

Vita

Education

Johns Hopkins University, Baltimore, Maryland. *Advisor: Jonathan S. Shapiro.*
Ph.D., Computer Science, 2006.

Yale University, New Haven, Connecticut. B.S., Computer Science, 1980.

Employment

Open Source Coordinator, ERights.org 1998 to Present. Leading the open source design and development of the E programming language.

Visiting Scientist, Virus-Safe Computing Initiative, Hewlett-Packard Laboratories, 2003 to Present. Contributor to projects applying least authority (Polaris, CapDesk, DarpaBrowser), secure naming for phishing-proof browsing (Petname tool, Passpet), rights-transfer protocol design (IOU protocol), decentralized computational market infrastructure (DonutLab).

Chief Technology Officer, Combex, Inc. 2000 to 2003. Founder. Contributor to CapDesk and the DarpaBrowser.

Director, Extropy Institute 1997 to 2003. The Extropy Institute promotes understanding of both the promises and dangers of future technologies.

Chief Architect, E platform, Electric Communities, Inc. 1996 to 1998. Led both the Original-E and E efforts. Brought Original-E to sufficient maturity to support Electric Communities Habitats, a secure decentralized virtual world. Chief architect of Habitat's security architecture. Contributor to Habitat's distributed object architecture.

Senior Software Architect, Agorics, Inc. 1994 to 1996. Co-Founder. Technical lead of Sun Lab's WebMart framework for object-capability-oriented electronic commerce. Built and demonstrated at Interop an ATM Network Bandwidth Auction, six

months after starting the Sun Labs contract. Contributor to the Joule language.

Co-Director, George Mason University Agorics Project, 1994 to 2001. We explored the question: What can economics (especially plan-coordination economics) learn from software engineering?

Co-Architect, Project Xanadu, Xanadu Inc. 1989 to 1994. Xanadu was a distributed hypertext publishing system that preceded and influenced the Web. Initiated the Trusty Scheme project, which built a W7-like secure programming language for enabling safe active content in hypertext pages.

Consultant, Xerox Palo Alto Research Center. 1985 to 1988. Co-creator of the agoric paradigm of market-based computation. Co-founder of the Vulcan project.

Software engineer, Datapoint Technology Center, 1980 to 1985. Created the first commercial distributed window system, VistaView.

Publications

Marc Stiegler, Alan H. Karp, Ka-Ping Yee, Tyler Close, and Mark S. Miller. “Polaris: Virus Safe Computing for Windows XP.” *Communications of the ACM*. 49(9) pages 83–88, September 2006. doi.acm.org/10.1145/1151030.1151033 www.hpl.hp.com/techreports/2004/HPL-2004-221.html.

Mark Samuel Miller. “Robust Composition: Towards a Unified Approach to Access Control and Concurrency Control.” PhD thesis, Johns Hopkins University, Baltimore, Maryland, USA, May 2006. www.erights.org/talks/thesis/

Mark S. Miller, E. Dean Tribble, and Jonathan S. Shapiro. “Concurrency Among Strangers: Programming in E as Plan Coordination.” *Proc. 2005 Symposium on Trustworthy Global Computing*, European Joint Conference on Theory and Practice of Software 2005. Appears in volume 3705 of Lecture Notes in Computer Science, pages 195–229. Springer, 2005. www.erights.org/talks/promises/index.html

Mark S. Miller, Bill Tulloh, and Jonathan S. Shapiro. “The Structure of Authority: Why Security Is Not a Separable Concern.” *Proc 2nd International Conference on Multiparadigm Programming in Mozart/OZ (MOZ/2004)*, Charleroi Belgium, pages 2–20, October 2004. www.erights.org/talks/no-sep/

Jonathan S. Shapiro, M. Scott Doerrie, Eric Northup, Swaroop Sridhar, and Mark S. Miller. “Towards a Verified, General-Purpose Operating System Kernel,” *NICTA Invitational Workshop on Operating System Verifica-*

tion, University of New South Wales, Sydney, Australia, October 2004.
www.coyotos.org/docs/osverify-2004/osverify-2004.html

Fred Spiessens, Mark S. Miller, Peter Van Roy, and Jonathan S. Shapiro. “Authority Reduction in Protection Systems.” 2004.
www.info.ucl.ac.be/people/fsp/ARS.pdf

Mark S. Miller and Jonathan S. Shapiro. “Paradigm Regained: Abstraction Mechanisms for Access Control.” *Eighth Asian Computing Science Conference (ASIAN '03)*, Tata Institute of Fundamental Research, Mumbai India, pages 224–242, December 1013 2003. www.erights.org/talks/asian03/

