

Richard C. Waters

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Experience

- 1999–, President and CEO, Mitsubishi Electric Research Labs (MERL) (Cambridge MA).
Leading the 80-person North American R&D operations of Mitsubishi Electric. As in any research lab, the central challenge is creating a culture that leads to results that are both scientifically significant and of significant economic benefit to the parent company.
- 2001–02, Interim Director, MERL Cambridge Systems Lab (Cambridge MA).
Directly supervised an advanced development staff of 20 for six months while piloting the transition to a new director for the laboratory. Took strong steps to energize the laboratory and focus its efforts in new directions.
- 1998–99, Senior Vice President, MERL (Cambridge MA).
1998–00, Director, MERL Cambridge Research Lab (Cambridge MA).
Directly supervised a research staff of 25 in pursuit of application-oriented basic research in computer science, while participating in the management team of MERL as a whole. Guided the laboratory toward greater impact on the parent company. (Continued to lead the laboratory for a year after becoming President of MERL.)
- 1996–, Research Fellow, MERL (Cambridge MA).
1991–96, Senior Research Scientist, MERL Cambridge Research Lab (Cambridge MA).
Founding member of the laboratory. Led research on distributed virtual environments for education and collaboration—computer systems where multiple users interact in real time over the Internet in 3D visual and audio environments. In the late 90s, continued research in the areas of computer graphics, speech interfaces, and computer vision applications.
- 1991–, Research Affiliate, MIT AI Laboratory (Cambridge MA)
Involved with research on AI, software engineering, and multimedia; supervised theses.
- 1982–91, Principal Research Scientist, MIT AI Laboratory (Cambridge MA)
1978–82, Research Scientist, MIT AI Laboratory (Cambridge MA)
Co-principal investigator Programmer’s Apprentice project. The goal of this project was the creation of a system that could assist programmers in developing and maintaining computer programs. Supervised a number of PhD, MS and BS theses.
- 1999–, President, John L. and Geraldine R. Weil Memorial Charitable Foundation (Newton MA).
Head of this foundation dedicated to the understanding and elimination of child abuse (see “<http://jgweil.org>”).

Education

- Ph.D. 1978, MIT Department of EE & CS (Cambridge MA)
Research on Artificial Intelligence and Software Engineering under G.J. Sussman.
Minor in Linguistics.
- M.S. 1973, Harvard University (Cambridge MA).
- B.S. 1972, Brown University (Providence RI).

Selected Additional Activities

- Member of the General Board of Directors, YMCA of Greater Boston, 2006–.
- Member Board of Directors, Computing Research Association, 2002–08
 Member of the Executive Committee, 2005–07.
- Member Association for Computing Machinery Job Migration Task Force, 2004–05.
 Chair of the committee that wrote the section on the globalization of IT research.
- Member of the Board of Directors, Mitsubishi Electric America Foundation, 2003–
 (the philanthropic arm of the Mitsubishi Electric Company in North America).
- Co-chair of the conference committee, 2004 Computing Research Association Snowbird Conference,
 Snowbird Utah, July 2004.
- Member editorial board of *Presence: Teleoperators and Virtual Environments*, MIT Press, 1998–05.
- General co-chair (with Chikofsky E.), first Working Conference on Reverse Engineering,
 Baltimore MD, May 1993.
- Founding member editorial board of *Automated Software Engineering*, Kluwer Academic Press, 1992–98.
- Member of the organizing committee, AAAI-92 Workshop on Artificial Intelligence
 and Automated Program Understanding, July 1992.
- Editor of the Algorithms section of *ACM Lisp Pointers*, 1991–96.
- Program co-chair of the *Enabling Technology and Systems* area of the
 1991 National Conference on Artificial Intelligence, Anaheim CA, July 1991.
- Major technical contributor to the ANSI Common Lisp standardization committee (X3J13), 1987-90.

