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 Unied 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 Belguim, 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.