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Date of Birth: March 27, 1944
Place of Birth: Newark, New Jersey, USA

I. Education

Ph.D., Mathematics, 1971, University of Maryland
M.A., Mathematics, 1970, University of Maryland
A.B., Mathematics, 1965, Princeton University

II. Professional Interests

Effective application of computing to support software development, medical safety, dispute resolution, egovernment and electronic commerce, with particular emphasis on rigorous process definition and analysis, tool and environment integration, and software testing and analysis tools.

III. Academic Appointments

Interim Dean, College of Natural Sciences and Mathematics, University of Massachusetts at Amherst (September 2001-August, 2005).

Co-Director, Electronic Enterprise Institute, University of Massachusetts at Amherst (June 1999-present)

Co-Director, Laboratory for Advanced Software Engineering Research, University of Massachusetts at Amherst (1994-present).

Professor, Department of Computer Science, University of Massachusetts at Amherst (September 1993-present).

Founding Director, Irvine Research Unit in Software, University of California at Irvine (July 1990-1993).

Chair, Department of Information and Computer Science, University of California at Irvine (July 1989-December 1992).

Professor, Department of Information and Computer Science, University of California at Irvine (September 1988-June 1993).

Professor, Department of Computer Science, University of Colorado, Boulder, Colorado (June 1982-September 1988).

Chair, Department of Computer Science, University of Colorado, Boulder, Colorado (June 1981-June 1986).

Associate Professor, Department of Computer Science, University of Colorado, Boulder, Colorado (June 1977-June 1982).

Assistant Professor, Department of Computer Science, University of Colorado, Boulder, Colorado (September 1971-June 1977).

IV. Publications

A. Books

1. *Social Security Electronic Service Provision: A Strategic Assessment*, Leon J. Osterweil, Lynnette Millett, and Joan Winston (eds.) National Academies Press, August 2007.

B. Book Chapters and Articles

1. “A Future for Software Engineering?”, Leon J. Osterweil, (invited, reviewed), in *Future of Software Engineering*, 2007, L. Briand and A. Wolf (eds.), IEEE Computer Society Press, May 2007, pp. 1-11.
2. “Unifying the Software Process Spectrum”, **Lecture Notes in Computer Science**, Mingshu Li, Barry Boehm and Leon J. Osterweil (eds.), Springer-Verlag Berlin Heidelberg, Germany, Vol. LNCS 3840, 522 pgs (2006).
3. “Continuous Self-Evaluation for the Self-Improvement of Software” (with Lori A. Clarke), **Lecture Notes in Computer Science**, Paul Robertson, Howie Shrobe and Robert Laddaga (eds.), Springer-Verlag, Heidelberg, Germany, Vol. #1936 on Self-Adaptive Software. (2001).
4. “Improving the Quality of Software Quality Determination Processes,” **Proceedings of the IFIP TC2/WG2.5 Working Conference on the Quality of Numerical Software, Assessment and Enhancement**, Oxford, United Kingdom, 8-12 July 1996. And in the

Quality of Numerical Software: Assessment and Enhancement, Boisvert, (ed.), pp. 90–106, Chapman Hall (on behalf of the International Federation for Information Processing (IFIP), London, 1997. <http://laser.cs.umass.edu/abstracts/96-063.html>

5. “Research Issues in the Intersection of Hypertext and Software Development Environments” (with H. Ziv), **Workshop on Research Issues in Software Engineering and Human-Computer Interfaces**, R.N. Taylor (ed.) Springer-Verlag *Lecture Notes in Computer Science*, 1994.
6. “Software Development Environment Research Projects in the United States,” **Software Engineering Environments**, Fred Long, (ed.), Ellis Horwood, Ltd., Chichester, England, Vol. 3, pp. 115-120 (1991).
7. “A Metaphor and Conceptual Architecture for Software Development Environments” (with I. Shy and R.N. Taylor), *Lecture Notes in Computer Science*, Springer-Verlag, Berlin (1990).
8. “A Process-Object Centered View of Software Environment Architecture,” **Advanced Programming Environments**, Conradi, T. Didriksen, D. Wanvik (eds.), Springer Verlag, pp. 156-174 (1986).
9. “The Integration of Toolpack/IST” (with G. Clemm), **Problem Solving Environments**, Brian Ford and Françoise Chatelin (eds.), North Holland, pp. 209-227 (1986).
10. “The Toolpack/IST Approach to Extensibility in Software Environments” (with G. Clemm), **Ada Software Tools Interfaces**, Peter J.L. Wallis (ed.), Springer-Verlag, New York, 1984, pp. 133-163.
11. “A Survey of Current trends in Software Tools and Environment,” **Real-Time Data Handling and Process Control-II**, Kingham, G. LeLann, and N.E. Malagardis (eds.), North Holland, New York, 1984, pp. 89-102.
12. “Integrating the Testing, Analysis, and Debugging of Programs,” **Software Validation**, Hans-Ludwig Hausen (ed.), North Holland, New York, pp. 73-102.
13. “Toolpack—An Integrated System of Tools for Mathematical Software Development,” **Evaluating Mathematical Programming Techniques, Lectures Notes in Economics and Mathematical Systems**, #199, John M. Mulvey, (ed.) Spring-Verlag, pp. 258-267, (1982).
14. “Error and Anomaly Diagnosis Through Data Flow Analysis” (with L. D. Fosdick and R. Taylor), **Program Testing**, B. Chandrasekaran and S. Radicchi, (eds.) North-Holland, pp. 35-63, (1982).
15. “A Strategy for Integrating Program Testing and Analysis,” **Program Testing**, B. Chandrasekaran and S. Radicchi, (eds.) North-Holland, pp. 187-229, (1982).

16. "Using Data Flow Tools in Software Engineering," **Program Flow Analysis: Theory and Application**, S. Muchnick and N. Jones, (eds.) Prentice-Hall, Englewood Cliffs, NJ (1981).
17. "A Software Lifecycle Methodology and Tool Support," **Software Development Tools**, E. Riddle and R. E. Fairley, (eds.), Springer-Verlag, 82-92, (1980).

C. Refereed Journal Articles

1. "What we Learn from the Study of Ubiquitous Process", Leon J. Osterweil, *Software Process Improvement and Practice*, v.12, #5 (Sept.-Oct. 2007) pp. 399-414.
2. "Ensuring Reliable Datasets for Environmental Models and Forecasts", Emery R. Boose, Aaron M. Ellison, Leon J. Osterweil, Lori Clarke, Rodion Podorozhny, Julian L. Hadley, Alexander Wise, David R. Foster. *Ecological Informatics*, v.2 #3 (Oct. 2007) pp. 237-247.
3. "Applying Little-JIL to Describe Process-Agent Knowledge and Support Project Planning in SoftPM", Junchao Xiao, Leon J. Osterweil, Lei Zhang, Alexander Wise, and Wang Qing, *Software Process Improvement and Practice*, v. 12, # 5, (Sept.-Oct. 2007), pp. 437-448.
4. "Increasing patient Safety and Efficiency in Transfusion Therapy using Formal Process Definitions", Elizabeth A. Henneman, Rachel Cobleigh, Kimberly Frederick, Ethan Katz-Bassett, George S. Avrunin, Lori A. Clarke, Leon J. Osterweil, Chester Andrzejewski Jr., Karen Merrigan and Philip L. Henneman, *Transfusion Medicine Reviews*, January 2007.
5. "Analytic Webs Support the Synthesis of Ecological Data Sets", Ellison, A. Osterweil, L. J., Hadley, J. L., Wise, A. E., Boose, E., Clarke, L. A., Foster, D. R., Hanson, A., Jensen, D., Kuzeja, P., Riseman, E., Schultz, H., *Ecology*, Vol. 87, No. 6, pp. 1345-1358, June 2006.
6. "Analyzing Processes for E-Government Development: The Emergence of Process Modeling Languages" (with C. M. Schweik, N. Sondheimer, C. Thomas) *Journal of E-Government*. 1(4), 2004 pp. 63-89.
7. "FLAVERS; A Finite State Verification Technique for Software Systems"(with Jamieson M. Cobleigh and Lori A. Clarke), *IBM Systems Journal (Issue on Software Testing and Verification)*, Vol. 41, No. 1, pp. 140-165, 2002. <http://www.research.ibm.com/journal/sj/411/cobleigh/html>
8. "Engineering Software Design Process Execution"(with X. Song), *IEEE Transactions on Software Engineering*. Vol. 24, No. 9, September 1998. pp. 759-775.
9. "Report from the Panel on Software Quality: Strategic Directions," *ACM Computing Surveys*, December 1996.

