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CURRICULUM VITAE

Joseph Amadee Goguen

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born 28 June 1941

Pittsfield, Massachusetts, USA

Research Interests

Areas in which I have done research include the following: software engineering, especially specification, modularization, requirements capture and analysis, architecture, and abstract data types; user interface design; theorem proving; design and semantics of programming languages, including module systems, and concurrent object oriented, functional and logic languages and their combinations; sociology of science and technology; category theory, logic, and universal algebra, especially order and hidden sorted algebra; unification; fuzzy sets and fuzzy logic; ethics; massively parallel, hierarchical computer architecture; term and graph rewriting, with application to models of parallel computation; semiotics; computer security; database inference and consistency; visual programming; context-sensitive interactive graphical editing; psycholinguistics and psychology, including multi-media instruction; natural language processing, including unification grammar and situation semantics; discourse analysis of aircraft accident transcripts, and of planning, reasoning, and explanation; information theory; philosophy of computation, art, and consciousness.

Education

Ph.D. in Mathematics	University of California at Berkeley, 1968
M.A. in Mathematics	University of California at Berkeley, 1966
B.A. in Mathematics	Harvard College, 1963

Professional and Academic Experience

- Professor of Computer Science and Director of the Meaning and Computation Lab, University of California at San Diego, from January 1996. Member of committees for faculty recruiting, computer hardware, and qualifying examination. Member of the Lab for Comparative Human Cognition from March 1999.
- Director, UCSD Program in Advanced Manufacturing, January 1996 to June 1997.
- Professor of Computing Science and Fellow of St. Anne's College, Oxford University, from September 1988 to April 1996. Director of Centre for Requirements Analysis and its Foundations, from March 1991. Acting head of Department, 1993-4. Member of committees directing Research Students in the Programming Research Group, directing joint degree between the Computing Lab and the Engineering School, and establishing a new undergraduate degree in Computing; also chairman of Examiners for MSc Degree in Computing. Principal investigator of several grants and contracts,

from the UK Science and Engineering Research Council, British Telecom, Fujitsu Corporation, Sharp Corporation, and the European ESPRIT programme.

- Senior Staff Scientist, SRI International, Computer Science Laboratory, from May 1987 to September 1988; Program Manager, from November 1985; Senior Computer Scientist from September 1979. Research and management in areas of computer science, psychology, and linguistics. Principal Investigator on over \$3 million in grants contracts, from the National Science Foundation, the Office of Naval Research, Philips Corporation, Ada Joint Projects Agency, and others.
- Member, Center for the Study of Language and Information at Stanford University, from January 1984. Research and planning in the areas of semantics of natural and artificial languages, situated language, and theory of computation; member of the Research Committee; head of Computer Science section.
- Professor, Computer Science Department, University of California at Los Angeles, from July 1979 to January 1981; Associate Professor from July 1974 to July 1979; Assistant Professor, Computer Science Department, University of California at Los Angeles, 1973–1974; Visiting Assistant Professor, 1972–1973.
- Managing Director and General Partner, Structural Semantics, Palo Alto, CA, 1978–1996. Contracts with NASA, Westinghouse, SRI International, Hughes Aircraft, and others.
- Consultant to IBM, NCR, Hughes Aircraft, Westinghouse Electric and several other corporations.
- Senior Visiting Fellow, Department of Artificial Intelligence, University of Edinburgh, Scotland, summer 1976 and fall 1977.
- Visiting Associate Professor, University of Colorado, Boulder CO, summers 1974, 1975, 1977, 1978.
- Academic Staff, Naropa Institute, Boulder CO; organized an innovative cognitive science program; teaching artificial intelligence, cybernetics, system theory, linguistics, summers 1974, 1975, 1977 and 1978.
- Research Fellow, Mathematical Sciences Department IBM T.J. Watson Research Center, Yorktown Heights NY, September 1971 to September 1972. Research on natural and artificial language semantics, program schemes, algebraic theories, systems, etc.
- Assistant Professor, Committee on Information Sciences, University of Chicago, 1968 to 1973. Research and teaching in information theory, logic and model theory, applications of categorical algebra, switching theory, automata, control theory, music, general systems theory, and formal languages.
- Instructor, Department of Mathematics, University of California at Berkeley, Summer 1968. Courses on complex variables, difference equations and linear algebra.
- Research Assistant, Department of Mathematics, University of California at Berkeley, 1965–1968. Research on the theory of evolutionary algorithms with applications to biology, and the numerical solution of chemical equilibrium problems, for Professor Hans Bremermann.
- Consultant to Krohn-Rhodes Research Institute, 1966 and 1967. Research on mathematical economics, pattern recognition, and semigroup theory.

- Teaching Assistant, Department of Mathematics, University of California at Berkeley, 1963–1965. Teaching calculus sections.
- Scientist at Sylvania Electronic Systems, Applied Research Laboratory, Waltham MA., summers 1962, 1963, research on pattern and speech recognition, color vision, switching and automaton theories; consultant, 1963, research on nets of automata and learning theory.
- Research Assistant, Department of Psychology, University of Pennsylvania Summer 1961. Research on psychophysics and learning theory, for Professors Bush, Luce, and Gelanter.
- Tutor in the Bureau of Study Council, Harvard University, 1961 and 1962. Mostly mathematics, physics, statistics, and study habits.
- Programming and Digital Design Technician, General Electric Co., Defense Electronics Division, Pittsfield MA, summers of 1959 and 1960. In 1960, helped design a computer (drum and NORs), and an automated digital testing device. In 1959, designed a circular geoballistic slide rule.

Doctoral Students Supervised

The following are doctoral students that I have supervised, showing the institution, and the date of graduation (in parentheses), or of leaving (in brackets).

1. Robert Yacobellis, University of Chicago (1970).
2. Susanna Ginali (Schwab), University of Chicago (1973).
3. Peter Dybjer, University of California at Los Angeles (1978).
4. Farshid (Cyrus) Nourani, University of California at Los Angeles (1979).
5. Efraim Shaket, University of California at Los Angeles (1979).
6. James Weiner, University of California at Los Angeles (1980).
7. Joseph Tardo, University of California at Los Angeles (1980).
8. Kamran Parsaye(-Ghomi), University of California at Los Angeles (1982).
9. Maria Zamfir (Bleyberg), University of California at Los Angeles (1983).
10. Michael Lowry, Stanford University (1989).
11. Tomas Isakowitz, University of Pennsylvania (1989).
12. Adolpho Socorro, Oxford University (1993).
13. Răzvan Diaconescu, Oxford University (1994).
14. Antonio Alencar, Oxford University (1994).
15. Jose Barros, Oxford University (1995).
16. Paulo Borba, Oxford University (1995).

17. Lutz Hamel, Oxford University (1996).
18. Francisco Pinheiro, Oxford University (1997).
19. Will Tracz, Stanford University (1997).
20. Andre Stern, Oxford University (1997).
21. Simone Viglione, Oxford University (1997).
22. Corina Cirstea, Oxford University (1999).
23. Sula Ma, Oxford University (2001).
24. Grigore Roşu, University of California at San Diego (2000).
25. Kai Lin, University of California at San Diego.
26. Hendrik Hilberdink, Oxford University.
27. Marina Jirotko, Oxford University.
28. Guilian Wang, University of California at San Diego.
29. Douglas Harrell, University of California at San Diego.

In addition, I have served on many Ph.D. committees, including those of Adele Goldberg and Kenneth Sevcik at Chicago, and Richard Schwartz and Jean Gallier at UCLA, and I have served as external examiner for several dissertation committees, including two at the University of Waterloo (Michael Levy and Keitaro Yukawa), and one each at the University of Cambridge, the University of Edinburgh, Universität Passau, Universidade de Minho, and Cal Tech. I have also supervised many Masters theses at UCLA, Oxford, and UCSD.

Public and Professional Service Activities

- Program committee for KES2002, Sixth International Conference on Knowledge-Based Information Engineering Systems, Crema, Italy, 16–18 September 2002.
- Program committee for VRI02, Visual Representations and Interpretations, Liverpool, Liverpool UK, 9–12 September 2002.
- Program committee for Workshop on Media Technology for Communicative Reality, Tokyo, Japan, 18 August 2002.
- Tutorial at ASE01, Sixteenth IEEE International Conference on Automated Software Engineering, San Diego, 26–29 November 2001.
- Program committee for Workshop on Social Intelligence Design, at the Fifteenth Annual Conference of the Japanese Society for Artificial Intelligence, Matsue, Japan, 21–22 May 2001.
- Member of International Advisory Committee of BISC special interest group on fuzzy logic and the internet, from February 2001.