Books

- Waters R.C. & Chikofsky E.J. (editors), *Proc. Working Conference on Reverse Engineering*,
 (Baltimore MD, May 1993), IEEE Computer Society Press, Los Alamitos CA, 1993.
- Rich C. & Waters R.C., *The Programmer's Apprentice*,
 Addison–Wesley, Reading MA and ACM Press, Baltimore MD, 1990.
- Rich C. & Waters R.C. (editors), *Readings in Artificial Intelligence and Software Engineering*,
 Morgan Kaufmann, Los Altos CA, 1986.

Publications in Refereed Journals

- Waters R.C., Anderson D.B., Barrus J.W., Brogan D.C., Casey M.A., McKeown S.G.,
 Nitta T., Sterns I.B., & Yerazunis W.S.,
 “Diamond Park and Spline: Social Virtual Reality with 3D Animation,
 Spoken Interaction, and Runtime Extendability,”
Presence: Teleoperators and Virtual Environments, 6(4):461–480, August 1997.
- Waters R.C. & Barrus J.W., “The Rise of Shared Virtual Environments,”
IEEE Spectrum, 34(3):20-25, March 1997.
- Barrus J.W., Waters R.C., & Anderson D.B. “Locales: Supporting Large Multiuser Virtual Environments,”
IEEE Computer Graphics and Applications, 16(6):50–57, November 1996.
- Schabes Y. & Waters R.C., “Tree Insertion Grammar: A Cubic-Time Parsable Formalism
 That Lexicalizes Context-Free Grammar Without Changing the Trees Produced,”
Computational Linguistics, 21(4):479–513, December 1995.

- Waters R.C., "The Audio Interactive Tutor,"
Computer Assisted Language Learning, 8(4):325–354, December 1995.
- Anderson D.B., Barrus J.W., Howard J., Rich C., Shen C., & Waters R.C.,
 "Building Multiuser Interactive Multimedia Environments at MERL,"
IEEE MultiMedia, 2(4):77–82, Winter 1995.
- Rich C., Waters R.C., Strohecker C., Schabes Y., Freeman W.T., Torrance M.C., Golding A.R., & Roth M.,
 "Demonstration of an Interactive Multimedia Environment,"
IEEE Computer, 27(12):15–22, December 1994.
- Rich C., Waters R.C., Schabes Y., Freeman W.T., Torrance M.C., Golding A.R., & Roth M.,
 "An Animated On-Line Community with Artificial Agents,"
IEEE MultiMedia, 1(4):32–42, Winter 1994.
- Waters R.C. & Chikofsky E.J. (editors), *Special Section on Reverse Engineering*,
Communications of the ACM, 37(5):22–93, May 1994.
- Waters R.C., "Cliché-Based Program Editors,"
ACM Transactions on Programming Languages and Systems, 16(1):102–150, January 1994.
- Rich C. & Waters R.C., "Knowledge Intensive Software Engineering Tools,"
IEEE Transactions on Knowledge and Data Engineering, 4(5):424–430, October 1992.
- Reubenstein H.B. & Waters R.C., "The Requirements Apprentice:
 Automated Assistance for Requirements Acquisition,"
IEEE Transactions on Software Engineering, 17(3):226–240, March 1991.
 (Reprinted in *Conceptual Modelling, Databases and CASE: An Integrated View of Information
 Systems Development*, Loucopoulos P. & Zicari R. (editors), John Wiley, New York, 1992.)
- Waters R.C., "Automatic Transformation of Series Expressions into Loops,"
ACM Transactions on Programming Languages and Systems, 13(1):52–98, January 1991.
- Waters R.C., "Automated Software Management Based on Reference Models,"
Software—Practice & Experience, 19(10):931–955, October 1989.
- Rich C. & Waters R.C., "The Programmer's Apprentice Project: A Research Overview,"
IEEE Computer, 21(11):10–25, November 1988.
 (Reprinted in *Artificial Intelligence at MIT: Expanding Frontiers*, Volume 1, 166–195,
 Winston P.H. with Shellard S.A. (editors), MIT Press, Cambridge MA, 1990.)
 (Reprinted in *Artificial Intelligence and Software Engineering*, 155–182,
 Partridge D. (editor), Ablex, Norwood NJ, 1991.)
- Waters R.C., "Program Translation via Abstraction and Reimplementation,"
IEEE Transactions on Software Engineering, 14(8):1207–1228, August 1988.
 (Reprinted in *Software Reengineering*, Arnold R. (editor),
 IEEE Computer Society Press, Los Alamitos CA, 1993.)
- Rich C. & Waters R.C., "Automatic Programming: Myths and Prospects,"
IEEE Computer, 21(8):40–51, August 1988.
 (Reprinted in translation in *Automatic Programming Handbook*, 41–55,
 Ohno Y. & Harada M. (editors), Ohmsha Ltd., Tokyo Japan, 1989.)
- Waters R.C., "The Programmer's Apprentice: A Session With KBEmacs,"
IEEE Transactions on Software Engineering, 11(11):1296–1320, November 1985.
 (Reprinted in *Readings in Artificial Intelligence and Software Engineering*, 351–376,
 Rich C. & Waters R.C. (editors), Morgan Kaufmann, Los Altos CA, 1986.)
 (Reprinted in *Language Architectures and Programming Environments*, 204–255,
 Ichikawa T. & Tsubotani H. (editors), World Scientific Publishing Co., Singapore, 1992.)