10. "APPL/A--A Language for Software-Process Programming"(with S. Sutton and D. Heimbigner), *ACM Transactions on Software Engineering and Methodology*, Vol. 4, No. 3, July 1995, pp. 221-286.
11. "Experience with an Approach to Comparing Software Design Methodologies" (with X. Song), *IEEE Transactions on Software Engineering*, pp. 364-384, (May 1994).
12. "AIDA: a Dynamic Analyzer for Ada Programs" (with F.E. Eassa and M. Z. Abdel-mageed), *Information and Software Technology*, Vol. 36, No.2 (1994).
13. "Directions for U.S. Research and Development Efforts on Software Testing and Analysis: A Report from the Workshop on Directions in Software Testing and Analysis" (with Lori A. Clarke), *IEEE Software*, Vol. 18, No. 9, September 1992, pp. 89-96.
14. "A Proposed Testing and Analysis Research Initiative" (with Lori A. Clarke), *IEEE Software*, pages 89-96, (September 1992).
15. "Towards an Objective, Systematic, Design-Method Comparison" (with X. Song), *IEEE Software*, pages 43-53, (May 1992).
16. "Cesar A Static Sequencing Constraint Analyzer" (with K.M. Olander), *ACM Transactions on Software Engineering Methods*, No. 1, (1992)
17. "Cecil: A Sequencing Constraint Language for Automatic Static Analysis Generation" (with K.M. Olander), *IEEE Transactions on Software Engineering*, No. 3, pp. 268-280 (1990).
18. "A Mechanism for Environment Integration" (with G.M. Clemm), *ACM Transactions on Programming Languages and Systems*, No.1, pp. 1-25, (1990).
19. "Omega--A Data Flow Analysis Tool for the C Programming Language" (with C.L. Wilson), *IEEE Transactions on Software Engineering*, SE-11, pp. 832-838, (1985).
20. "Toolpack--An Experimental Software Development Environment Research Project," *IEEE Transactions on Software Engineering*, SE-9, pp. 673-685, (1983).
21. "Anomaly Detection in Concurrent Software by Static Data Flow Analysis"(with R.N. Taylor), *IEEE Transactions on Software Engineering*, SE-6, pp. 265-278 (1980).
22. "Software Environment Research: Directions for the Next Five Years," *IEEE Computer*, Vol. 14, No.4, pp. 35-44, (1981).
23. "ASSET: A Life Cycle Verification and Visibility System"(with J.R. Brown and L.G. Stucki), *Journal of Systems and Software*, pp. 77-87, (1979).
24. "On Two Problems in the Generation of Program Test Paths" (with H. N. Gabow and S. N. Maheshwari), *IEEE Transactions on Software Engineering*, SE-2, pp. 227-231 (1976).

25. "Data Flow Analysis in Software Reliability" (with L.D. Fosdick), *ACM Computing Surveys*, Vol. 8 (1976).
26. "DAVE - A Validation, Error Detection and Documentation System for Fortran Programs" (with L.D. Fosdick), *Software Practice and Experience*, Vol. 6, pp. 473-486 (1976).
27. "Some Classes of Uniquely Colorable Graphs," *Discrete Mathematics*, Vol. 8, pp. 59-69 (1974).
28. "A Theorem for Enumerating Certain Types of Collections," *Canadian Journal of Mathematics*, Vol. 25, No. 1, (1973), pp. 74-82.

D. Refereed Conference Proceedings

1. "Engineering Medical Processes to Improve their Safety: An Experience Report", Leon J. Osterweil, George S. Avrunin, Bin Chen, Lori A. Clarke, Rachel Cobleigh, Elizabeth A. Henneman, Philip L. Henneman, in **Proc. IFIP Working Group 8.1 Working Conference on Situational Method Engineering: Fundamentals and Experiences**, J. Ralyte, S. Brinkkemper, and B. Henderson-Sellers, eds., Springer, September 2007, pp. 267-282.
2. "Automated Fault Tree Analysis for Engineering Design Optimization" Tiefu Shao, Zongfang Lin, Sundar Krishnamurthy, Ian R. Grosse, Leon J. Osterweil, in **2007 ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference**, Las Vegas, NV Sept. 4-7, 2007.
3. "Challenges Observed in the Definition of Reference Business Processes", Liming Zhu, Leon J. Osterweil, Mark Staples, and Udo Kannengiesser, **3rd International Workshop on Business Process Design (BPD'07)**, Brisbane, Australia, Sept. 2007.
3. "Rigorously Defining and Analyzing Medical Processes: An Experience Report", Stefan Christov, Bin Chen, George Avrunin, Lori A. Clarke, Leon J. Osterweil, David Brown, Lucinda Cassells, and Wilson Mertens, **Workshop on Model Based Trustworthy Health Information Systems**, Nashville, TN, September 2007 (selected as Best Paper of this workshop).
4. "Representing Process Variation with a Process Family", Borislava I. Simidchieva, Lori A. Clarke, and Leon J. Osterweil. **International Conference on Software Process**, MN, pp. 109-120, May 2007.
5. "Using Process Definitions to Drive User Interactions with Digital Government Systems", Lori A. Clarke, Alan Gaitenby, Ethan Katsh, Matthew Marzilli, Leon J. Osterweil, Daniel Rainey, Borislava Simidchieva, Norman Sondheimer, Leah Wing, and

Alexander Wise, **8th Annual International Conference on Digital Government Research:** Bridging Disciplines & Domains, Philadelphia, PA, pp. 310-311, May 20-23, 2007.

6. “A Process-Driven Tool to Support Online Dispute Resolution”, with Lori A. Clarke, Alan Gaitenby, Daniel Gyllstrom, Ethan Katsh, Matthew Marzilli, Norman K. Sondheimer, Leah Wing, Alexander Wise, and Daniel Rainey, **International Conference on Digital Government Research**, San Diego, CA, ACM Press, pp. 356-357, May 2006.
7. “Automatic Fault Tree Derivation from Little-JIL Definitions” (with Bin Chen, George S. Avrunin and Lori A. Clarke), **Software Process Workshop (SPW 2006)/Process Simulation Workshop (ProSIM)**, *Lecture Notes in Computer Science*, Qing Wang, Dietmar Pfahl, David M. Raffo, and Paul Wernick (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3966, May 2006 pp. 150-158.
8. “Definition and Analysis of Election Processes” (with Mohammad S. Raunak, Bin Chen, Amr Elssamadisy and Lori A. Clarke), **Software Process Workshop (SPW 2006)/Process Simulation Workshop (ProSIM)**, *Lecture Notes in Computer Science*, Qing Wang, Dietmar Pfahl, David M. Raffo, and Paul Wernick (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3966, pp. 178-185, May 2006.
9. “Applying Little-JIL to Describe Process-Agent Knowledge in SoftPM” (with Junchao Xiao, Lei Zhang, Alexander Wise and Qing Wang), **Software Process Workshop (SPW 2006)/Process Simulation Workshop (ProSIM)**, *Lecture Notes in Computer Science*, Qing Wang, Dietmar Pfahl, David M. Raffo, and Paul Wernick (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3966, pp. 214-221.
10. “Automatically Analyzing Software Processes: Experience Report”, (with Rodion M. Podorozhny and Dewayne E. Perry), *Lecture Notes in Computer Science*, Mingshu Li, Barry Boehm and Leon J. Osterweil (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3840, pgs. 482-497 (2005).
11. “Unifying Microprocess and Macroprocess Research”, *Lecture Notes in Computer Science*, Mingshu Li, Barry Boehm and Leon J. Osterweil (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3840, pgs. 68-74 (2005).
12. “Process Support to Help Novices Design Software Faster and Better”(with Aaron G. Cass and Alexander Wise), April 2005. **Proceedings of the 20th IEEE/ACM International Conference on Automated Software Engineering (ASE 2005)**, Long Beach, CA, November 7-11, 2005, pp. 295-299.
13. “Early Lessons from the Application of Process Technology to Online Grievance Mediation”(with Ethan Katsh, Norman K. Sondheimer and Daniel Rainey), **2005 National Conference on Digital Government Research**, Atlanta, GA, May 15-16, 2005.

14. "Process Programming to Support Medical Safety: A Case Study on Blood Transfusion", (with Lori A. Clarke, Yao Chen, George S. Avrunin, Bin Chen, Rachel Cobleigh, Kim Frederick and Elizabeth A. Henneman), **Software process Workshop (SPW 2005)**, Beijing, China, May 25-27, 2005, Springer-Verlag *Lecture Notes in Computer Science*, Mingshu Li, Barry Boehm and Leon J. Osterweil (eds.), Vol. LNCS 3840, pp. 347-359.
15. "Process Technology To Facilitate the Conduct of Science" (with Alexander Wise, Lori A. Clarke, Aaron M. Ellison, Julian Hadley, Emery Boose and David R. Foster), **Software Process Workshop (SPW2005)**, Beijing, China, May 25-27, 2005, Springer-Verlag *Lecture Notes in Computer Science*, Vol. LNCS 3840, pp. 403-415.
16. "Effective Resource Allocation for Process Simulation: A Position Paper (with Mohammad S. Raunak) **6th International Workshop on Software Process Simulation and Modeling (ProSIM 2005)**, St. Louis, MO, May 14-15, 2005.
17. "Process Definition Language Support for Rapid Simulation Prototyping" (with Mohammad S. Raunak) **Software Process Workshop (SPW2005)**, Beijing, China, May 25-27, 2005, Springer-Verlag *Lecture Notes in Computer Science*, Vol. 3840, pp. 416-432.
18. "Process Technology for Achieving Government Online Dispute Resolution" (with Ethan Katsh and Norman Sondheimer), **National Conference on Digital Government Research**, Seattle, WA, May 2004.
19. "Formalizing Rework in Software Processes," (with Aaron G. Cass and Stanley M. Sutton, Jr.), **9th European Workshop on Software Process Technology (EWSPT 2003)**, Helsinki, Finland, September 2003, Springer Verlag *Lecture Notes in Computer Science* #2786, pp. 16-31.
20. "Trust Resource Management In Digital Government Through Process Modeling", (with Norman Sondheimer, Anthony Butterfield, Lori Clarke, Robert Marx, Matthew Billmers, Joel Sieh, Bruce Southard and David Su), NSF's **National Conference on Digital Government Research** (dg.o2003), Boston, MA, May 2003.
21. "E-Government through Process Modeling: A Requirements Field Study', (with N. K. Sondheimer, M. Billmers, J. Sieh and B. Southard), **IADIS International Conference e-Society**, Lisbon, Portugal, June 2003, session FP 5.1.
22. "Containment Units: A Hierarchically Composable Architecture for Adaptive Systems"(with Jamieson M. Cobleigh, Alexander Wise and Barbara Staudt Lerner), **10th International Symposium on the Foundations of Software Engineering (FSE 10)**, pp. 159-165, November 2002, Charleston, SC