- Program committee for ASE01, Sixteenth IEEE International Conference on Automated Software Engineering, San Diego, 26–29 November 2001.
- Member of Senior Advisory Board, Minciu Sodas Laboratory, Vilnius, Lithuania, from July 2000.
- Program committee for conference “Organizational Semiotics: the evolving science of information systems,” Montreal, 23–25 July 2001.
- Editorial Board for “Digital Horizons” publication series, Synchron Press, Germany, from July 2000.
- Program committee for CATS 2001, Computing: Seventh Australasian Theory Symposium, Queensland Australia, 29 January to 4 February 2001.
- Program committee for Third International Workshop on Organisational Semiotics, Staffordshire UK, 4 July 2000.
- Member, Minciu Sodas Laboratory, Vilnius, Lithuania, from January 2000.
- Editorial Advisory Board, *Tikkun* magazine, from December 1999.
- Program committee for ASE00, Fifteenth IEEE International Conference on Automated Software Engineering, Grenoble FR, 11–15 September 2000.
- Program committee for FMOODS 2000, Fourth IFIP International Conference on Formal Methods for Open Object-based Distributed Systems, Stanford CA, 6–8 September 2000.
- Program committee for CATS 2000, Computing: the Sixth Australasian Theory Symposium, Canberra Australia, 31 January to 3 February 2000.
- PI of NSF “Twinning” grant, to support collaboration with Romanian computer scientists, March 1999 to January 2001.
- Series Editor for Imprint Academic books on Consciousness Studies, from December 1998.
- Program committee for ASE-99, 14th IEEE International Conference on Automated Software Engineering, Orlando FL, November 1999.
- Program committee for Workshop on Imitation in Animals and Artifacts, AISB’99, Edinburgh Scotland, 6–9 April 1999.
- Program committee for ASE-98, 13th IEEE International Conference on Automated Software Engineering, Honolulu HA, 13–16 October 1998.
- Program committee for Joint Conference on Science and Technology of Intelligent Systems, including ISIC’98 (Int. Symp. on Intelligent Control), CIRA’98 (Symp. on Computational Intelligence in Robotics and Automation), and ISAS’98 (Intelligent Systems and Semiotics), Gaithersberg MD, 14–17 September 1998.
- Program committee for Workshop on Social Intelligence, Zürich, Switzerland, 17–21 August 1998.
- Program committee for User Interfaces for Theorem Provers 1998 (UITP98), Eindhoven, the Netherlands, 13–24 July 1998.

- Program committee for ICRE'98, Third IEEE International Conference on Requirements Engineering, Colorado Springs CO, 5–9 April 1998.
- Program committee for Computation for Metaphors, Analogy and Agents (CMAA'98), Aizu University, Aizu-Wakamatsu, Japan, 6–10 April 1998.
- Program committee for ASE-97, 12th IEEE International Conference on Automated Software Engineering, Incline Village Nevada, 3–5 November 1997.
- Program committee for ISAS'97, Intelligent Systems and Semiotics, Gaithersberg MD, 23–25 September 1997.
- Editorial Board, *Discrete Mathematics and Theoretical Computer Science* book series, Springer-Verlag, from October 1996.
- Member of IFIP WG1.3, from January 1996.
- Editor in Chief, *Journal of Consciousness Studies*, from July 1996; Founding Editor and Executive Editor, from December 1992.
- Program committee for ICRE'96, Second IEEE International Conference on Requirements Engineering, Colorado Springs CO, 15–18 April, 1996.
- Program committee for ICDE-12, 12th International Conference on Data Engineering, New Orleans LA, 26 Feb – 1 March, 1996.
- International Advisory Board of the Centre for Discrete Mathematics and Theoretical Computer Science, Universities of Auckland and Waikato, from October 1994.
- Editorial Board of *Journal of General Systems and Applications*, from February 1994.
- Program Committee for Workshop on Increasing the Practical Impact of Formal Methods for Computer-Aided Software Development: Evolution Control, Naval Postgraduate School, Monterey, California, September 1994.
- Program Committee for RE'95, Second IEEE International Symposium on Requirements Engineering (York, England, March 1995).
- Program Committee for Fourth IS-CORE Workshop, 16–19 August 1994, Noordwijkerhout, the Netherlands.
- Program Committee for ICRE'94, IEEE International Conference on Requirements Engineering (Colorado Springs, USA, March 1994).
- Program Committee for Workshop on Increasing the Practical Impact of Formal Methods for Computer-Aided Software Development: Software Slicing, Merging and Integration, Naval Postgraduate School, Monterey, California, 13–15 October 1993.
- Member of International Advisory Board of the *Egyptian Journal of Mathematics*, from 1993.
- Program Committee for TAPSOFT '93 (Theory and Practice of Software Development) and CAAP (Colloquium on Trees in Algebra and Programming).

- Program Committee for Conference on Social Science Research, Technical Systems, and Cooperative Work (Paris, March 1993).
- Program Committee for First International Symposium on Requirements Engineering (San Diego, CA, January 1993).
- Organizer for Workshop on Object Oriented Information Systems (Schloss Dagstuhl, Germany, March 1992).
- Program Committee for Conference on Theorem Provers in Circuit Design (Nijmegen, June 1992).
- Program Committee Chairman for Requirements Engineering Workshop (Oxford, December 1991).
- Lectures on “Sheaf Semantics of Interacting Concurrent Objects” at the Advanced School on Algebraic, Logical and Categorical Foundations of Concurrency, Gargnano del Garda, Italy” 7-11 October 1991.
- Program Committee for 1991 European Conference on Object Oriented Programming (Geneva, July 1991).
- Editorial Board of *Formal Methods in System Design*, 1991 on.
- Program Committee of 1990 IFIP Working Conference on Object Oriented Data Bases (Windemere UK, July 1990; IFIP WG2.6).
- Program Committee of 1990 Formal Methods and Software Development Workshop (Napa CA, May 1990).
- Editorial Board of *Mathematical Structures in Computer Science*, 1990 on.
- Editorial Board of *International Journal of Foundations of Computer Science*, 1988 on.
- Program Committee for 1988 Principles of Programming Languages (POPL) Symposium.
- Program Committee for 1987 AAI (American Association for Artificial Intelligence) Meeting.
- Discussant in NSF JTECH (National Science Foundation, Japanese Technology Assessment) Workshop on Advanced Computing (assessment of Japanese Fifth Generation Project), February 1987; involved writing report on visit to Japan.
- Host for Fullbright Scholar from Norway, Dr. Ellen Munthe-Kaas, 1986–87.
- Editorial Board, Cambridge Tracts in Theoretical Computer Science, 1987–1995.
- Program Committee for Second International Conference on Supercomputing, 1987.
- Organizing Committee for LICS (Logic in Computer Science) Conference, cosponsored by ACM and IEEE, 1985 – 1992.
- Program Committee for TAPSOFT '87 (Theory and Practice of Software Development) and CFLP (Combining Functional and Logic Programming).
- Program Committee for LICS 87 (Logic in Computer Science).

- Program Committee for CADE 86 (Conference on Automatic Deduction).
- Editorial Board of *Future Computer Systems*, 1985–1996.
- Co-director of Software Technology Seminars, 1980, 1982, 1983, Capri, Italy.
- Editorial Board of *Journal of Computer and System Sciences*, 1981 on.
- Associate Commentator, *The Behavioral and Brain Sciences*, 1977-80.
- Editorial Board of *International Journal of Fuzzy Sets and Systems*, 1977–97.
- NSF Review Board for Theoretical Computer Science, 1975-76.
- Teaching Staff, Vajradhatu Seminary, West Village, Colorado, 1975.
- Founded and led Fuzzy Robot Users Group at UCLA, 1974–79.
- Teaching, planning, and program design for Science Program, Naropa Institute, Boulder, Colorado, 1974-1979.
- Project Headstart, teaching mathematics, Berkeley, California, 1966-67.
- Referee for *Journal of the Association for Computing Machinery*, *IEEE Transactions on Software Engineering*, *Communications of the Association for Computing Machinery*, Office of Naval Research, National Science Foundation, 15th International Conference on Computer Architecture, *IEEE Computer, Information and Control*, *ACM Transactions on Programming Languages and Systems*, *Transactions of the American Mathematical Society*, *Automatica*, *SIAM Journal*, *Journal of Mathematical System Theory*, *IFIP Conferences*, *Theoretical Computer Science*, *SIAM Journal on Computing*, *General Topology and Its Applications*, *IEEE Transactions on Information Theory*, *International Journal of Man-Machine Studies*, and many other journals, conferences, and government agencies.