- Waters R.C., “User Format Control in a Lisp Prettyprinter,”
ACM Transactions on Programming Languages and Systems, 5(4):513–531, October 1983.
- Waters R.C., “The Programmer’s Apprentice: Knowledge Based Program Editing,”
IEEE Transactions on Software Engineering, 8(1):1–12, January 1982.
 (Reprinted in *Interactive Programming Environments*, 464–486,
 Barstow D., Shrobe H., & Sandewal E. (editors), McGraw-Hill, New York NY, 1984.)
- Waters R.C., “A Method for Analyzing Loop Programs,”
IEEE Transactions on Software Engineering, 5(3):237–247, May 1979.

Publications in Refereed Conference Proceedings

- Kruja E., Marks J., Blair A., & Waters R.C., “A Short Note on the History of Graph Drawing,”
proc. 9th International Symposium on Graph Drawing, (Vienna Austria, September 2001),
 272–286, Springer-Verlag, Berlin, 2002.
- Waters R.C., Anderson D.B., & Schwenke D.L., “Design of the Interactive Sharing Transfer Protocol”,
*Postproc. WET ICE ’97 – IEEE Sixth Workshops on Enabling Technologies:
 Infrastructure for Collaborative Enterprises*, (MIT, June 1997), 140–147,
 IEEE Computer Society Press, Los Alamitos CA, 1997.
- Barrus J.W. & Waters R.C., “QOTA: A Fast, Multi-Purpose Algorithm
 For Terrain Following in Virtual Environments,”
Proc. VRML ’97 Symposium, (Monterey CA, February 1997), 59–64,
 Association for Computing Machinery, NY NY, 1997.
- Barrus J.W., Waters R.C., & Anderson D.B. “Locales and Beacons:
 Efficient and Precise Support for Large Multi-User Virtual Environments,”
Proc. IEEE Virtual Reality Annual International Symposium, (Santa Clara CA, March 1996),
 204–213, IEEE Computer Society Press, Los Alamitos CA, 1996.
- Schabes Y. & Waters R.C., “Lexicalized Context-Free Grammars,”
Proc. 31st Annual Meeting of the Association for Computational Linguistics,
 (Columbus OH, June 1993), 121–129, Association for Computational Linguistics, 1993.
- Selfridge P.G., Waters R.C., & Chikofsky E.J., “Challenges to the Field of Reverse Engineering,”
Proc. Working Conference on Reverse Engineering, (Baltimore MD, May 1993), 144–150,
 IEEE Computer Society Press, Los Alamitos CA, 1993.
- Reubenstein H.B. & Waters R.C., “The Requirements Apprentice: An Initial Scenario,”
Proc. Fifth International Workshop on Software Specification and Design, (Pittsburgh PA,
 May 1989), 211–218, IEEE Computer Society Press, Washington DC, 1989.
- Waters R.C., “Using Obviously Synchronizable Series Expressions Instead of Loops,”
Proc. 1988 International Conference on Computer Languages, (Miami FL, October 1988),
 338–346, IEEE Computer Society Press, Washington DC, 1988.
- Waters R.C., “Efficient Interpretation of Synchronizable Series Expressions,”
Proc. ACM SIGPLAN ’87 Symposium on Interpreters and Interpretive Techniques,
 (St. Paul MN, June 1987), *ACM SIGPLAN Notices*, 22(7):74–85, July 1987.
- Rich C., Waters R.C., & Reubenstein H.B., “Toward a Requirements Apprentice,”
Proc. Fourth International Workshop on Software Specification and Design, (Monterey CA,
 April 1987), 79–86, IEEE Computer Society Press, Washington DC, 1987.
 (Reprinted in *System and Software Requirement Engineering* 439–446,
 Thayer R. & Dorfman M. (editors), IEEE Computer Society Press, Los Alamitos CA, 1990.)

