contributed Papers

14th Congress of Logic, Methodology, and Philosophy of Science, Nancy, France, July 19-26, 2011, Symposium on Theories of Continua: "Plurality of Continua".

Association for Symbolic Logic meetings, Berkeley, 25 March, 2011, session on Categorical Foundations and Foundations of Category Theory: revisiting Feferman 1977: "None of the Above—or Better, Some of Each".

First World Congress on Universal Logic, Montreux, Switzerland, Mar. 31 - April 3, 2005: "Pluralism in Logic: The Case of Smooth Infinitesimal Analysis."

Xth International Congress of Logic, Methodology, and Philosophy of Science, Florence, Italy, August 22, 1995: "Modal-Structuralism and Indispensability Arguments for Mathematics."

Association for Symbolic Logic, "Constructivization Problems in Space-time Physics: Singularity Theorems (Irvine, CA, April 1, 1995).

Beijing International Conference on Philosophy of Science, June, 1992, "Naturalism and Mathematical Realism."

Association for Symbolic Logic, "Limitations on Constructivization of Mathematics for Quantum Mechanics" (San Francisco, April, 1991).

Symposium on the Foundations of Modern Physics 1990, Joensuu, Finland, "Does Consciousness Play a Special Role in Quantum Measurement?" (August, 1990).

Society for Exact Philosophy, "Never Say 'Never': On the Communication Problem between Intuitionism and Classicism" (Tallahassee, FL, May, 1990).

Society for Exact Philosophy, Honolulu, "Toward a Modal Interpretation of Mathematics" (Feb. 1986).

Australian Association of Philosophy Conference, Adelaide, "Realist Principles" (Sep. 1983).

VIIth International Congress of Logic, Methodology, and Philosophy of Science, Salzburg, "Stochastic Einstein-locality and the Bell Theorems," (July, 1983).

VIth International Congress of Logic, Methodology, and Philosophy of Science, Hannover, West Germany, "Physicalism and the Mind-Body Problem," (August, 1979).

Workshops Organized

"Quantum Measurement: Decoherence and Modal Interpretations," sponsored by the Minnesota Center for Philosophy of Science in cooperation with the Theoretical Physics Institute, University of Minnesota, May 4-7, 1995. This workshop was supported by a grant from the National Science Foundation (co-principal investigators Richard Healey and Geoffrey Hellman) and by grants from CLA Scholarly Events Fund and the Graduate School at the University of Minnesota.

"Recent Work in Philosophy of Mathematics," Indiana University, Departments of Philosophy and History and Philosophy of Science (with J. Alberto Coffa), Bloomington, IN, November 2-4, 1984.

Advisory Panel

National Science Foundation, History and Philosophy of Science, 1987-1991.

Editorial Boards

Philosophy of Science

Reviews Editor, *Bulletin of Symbolic Logic* (2002-05)

Philosophia Mathematica

Advisory Board

Seven Pines Symposium (physics, history and philosophy of physics)

Administrative Experience (Selected)

Search Committees:

School of Music, University of Minnesota (for hire of pianist, Lydia Artymiw), 1988-89

Program in History of Science and Technology and Department of Physics (for hire of Michel Janssen), 1998-99.

College of Liberal Arts Committee on Promotion and Tenure (2004-05)

Chair of Department of Philosophy (1 July, 2005-30 June, 2014)

President of Curatorial Council of Asian Arts, Minneapolis Institute of Arts (1989-92).