Honors and Special Recognition

- Fellow of the International Fuzzy Systems Association, August 2001.
- Listed in the mid-80s on the “Most cited authors in Computer Science – January 2001” page of the automated citation system at citeseer.nj.nec.com/mostcited.html.
- Japan Society for the Promotion of Science Senior Research Fellowship, Spring 1999.
- Nominated for Turing Award, 1999.
- Nominated for Fellowship at the Institute for Advanced Study in the Behavioral Sciences, 1999.
- Key Resource Award in Formal Methods, from Links2Go, for hidden algebra website, 22 July 1998.
- Creativity Award from Art & Technology, for “Semiotic Zoo” website, 12 January 1998.
- Invited contributor to *People and Ideas of Theoretical Computer Science*, a collection of essays in honor of the twenty-fifth anniversary of the journal *Theoretical Computer Science*, edited by Christian Calude (Springer Verlag, 1998).
- Shell Oil Distinguished Lecture, University of Texas, El Paso, October 1997.

- Glasgow University Distinguished Seminar Lecture, November 1990.
- NASA Certificate of Recognition and Tech Brief Award, for research report “Checklist Interruption and Resumption: A Linguistic Study,” August 1990.
- Syracuse University Distinguished Lectureship in Parallel Computing, 1987.
- Nominator for the 1988 Kyoto Prize (Inamori Foundation; Japanese equivalent of the Nobel Prize), 1987.
- Exceptional Achievement Award, SRI International, 1984.
- Senior Visiting Fellow (Science and Engineering Research Council, United Kingdom), Department of Artificial Intelligence, University of Edinburgh, Edinburgh, Scotland, from June to September 1976, and August to December 1977; also, Department of Computer Science, August 1983.
- IBM Postdoctoral Research Fellowship in the Mathematical Sciences, IBM, T.J. Watson Research Center, Yorktown Heights, New York, 1971-1972.
- Winner, Westinghouse Science Talent Search, 1959.
- Listed in *Who's Who*; *Debrett's Distinguished People of Today*; *2000 Outstanding Scientists of the 20th Century*; *Who's Who Today*; *Who's Who in Engineering*; *Directory of American Philosophers*; *Who's Who in the West*; *American's Names and Faces*; *Who's Who in Computer Education and Research*; *American Men and Women of Science*; *Men of Achievement*; *Who's Who in Finance and Industry*; *Who's Who in Technology Today*; *The Directory of Distinguished Americans*; *Personalities of America*; and other bibliographical publications.

Presentations and Lectures

This list is reasonably complete from 1985 on, but some titles are only approximate, and some items are missing from earlier years, especially 1974–76, and before 1971. Many lectures at the unit of current employment are omitted, as are many conferences presentations, especially those that can be deduced from the publication list.

- “Qualia in Music,” lecture/demonstration with Ryoko Goguen, University of Vienna,, 20 March 2003.
- “Integrating Data by Integrating Meta-Data and Meta-Data Languages,” UCSD Database Seminar, 7 February 2003.
- “Conditional Circular Coinductive Rewriting,” Japan Advanced Institute for Science and Technology, Hokuriku, Ishakawa, Japan, 20 December 2002.
- “Consciousness and the Decline of Cognitivism,” Keio Univeristy, Tokyo, 11 December 2002.
- “Consciousness and the Decline of Cognitivism,” Sony Computer Science Lab, Tokyo, 10 December 2002.
- “Consciousness and the Decline of Cognitivism,” UCSD Communication Department Colloquium, San Diego CA, 13 November 2002.

- “A Metadata Integration Assistant Generator for Heterogeneous Distributed Databases,” International Conference on Ontologies, Databases, and Applications of Semantics for large-scale Information Systems (ODBASE), Irvine, California, 31 October 2002.
- “Web-based Multimedia Software Engineering,” Ludwig Maximilians Universität, Munich, Germany, 2 October 2002.
- “Conditional Circular Coinductive Rewriting,” Workshop on Algebraic Development Techniques, Frauenchiemsee, Germany, 26 September 2002.
- “Composing Hidden Information Modules over Inclusive Institutions,” Workshop on Algebraic Development Techniques, Frauenchiemsee, Germany, 25 September 2002.
- “Conditional Circular Coinductive Rewriting,” IFIP Working Group 1.3, Frauenchiemsee, Germany, 24 September 2002.
- “Conditional Circular Coinductive Rewriting,” University of Bucharest, Bucharest, Romania, 18 September 2002.
- “Consciousness and the Decline of Cognitivism,” Workshop on Distributed Collective Practice, San Diego CA, 8 February 2002.
- “The care and feeding of scenarios,” Workshop on Virtual Worlds and Simulation, San Antonio TX, 30 January 2002.
- “A Hidden Herbrand Theorem,” Japan Advanced Institute for Science and Technology, Hokuriku, Ishakawa, Japan, 21 December 2001.
- “Consciousness and Cognition,” Department of Physics, Univerisity of Tokyo, Tokyo, Japan, 13 December 2001.
- “Towards a Design Theory for Virtual Worlds,” Department of Information and Communication Engineering, Univerisity of Tokyo, Tokyo, Japan, 12 December 2001.
- “BOBJ, Kumo, and Behavioral Verification,” Philosophy Department, Keio Univeristy, Tokyo, Japan, 11 December 2001.
- “Meditations on Certainty in the Social Sciences,” lecture at the UCSD Laboratory for Comparative Human Cognition, 3 December 2001.
- “Behavioral Verification with BOBJ and Kumo,” tutorial with Kai Lin and Grigore Rosu, at ASE’01, 26 November 2001.
- “Consciousness,” lecture for CogSci 200, UCSD Cognitive Science Department, 16 November 2001.
- “Metaphor and Meaning in Music,” lecture at the UCSD Department of Music, 2 March 2001.
- “Towards a Design Theory for Virtual Worlds: Algebraic Semiotics and Scientific Visualization as a Case Study,” keynote address, Conference on Virtual Worlds and Simulation, Phoenix AZ, 9 January 2001.
- “The Reality of Mathematical Objects,” lecture at the UCSD Laboratory for Comparative Human Cognition, 3 October 2000.

- “Methods for Database Integration,” lecture at the San Diego Supercomputer Center, 26 July 2000.
- “Algebraic Semiotics and User Interface Design,” lecture in the Information Science Seminar, Japan Advanced Institute for Science and Technology, Hokuriku, Ishakawa, Japan, 20 December 2000.
- “Web-based Multimedia Support for Distributed Cooperative Software Engineering,” keynote address, International Symposium on Multimedia Software Engineering, Taipei, Taiwan, 12 December 2000.
- “Algebraic Semiotics and User Interface Design,” distinguished lecture, Institute for Software Engineering, Univeristy of California at Irvine, 20 October 2000.
- “On the Role of Algebra in Computer Science,” distinguished lecture, Department of Mathematics, Technical University of Lisbon, 13 July 2000.
- “Towards the Automation of Behavioral Reasoning,” at meeting of IFIP Working Group 1.3, Stanford University, 30 June 2000.
- “The Ethics of Databases,” invited lecture, Confronting Convergence Seminar Series, Annenberg Center, University of Southern California, 6 December 1999.
- “The Ethics of Databases,” 1999 Annual Meeting of the Society for Social Studies of Science, San Diego, 29 October 1999.
- “Hiding More of Hidden Algebra,” FM’99 – World Congress on Formal Methods, Toulouse, France, 23 September 1999.
- “Algebraic Specification: Past, Present and Future,” keynote address for OBJ/CafeOBJ/Maude Symposium, at FM’99 – World Congress on Formal Methods, Toulouse, France, 20 September 1999.
- “Recent Results in Hidden Algebra,” Technical University of Lisbon, Department of Mathematics, Lisbon, Portugal, 17 September 1999.
- “Actor-Network Theory for Information Technology in Developing Nations,” presentation for Panel “Information Technology on the Fringes,” Workshop on Requirements Engineering, Buenos Aires, Argentina, 9 September 1999.
- “Requirements Engineering and User Interface Design,” keynote lecture, Workshop on Requirements Engineering, Buenos Aires, Argentina, 9 September 1999.
- “Requirements Engineering and User Interface Design,” Pontificia Universidade Catholica, Rio de Janeiro, Brasil, 6 September 1999.
- “A Protocol for Distributed Cooperative Work,” keynote address, Workshop on Distributed Systems, Iasi, Romania, 2 September 1999.
- “Recent Results in Hidden Algebra,” University of Bucharest, Faculty of Mathematics, Bucharest, Romania, 27 August 1999.
- “Recent Research in Hidden Algebra,” Japan Advanced Institute for Science and Technology, Hokuriku, Ishakawa, Japan, 10 June 1999.