- Waters R.C., “Reuse of Clichés in the Knowledge-Based Editor,”
Proc. International Workshop on Advanced Programming Environments, (Trondheim Norway, June 1986), *Advanced Programming Environments, Proceedings of an International Workshop*, Conradi R., Didriksen T.M., & Wanvik D.H. (editors), *Lecture notes in Computer Science*, 244:536–550, Springer-Verlag, New York NY, June 1986.
- Waters R.C., “Expressional Loops,”
Proc. Eleventh ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages, (Salt Lake City UT, January 1984), 1–10, ACM Press, Baltimore MD, 1984.
- Rich C. & Waters R.C., “Formalizing Reusable Software Components,”
Proc. Workshop on Reusability in Programming, (Newport RI, September 1983), 152–159, ITT Corporation, Hartford CN, 1983.
- Rich C. & Waters R.C., “The Disciplined Use of Simplifying Assumptions,”
Proc. Second ACM SIGSOFT Software Engineering Symposium: Workshop on Rapid Prototyping, (Columbia MD, April 1982), *ACM SIGSOFT Software Engineering Notes*, 7(5):150–154, December 1982.
- Waters R.C., “A Knowledge Based Program Editor,”
Proc. Seventh International Joint Conference on Artificial Intelligence, (Vancouver BC Canada, August 1981) 2:920–926, American Association for Artificial intelligence, Menlo Park CA, 1981. (Now available from Morgan Kaufmann, Los Altos CA.)
- Waters R.C., “The Programmer’s Apprentice,”
Proc. CYBERSOFT 80 - International Symposium on Cybernetics and Software, (Namur Belgium, September 1980), 11–35, University of Namur, Namur Belgium, 1980.
- Waters R.C., “A Method for Automatically Analyzing Programs,”
Proc. Sixth International Joint Conference on Artificial Intelligence, (Tokyo Japan, August 1979), 2:935–941, Stanford University Computer Science Dept., Stanford CA, 1979. (Now available from Morgan Kaufmann, Los Altos CA.)
- Rich C., Shrobe H.E., & Waters R.C., “An Overview of the Programmer’s Apprentice,”
Proc. Sixth International Joint Conference on Artificial Intelligence, (Tokyo Japan, August 1979), 2:827–828, Stanford University Computer Science Dept., Stanford CA, 1979. (Now available from Morgan Kaufmann, Los Altos CA.)