23. "PROPEL: An Approach Supporting Property Elucidation" (with Rachel L. Smith, George S. Avrunin, and Lori A. Clarke), **24th International Conference on Software Engineering (ICSE 2002)**, pp. 11-21, May 2002, Orlando, Florida.
24. "Architecting Dynamic Systems Using Containment Units" (with Alexander Wise, Jamieson M. Cobleigh, Lori A. Clarke and Barbara Staudt Lerner), **Working Conference on Complex and Dynamic Systems Architecture**, pp. Day 3, Session 1, December 2001, Brisbane, Australia.
25. "An Architecture for Flexible, Evolvable Process-Driven User Guidance Environments" (with Timothy J. Sliski, Matthew P. Billmers and Lori A. Clarke), **Joint Eighth European Software Engineering Conference (ESEC 2001) and the Ninth ACM Sigsoft Symposium on the Foundations of Software Engineering (FSE 9)**, September 2001, Vienna Austria, pp. 33-43.
26. "Applying Real-Time Scheduling Techniques to Software Processes: A Position Paper" (with Aaron G. Cass), **Eighth European Workshop on Software Process Technology (EWSPT 2001)**, p.p. 145-151, June 2001, Witten, Germany, Springer-Verlag *Lecture Notes in Computer Science*, LNCS 2077.
27. "The Right Algorithm at the Right Time: Comparing Data Flow Analysis Algorithms for Finite State Verification" (with Jamieson M. Cobleigh and Lori A. Clarke), **23rd International Conference on Software Engineering (ICSE 2001)**, pp. 37-46, May 2001, Toronto, Canada.
28. "State Carrying Code For Expediting Verification of Critical Properties" (with Lori A. Clarke), **Third Workshop on New Directions in Software Technology (NDIST 3)**, Caneel Bay, St. John, U.S. Virgin Islands, December 2000.
29. "Design Guidance Through the Controlled Application of Constraints" (with Aaron G. Cass), **10th International Workshop in Software Specification and Design (IWSSD 10)**, p.p. 195-199, November 2000, San Diego, CA
30. "Using Little-JIL to Coordinate Agents in Software Engineering" (with Alexander Wise, Aaron G. Cass, Barbara Staudt Lerner, Eric K. McCall and Stanley M. Sutton, Jr.), **Automated Software Engineering Conference (ASE 2000)**, pp. 155-163, September 2000, Grenoble, France.
31. "Relocation in Mobile Process-Centered Software Developments Environments" (with Supratik Bhattacharyya), **11th International Workshop on Database and Expert Systems Applications (DEXA 2000)**, September 6-8, 2000, Greenwich, UK, pp. 198-203.
32. "HI-PLAN and Little-JIL: a Study of Contrast between Two Process Languages" (with Hyungwon Lee), **International Conference on Software on Theory and**

Practice (ICS 2000) of 16th IFIP World Computer Congress (WCC2000), August 2000, Beijing, PRC, pp 300-311.

33. "Verifying Properties of Process Definitions" (with Jamieson M. Cobleigh and Lori A. Clarke), **ACM Sigsoft 2000 International Symposium On Software Testing and Analysis (ISSTA 2000)**, August 21-25, 2000, Portland, OR. pp. 96-101.
34. "Frameworks for Reasoning about Agents Based Systems" (with Lori A. Clarke), **First Annual Workshop on Infrastructure for Scalable Multi-Agent Systems**, June 2000, Barcelona, Spain.
35. "Little-JIL/Juliette: A Process Definition Language and Interpreter" (with Aaron G. Cass, Barbara Staudt Lerner, Eric K. McCall, Stanley M. Sutton Jr., and Alexander Wise), **22nd International Conference of Software Engineering (ICSE 2000)**, June 4-11, 2000, Limerick, Ireland, pp 754-757.
36. "Continuous Self-Evaluation for the Self-Improvement of Software" (with Lori A. Clarke), 1st International Workshop on Self Adaptive Software (IWSAS 2000), Oxford, England, Springer Verlag Lecture Notes in Computer Science #1936, pp. 27-29, April 2000. (*UM-CS-2000-065*)
37. "Modeling Resources for Activity Coordination and Scheduling" (with Rodion M. Podorozhny and Barbara Staudt Lerner), **Third International Conference on Coordination Models and Languages**, (Appeared as Springer-Verlag Lecture Notes in Computer Science #1594), pp. 307-322, April 26-28, 1999, Amsterdam, The Netherlands.
38. "Coordinating Agent Activities in Knowledge Discovery Processes" (with David Jensen, Yulin Dong, Barbara Staudt Lerner, Eric K. McCall, Stanley M. Sutton, Jr., and Alexander Wise), **Work Activities Coordination and Collaboration (WACC'99)**, San Francisco, CA, February 21-25, 1999, pp. 137-146.
39. "Programming Process Coordination in Little-JIL" (with Barbara Staudt Lerner, Stanley M. Sutton, Jr. and Alexander Wise), **Sixth European Workshop on Software Process Technology (EWSPT 1998)**, pp. 127-131, September 1998, Weybridge, UK. (Appeared as Springer-Verlag Lecture Notes in Computer Science #1487).
40. "Architecting Processes are Key to Software Quality", Leon Osterweil, **International Workshop on the Role of Software Architecture in Testing and Analysis (ROSATEA)**, June 30-July 3, 1998, Marsala, Sicily, Italy. pp. 18-20. <http://www.ics.uci.edu/~djr/roseatea/papers/osterweil.pdf>
41. "Efficient Composite Data Flow Analysis Applied to Concurrent Programs" (with Gleb Naumovich and Lori A. Clarke), **ACM SIGPLAN SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 1998)**, pp. 51-58, June 1998, Montreal, Quebec, Canada.

42. "Comparing Implementation Strategies for Composite Data Flow Analysis Problems"(with Gleb Naumovich and Lori A. Clarke), **SIGPLAN-SIGSOFT Workshop on Program Analysis for Software Tools and Engineering**, June 1998.
43. "Enhancing Design Methods to Support Real Design Processes"(with Barbara Staudt Lerner and Stanley M. Sutton Jr.), A condensed version of this paper appeared in the **Ninth IEEE International Workshop on Software Specification and Design**, April 16-18, 1998, Ise-shima, Japan. pp. 159-161.
44. "An Adaptable Generation Approach to Agenda Management" (with Eric K. McCall and Lori A. Clarke), **20th International Conference on Software Engineering**, April 1998, Kyoto, Japan, pp. 282-291.
45. "Verifying Properties of Distributed Systems: Prospects for Practicality" (with Lori A. Clarke), **Fourth International Conference on Achieving Quality in Software: Software Quality in the Communication Society (AQuIS)**, Venice, Italy, March 30-April 2, 1998, pp. 11-16.
46. "The Design of a Next-Generation Process Language" (with Stanley Sutton, Jr.), **ESEC/FSE'97 and the Fifth ACM SIGSOFT Symposium on the Foundations of Software Engineering**, Zurich, Switzerland, September 1997 (Appeared as Springer-Verlag Lecture Notes in Computer Science #1301), pp. 142-158 (refereed - 14% acceptance rate) <http://laser.cs.umass.edu/abstracts/97-054.html>
47. "Applying Static Analysis to Software Architectures" (with Gleb Naumovich, George S. Avrunin and Lori A. Clarke), **ESEC/FSE'97 and the Fifth ACM SIGSOFT Symposium on the Foundations of Software Engineering**, Zurich, Switzerland, September 1997, pp. 77-93. (Appeared as Springer-Verlag Lecture Notes in Computer Science #1301).
48. "The Criticality of Modeling Formalisms in Software Design Method Comparison" (with Rodion M. Podorozhny), **19th International Conference on Software Engineering**, May 1997, Boston, MA. pp. 303-313.
49. "Verification of Communication Protocols Using Data Flow Analysis" (with Gleb N. Naumovich and Lori A. Clarke), **SIGSOFT'96: Fourth Symposium on the Foundations of Software Engineering**, pp. 93--105, 14-18 October, 1996, San Francisco, CA .
50. "Improving the Quality of Software Quality Determination Processes" **7th IFIP Working Group WG 2.5 Working Conference on Quality mathematical Software**, July 1996, Oxford, England.
51. "Product Families and Process Families"(with Stanley M. Sutton, Jr.) **Tenth International Software Process Workshop**, June 16-19, 1996, Ventron, France.