- “Recent Research in Hidden Algebra,” Department of Philosophy, Keio University, Tokyo, Japan, 3 June 1999.
- “Hidden Algebra, Software and Automata,” Kyoto Sangyo University, Kyoto, Japan, 18 May 1999.
- “Motivation and Design of a Proof Tool for Algebraic Specification,” Japan Advanced Institute for Science and Technology, Hokuriku, Ishikawa, Japan, 13 May 1999.
- “Making Algebraic Specification Practical for Software Engineering,” keynote address, CafeOBJ Workshop, Miura, Kanagawa, Japan, 23 April 1999.
- “Hidden Algebra for Software Engineering,” keynote address, Conference on Discrete Mathematics and Theoretical Computer Science (University of Auckland, New Zealand), 20 January 1999.
- “Sheaves and Concurrency in Computer Science,” Peripetetic Seminar on Sheaves and Logic, Trieste, 29 November 1998.
- “Hidden Congruent Deduction,” First Order Theorem Proving Workshop, Vienna, 25 November 1998.
- “Formality in Informality in Software Architecture,” panel presentation at SEKE’98, Redwood City CA, 18 June 1998.
- “Poetry, Mechanism and Consciousness,” Towards a Science of Consciousness Conference, Tucson AZ, 30 April 1998.
- “An Introduction to Algebraic Semiotics, with Applications to User Interface Design,” keynote address, Conference on Computation for Metaphor, Analogy, and Agents, University of Aizu, Aizu-Wakamatsu, Japan, 9 April 1998.
- “Parameterized Programming and Software Architecture,” Rome Air Development Lab, Rome NY, 20 April 1998.
- “Parameterized Programming and Software Architecture,” Boeing Aircraft, Information Systems Lab, Seattle WA, 20 December 1998.
- “Past, Present and Future of Category Theory in Software Engineering,” panel presentation at Automated Software Engineering Conference, Lake Tahoe NV, 4 November 1997.
- “Distributed Cooperative Formal Methods Tools,” Automated Software Engineering Conference, Lake Tahoe NV, 3 November 1997.
- “Algebraic Denotational Semantics,” Shell Oil Distinguished Kickoff Lecture, Computer Science Department, University of Texas at El Paso, 29 September 1997.
- “Semiotics, ProofWebs and Distributed Cooperative Proving,” Oxford University Computing Lab, 11 September 1997.
- “Semiotics, ProofWebs and Distributed Cooperative Proving,” User Interfaces for Theorem Provers 1997, Sophia Antipolis, 1 September 1997.
- “Two Cultures of Computing & their Blends,” Faculty Lecture Series, CSE, UCSD, 9 April 1997.
- “Computer Science and Consciousness,” Sony Computer Science Lab, Tokyo, Japan, 28 March 1997.

- Keynote address, “Behavioral Specification and Coinduction,” Algebraic Engineering and Semigroups Conference, University of Aizu, Aizu–Wakamatsu, Japan, 24 March 1997.
- “Automata in Hidden Algebra,” lecture at JAIST (Japan Advanced Inst. of Science and Technology), Hokuriku, Japan, 21 April 1997.
- “Loose Coupling, Early Evolution and Flexible Manufacturing,” lecture at JAIST (Japan Advanced Inst. of Science and Technology), Hokuriku, Japan, 21 April 1997.
- “Formal Methods and Software Engineering: the Dry and the Brittle,” lecture at JAIST (Japan Advanced Inst. of Science and Technology), Hokuriku, Japan, 21 April 1997.
- “Semiology and Theorem Proving,” NEC Central Research Lab, Tokyo, Japan, 18 March 1997.
- “Hidden Algebra and Coinduction,” NEC Central Research Lab, Tokyo, Japan, 18 March 1997.
- “Tools and Methods for the Tatami Library System,” CafeOBJ Workshop, Tokyo, Japan, 14 March 1997.
- “Hidden Algebra,” lecture at JAIST (Japan Advanced Inst. of Science and Technology), Hokuriku, Japan, 22 August 1996.
- “Links for a Hidden World,” lecture at CafeOBJ kickoff meeting, Shonan Village Center, Japan, 20 August 1996.
- “An Object Oriented Tool for Tracing Requirements,” best paper session, International Conference on Requirements Engineering, Colorado Springs, Colorado, 18 April 1996.
- “Formal Methods in Requirements Engineering,” panel presentation, International Conference on Requirements Engineering, Colorado Springs, Colorado, 17 April 1996.
- “Behavioral Verification,” 10th Anniversary of OBJ2 Symposium, Itoh, Japan, 21 October 1995.
- “Situated Adaptive Software: Beyond the Object Paradigm,” International Symposium on New Models of Software Architecture, Tokyo, Japan, 20 October 1995.
- “Parameterized Programming and Software Architecture,” Monterey Workshop on Improving the Impact of Formal Methods: Software Architectures, Monterey CA, 13 September 1995.
- “An Implementation-Oriented Semantics for Module Composition,” meeting of COMPASS working group, Denmark, 27 May 1995.
- “Formal Methods,” Naval Postgraduate School, Monterey CA, 15 and 26 September 1994.
- “Requirements Engineering in Software Development,” Department of Computer Science and Engineering, University of California at San Diego, 13 September 1994.
- “Towards an Algebraic Semantics for the Object Paradigm,” Department of Computer Science and Engineering, University of California at San Diego, 18 February 1994.
- “Term Rewriting”, Naval Postgraduate School, Monterey CA, 29–30 December 1993.
- “Towards an Algebraic Semantics for the Object Paradigm,” NEC, Kawasaki City, Japan, 10 November 1993.

- “An Approach to Situated Adaptive Software,” IMSA’93, Kanazawa Japan, 8 November 1993.
- “Towards an Algebraic Semantics for the Object Paradigm,” Naval Postgraduate School, Monterey CA, 17 September 1993.
- “The Denial of Error,” keynote address at meeting on Scalability of Formal Methods for Industry, Bristol, 25 May 1993.
- “Reconciling Social and Technical Issues for Critical Systems,” SERC Systems Panel meeting on critical systems, DTI, London, 18 May 1993.
- “On the Design of Notation,” Rank Xerox EuroPARC Labs, Cambridge, 6 May 1993.
- “Towards an Algebraic Semantics for the Object Paradigm,” lecture at Esprit ISCORE Working Group meeting, Oxford, 29 March 1993.
- “Summary,” Workshop on Social Science Research, Technical Systems, and Cooperative Work, CNRS, Paris, 10 March 1993.
- “Ethical issues in Information Technology,” Grandpont House, Oxford, 17 February 1993.
- “Techniques for Requirements Elicitation” and discussion leader of open session on “Social Issues in Requirements Engineering,” 5 January 1993, at IEEE Symposium on Requirements Eng, Coronado Is., San Diego, CA.
- “The Dry and the Wet,” Software Industry Association of Nova Scotia, Halifax, Canada, 18 November 1992.
- “Algebraic Semantics for the Object Paradigm,” Workshop on Abstract Data Types, Caldes de Malevella, Spain, 28 October 1992.
- “Algebraic Semantics for the Object Paradigm,” Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 21 October 1992.
- “Algebraic Semantics for the Object Paradigm,” Imperial College, 3 June 1992.
- “2OBJ: A Metalogical Theorem Prover Based on Equational Logic,” University of Cambridge, 20 May 1992.
- “Requirements Engineering as a Reconciliation of Social and Technical Issues,” University of Hamburg, Germany, 18 May 1992.
- “2OBJ: A Metalogical Theorem Prover Based on Equational Logic,” University of Hamburg, Germany, 18 May 1992.
- “Concepts and Practice,” Information Systems Concepts Conference, Alexandria Egypt (IFIP Working Group 8.1), 15 April 1992.
- “The Dry and the Wet,” keynote address at Information Systems Concepts Conference, Alexandria Egypt (IFIP Working Group 8.1), 13 April 1992.
- “Algebraic Semantics for the Object Paradigm,” Mathematical Foundations of Programming Semantics Conference, Oxford, 9 April 1992.