Book Chapters

- Waters R.C. (lead author) with Hartmanis J. & Varma R., “The Globalization of IT Research”
 in *Globalization and Offshoring of Software - A Report of the ACM Job Migration Task Force*, 155–161, Aspray W., Mayadas F. & Vardi M. (editors), Association for Computing Machinery, NY NY, 2006.
- Waters R.C. & Barrus J.W., “Sharing Distributed Virtual Worlds,”
 in *VRML Clearly Explained – 2nd Edition*, 481–515, Vacca, J.R., Academic Press Professional, Boston MA, 1998.
- Schabes Y. & Waters R.C., “Stochastic Lexicalized Tree-Insertion Grammar,”
 in *Recent Advances in Parsing Technology*, 281–294, Bunt H. & Tomita M. (editors), Kluwer Academic Publishers, Norwell MA, 1996.
- Rich C. & Waters R.C., “Approaches to Automatic Programming,”
 in *Advances in Computers*, Volume 37, 1–57, Yovits M.C. (editor), Academic Press, San Diego CA, 1993.
- Waters R.C., “Pretty Printing,”
 Chapter 27 in *Common Lisp: the Language*, Second Edition, 748–769, Steele G.L.Jr., Digital Press, Burlington MA, 1990.

- Waters R.C., “Series,”
Appendix A in *Common Lisp: the Language*, Second Edition, 923–955,
Steele G.L.Jr., Digital Press, Burlington MA, 1990.
- Perdue C. & Waters R.C., “Generators and Gatherers,”
in *Common Lisp: the Language*, Second Edition, 956–959,
Steele G.L.Jr., Digital Press, Burlington MA, 1990.
- Rich C. & Waters R.C., “Formalizing Reusable Software Components in the Programmer’s Apprentice,”
in *Software Reusability, Volume II, Applications and Experience*, 313–343,
Biggerstaff T. & Perlis A. (editors), Addison-Wesley, Reading MA, 1989.
- Rich C. & Waters R.C., “Artificial Intelligence and Software Engineering,”
in *AI in the 1980’s and Beyond: An MIT Survey*, 109–154,
Grimson W.E.L. & Patil R.S. (editors), MIT Press, Cambridge MA 1987.
(This chapter is a revised version of the introduction to
Readings in Artificial Intelligence and Software Engineering, Rich C. & Waters R.C. (editors).)
- Rich C. & Waters R.C., “Software Development Technology,”
in *Artificial Intelligence and Fifth Generation Computer Technologies: The Technology
and the Commercial Prospects*, 179–206, Brattle Research Corporation, Boston MA, 1982.
- Waters R.C., “Programmer’s Apprentice,”
in *The Handbook of Artificial Intelligence*, 2:343–349, Barr A. & Feigenbaum E. (editors),
William Kaufmann, Los Altos CA, 1982.
(Also in *Automatic Programming*, 43–49,
Elschlager R. & Philips J. (editors), Stanford Univ. Memo HPP-79-24, August 1979.)

Publications in Non-Refereed Journals

- Waters R.C., “CRA Outstanding Undergraduate Award Winners Announced,”
Computing Research News, 18(1):3, Computing Research Association,
Washington DC, January 2006.
- Waters R.C., “Results of CRA’s 2004 Salary Survey of Computing Research Staff in Industrial Labs,”
Computing Research News, 17(5):3&6, Computing Research Association,
Washington DC, November 2005.
- Waters R.C., “Mitsubishi Electric Research Laboratories,”
Computing Research News, 12(5):1&22, Computing Research Association,
Washington DC, November 2000.
- Waters R.C., “Mitsubishi Electric Information Technology Center America, Inc.”
(in Japanese), *Transactions of the Institute of Electronics, Information and
Communication Engineers*, 5(1):18-19, April 2000.
- Waters R.C., Anderson D.B., Yerazunis W.S., Kozuka H., & Fukuoka H.,
“Spline: A Software Platform For Distributed Virtual Environments,”
(in Japanese), *Mitsubishi Denki Giho* (Mitsubishi Electric’s technical journal), 71(2):26–29,
February 1997.
- Waters R.C., “Interactive Story Systems: Plot and Character,”
in “The 1995 AAAI Spring Symposia Reports,” *AI Magazine*, 16(3):7–10, Fall 1995.
- Waters R.C., “The Survival of Lisp: Either We Share, Or It Dies,”
ACM Lisp Pointers, 7(1-2):23–26, January-June 1994.