52. "Using Software Technology to Define Workflow Processes"(with Stanley M. Sutton, Jr.),

53. **NSF Workshop on Workflow and Process Automation in Information Systems: State-of-the-art and Future Directions**, Amit Sheth (ed.) May 8-10 1996, Athens, GA.

54. "Multilanguage Interoperability in Distributed Systems: Experience Report" (with M.J. Maybee and D. H. Heimbigner), **18th International Conference on Software Engineering**, pp. 451-463, March 25-30, 1996, Berlin, Germany (24% acceptance rate). <http://laser.cs.umass.edu/abstracts/95-075.html>

55. "Assuring Accuracy and Impartiality in Software Design Methodology Comparison" (with X. Song}, **Eighth International Workshop on Software Specification and Design**, pp. 170--171 March 22-23, 1996, Schloss Velen, Germany.

56. "PDP: Programming a Programmable Design Process" (with S.M. Sutton, Jr.), **Eighth International Workshop on Software Specification and Design**, pp.186--190, March 22-23, 1996, Schloss Velen, Germany.

57. "Wide-spectrum Software Product Architecture Formalisms"(with L.A. Clarke), **First Workshop on Architecture for Software Systems**, Seattle WA, April 24-28, 1995.

58. "Research Issues in the Intersection of Hypertext and Software Development Environments" (with H. Ziv), **Workshop on Research Issues in Software Engineering and Human-Computer Interfaces**, R.N. Taylor (ed.), (Springer-Verlag, Lecture Notes in Computer Science), 1995.

59. "An Argument for the Elimination of Roles" (with D. Heimbigner), position paper, **Ninth International Software Process Workshop**, Airlie, VA, October 1994, pp. 122–123.

60. "An Alternative to Software Process Languages" (with D. Heimbigner), position paper, **Ninth International Software Process Workshop**, Airlie, VA, October 1994, pp. 129-131.

61. "Engineering Software Design Processes to Guide Process Execution" (with X. Song), **Third International Conference on the Software Process**, Reston, VA, October 1994, pp. 135–152.

62. "Sixth International Software Process Workshop--Software Process Example" (with M. Kellner, P. Feiler, A. Finkelstein, T. Katayama, and M. Penedo), **First International Conference on the Software Process**, Redondo Beach, CA, IEEE Press, pp. 176-187, October 1991.

63. "Programming a Software Requirements-Specification Process" (with Sutton, H. Ziv, D. Heimbigner, H. Yessayan, M. Maybee, and X. Song), **First International Conference on the Software Process**, Redondo Beach, CA, IEEE Press, pp. 68-89, October 1991.
64. "Comparing Design Methodologies Through Process Modeling" (with X. Song), **First International Conference on the Software Process**, Redondo Beach, CA, IEEE Press, pp. 29-44, October 1991.
65. "A Selective Survey of Object Management Approaches Toward Process-Driven Software Development Environments" (with H. Kleppinger), **First Irvine Software Symposium**, Irvine, CA, June 1991.
66. "The Arcadia Process-Centered Environment Architecture" (with Taylor), **Sixth International Software Process Workshop**, Hakodate, Japan , October 1990.
67. "Language Constructs for Managing Change in Process-Centered Environments" (with S.M. Sutton, Jr. and D. M. Heimbigner), **ACM SIGSOFT '90: Fourth International Symposium on Software Development Environments**, Irvine, CA, pp. 206—217, December 1990.
68. "Cesar: A Static Sequencing Constraint Analyzer" (with K.M. Olender), **ACM SIGSOFT '89: Third Workshop on Software Testing, Analysis and Verification**, Key West, FL, December 1989.
69. "Integrating Testing Techniques Through Process Programming" (with D.J. Richardson and S.L. Aha), **ACM SIGSOFT '89: Third Workshop on Software Testing, Analysis and Verification**, Key West, FL, pp. 219-228, December 1989.
70. "Experience with Process Programming," **Fifth International Software Process Workshop**, Kennebunkport, ME, May 1989.
71. "An Example of Formal Specification as an Aid to Design and Development" (with R.B. Terwilliger and M.J. Maybee), **Fifth International Workshop on Software Specification and Design**, Pittsburgh, PA, May 1989.
72. "Foundations for the Arcadia Environment Architecture" (with R.N. Taylor, R.W. Selby, M. Young, F.C. Belz, L. A. Clarke, J.C. Wileden, and A.L. Wolf), **ACM SIGSOFT '88: Third Symposium on Software Development Environments**, Boston, MA, pp.1-13, November 1988.
73. "New Perspectives on Software Maintenance Processes" (with Shehab A. Gamalel-Din), **Conference on Software Maintenance**, Phoenix, AZ, pp.14-22, October 1988.
74. "Some Early Experiences with Process Programming," **Fourth International Software Process Workshop**, Moretown, Hampstead, England, May 1988.

75. "TRICS: A Testing Tool for C" (with Barbara Raither), **First European Software Engineering Conference**, Strasbourg, France, September 1987.
76. "Specification and Static Evaluation of Sequencing Constraints in Software" (with K. Olander), **Workshop on Software Testing**, Banff, Canada, July 1986.
77. "Arcadia: A Software Development Environment Research Project" (with R. Taylor, L.A. Clarke, R.W. Selby, J.C. Wileden, A. Wolf and M. Young), **ACM/IEEE Symposium on Ada Tools and Environments**, Miami, FL, April 1986.
78. "Keystone: A Federated Software Environment" (with D. Heimbigner, G. Clemm, L. Williams), **ACM SIGPLAN '85 Workshop on Software Engineering Environments for Programming-in-the-Large**, Harwich port, MA, June 1985.
79. "The Use of Sequencing Information in Software Specifications for Verification" (with Richard N. Taylor), **Fourth Jerusalem Conference on Information Technology**, Jerusalem, Israel, (also appeared in IEEE Catalog #84CH2022-2), pp. 260-266, May 1984 (refereed).
80. "The Toolpack/IST Programming Environment" (with Wayne R. Cowell), **SoftFair Conference on Software Development Tools, Techniques and Alternatives**, (also appeared in IEEE Catalog #83CH1919-0), July 1983.
81. "Omega--A Data Flow Analysis Tool for the C Programming Language" (with Cynthia L. Wilson), **Sixth International Computer Software and Applications Conference (Compsac 82)**, (also appeared in IEEE Catalog #82CH1810-1), pp. 9-18, November 1982.
82. "Toolpack--An Experimental Software Development Environment Research Project" **Sixth International Conference on Software Engineering, Tokyo**, (also appeared in IEEE Catalog #82CH1795-4), pp. 166-175.
83. "BIGMAC II" (with E. W. Myers, Jr.), **Fifth International Conference on Software Engineering**, San Diego, CA, March 1981.
84. "A Software Lifecycle Methodology and Tool Support" **Software Development Tools Workshop Conference**, Pingree Park, CO, May 1979 (invited).
85. "Using Tools for Verification, Documentation and Testing," **Programming Environment for Development of Numerical Software**. Pasadena, CA, October 1978.
86. "A Methodology for Testing Computer Programs," **AIAA Conference on Computers in Aerospace**, Los Angeles, CA, November 1977.

87. "Using Tools in Modeling Software Production," **NASA Software Workshop**, Greenbelt, MD, September 1977.
88. "Allegations as Aids to Static Program Testing," **1976 ACM National Conference**, Houston, Texas, October 1976 (invited, refereed).
89. "The Detection of Anomalous Interprocedural Data Flow" (with L.D. Fosdick), **Second International Conference on Software Engineering**, San Francisco, CA, October 1976.
90. "Some Experience with DAVE - A Fortran Program Analyzer" (with L.D. Fosdick). **AFIPS National Computer Conference**, pp. 909-916, New York, N.Y., June 1976 .
91. "Automated Input/Output Variable Classification as an Aid to Validation of FORTRAN Programs" (with L.D. Fosdick), **Mathematical Software II Conference**, Purdue University, May 1974 (invited, refereed).