- “Requirements Engineering as a Reconciliation of the Social and the Technical,” University of Belfast, 1 April 1992.
- “Algebraic Semantics for the Object Paradigm,” lecture at Workshop on Object Oriented Information Systems (Schloss Dagstuhl, Germany), 19 March 1992.
- “Introduction to Tantra,” Oxford Buddhist Society, 4 February 1992.
- “2OBJ: A Metalogical Theorem Prover Based on Equational Logic,” Programming Research Group, Oxford, 23 January 1992.
- “The Dry and the Wet,” Requirements Capture and Analysis Workshop, Oxford, 19 December 1991.
- “What is Unification?” Symposium on New Models for Software Architecture, Tokyo, Japan, 18 November 1991.
- “Requirements Capture and Analysis,” Programming Research Group Colloquium, 17 October 1991.
- “Sheaf Semantics for Interacting Concurrent Objects,” series of four lectures at Advanced school on the algebraic logical and categorical foundations of concurrency, Gargnano del Garda, Italy, 6-11 October, 1991.
- “2OBJ: A Metalogical Framework based on Equational Logic,” Discussion Meeting on Mechanized Reasoning and Hardware Design, Royal Society, London, 3 October 1991.
- “2OBJ: A Metalogical Framework based on Equational Logic,” SRI International, Menlo Park CA, 25 September 1991.
- “Sheaf Semantics for Concurrent Interacting Objects,” ISCORE Workshop, London, 17 September 1991.
- “The Dry and the Wet,” panel presentation at COSCIS’91 (Conference on Collaborative Work, Social Communications and Information Systems), Helsinki, 27 August 1991.
- “Sheaf Semantics for Concurrent Interacting Objects,” Helsinki Institute of Technology, 23 August 1991.
- “Sheaf Theoretic Models for Concurrent Computation,” Conference on Category Theory and Computer Science, London Mathematical Society, at Durham, 22 July 1991.
- “Sheaf Theoretic Models for Concurrent Computation,” Workshop on Object Based Concurrent Computing, at European Conference on Object Oriented Programming, Geneva, 16 July 1991.
- “OBJ3,” at OBJ Users Group Meeting, Oxford, 3 July 1991.
- “Oxford Approach to Requirements,” Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 30 May 1991.
- “OBJ as a Metalogical Framework,” at Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 28 May 1991.
- “Logical Support for Modularisation,” at Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 27 May 1991.

- “Logical Support for Modularisation,” with Răzvan Diaconescu, at Second Annual Workshop on Logical Frameworks (Esprit Basic Research Action), Edinburgh, 23 May 1991.
- “A Linguistic Approach to Requirements Capture and Analysis,” Sharp Research Laboratories, Nara, Japan, 8 April 1991.
- “Hyperprogramming: A Formal Approach to Software Environments,” Sharp Research Laboratories, Nara, Japan, 8 April 1991.
- “A Linguistic Approach to Requirements Capture and Analysis,” ElectroTechnical Laboratory, Tsukuba Science City, Japan, 5 April 1991.
- “Hyperprogramming: A Formal Approach to Software Environments,” Sony Computer Science Lab, Tokyo, Japan, 4 April 1991.
- “An Algebraic Approach to Refinement,” Sony Computer Science Lab, Tokyo, Japan, 4 April 1991.
- “A Linguistic Approach to Requirements Capture and Analysis,” Fujitsu International Institute for Advanced Study of Social Information Science, Tokyo, Japan, 2 April 1991.
- “Hyperprogramming: A Formal Approach to Software Environments,” Fujitsu International Institute for Advanced Study of Social Information Science, Tokyo, Japan, 1 April 1991.
- “Requirements Capture and Analysis: an Oxford Perspective,” BT Technology Awareness Seminar, 18 March 1991.
- “Types as Theories,” School of Mathematical Sciences, University of Bath, 7 December 1990.
- “Types and FOOPS,” at Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 3 December 1990.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Distinguished Lecture, University of Glasgow, Glasgow UK, 23 November 1990.
- “Proving and Rewriting,” at Second International Conference on Algebraic and Logic Programming, Nancy, France, 1-3 October 1990.
- “Algebraic Methods and Theorem Proving,” four lectures in the Logic for IT sponsored Summer School on Algebraic Methods in Computer Science, at University of Wales, University College, Swansea, 16-22 September 1990.
- “Types and FOOPS,” at British Telecom Research, Ipswich, UK, 20 July 1990.
- “Types and FOOPS,” at IFIP WG 2.2 Working Conference on Object Oriented Databases, Windemere, UK, 4 July 1990.
- “Semantics of Object Oriented Programming,” 3 one hour (tutorial) lectures, at Workshop on Foundations of Object Oriented Languages (REX/FOOL), Noordwijkerhout, Netherlands, 28 May to 1 June 1990.
- “OBJ3,” ACM Conference on Formal Methods and Software Development, Napa CA, 10 May 1990.
- “Formal Methods and Software Development,” keynote address at ACM Conference on Formal Methods and Software Development, Napa CA, 9 May 1990.

- “An Algebraic Approach to Refinement,” VDM 90: Formal Symposium on Methods in Software Development, Kiel, Germany, 20 April 1990.
- “An Algebraic Approach to Refinement,” Workshop on Refinement, ICL, Winnersh, UK, 15 March 1990.
- “Semantics of Interacting Concurrent Objects using Sheaf Theory,” Symposium on Symbolic Computation, in Honor of Erwin Engeler’s 60th Birthday, Zürich, Switzerland, 7 March 1990.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” University of Essex, Colchester, UK, 2 March 1990.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Imperial College, London, 16 February 1990.
- “Types as Theories,” Mathematics Research Centre and Programming Research Group, University of Amsterdam, 8 February 1990.
- “Semantics of Concurrent Active Interacting Objects using Sheaf Theory,” University of Edinburgh, 26 January 1990.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Sony Computer Science Lab, Tokyo, Japan, 12 January 1990.
- “Hyperprogramming: A Formal Approach to Software Environments,” keynote address at Symposium on Formal Methods in Software Development, Joint System Development Corporation, Tokyo, Japan, 11 January 1990.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Fujitsu International Institute for Advanced Study of Social Information Science, Tokyo, Japan, 10 January 1990.
- “Recent Developments in Formal Specification Theory,” Joint Systems Development Corporation, Tokyo, Japan, 9 January 1990.
- “Semantics of Concurrent, Interacting Active Objects,” Instituto de Engenharia de Sistemas e Computadores, Lisbon, Portugal, 6 December 1989.
- “Chaos and Consciousness,” Architectural Association, School of Architecture (London), 24 November 1989.
- “A Sheaf-Theoretic Approach to Modelling Concurrent Object Oriented Systems,” ISCORE (ESPRIT) Working Conference, Imperial College, 29 September 1989.
- “Concurrent Object Oriented Models of Computation for the Rewrite Rule Machine,” UK-Japan Conference, Oxford, 27 September 1989.
- “A Categorical Manifesto — with Applications to Generalized Lawvere Theories,” Conference on Category Theory and Computer Science, University of Manchester, 8 September 1989.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Hewlett-Packard Research Labs, Bristol, 31 May 1989.
- “Types as Theories,” Conference on Topology and Computer Science, Oxford, 28 June 1989.

- “What is a Logic? The Theory of Institutions,” Logic Colloquium, Mathematical Institute, Oxford University, 5 June 1989.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Hewlett-Packard Research Labs, Bristol, UK, 31 May 1989.
- “Types as Theories,” Conference on Programming Logic, Bastad, Sweden, 23 May 1989.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” Conference on Informatics, Centre for European Culture, Delfi, Greece, 7 May 1989.
- “Object Oriented Programming as a Natural Extension of Functional Programming,” British Colloquium on Theoretical Computer Science, Royal Hollowell and Bedford New College, Egham, Surrey, UK, 11 April 1989.
- “The Language of Computer Science,” Royal Hollowell and Bedford New College, Annual Departmental Address, Computer Science Department, Egham, Surrey, UK, 7 March 1989.
- “Unifying Functional, Object Oriented and Relational Programming with Logical Semantics,” University of Hong Kong, 8 December 1988.
- “Towards a General Understanding of the Semantics of Concurrent Computation,” Workshop on Concurrent Programming, ICOT, Tokyo, Japan, 5 December 1988.
- “Cell and Ensemble Architecture for the Rewrite Rule Machine,” Japanese 5th Generation Conference, Tokyo, Japan, 30 November 1988.
- “Software for the Rewrite Rule Machine,” with Josè Meseguer, Japanese 5th Generation Conference, Tokyo, Japan, 30 November 1988.
- “Unifying Functional, Object Oriented and Relational Programming with Logical Semantics,” University of Hawaii, 23 November 1988.
- “The Software Project as an Autopoietic Being,” Conference on Software Development and Reality Construction, Schloss Eringerfeld, Germany, 27 September 1988.
- “Data Collection and Reality Construction,” Conference on Software Development and Reality Construction, Schloss Eringerfeld, Germany, 26 September 1988.
- “OBJ as a Theorem Prover, with Application to Hardware Verification,” Second Calgary Workshop on Hardware Verification, Banff, Alberta, Canada, 14 June 1988.
- “OBJ as a Theorem Prover,” Semantics of Programming Seminar, Stanford University, 29 April 1988.
- “Combining Functional and Logic Programming for Natural Language Understanding,” Foundations of Cognitive Science Series, California State University at Fresno, 20 April 1988.
- “OBJ as a Theorem Prover,” Logic and Computation Seminar, University of Pennsylvania, 13 April 1988.
- “The Rewrite Rule Machine Project,” Distinguished Lecture in Parallel Computation, Northeast Parallel Architecture Center, University of Syracuse, 11 April 1988.