- Waters R.C., “To NReverse When Consing a List or By Pointer Manipulation, To Avoid It; That Is the Question,”
ACM Lisp Pointers, 6(4):27–34, October–December 1993.
- Waters R.C., “Macroexpand-All: An Example of a Simple Lisp Code Walker,”
ACM Lisp Pointers, 6(1):25–32, January–March 1993.
- Waters R.C., “Using the New Common Lisp Pretty Printer,”
ACM Lisp Pointers, 5(2):27–34, April 1992.
- Norvig P. & Waters R.C., “Implementing Queues in Lisp,”
ACM Lisp Pointers, 4(4):2–8, October 1991.
- Waters R.C., “Determining the Coverage of a Test Suite,”
ACM Lisp Pointers, 4(4):33–43, October 1991.
- Waters R.C., “System Validation via Constraint Modeling,”
ACM SIGPLAN Notices, 26(8):27–36, August 1991.
- Waters R.C., “Supporting the Regression Testing of Lisp Programs,”
ACM Lisp Pointers, 4(2):47–53, June 1991.
- Waters R.C. & Tan Y.M., “Toward a Design Apprentice:
 Supporting Reuse and Evolution in Software Design,”
ACM SIGSOFT Software Engineering Notes, 16(2):33–44, April 1991.
- Waters R.C., “The Series Macro Package,”
ACM Lisp Pointers, 3(1):7–28, March 1990.
- Finkelstein A. & Waters R.C., “Summary of the Requirements Elicitation, Analysis and
 Formalization Track [of the Fifth International Workshop on Software Specification and Design],”
ACM SIGSOFT Software Engineering Notes, 15(5):40, July 1989.
- Waters R.C., “KBEmacs: Where’s the AI?,”
AI Magazine, 7(1):47–56, Spring 1986.
 (Reprinted in *Proc. Second Kansas Conference: Knowledge-Based Software Development*,
 (Manhattan KS, October 1986), Kansas State University, Manhattan KS, 1986.)
- Waters R.C., “Program Editors Should Not Abandon Text Oriented Commands,”
ACM SIGPLAN Notices, 17(7):39–46, July 1982.
- Rich C. & Waters R.C., “Computer Aided Evolutionary Design for Software Engineering,”
ACM SIGART Newsletter, (76):14–15, April 1981.

Publications in Non-Refereed Conference Proceedings

- Waters R.C., “A Prototype Interactive Environment for Collaborative Learning,”
*Proceedings of the Computer Assisted Language Instruction Consortium 1995 Annual
 Symposium “Computers & Collaborative Learning”*, 184–185, (Middlebury VT, June 1995),
 Duke University, Durham NC, 1995.
- Waters R.C., “‘Plot Control’ in a Foreign Language Practice System,”
*Working Notes 1995 AAAI Spring Symposium: Interactive Story Systems:
 Plot and Character*, 112–113, (Stanford University, March 1995), 1995.
- Rich C., Waters R.C., Strohecker C., Schabes Y., Freeman W.T., Torrance M.C., Golding A.R., & Roth M.,
 “A Prototype Interactive Environment for Collaboration and Learning,”
Notes 1994 AAAI workshop on Artificial Intelligence, Artificial Life, and Entertainment, page 56,
 (Seattle WA, August 1994), 1994.