E. Other Conference Papers

1. "Ubiquitous Process Engineering: Applying Software Process Technology to Other Domains". Invited Keynote Address, **Software Process Workshop (SPW 2006)**, Shanghai, China, May 2006, *Lecture Notes in Computer Science*, Qing Wang, Dietmar Pfahl, David M. Raffo and Paul Wernick (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3966, pp. 39-47.
2. "Unifying Microprocess and Macroprocess Research" Invited Keynote Address, **International Software Process Workshop (SPW2005)**, Beijing, China, May 25-27, 2005, *Lecture Notes in Computer Science*, Mingshu Li, Barry Boehm and Leon J. Osterweil (eds.), Springer-Verlag, Heidelberg, Germany, Vol. LNCS 3840.
3. "Understanding Process and the Quest for Deeper Questions in Software Engineering Research," Invited Keynote, **9th European Software Engineering Conference (ESEC 2003)**, Helsinki, Finland, September 2003, pp. 6.
4. "Efficient Composite Data Flow Analysis Applied to Concurrent Programs" (with Gleb Naumovich and Lori A. Clarke), **ACM SIGPLAN/SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 1998)**, pp. 51-58, Montreal, Quebec, Canada, June 1998.
5. "Gaining Confidence in Distributed Systems" (with Gleb Naumovich, Lori Clarke and Matthew B. Dwyer) Invited Keynote,, **10th International Software Quality Week**, Vol. II, Session 10, San Francisco, CA, May 1997.

6. "Software Processes Are Software Too, Revisited: An Invited Talk on the Most Influential Paper of ICSE 9," **19th International Conference on Software Engineering**, pp. 540--548, Boston, MA, May 1997. <http://laser.cs.umass.edu/abstracts/97-029.html>
7. "Perpetually Testing Software," Invited Keynote, **Ninth International Software Quality Week**, San Francisco, CA, May 1996, Software Research Institute, San Francisco, CA.
8. "A History of Software Testing and Analysis," **Ninth International Software Quality Week**, San Francisco, CA, May 1996, Software Research Institute, San Francisco, CA.
9. "An Anytime Approach to Analyzing Software Systems" (with Dan Rubenstein and Shlomo Zilberstein), **10th International FLAIRS Conference** (Florida Artificial Intelligence Research Society), pp. 386--391, Daytona Beach, Florida, May 1997.
10. "The Challenges of Integrating Software Analysis and Testing Software," **Fifth International Conference on Software Quality**, Austin, Texas, October 1995.
11. "Software Environments," **ACM/CRA Conference on Strategic Directions in Computing Research**, Arlington, VA, pp. 58-60, October 1989 (invited).
12. "Software Processes are Software Too," **Ninth International Conference on Software Engineering**, Monterey, CA, pp 2-13, March 1987 (invited keynote).
13. "The Toolpack/IST Approach to Extensibility in Software Environments" (with G. Clemm), **Second IBM Productivity Tools Symposium**, Atlanta, Georgia, September 1984(invited).
14. "Status and Directions for Software Testing and Evaluation Tools," **National Conference on Software Testing and Evaluation**, National Security Industrial Association Software Group, Washington, DC, pp. D-1 to D-11, February 1983. Reprinted as Auerbach Technical Report 14-06-11, July 1983 (invited).
15. "Integrating and Testing, Analysis and Debugging of Programs," **Symposium on Software Validation**, Gesellschaft furs Mathematik and Datenverarbeitung, Mbh, Bonn, Darmstadt, West Germany, September 1983 (invited).
16. "An Extensible Toolset and Environment for the Production of Mathematical Software" **International Conference Tools, Methods and Languages for Scientific and Engineering Computation**, Paris, France, INRIA, Rocquencourt, May 1983 (invited).
17. "A Survey of Current Trends in Software Tools and Environments," **Second International Symposium on Real Time Data '82**, Versailles, France, INRIA, Rocquencourt, pp. 63-76, November 1982 (invited).
18. "Toolpack--Software Development Environment Project," **Fourth Israel Conference on Quality Control**, Herzliyah, Israel, October 1982 (invited).

19. "Toolpack--A Mathematical Software Tools Integration Project," **Statistical Computing Section**, American Statistical Association, 1982 (invited).
20. "Toolpack--A Collection of Tools for Mathematical Software," **Conference on the Computing Environment for Mathematical Software**, Jet Propulsion Laboratory Publication 81-67, Pasadena, CA, pp. 18-20. (invited).
21. "A Strategy for Integrating Program Testing and Analysis," **Army Numerical Analysis and Computers Conference**, Army Research Office Report #81-3, pp. 555-609, February 1981 (invited).
21. "Program Testing Techniques Using Simulated Execution" (with L.D. Fosdick), **Symposium on Simulation of Computer Systems**, pp. 171-180, Boulder, Colorado, August 1976 (invited).
23. "Simulated Program Execution as a Strategy for Error Detection and Validation" (with L.D. Fosdick), **Computer Simulation Conference**, pp. 704-707, Washington, D.C., July 1976 (invited).
24. "Validation and Global Optimization of Programs" (with Fosdick), **Fourth Texas Conference on Computing Systems**, Austin, Texas, October 1975 (invited).
25. "DAVE - A Fortran Program Analysis System" (with L.D. Fosdick), **Computer Science and Statistics, Eighth Annual Conference on the Interface**, pp. 329-335, Los Angeles, CA, February (invited).

F. Selected Reports

1. "Complex Medical Processes as Context for Embedded Systems", with George S. Avrunin and Lori A. Clarke, Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2006-31, Amherst, MA 01003, March 2006.
2. "Using Process Definitions to Facilitate the Specification of Requirements" (with Norman K. Sondheimer, Lori A. Clarke, Ethan Katsh) Department of Computer Science, University of Massachusetts (and Daniel Rainey) National Mediation Board, Washington, DC; Technical Report #UM-CS-2006-011, Amherst, MA 01003, March 2006.
3. "Using Little-JIL to Define Containment Units" (with Barbara Staudt Lerner, Jamieson M. Cobleigh and Alexander Wise), Department of Computer Science, University of Massachusetts Technical Report #UM-CS-2002-033, Amherst, MA 01003, July 2002.
4. "An Analytic Web to Support the Analysis and Synthesis of Ecological Data" (with Aaron M. Ellison, Julian L. Hadley, Alexander Wise, Emery Boose, Lori A. Clarke,

David R. Foster, Allen Hanson, David Jensen, Paul Kuzeja, Edward Riseman, and Howard Schultz), Department of Computer Science, University of Massachusetts Technical Report #UM-CS-2004-079, Amherst, MA 01003, August 2004

5. “Programming Rework in Software Processes”(with Aaron G. Cass), Department of Computer Science, University of Massachusetts Technical Report #UM-CS-2002-025, Amherst, MA 01003, March 2002.
6. “Requirements-Based Design Guidance: A Process-Centered Consistency Management Approach” (with Aaron G. Cass), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2002-025, Amherst, MA 01003, March 2002.
7. “Comparison Process Specification for a Repeatable Comparison of Architecting Processes”(with Rodion M. Podorozhny, and Dewayne E. Perry), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2001-006, Amherst, MA 01003, February 2001.
8. “Exploiting Hierarchy for Planning and Scheduling” (with Aaron G. Cass and Krithi Ramamritham), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2000-064, Amherst, MA 01003, December 2000.
9. “Modeling and Managing Resource Utilization in Process, Workflow, and Activity Coordination” (with Barbara Staudt Lerner, Anoop George Ninan and Rodion M. Podorozhny), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2000-058, Amherst, MA 01003, August 2000.
10. “Supporting Communication of Heterogeneous Distributed Agents with Agenda Management Systems” (with Eric K. McCall and Lori A. Clarke), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-2000-032, Amherst, MA 01003, June 2000.
11. “Logically Central, Physically Distributed Control in a Process Runtime Environment” (with Aaron G. Cass, Barbara Staudt Lerner, Eric K. McCall and Alexander Wise), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1999-065, Amherst, MA 01003, November 1999.
12. “Specifying Coordination in Processes Using Little-JIL”(with Alexander Wise, Barbara Staudt Lerner, Eric K. McCall and Stanley M. Sutton, Jr.), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1999-071), Amherst, MA 01003, November 1999.
13. “Formally Defining Coordination Process to support Contract Negotiations” (with Aaron G. Cass, Hyungwon Lee and Barbara Staudt Lerner), Department of Computer

Science, University of Massachusetts, Technical Report #UM-CS-1999-039, Amherst, MA 01003, June 1999.

14. "A Rigorous Approach to Resource Management in Activity Coordination" (with Rodion M. Podorozhny and Barbara Staudt Lerner), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1999-012, Amherst, MA 01003, March 1999.
15. "Experience Using the JIL Process Programming Language to Specify Design Processes" (with Stanley M. Sutton, Jr. and Barbara Staudt Lerner), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1997-068, Amherst, MA 01003, September 1997.
16. "A Framework for Relocation in Mobile Process-Centered Software Development Environments" (with Supratik Bhattacharyya), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1996-069, Amherst, MA 01003, August 1996.
17. "An Analysis of Process Languages" (with Stanley M. Sutton, Jr., Peri L. Tarr), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1995-078, Amherst, MA 01003, August 1995.
18. "Directions for U.S. Research and Development Efforts on Software Testing and Analysis: A Report from the Workshop on Directions in Software Testing and Analysis" (with Lori A. Clarke), Department of Computer Science, University of Massachusetts, Technical Report #UM-CS-1990-073, Amherst, MA 01003, September 1992. (A shorter published version of this paper appeared in IEEE Software, 18(9), September 1992, pp. 89-96).