- “OBJ as a Theorem Prover,” Computer Science Department, Carnegie-Mellon University, 1 March 1988.
- “What is Unification? – a Categorical Approach to Substitution, Equation and Solution,” Center for the Study of Language Information, Stanford University, 24 February 1988.
- “Higher Order Programming Considered Unnecessary,” University of Texas Year of Programming, Institute on Declarative Programming, Austin TX, 28 August 1987.
- “Unifying Functional and Object Oriented Programming,” University of Edinburgh, 9 July 1987.
- “Some Electronic Mathematics,” American Mathematical Society Summer Institute on Category Theory and Computer Science, University of Colorado at Boulder, 16 June 1987.
- “Constraints in Logic Programming,” MIT, Laboratory for Computer Science, May 1987.
- “The Rewrite Rule Machine Project,” University of California at Santa Barbara, 13 May 1987.
- Chairman and speaker at special session on the Rewrite Rule Machine, Second International Conference on Supercomputing (Santa Clara, California), 7 May 1987 (four papers in the session, and one in another).
 1. “Introduction to the Rewrite Rule Machine”
 2. “Architectural Options and Testbed Facilities for the Rule Machine”
 3. “Models of Computation for the Rewrite Rule Machine”
 4. “Simulation Results for the Rewrite Rule Machine”
 5. “Programming by Generic Example”

(The middle three were joint with various subsets of José Meseguer, Timothy Winkler, Sany Leinwand, and Claude Kirchner.)

- “Order-Sorted Equational Computation,” with José Meseguer, Gert Smolka and Werner Nutt, and “Order-Sorted Unification,” with José Meseguer and Gert Smolka, Colloquium on the Resolution of Equations in Algebraic Structures, MCC (Lakeway TX), 4,5 May 1987. (Talks given by Smolka and Meseguer, respectively)
- “The Rewrite Rule Machine Project,” University of Manchester, 2 April 1987.
- “Parameterized Programming,” Imperial College, London, 31 March 1987.
- “Models and Equality for Logical Programming,” TAPSOFT ‘87 (Theory and Practice of Software Development) (Pisa, Italy), 27 March 1987; also, Chairman of panel discussion session “On Industrial Activity and Trends,” 26 March 1987.
- “Logical Programming and Situation Semantics,” Workshop on Semantic Issues in Human and Computer Languages (Half Moon Bay, California), sponsored by the Center for the Study of Language and Information at Stanford University, 20 March 1987.
- “Parameterization: Problems and Promises,” Spring COMPCON (San Francisco, California), 24 February 1987.

- “Concurrent Term Rewriting as a Model of Computation,” University of California at Santa Barbara, 17 February 1987.
- “The Rewrite Rule Machine,” DARPA Workshop on Message Passing Architectures, MIT Endicott House, Dedham MA, 10 February 1987.
- “Towards an Assessment of Japanese Fifth Generation Software Efforts,” Joint NSF-DARPA Japanese Technology Assessment Workshop on Advanced Computing, at NSF (Washington DC), 6 February 1987.
- “Combining Functional and Object Oriented Programming,” Database Seminar, Stanford University, November 1986.
- “Concurrent Term Rewriting: A New Model of Computation for Massively Parallel Symbolic Computation,” Supercomputing Research Center, Lanham MD, 30 October 1986.
- “Reusing and Interconnecting Software Components,” Information Processing Society of Japan Regional Meeting, Kyoto, Japan, 17 October 1986.
- “Reusing and Interconnecting Software Components,” UNIVAC, Tokyo, Japan, 16 October 1986.
- Series of lectures “Software Engineering and Algebraic Semantics,” ElectroTechnical Laboratory, Tsukuba Science City, Japan, 13-15 October 1986.
- “Extensions and Foundations of Object Oriented Programming,” IBM Research Center, Tokyo, Japan, 20 October 1986.
- “One, None, a Hundred Thousand Specification Languages,” IFIP ’86 (Dublin, Ireland), September 1986.
- “Concurrent Term Rewriting as a Model of Computation,” MCC - Los Alamos National Lab Graph Reduction Workshop (Santa Fe, New Mexico), September 1986.
- “Object Oriented Programming as Reflective Equational Programming,” University of Rome, July 1986.
- “Eqlog: Equality, Types and Generic Modules for Logic Programming,” University of Pisa, July 1986.
- “Parameterized Programming,” University of Milan, July 1986.
- “Modular Algebraic Specification of Some Constructions in Plane Geometry,” Workshop on Geometrical Reasoning (Oxford University), July 1986.
- Three lectures in International Workshop on Computer Science and Mathematical Logic, Eidgenössische Technische Hochschule, Zürich, Switzerland, June 1986.
- “Aspects of the Past, Present and Future of OBJ,” keynote address at OBJ Workshop, Imperial College, London (sponsored by United Kingdom Alvey Directorate) 18 April 1986.
- “Combining Object Oriented Programming with Other Paradigms,” University of Manchester, 17 April 1986.
- “Combining Object Oriented Programming with Other Paradigms,” University of California at Berkeley, April 1986.

- “Eqlog: Equality, Types, and Generic Modules for Logic Programming,” Carnegie-Mellon University, 5 March 1986.
- “Eqlog: Equality, Types, and Generic Modules for Logic Programming,” University of Toronto, 4 March 1986.
- “Eqlog: Equality, Types, and Generic Modules for Logic Programming,” University of Waterloo, 2 March 1986.
- “Combining Object Oriented Programming with Other Paradigms,” University of Edinburgh, March 1986.
- “Principles of OBJ,” University of California at Los Angeles, 4 February 1986.
- “Suggestions for Using and Organizing Libraries for Ada Program Development,” First International Conference of Supercomputer Systems (St. Petersburg, Florida), 19 December 1985.
- Four lectures on “Declarative Languages and Architectures,” International Summer School on Advanced Programming Technologies (San Sebastian), Spain, 2-6 September 1985.
- “Institutions, Charters and Parchments,” Workshop on Category Theory in Computer Science, University of Surrey, Guildford, England, September 1985.
- “Extensions and Foundations of Object Oriented Programming,” Conference on Object Oriented Programming, AI Europa 85 (Weisbaden, Germany), September 1985.
- “Direct Manipulation Programming,” Xerox Palo Alto Research Center, June 1985.
- “Proposal for a Rewrite Rule Machine,” Syracuse University, 10 May 1985.
- “Proposal for a Rewrite Rule Machine,” General Electric, Corporate Research and Development Center (Schenectedy, New York), 8 May 1985.
- “Extensions and Foundations of Object Oriented Programming,” IBM Research (Yorktown Heights, New York), February 1985.
- “Eqlog,” MCC Workshop on Combining Functional and Logic Programming (Austin TX), March 1985.
- “Logic and Functional Programming,” Center for the Study of Language and Information,” 14 February, 1985.
- “Semantics of Computation,” Dalhousie University, Halifax, Nova Scotia, September 1984.
- Course on Algebraic Specification at Rocky Mountain Institute of Software Engineering Summer Program (Aspen, Colorado), July 1984.
- “Combining Logic and Functional Programming – with Equality, Types, and Generic Modules too!,” Hewlett-Packard Labs Research Center, Palo Alto CA, 26 April 1984.
- “Abstraction in Programming,” Office of Naval Research Seminar on Scientific Issues in Software Research (Washington DC), 12 October 1983.