- Schabes Y. & Waters R.C., “Combining Word Sensitivity, Hierarchical Structure Sensitivity, and Processing Efficiency in a Stochastic Language Model,”
Proc. 1993 IEEE Workshop on Automatic Speech Recognition,
(Snowbird Utah, December 1993), 1993.
- Schabes Y. & Waters R.C., “Stochastic Lexicalized Context-Free Grammar,”
Proc. Third International Workshop On Parsing Technology, (Tilburg, The Netherlands,
August 1993), 257–266, Association for Computational Linguistics Special Interest
Group on Parsing, 1993.
- Waters R.C., “Support for Reuse in the Programmer’s Apprentice,”
*Proc. Fall 1990 Conference on the 4 Rs of Software Automation:
RAD, Re-Engineering, Repositories, and Reusability*, (Boston MA, August 1990), L64–L76,
Extended Intelligence Inc., Chicago IL, 1990.
- Waters R.C., “Programming in the Year 2009,”
Preprints for the International Workshop on Artificial Intelligence and Software Engineering,
(Exeter, England, April 1989), 1-5, University of Exeter, England, 1989.
- Rich C. & Waters R.C., “The Programmer’s Apprentice,”
Proc. CASE ’87 First International Workshop on Computer-Aided Software Engineering,
(Cambridge MA, May 1987), 2:1036–1039, Index Technology Corp., Cambridge MA, 1987.
- Waters R.C., “The Programmer’s Apprentice: Knowledge Based Program Editor,”
Conference Record IEEE Mini/Micro Northeast-84, (Boston MA, May 1984),
Session 16:1-9, IEEE, Piscataway NJ, 1984.
- Waters R.C., “The Programmer’s Apprentice: Knowledge Based Program Editing,”
Proc. of the Eighth IBM (ACIS) University Study Conference,
(Raleigh NC, October 1983), 95–117, IBM, White Plains NY, 1983.

Other Publications

- Waters R.C. *The John Leopold Weil and Geraldine Rickard Weil Memorial Charitable Foundation Website*,
“<http://www.jgweil.org>”, Continuously updated from September, 2003.
- Waters R.C. & Anderson D.B., *The Java Open Community Application Program Interface*,
“<http://www.merl.com/opencom/opencom-java-api.html>”,
Version 0.8, November 5, 1996.
Version 0.9, February 19, 1997.
- Waters R.C. & Anderson D.B., *The ANSI C Open Community Application Program Interface*,
“<http://www.merl.com/opencom/opencom-c-api.html>”,
Version 0.8, November 5, 1996.
Version 0.9, February 19, 1997.
- Anderson D.B., Greening D., Ma M., Marvit M., & Waters R.C., *Open Community Overview*,
“<http://www.merl.com/opencom/opencom-overview.htm>”, November 5, 1996.
(Handed out under the name *Universal Worlds Overview* at the
Earth2Avatars conference, (San Fransisco CA, October 26, 1996).)
- Anderson D.B., Barrus J.W., Marks J., Waters R.C., Yerazunis A.S. & Rich C., “Social Virtual Reality:
DiamondPark and SPLINE”,
video, Fall 1995.
- Waters R.C. “SERIES: Common Lisp looping macro package”,
distributed on CD in *Prime Time Freeware for AI*, Kantrowitz M. Ed., Issue 1-1,
Prime Time Freeware, Sunnyvale CA, August 1994.

Waters R.C. “XP: Common Lisp pretty printer”,
distributed on CD in *Prime Time Freeware for AI*, Kantrowitz M. Ed., Issue 1-1,
Prime Time Freeware, Sunnyvale CA, August 1994.

Rich C., & Waters R.C., “Electronic Meeting Place”, video, 1993.

Patents

Eight patents pending plus the following patents granted.

Waters R.C., Thornton J., Raskar R., Kato M., & Dietz P.,
Self-Correcting Rear Projection Television,
US Patent 7,227,592, Disclosed ?/03, filed 9/03, granted 6/07.

Waters R.C., *Automatic Indicator System and Method*,
US Patent 7,215,324, Disclosed 3/02, filed 10/02, granted 12/06.

Russell F. & Waters R.C., *Video Camera Controlled Surround Sound*,
US Patent 6,741,273, disclosed 6/99, filed 7/99, granted 5/04.

Waters R.C. *Situation Awareness System*,
US Patent 6,396,535, disclosed 12/98, filed 2/99, granted 5/02.

Waters R.C., Jones T.R., Perry R., & Seiler L. *Method and Apparatus For Multi-Phase Rendering*,
US Patent 6,359,619, disclosed 6/98, filed 6/99, granted 3/02.