V. Other Creative Work

1. Leader of development team for Little-JIL process programming language and Juliette process interpreter engine.
2. Chief Scientist: MCC Corp., QuEST (Quality Enhancing Software Technology) Project.
3. Introduced the idea of Process Programming, now being explored as the basis for effective integration of software development environments by several major projects around the world.
4. Arcadia Project: Principal Investigator on research grants for this project from University of Colorado at Boulder, University of California at Irvine, and University of Massachusetts at Amherst.

5. Technical co-chairman, Toolpack consortium: a joint project of 7 universities, government labs and private companies to construct a tool environment for production of mathematical software. Toolpack-1 was distributed to over 600 sites worldwide.
6. One of two principal designers of DAVE, a Computer Program Validation System distributed to approximately 90 sites worldwide.

VI. Awards and Honors

1. 2003 ACM Sigsoft Outstanding Research Award (Lifetime Achievement Award).
2. Fellow Association for Computing Machinery, May 1998
3. Most Influential Paper of the Ninth International Conference on Software Engineering (ICSE9), Awarded as 10-Year Retrospective, May 1997.
4. Runner-up: Most Influential Paper of the Sixth International Conference on Software Engineering, Awarded as 10-Year Retrospective, May 1994.
5. University of Colorado Campus Outstanding Teaching Award, May 1977

VII. Keynote Talks and Distinguished Lectures

1. Invited Talk: Shanghai Software Quality Consortium (SSQC), Shanghai SPIN & QAI Chapter, Microsoft Asia Community, and ASTI Shanghai, Shanghai, China, January 2003.
2. Invited Speaker at Microsoft Research, Redmond, WA, September 2002.
3. Invited talk: Centennial Celebration, Nihon University, Tokyo, Japan, July 2002.
4. Invited talk: Japan Electronics and Information Technology Industries Association (JEITA), Tokyo, Japan, June 2002.
5. Invited Distinguished Lecturer: University of California Irvine Institute for Software Research, Distinguished Lecture Series, Irvine, California, November 2001.
6. Invited Presentation: Institute of Electrical Engineers (IEE), London, England, October 2001.
7. Keynote Speaker: Tutorials on Software Process, Delhi and Bangalore India, January 2001.
8. Distinguished Lecturer, University of Texas Joint Computer Science /Electrical Engineering Department Software Engineering Symposium Series, November 2000.
9. Keynote Speaker: Quality Week 2000, San Francisco, CA, May 2000.

10. Keynote Speaker: Computer Society of India, International Conference on Software Engineering (CONSEG 97) Madras, India, January 1997.
11. Keynote Speaker: Ninth International Software Quality Week, San Francisco CA, June 1996.
12. Keynote Speaker: Dedication Symposium, Fraunkofer Institute on Software Engineering, Berlin (1993)
13. Keynote Speaker: Dedication Symposium, Japan Advanced Institute for Science and Technology, Kanazawa, Japan (1992)
14. Keynote Speaker: CASE 92 Japan Conference, Tokyo, Japan (1992)
15. Keynote Speaker: CASE 92 Conference, Montreal, Canada (1992)
16. Distinguished Lecturer, CRIM and McGill University, Montreal, Canada (1992)
17. Keynote Speaker: Japanese Ministry of Education National Software Engineering Research Convocation, Tokyo, Japan (1990)
18. Distinguished Lecturer, Eureka Software Factory Project, Dortmund, Germany (1990)
19. Distinguished Lecturer, Naval Postgraduate School, Monterey, CA (1989)
20. Distinguished Lecturer, AT&T Bell Laboratories (1989)
21. Keynote Speaker: Japan Software Engineers' Association Annual Meeting, Tokyo (1987)
22. Keynote Speaker: Ninth International Conference on Software Engineering, Monterey, CA (1987)
23. Landsdowne Scholar, University of Victoria, Victoria, British Columbia (1981)
24. SIAM Lecturer (1977-78)

VIII. Extramural Funding

1. Process Families and their Application to Online Dispute Resolution
Funded by: National Science Foundation (NSF)
Period: October 1, 2007 – September 30, 2010
Role: Principal Investigator
Amount: \$873,442

2. NSF/ITR: Improving the Safety and Efficiency of Medical Processes
Funded by: National Science Foundation (NSF)
Period: October 1, 2004 – September 30, 2007
Role: Co-Principal Investigator with Lori A. Clarke, George Avrunin, Elizabeth Henneman
Amount: \$1,448,468
3. Gift
Funded by: Tata Consultancy Service, Mumbai, India
Period: Received Fall 2006
Role: Recipient of Gift to support work on improving TCS software development processes
Amount: ~\$150,000
4. NSF: Process Technology for Achieving Government Online Dispute Resolution
Funded by: National Science Foundation (NSF)
Period: September 1, 2004 – August 31, 2008
Role: Principal Investigator (N. Sondheimer and E. Katsh, Co-PIs)
Amount: \$700,000
5. Electronic Institute Initiative (EEI)
Funded by: National Mediation Board
Period: October 1, 2004 – September 30, 2007
Role: Co-Director with Norman Sondheimer and Ethan Katsh
Amount: \$150,000
6. A Process Definition Language for Guiding Multi-user Design
Funded by: National Science Foundation (NSF)
Period: July 15, 2002 - June 30, 2004
Role: Principal Investigator
Amount: \$150,000
7. Preliminary Evaluation of Process Formalisms for Defining Government Processes
Funded by: National Science Foundation (NSF)
Period: July 1, 2002 – June 30, 2003
Role: Co-Principal Investigator with Norman Sondheimer
Amount: \$99,886
8. ITR/AP: The Analytic Web
Funded by: National Science Foundation (NSF)
Period: September 1, 2002 - August 31, 2006
Role: Principal Investigator (Lori A. Clarke, David Foster and Ed Riseman, CoPIs)
Amount: \$2,100,000

9. The Impact Project: Determining the Impact of Software Engineering Research upon Practice
Funded by: National Science Foundation (NSF)
Period: November 1, 2001 – December 31, 2006
Role: Co-Principal Investigator with Alex Wolf
Amount: \$150,600
10. Electronic Institute Initiative (EEI): Center for E-Government
Funded by: Commonwealth of Massachusetts Information Technology Division
Period: July 1, 2001 - June 30, 2002
Role: Co-Director with Norman Sondheimer
Amount: \$50,000
11. DASADA: Process Guidance and Validation for Dependable On-The-Fly System Adaptation
Funded by: Defense Advanced Research Projects Agency (DARPA)
Period: July 1, 2000 - June 30, 2002
Role: Co-Principal Investigator with Lori A. Clarke
Amount: \$474,997
12. Support for MARS Project: A Software Control Framework for Leaning Coordinated Multi-Robot Strategies in Open Environments
Funded by: Defense Advanced Research Project Agency (DARPA)
Role: Co-Principal Investigator (Roderic Grupen, Principal Investigator)
Period: April 1, 2000 - June 30, 2002
Amount: \$1,148,862
13. QUEST (Quality Enabling Software Technology)
Funded by: MCC (Microelectronics & Computer Technology Corp.)
Period: June 1, 1996 - May 31, 1999
Role: Co-Principal Investigator with Lori A. Clarke
Amount: \$230,000
14. Experimental Study of Static Analysis Techniques for Concurrent Software
Funded by: NSF
Period: Sept. 1, 1997 - Aug. 31, 2001
Role: Associated Faculty Member (George S. Avrunin, Principal Investigator),
Amount: \$1,434,337.
15. EDCS: UMASS/Evolutionary Design of Complex Software (Perpetual Testing)
Funded by: Advanced Research Projects Agency (ARPA)
Period: Feb. 10, 1997 - December 21, 2001
Role: Co-Principal Investigator with Lori A. Clarke
Amount: \$1,854,722
16. UMASS Arcadia: Support for Advanced Software Engineering Environments

Funded by: Advanced Research Projects Agency (Arpa)
Amount: \$3,350,000
Period: July 1, 1994 - June 30, 1997 (2-year no-cost extension to June 30, 1999)
Role: Principal Investigator (with L.A. Clarke)
 Option Title: Investigating Environment Support for Ada 95
 Amount: \$150,000
 Option Title: Analysis, Testing and Validation in the Context of Megaprogramming
 Amount: \$52,500
 Option Title: Stricom Interoperability Support
 Amount: \$124,537

17. Arcadia 2: UC Irvine/University of Colorado Participation
Funded by: Defense Advanced Research Projects Agency (Darpa)
Amount: \$2,650,000
Period: July 15, 1991 - July 14, 1994
Role: Principal Investigator (with D.J. Richardson)

18. Arcadia Project : University of Colorado Participation
Funded by: NSF in cooperation with Darpa
Amount: \$1,687,477
Period: July 15, 1987 - July 15, 1991
Role: Principal Investigator

19. A Facility for Research in Numerical Computation and Software Environments
Funded by: NSF Coordinated Experimental Research Program and Univ. of Colorado
Amount: \$3,197,254
Period: June 1, 1985 - May 31, 1990
Role: Co-Principal Investigator (with Robert Schnabel)