- “Parameterized Programming,” Workshop on Reusability in Programming (Newport RI), 8 September 1983.
- “Parameterized Programming,” University of Edinburgh, 29 August, 1983.
- “Parameterized Programming,” University of Manchester, 10 August, 1983.
- “The Rewrite Rule Machine,” Cambridge University, 8 August, 1983.
- “OBJ: An Algebraic Specification Language,” IBM Research, San Jose CA, July 1983.
- “Reducing Polymorphism to Subtypes,” NSF/ONR Workshop on Data Types (Carnegie-Mellon University), 10 June 1983.
- “Institutions: Abstract Model Theory for Program Specification,” Symposium on Logic in Computer Science (Carnegie-Mellon University), 7 June 1983.
- “Iconic Programming by Example,” DARPA Program Visualization Conference (Santa Fe, New Mexico), 18 May 1983.
- “Initiality, Induction and Computability,” Workshop on the Semantics of Programming Languages (Bad Honnef, Germany), 16 March 1983.
- “Merged Views, Closed Worlds and Ordered Sorts,” NSF Database Interface Workshop, University of Pennsylvania, October 1982.
- “Initiality, Induction and Computability” with José Meseguer, and “Institutions” with Rod Burstall, Workshop on the Application of Algebra to Language Definition and Compilation (Fountainebleau, France), 12-13 June 1982.
- Lectures on algebraic specification, and on fuzzy sets, Universidad Politecnica, Barcelona, Spain, May 1982.
- “Universal Realization of Software Modules,” University of Pennsylvania, March 1982.
- “Naturalness of Programming Languages Constructions,” Stanford University, 24 November 1981.
- Two lectures on “Specification Languages: Design and Semantics,” Syracuse University, 6 November 1981.
- “Naturalness in Programming and Specification Languages,” Xerox Palo Alto Research Center, 15 October 1981.
- “Semantics of Clear,” “An Ordinary Design,” and “Design of OBJ,” Workshop on Program Specification (Aarhus, Denmark), 4-6 August 1981.
- “More Thoughts on Specification and Verification,” Verksshop 2 (Washington DC), April 1981.
- “Programming Language Semantics Using Parameterized Abstract Modules,” Programming Language and Verification Seminar, Stanford University, 2 December 1980.
- Short course “Algebraic Specification Techniques,” NCR, San Diego CA, 18 November 1980.

- “Structural Semantics: A Report from the Field,” Epistemics Department, University of Edinburgh, 3 November 1980.
- “The Two Truths,” Edinburgh Dharma Study Group, 2 November 1980.
- “Enhancements of Clear,” University of Edinburgh, 31 October 1980.
- “Abstractions and Theories in Software Engineering,” University of Milan, 27 October 1980.
- “Abstractions and Theories in Software Engineering,” International Conference on Software Engineering (Capri, Italy), 24 October 1980.
- “Software Engineering,” Acadia University, Wolfville, Nova Scotia, 5 August 1980.
- “Order-Sorted Algebra,” University of California at Berkeley, 2 June 1980.
- “Order-Sorted Algebra,” Stanford University, 6 May 1980.
- “Algebraic Specification,” Xerox Palo Alto Research Center, 17 April 1980.
- “Impermanence and Letting Go,” Amsterdam Dharma Study Group, 30 March 1980.
- Lecture series on algebraic semantics, with Rod Burstall, in Short Advanced Course on Data Types: Concepts and Applications, INRIA, Le Chesnay, France, 17-21 March 1980.
- “Thoughts on Program Specification, Design and Verification,” Verkhshop 1 (Washington, District of Columbia), February 1980.
- “Structure of Planning Discourse,” Graduate School of Management, University of California at Los Angeles, 24 January 1980.
- “Impermanence and Death,” Edinburgh Dharma Study Group, 8 November 1979.
- “How to Prove Inductive Hypotheses without Induction,” University of Edinburgh, 5 November 1979.
- “Specification Techniques” and “Algebraic Specification,” Technical University of Berlin, 2 November and 30 October, 1979.
- “Recent Developments in Algebraic Semantics,” University of Paris VII, 25 October 1979.
- “Structure of Planning Discourse,” with Charlotte Linde, Bay Area Discourse Group (Berkeley, California), 8 October 1979.
- “Program Specification and Reliable Programming,” Bell Telephone Labs, Naperville IL, 13 July 1979.
- Moderator and speaker in session on “The Limits of Reason,” Conference on Contrasting Perspectives on Cognition, Naropa Institute, Boulder CO, 8 August 1979.
- “Structures in Social Communication,” Colloquium, Naropa Institute, Boulder CO, 31 July 1979.
- “An Algebraic Approach to Program Specification,” IBM Research (Yorktown Heights, New York), 11 July 1979.
- “Program Specification and Program Reliability,” IBM Research, San Jose CA, 11 May 1979.

- “Program Specification and Program Reliability,” SRI International, Menlo Park CA, 10 May 1979.
- “Putting Theories together to Make Specifications,” MIT, 4 April 1979.
- “Program Specification and Reliable Programming,” University of Colorado at Boulder, 2 March 1979.
- “Social Significance of Variable Rules in Discourse Structure,” with Charlotte Linde, Berkeley Linguistics Society Meeting, University of California at Berkeley, 17 February 1979.
- “Program Specification and Software Reliability,” Symposium on Specification of Abstract Data Types, University of California at Los Angeles, 11 January 1979.
- “Algebraic Program Specification and Software Reliability,” Symposium on Specification of Abstract Data Types, University of Southern California, 4 December 1978.
- “Relations between Fuzzy Random Variables in Small Group Planning,” Operations Research Society of America (Los Angeles, California), 14 November 1978.
- “Structure of Planning Discourse,” RAND Corporation, Santa Monica, California, 25 October 1978.
- “Some Ideas in Algebraic Semantics,” Third IBM Symposium on the Mathematical Foundations of Computer Science (Kobe, Japan), August 1978.
- “Some Fundamental of Order-Algebraic Semantics,” Fifth Symposium on the Mathematical Foundations of Computer Science (Gdansk, Poland), September 1976.
- “Semantics of Computation,” Symposium on Applications of Category Theory Applied to Computation and Control (San Francisco, California), February 1974.
- “Theory of Context-Free Languages”, Consiglio Nazionale delle Ricerche, Laboratorio di Cibernetica, Naples, 26 July 1973.
- “Adjointness in Computer Science”, Consiglio Nazionale delle Ricerche, Laboratorio di Cibernetica, Naples, 25 July 1973.
- “Automata and Categories”, Consiglio Nazionale delle Ricerche, Laboratorio di Cibernetica, Naples, 24 July 1973.
- “Foundations of System Theory”, Technische Universität Berlin, 19 July 1973.
- Lecture series on Abstract Data Types, Forschungsseminar in Grundlagen der Computer-Wissenschaften, at Eidgenössische Technische Hochschule, Zürich, Switzerland, 26–27 June 1973.
- “On Homomorphisms, Correctness and Equivalence of Program Schemes”, Department of Machine Intelligence, University of Edinburgh, 7 July 1973.
- “On Homomorphisms, Correctness and Equivalence of Program Schemes”, Technische Universität Berlin, 17-18 July 1973.
- “On Homomorphisms, Correctness and Equivalence of Program Schemes”, Gesellschaft für Mathematik und Dataverhandlung, Bonn, 20 July 1973.

- “Some Comments on Applying Mathematical System Theory”, Multidisziplinäre Ansätze zur Lösung von Umwelt-problemen, Schloss Reisenburg, Germany, 19 June 1973.
- “Computer Representation of Human Concepts with Applications to Problems in Natural Language Semantics”, Los Angeles Chapter of ACM Artificial Intelligence Special Interest Group, 5 June 1973.
- “Correctness and Equivalence of Programs”, Department of Electrical Engineering and Computer Science, University of California at Berkeley, 18 May 1973.
- “Correctness and Equivalence of Programs and Program Schemes”, University of Southern California, 12 March 1973.
- “Mathematical Representations of Hierarchically Organised Systems”, Economics Department, University of California at Santa Barbara, 2 March 1973.
- “On Mathematics in Computer Science Education” and “Foundations of Computer Science”, UCLA Arrowhead Conference on Computer Science Education, 8-12 February 1973.
- “Computer Representation of Human Concepts, with Applications to Problems in Artificial Intelligence”, UCLA, 19 October 1972.
- “Computer Representation of Human Concepts, with Applications to Problems in Artificial Intelligence”, University of California at Irvine, 15 November 1972.
- “Computer Representation of Human Concepts, with Applications to Problems in Artificial Intelligence”, University of Colorado, 7 December 1972.
- “The Logic of Inexact Concepts”, Department of Mathematics, UCLA, 10 November, 1972.
- “Mathematical Foundations for System and Information Sciences”, University of Massachusetts, 18 October 1971.
- “Discrete Time Machines in Closed Categories”, University of Chicago, 1 April 1971.