Waters R.C. & Anderson D.B., *System For the Reliable, Fast, Low-Latency Communication of Object State Updates Over a Computer Network by Combining Lossy and Lossless Communications*,
US Patent 6,006,254, disclosed 7/97, filed 8/97, granted 12/99.

Waters R.C., *Beacons for Locales*,
US Patent 5,920,862, disclosed 7/95, filed 11/95, granted 7/99.

Anderson D.B. & Waters R.C., *System For Sending Small Positive Data Notification Messages Over a Network To Indicate That a Recipient Node Should Obtain a Particular Version of a Particular Data Item*,
US patent 5,842,216, disclosed 1/96, filed 5/96, granted 11/98.

Yerazunis W.S. & Waters R.C., *Method for Smooth Motion in a Distributed Virtual Environment*,
US patent 5,793,382, disclosed 12/95, filed 6/96, granted 8/98.

Barrus J.W. & Waters R.C., *System For Designing a Virtual Environment Utilizing Locales*,
US patent 5,736,990, disclosed 6/95, filed 8/95, granted 4/98.

Waters R.C., *Audio Interactive Tutor*,
US patent 5,540,589, disclosed 3/93, filed 4/94, granted 7/96.

Schabes Y. & Waters R.C., *System For Decreasing the Time Required To Parse a Sentence*,
US patent 5,475,588, disclosed 6/93, filed 6/93, granted 12/95.

Additional Activities Not Listed Above

President, Friends of Concord Rural Trails (Concord MA), 2006–.

Chairman of the Undergraduate Awards Committee
of the Board of Directors of the Computing Research Association, 2005–08.

Member board of Trustees, The Fenn School (Concord MA), 2005–06.

Co-Chairman of the Industry Committee
of the Board of Directors of the Computing Research Association, 2004–05.

- Session Chairman, *Research in Corporate Labs*,
2002 Computing Research Association Snowbird Conference,
Snowbird Utah, July 2002.
- Member of the conference committee, 2002 Computing Research Association Snowbird Conference,
Snowbird Utah, July 2002.
- Member of the program committee and publication chair, 2001 Int. Symposium on Wearable Computers,
Zurich Switzerland, October 2001.
- Member of the program committee, 2000 International Symposium on Wearable Computers,
Atlanta Georgia, October 2000.
- Session Chairman, *Managing Corporate Research Labs*,
2000 Computing Research Association Snowbird Conference,
Snowbird Utah, July 2000.
- Member Industrial Advisory Board of the Graphics, Visualization & Usability Center
of the College of Computing of the Georgia Institute of Technology, 1996–01.
- Member of the program committee, 2nd Working Conference on Reverse Engineering,
Toronto Ontario Canada, July 1995.
- Member review panel for the Ontario Canada Information Technology Research Centre, 1994.
- Member of the program committee, 8th Knowledge-Based Software Engineering Conference,
Chicago IL, September 1993.
- Member of the program committee, IEEE International Symposium on Requirements Engineering,
San Diego CA, January 1993.
- Member of the program committee, 7th Knowledge-Based Software Engineering Conference,
McLean VA, September 1992.
- Registration chair, 1992 Lisp and Functional Programming Conference,
San Francisco CA, June 1992.
- Member of the program committee, 4th International Symposium on Applications of AI,
Monterey Mexico, October 1991.
- Member of the technical-writing-prize committee
1991 National Conference on Artificial Intelligence, Anaheim CA, July 1991.
- Session chairman, *Automated Reasoning: Theorem Proving I and Program Synthesis*,
1990 National Conference on Artificial Intelligence, Boston MA, August 1990.
- Member of the program committee, 1990 National Conference on Artificial Intelligence,
Boston MA, August 1990.
- Member of the program committee, First Domain Modeling for Software Engineering Workshop,
held in conjunction with OOPSLA'89, New Orleans LA, October 1989.
- Discussion Chairman, *Requirements Elicitation, Analysis, and Formalization* track, Fifth
International Workshop on Software Specification and Design, Pittsburgh PA, May 1989.