20. Research Grant in Support of Software Tools and Development Environments
Funded by: AT&T
Amount: \$80,000
Period: August 1, 1984 - August 1988
Role: Grantee (with W.M. Waite, R. King, R. Terwilliger)

21. Integrated Testing and Analysis of Mathematical Software Tools
Funded by: Department of Energy
Amount: \$475,000
Period: August 1, 1984 - July 31, 1987
Role: Principal Investigator

22. Experimental Research on Advanced Software Tools and Environments
Funded by: National Science Foundation
Amount: \$312,000
Period: July 1, 1984 - June 30, 1986
Role: Principal Investigator

23. Continuing Research in Software Development Environments
Funded by: National Science Foundation
Amount: \$100,000
Period: July 1, 1983 - June 30, 1984
Role: Principal Investigator
24. DOE Toolpack
Funded by: Department of Energy
Amount: \$499,032
Period: August 1, 1980 - July 31, 1984
Role: Co-Principal Investigator (with L. D. Fosdick)
25. Toolpack: University of Colorado Participation
Funded by: National Science Foundation
Amount: \$300,310
Period: June 1, 1980 - November 30, 1983
Role: Co-Principal Investigator (with L. D. Fosdick)
26. The Construction and Evaluation of Tools for Testing and Verification of Software
Funded by: United States Army Research Office
Amount: \$172,000
Period: February 15, 1980 - February 14, 1983
Role: Co-Principal Investigator (with L. D. Fosdick)
27. An Integrated Testing System for Computer Programs
Funded by: United States Army Research Office
Amount: \$80,902
Period: January 5, 1978 - December 31, 1979
Role: Co-Principal Investigator (with L. D. Fosdick)
28. An Integrated Testing System for Computer Programs
Funded By: National Science Foundation
Amount: \$315,389
Period: June 1, 1977 - November 30, 1980
Role: Co-Principal Investigator (with L. D. Fosdick)
29. Analysis of Mathematical Software for the Purpose of Validation and Documentation
Funded by: National Science Foundation
Amount: \$320,689
Period: June 1, 1975 - November 30, 1977
Role: Co-Principal Investigator (with L. D. Fosdick)
30. A Regional Distribution Center for the CITY Model
Funded by: Environmental Protection Agency
Amount: \$5,275
Period: June 29, 1972 - June 28, 1973

Role: Principal Investigator

IX. Panel and Board Memberships:

1. Member of Editorial Board, **International Journal of Software and Informatics** (proposed for publication by ACM and IEEE), 1997-present.
2. Steering Committee, International Conference on the Software Process series, 2006-present.
3. Chair, National Research Council Panel on Strategic Plans and Directions for the Social Security Administration, 2004-present.
4. Chair, National Research Council Panel on “IT and the States”, Funded by Ford Foundation. 2003-2004.
5. Associate Editor, **Automated Software Engineering** (2001-present).
6. Member, Committee of Visitors, National Science Foundation Computer and Computation Research Division (July 2000).
7. Member Worcester Polytechnic Institute Computer Science Department Advisory Board, Worcester, MA (1999-Present)
8. Member, KLA-Tencor Corporate Software Technology Advisory Board, San Jose, CA, (1997-2000).
9. Associate Editor, **Software Process Improvement and Practice**, John Wiley, publisher (1994-present).
10. Member, Software Advisory Panel, MCC, Inc., Austin, Texas, (1994-1997).
11. Member, Corporate Computer Science Technology Panel, Science Applications International Corp. (1993-1996).
12. Member, Software Engineering Institute Software Process Definition Steering Committee (1990-1996)
13. Associate Editor, **ACM Transactions on Software Engineering Methodology** (1989-2000)
14. Member, Technical Policy Committee, Numerical Algorithms Group, Ltd., Oxford, England (1988-2005)
15. Member, Advisory Board, Software Process Program, Software Engineering Institute, Pittsburgh, PA (1988-1996)

16. Member, Executive Committee, IEEE Technical Committee on Software Engineering (1986-1990)
17. NSF Coordinated Experimental Research Proposal Evaluation Panelist and Site Visitor (1985 and 1986)
18. Software Engineering Evaluation Panel, U.S. Office of Technology Assessment (1984)
19. Software Test and Evaluation Panel, Office of U.S. Secretary of Defense (1982-1985)
20. Member, Editorial Board, **IEEE Computer** (1983-1986)

IX. Consulting Activities

1. MCC, Inc.
Corporate Software Technology Advisory Panel, and Quest Project (1993-1998).
2. Science Applications International Corp. (SAIC), (1991-1994).
3. Tata Consultancy Services, Bombay, India
Consultant to top management: review of corporate software practices (1992, 1997, 2006, 2007)
4. Unisys Corporation
Consultant to Stars Project Software Process team (August 1991-1993).
5. US Department of Defense Software Engineering Institute, Carnegie-Mellon University
Member, Software Process Program Advisory Board (August 1988-1996).
6. Institute for Defense Analyses
Member of technology assessment team, for Software Testing and Analysis for Strategic Defense Initiative (September 1988).
7. TRW, Inc.
Member of Arcadia Project Technical Advisory Board (February 1987-February 1989).
8. proCASE, Inc.
Member Technology Advisory Board (December 1986-1991).
9. IBM Corporation
Member Academic Advisory Board to IBM Executive Tools Council. Reviewed and advised on activities of major IBM corporate software technology effort, (May 1985-October 1986).
10. Institute for Defense Analyses

Member, WIS Foundation Technologies Task Force (October 1984-December 1985).

11. Jet Propulsion Laboratory, Pasadena, CA
Served on Software Advisory Panel (January 1985).
12. Hewlett-Packard, Palo Alto, CA
Taught Software Testing course (February 1984)
13. IBM Corporation.
Instructor, Advanced Course on Integrated Testing and Analysis Tools for Software (December 1983-January 1984).
14. Rome Air Development Center
Participated in review of USAF North American Air Defense Command software (May 1983)
15. IBM Boulder Laboratories, CO
Advised on software development and testing tools and environments (March 1982-December 1982).
16. Schlumberger--Doll Research Center, Ridgefield, CT
Advised on the design and selection of software tools (January 1981)
17. Boeing Computer Services Company, Seattle, WA
Assisted and advised on technical matters and technical policy in the area of software tools for testing and verification. Served as technical marketing advisor (September 1978-March 1981).
18. National Center for Atmospheric Research, Boulder, CO
Presented short course on Software Engineering (January-February 1979).
19. TRW systems, Inc., Houston Operation, Houston, TX
Provided technical advice, review, and direction at TRW in connection with NASA Contract work (February 1975-February 1976).
20. Bell Telephone Laboratories, Denver Laboratory
Taught three in-house courses
21. National Center For Atmospheric Research, Boulder, CO
Taught two lecture series

XI. Professional Service and Activities

A. Professional Meeting Organization and Leadership:

1. General Chair, ICSE '06, ACM SIGSOFT/IEEE 28th International Conference on Software Engineering.
2. Chair, New Software Engineering Faculty Symposium, ICSE 2001, Toronto, Ontario, Canada, (May 2001); ICSE 2003, Portland, Oregon (May 2003); ICSE 2005 St. Louis, MO (May 2005), ICSE 2007, Minneapolis, MN (May 2007).
3. Chair, Executive Committee, NSF/ACM Sigsoft IMPACT Project (2001-present).
4. General Chair, ACM SIGSOFT'98: 6th Symposium on the Foundations of Software Engineering, Orlando, Florida (November 3-5, 1998).
5. Program Committee co Chair, Fifth International Conference on the Software Process, Lisle, IL (June 1998).
6. Co-Organizer, International Workshops on Software Process Technology, CEFRIEL, Milan, Italy, March 1995, Irvine, CA (February 1996).
7. Director, International Software Process Association (1992-present).
8. Member, Steering Committee, International Conference on Software Engineering
9. Member, Organizing Committee, 16th International Conference on Software Engineering, Sorrento, Italy (May 16-21, 1994).
10. Program CoChair, Sixteenth International Conference on Software Engineering, Sorrento, Italy, (May 1994)
11. Program Chair, Second International Conference on Software Process, Berlin, Germany (February 1993)
12. Organizing Committee Chair, Workshop on Directions in Software Testing and Analysis, San Diego, CA (August 1990)
13. Program Chair, Second Software Testing, Analysis and Verification Symposium, Banff, Canada (July 1988)
14. General Chair, Fourth International Software Process Workshop, Devon, England (May 1988)
15. Program Chair, Second Symposium on Practical Software Development Environments (December 1986)

16. Organizer and Discussion Group Leader, National Bureau of Standards Software Environments Workshop, Rancho Santa Fe, CA (April 30 - May 2, 1980)
17. Local Arrangements Chairman, ACM-SIGPLAN Symposium on Compiler Construction, Denver, CO (August 1979)