Mark S. Miller, Ka-Ping Yee, and Jonathan S. Shapiro. “Capability Myths Demolished,” Report SRL2003-02, Systems Research Laboratory, Department of Computer Science, Johns Hopkins University. 2003. srl.cs.jhu.edu/pubs/SRL2003-02.pdf

Mark S. Miller and Marc Stiegler. “The Digital Path: Smart Contracting and the Third World,” in *Austrian Perspectives on the Internet Economy*, 2003 (Routledge). www.erights.org/talks/pisa/paper/, www.cypherpunks.to/erights/talks/pisa/paper/digital-path.pdf

Bill Tulloh and Mark S. Miller. “Institutions as Abstraction Boundaries.” In Jack High, editor, *Social Learning: Essays in Honor of Don Lavoie*. 2002. www.erights.org/talks/categories/

Marc Stiegler and Mark S. Miller. “A Capability Based Client: The DarpaBrowser.” Technical Report Focused Research Topic 5 / BAA-00-06- SNK, Combex, Inc., June 2002. www.combex.com/papers/darpa-report/index.html.

Mark S. Miller, Chip Morningstar, and Bill Frantz. “Capability-based Financial Instruments.” *Proc. Financial Cryptography 2000*, pages 349–378, 2000. www.erights.org/elib/capability/ode/

Mark S. Miller. “Learning Curve.” *Reason Magazine*, December 1996. reason.com/9612/bk.miller.shtml

E. Dean Tribble, Mark S. Miller, Norm Hardy, and David Krieger. “Joule: Distributed Application Foundations.” Technical Report ADd03.4P, Agorics Inc., Los Altos, December 1995. www.agorics.com/Library/joule.html.

Mark S. Miller, David Krieger, Norman Hardy, Chris Hibbert, and E. Dean Tribble. “An Automatic Auction in ATM Network Bandwidth.” In S. H. Clearwater, editor, *Market-based Control, A Paradigm for Distributed Resource Allocation*. World

Scientific, Palo Alto, CA, 1996.

Mark S. Miller, E. Dean Tribble, Ravi Pandya, and Marc Stiegler. “The Open Society and its Media.” In Markus Krummenacker, James Lewis, editor, *Prospects in Nanotechnology*. Proceedings of the 1992 First General Conference on Nanotechnology: Development, Applications, and Opportunities. Wiley, 1995. www.caplet.com/papers/open-media.html

Ted Kaehler, Hadon Nash, Mark S. Miller. “Betting, Bribery, and Bankruptcy—A Simulated Economy that Learns to Predict.” in *IEEE CompCon Proceedings*, pp. 357–361, 1989

Mark S. Miller and K. Eric Drexler. “Markets and Computation: Agoric Open Systems.” In Bernardo Huberman, editor, *The Ecology of Computation*, pages 133–176. North-Holland, 1988. www.agorics.com/Library/agoricpapers.html, www.cypherpunks.to/erights/talks/agoric/mnc-aos.pdf

Mark S. Miller and K. Eric Drexler. “Comparative Ecology: A Computational Perspective” In Bernardo Huberman, editor, *The Ecology of Computation*, North-Holland, 1988. www.agorics.com/Library/agoricpapers.html

K. Eric Drexler and Mark S. Miller. “Incentive Engineering for Computational Resource Management” In Bernardo Huberman, editor, *The Ecology of Computation*, North-Holland, 1988. www.agorics.com/Library/agoricpapers.html

Kenneth M. Kahn and Mark S. Miller. “Language Design and Open Systems.” In Bernardo A. Huberman, editor, *The Ecology of Computation*. Elsevier Science Publishers, North-Holland, 1988.

Mark S. Miller, Daniel G. Bobrow, E. Dean Tribble, and Jacob Levy. “Logical Secrets.” In *International Conference on Logic Programming*, pages 704–728, 1987.

Kenneth M. Kahn, E. Dean Tribble, Mark S. Miller, and Daniel G. Bobrow. “Vulcan: Logical Concurrent Objects.” In *Research Directions in Object-Oriented Programming*, pages 75–112. 1987.

David S. Fogelsong, Daniel G. Bobrow, Mark S. Miller. “Definition Groups: Making Sources into First-Class Objects.” *Research Directions in Object-Oriented Programming*, pages 129–146, 1987.

E. Dean Tribble, Mark S. Miller, Kenneth M. Kahn, Daniel G. Bobrow, Curtis Abbott, and Ehud Y. Shapiro. “Channels: A Generalization of Streams.” In *International Conference on Logic Programming*, pages 839–857, 1987.

Kenneth M. Kahn, E. Dean Tribble, Mark S. Miller, Daniel G. Bobrow. “Objects in Concurrent Logic Programming Languages.” *Object Oriented Programming Systems, Languages, and Applications* (OOPSLA) 1986, pages 242–257.