Professional Societies

Association for Computing Machinery and its special interest groups on Software Engineering, Artificial Intelligence, Programming Languages, and Automata and Computability Theory (SIGSOFT, SIGAI, SIGPLAN, SIGACT); IEEE Computer Society, and its Technical Committees on Computer Architecture, Database Engineering, Foundations of Computing, and Committee on Public Policy; European Association for Theoretical Computer Science; Mathematical Association of America; Computer Professionals for Social Responsibility; and the Society for Social Studies of Science.

Books Authored or Edited, Published or in Progress

1. *Theory and Practice of Software Technology*, edited with Domenico Ferrari and Mario Bolognani, North-Holland, 1983. ISBN 0-444-86647-7.
2. *Requirements Engineering: Social and Technical Issues*, edited with Marina Jirotko, Academic, 1994. ISBN 0-1238-5335-4.

3. *Algebraic Semantics of Imperative Programs*, with Grant Malcolm, MIT Press, April 1996. ISBN 0-262-07172-X.
4. *Art and the Brain*, edited book, Imprint Academic, October 1999. ISBN 0-907-84545-2.
5. *OBJ/CafeOBJ/Maude at Formal Methods '99*, edited with Kokichi Futatsugi and Josè Meseguer, Theta (Bucharest), September 1999. ISBN 973-99097-1-X.
6. *Software Engineering with OBJ: Algebraic Specification in Action*, edited with Grant Malcolm, Kluwer, April 2000. ISBN 0-7923-7757-5.
7. *Art and the Brain (Part 2)*, edited with Erik Myin, Imprint Academic, September 2000. ISBN 0-907-84512-6.
8. *Theorem Proving and Algebra*, in preparation for MIT Press.
9. *Hidden Algebra*, with Grigore Roşu, in preparation.
10. *Art, Brain, and Consciousness*, edited with Erik Myin, in preparation, Imprint Academic, 2004.

Publications in Journals and Conference Proceedings

11. "Color Perception Using a Single Cone Type with Distributed Maximum Sensitivity," *Bulletin of Mathematical Biophysics*, Volume 26, 1964, pages 121-138.
12. "L-Fuzzy Sets," *Journal of Mathematical Analysis and Applications*, Volume 18, Number 1, 1967, pages 145-174.
13. "Categories of Fuzzy Sets," Ph.D. Dissertation, Department of Mathematics, University of California at Berkeley, 1968.
14. "The Logic of Inexact Concepts," *Synthese*, Volume 19, 1968-1969, pages 325-373.
15. "Categories of V-Sets," *Bulletin of the American Mathematical Society*, Volume 75, Number 3, 1969, pages 622-624.
16. "Mathematical Representation of Hierarchically Organized Systems," in *Global Systems Dynamics*, edited by E. Attinger, S. Karger (Basel, Switzerland) 1971, pages 112-128.
17. "Systems and Minimal Realization," *Proceedings, IEEE Conference on Decision and Control* (Miami Beach, Florida) 1972, pages 42-46.
18. "Minimal Realization of Machines in Closed Categories," *Bulletin of the American Mathematical Society*, Volume 78, Number 5, 1972, pages 777-783.
19. "Hierarchical Inexact Data Structures in Artificial Intelligence Problems," *Proceedings, Fifth Hawaii International Conference on System Sciences* (Honolulu, Hawaii) 1972, pages 345-347.
20. "The Myhill Functor, Input-Reduced Machines, and Generalized Krohn-Rhodes Theory," with Robert H. Yacobellis, *Proceedings, Fifth Princeton Conference on Information Sciences and Systems* (Princeton, New Jersey) 1972, pages 574-578.

21. "On Homomorphisms, Simulation, Correctness and Subroutines for Programs and Program Schemes," *Proceedings, 13th IEEE Symposium on Switching and Automata Theory* (College Park, Maryland) 1972, pages 52–60.
22. "Realization is Universal," *Mathematical System Theory*, Volume 6, Number 4, 1973, pages 359–374.
23. "System Theory Concepts in Computer Science," *Proceedings, Sixth Hawaii International Conference on System Sciences* (Honolulu, Hawaii) 1973, pages 77–80.
24. "The Fuzzy Tychonoff Theorem," *Journal of Mathematical Analysis and Applications*, Volume 43, 1973, pages 734–742.
25. "Categorical Foundations for General Systems Theory," in *Advances in Cybernetics and Systems Research*, edited by F. Pichler and R. Trappl, Transcripta Books (London) 1973, pages 121–130.
26. "Semantics of Computation," *Proceedings, First International Symposium on Category Theory Applied to Computation and Control* (1974 American Association for the Advancement of Science, San Francisco) University of Massachusetts at Amherst, 1974, pages 234–249. Also published in *Lecture Notes in Computer Science*, Volume 25, Springer, 1975, pages 151–163.
27. "Initial Algebra Semantics," with James Thatcher, *Proceedings, 15th IEEE Symposium on Switching and Automata Theory*, 1974, pages 63–77.
28. "Concept Representation in Natural and Artificial Languages: Axioms, Extensions and Applications for Fuzzy Sets," *International Journal of Man-Machine Studies*, Volume 6, 1974, pages 513–561. Reprinted in *Fuzzy Reasoning and its Applications*, edited by E. H. Mamdani and Brian Gaines, Academic, 1981, pages 67–115.
29. "On Homomorphisms, Correctness, Termination, Unfoldments and Equivalence of Flow Diagram Programs," *Journal of Computer and System Sciences*, Volume 8, Number 3, 1974, pages 333–365.
30. "Some Comments on Applying Mathematical System Theory," in *Systems Approaches and Environmental Problems*, edited by Hans W. Gottinger, Vandenhoeck and Rupert (Göttingen, Germany), 1974, pages 47–67.
31. "Factorization, Congruences, and the Decomposition of Automata and Systems," with James Thatcher, Eric Wagner, and Jesse Wright, *Mathematical Foundations of Computer Science*, Lecture Notes in Computer Science, Volume 28, Springer, 1975, pages 33–45.
32. "Objects," *International Journal of General Systems*, Volume 1, Number 4, 1975, pages 237–243.
33. "Discrete-Time Machines in Closed Monoidal Categories, I," *Journal of Computer and System Sciences*, Volume 10, Number 1, February 1975, pages 1–43.
34. "Abstract Data Types as Initial Algebras and the Correctness of Data Representations," with James Thatcher, Eric Wagner, and Jesse Wright, in *Proceedings, Conference on Computer Graphics, Pattern Recognition, and Data Structure* (Beverly Hills, California), 1975, pages 89–93.
35. "Axioms for Discrimination Information," with Lee Carlson, *IEEE Transactions on Information Theory*, September 1975, pages 572–574.
36. "On Fuzzy Robot Planning," in *Fuzzy Sets and their Applications to Cognitive and Decision Processes*, edited by Lotfi Zadeh, K. S. Fu, K. Tanaka, and M. Shimura, Academic, 1975, pages 429–448.

37. “Robust Programming Languages and the Principle of Maximum Meaningfulness,” *Proceedings, Milwaukee Symposium on Automatic Computation and Control* (Milwaukee, Wisconsin), 1975, pages 87–90.
38. “Complexity of Hierarchically Organized Systems and the Structure of Musical Experiences,” *International Journal of General Systems Theory*, Volume 3, Number 4, 1977, pages 237–251. Originally in *UCLA Computer Science Department Quarterly*, October 1975, pages 51–88.
39. “Some Fundamentals of Order-Algebraic Semantics,” with James Thatcher, Eric Wagner, and Jesse Wright, *Proceedings, Fifth Symposium on Mathematical Foundations of Computer Science* (Gdańsk, Poland, 1976) Springer, Lecture Notes in Computer Science, Volume 45, 1976, pages 153–168.
40. “Parallel Realization of Systems, Using Factorizations and Quotients in Categories,” with James Thatcher, Eric Wagner, and Jesse Wright, *Journal of the Franklin Institute*, Volume 301, Number 6, June 1976, pages 547–558.
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