B. Program Committee Memberships:

1. 2006 Asia Pacific Software Engineering Conference, Bangalaore, India (Dec. 2006)
2. 2005 Software Process Workshop, Beijing, China, (May 2005)
3. 2003 Symposium on the Foundations of Software Engineering, Warsaw, Poland (April 2003).
4. 24th International Conference on Software Engineering, Portland, Oregon (May 2003).
5. Eighth European Software Process Technology Workshop, Schloss Bommerholz (September 2001).
6. Ninth Symposium on the Foundations of Software Engineering, Vienna, Austria (October 2001).
7. 22nd International Conference on Software Engineering, Toronto, Ont. (May 2001).
8. Eighth Symposium on the Foundations of Software Engineering, San Diego, CA (November 2000).
9. 21st International Conference on Software Engineering, Limerick, Ireland (June 2000).
10. Work Activities Coordination and Collaboration (WACC'99) (February 1999).
11. IFIP WG 8.1 Conference on Quality in Software Systems Engineering, India (November 1997).
12. Fourth International Conference on the Software Process, Brighton, England (December 1996).
13. IFIP Working Group WG8.1/8.2 Conference on Principles of Method Construction and Tool Support, Atlanta, GA (August 1996).
14. ISOTAS '96 International Symposium on Object Technologies for Advanced Software, Kanazawa, Japan (March 1996).
15. Third Conference on Foundations of Software Engineering (October 1995)
16. Second International Symposium on Software Testing and Analysis (August 1994)

17. Third International Conference on the Software Process
18. International Symposium on Software Testing and Analysis, Cambridge, Mass (1993)
19. Eighth International Software Process Workshop, Schloss Dagstuhl, Germany (1993)
20. 15th International Conference on Software Engineering, Baltimore, Maryland (1993)
21. 14th International Conference on Software Engineering, Melbourne, Australia (1992)
22. SIGSOFT '91: Conference on Software for Critical Systems, Washington, DC (1991)
23. First International Conference on Software Process, Los Angeles, CA (1991)
24. First Software Process Symposium, Washington, DC (1990)
25. Workshop on Formal Methods in Computer Science, Napa, CA (1990)
26. SIGSOFT 90: Fourth International Symposium on Software Development Environments, Irvine, CA (1990)
27. Second European Software Engineering Conference, Warwick, England (1989)
28. SIGSOFT '89: Third Symposium on Software Testing, Analysis, and Verification, Key West, FL (1989)
29. Eleventh International Conference on Software Engineering, Pittsburgh, PA (1989)
30. Workshop on Software CAD Databases, Napa, CA (1989)
31. Third International Symposium on Software Development Environments, Boston, MA (1988)
32. Tenth International Conference on Software Engineering, Singapore (1988)
33. First European Software Engineering Conference, Strasbourg, France (1987)
34. Ninth International Conference on Software Engineering, Monterey, CA (1987)
35. First Software Process Workshop (1984)
36. International Conference on Tools, Methods, and Languages for Scientific and Engineering Computation, Paris, France (1983)
37. Symposium on Application and Assessment of Automated Tools for Software Development (1983)

38. SoftFair I--Software Tools Symposium (1983)
39. Seventh International Conference on Software Engineering (1982)

C. Reviewer for:

1. National Science Foundation
2. IEEE Computer Magazine
3. Software: Practice & Experience
4. IEEE Software Magazine
5. IEEE Transactions on Software Engineering
6. ACM Transactions on Programming Languages and Systems
7. ACM Transactions on Software Engineering Methods
8. Software Process Improvements and Practice
9. Automated Software Engineering

XII. Ph.D. Advisees

1. Aaron Cass – Ph.D May 2005
Union College, Schenectady, NY.
2. Eric K. McCall – Ph.D., September 1999 (co-supervised with Lori A. Clarke)
Hewlett-Packard Laboratories, Palo Alto, CA.
3. Mark Maybee - Ph.D., January 1995
Sun Microsystems, Boulder, CO
4. Xiping Song - Ph.D., June 1992,
Siemens Corporate Research, Princeton, NJ
5. Stanley M. Sutton, Jr. - Ph.D., July 1990 (co-supervised with D.M. Heimbigner)
IBM T. J. Watson Research Center, Hawthorne, NY
6. Shehab Gamalel-Din - Ph.D., July 1989
Assistant Professor, Al Azhar University, Cairo, Egypt

7. Fathy ElBouraey Eassa - Ph.D., July 1989
Granted by Al Azhar University, Cairo, Egypt
Assistant Professor, Al Azhar University, Cairo, Egypt
8. Kurt Olander - Ph.D., July 1988
Hewlett Packard Corp.
9. Russell Rew - Ph.D., March 1987 (co-supervised with R.B. Schnabel)
Member, Technical Staff, AT&T
10. Geoffrey Clemm - Ph.D., February 1986
International Business Machines, Lexington, MA
11. Eugene W. Myers, Jr. - Ph.D. August 1981 (co-supervised)
Howard Hughes Medical Institution, Janelia Farm.
12. Mike Gallucci - Ph.D., July 1981
Technical Staff Member, AT&T Information Systems
13. Richard N. Taylor Ph.D., December 1980
Professor, Department of Information and Computer Science,
University of California at Irvine--Presidential Young Investigator, 1984
14. Lori A. Clarke - Ph.D., August 1976
Professor, Department of Computer Science
University of Massachusetts at Amherst

XIII. M.S. Advisees

1. Bradley Hawkes—M.S. January 2007
2. Matthew Billmers – M.S. May 2002
3. Jamieson M. Cobleigh – M.S. May 2001
4. Xueying Shen – M.S. May 2001
5. Tim Sliski – M.S. August 2000
6. Jin Huang - M.S., June 1996
7. Bharathi Ramavarjula - M.S., January 1995
8. Rainie Bicknell - M.S., May 1984

9. Sarah Kiehaber - M.S., August 1983
10. James I. Montgomery - M.S., December 1971
11. Cindy Wilson - M.S., July 1981
12. Kirsten Newbury - M.S., May 1980
13. Lee Bollacker - M.S., May 1980
14. Steven Winograd - M.S., June 1975

XIV. Courses Taught

At the University of Massachusetts, Amherst:

- CMPSCI 520/620 Software Engineering I
- Software Process Technology Seminars
- Advanced Topics in Electronic Commerce (with Leslie Ball)
- Introduction to Software Engineering
- Software Engineering Management Practicum

At the University of California, Irvine:

- ICS 290 Software Process Programming
- ICS 125B Project in System Design (with Ray Klefstad)
- ICS 121 Software Engineering (with Debra Richardson)
- ICS 121 Software Engineering (with Dick Taylor)
- ICS 290 Process Programming
- ICS 125b Project in System Design
- ICS 245a Introduction to Software Engineering
- ICS 199 Individual Study, (Vincent Tieu)
- ICS 199 Individual Study, (Jonathan Shaw)

ICS 290S Research-Software

At the University of Colorado, Boulder:

Introductory Programming - Business Applications

Introductory Programming - Liberal Arts

Intermediate Business Programming

Intermediate Programming - Humanities

Computer Hardware and Architecture

Finite Mathematics I

Finite Mathematics II

Compiling Non-Numeric Languages

Software Engineering

Program Testing

Software Production Workshop

Seminar in Software Process Programming

Doctoral Seminar

XV. University Service

1. Interim Dean, College of Natural Sciences and Mathematics, Univ. of Massachusetts, Amherst, (Sept. 2001-Aug. 2005).
2. Member, Computer Science Curriculum Committee, University of Massachusetts, Amherst, 2005-06.
3. Member, Graduate Admissions Committee, University of Massachusetts (1999-2001).
4. Chair, Department of Personnel Committee, University of Massachusetts (1999-2001).
5. Organizer, Department Candidates Weekend, University of Massachusetts (1999-2001).

6. Member, Department Awards Committee, University of Massachusetts (1999-2001).
7. Chair, Department Development/Campaign Committee, University of Massachusetts (1999-2001).
8. Chief Organizer, Department Candidates Weekend, University of Massachusetts (1999-2001).
9. Member, Ad-hoc Organizing Committee: Computer Science Department Professionalism Seminar Series, University of Massachusetts (1999-2001).
10. Member, Department New Building GALA Opening, University of Massachusetts (1999-2000).
11. Member, Campus Isenberg Chair Search Committee, University of Massachusetts (1999-2000).
12. Director, Irvine Research Unit in Software, University of California at Irvine (July 1990-1993).
13. Chair, Department of Information and Computer Science, University of California at Irvine (July 1989-1993).
14. ICS Department Executive Committee, University of California, Irvine (Academic Year 1988-89, 1989-90, 1990-91, 1991-92).

15. UCI Faculty Senate - University Advancement Liaison Committee, University of California, Irvine (1989-1993).
16. UCI Chancellor's Fellowship Committee, University of California, Irvine (Academic Year 1988-1993).
17. University of California Management Institute, University of California, Irvine (July 1990).
18. Chairman, Department of Computer Science, University of Colorado, Boulder, Colorado (June 1981 - June 1986).

XVI. Experience in Other Than Higher Education

1. Engineer and Manager, Boeing Computer Services Company, Seattle, WA (June 1977 - August 1978).

2. Vice President, Language and Systems Development, Inc. (February 1969-August 1971).