

**John Reppy**  
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Department of Computer Science  
University of Chicago  
1100 E. 58th St.  
Chicago, IL 60615  
(773) 702-5534  
jhr@cs.uchicago.edu  
<http://www.cs.uchicago.edu/~jhr>

5326 S. University Ave.  
Chicago, IL 60615  
(773) 752-5317

**Date of Birth:** July 29, 1960

**Citizenship:** U.S.A.

**Education:**

Ph.D. in Computer Science from Cornell University.  
M.Sc. in Computer Science from Cornell University.  
A.B. in Computer Science from Cornell University.

**Research Interests:**

Design and implementation of high-level programming languages for parallelism and concurrency; functional and object-oriented programming languages; user interfaces and graphical applications; programming environments; and system support for high-level languages.

**Work Experience:**

**July 2002–present:** Associate Professor, University of Chicago.

**May 1997–June 2002:** Member of technical staff at Bell Labs, Lucent Technologies.

**September 1991–May 1997:** Member of technical staff at AT&T Labs Research (née AT&T Bell Laboratories).

**1981–1991:** Various summer and consulting jobs at AT&T Bell Laboratories; involved in research in the area of programming environments and system and language support for interactive applications.

**Teaching Experience:**

**2002–present:** Taught three courses per academic year; topics include compilers (both undergraduate and graduate level), computer graphics, programming languages, mathematical foundations of software, operating systems, and concurrent programming.

**Spring 1994:** Taught CS703, a graduate course in advanced programming language implementation, at the University of Wisconsin at Madison.

**Spring 1992:** Taught CIS570, a graduate course in advanced programming language implementation, at the University of Pennsylvania.

**Professional activities:**

Chair of the ICFP steering committee; member of the FOOL steering committee.

Program chair of FOOL/WOOD '07; General chair of ICFP '06; co-chair of ICFP '00 programming contest; co-chair of HLCL '00 workshop; and general chair of ML '94.

Member of program committees for DAMP'08, TFP '07, ML '05, POPL '05, PADL '05, ECOOP '03, PADL '02, BABEL '01, ICFP '01, CONCUR '00, FOOL-6, HLCL '98, ML '98, ICCL '98, ICFP '96, PLDI '95, and POPL '95.

Associate Editor, *ACM Transactions on Programming Languages and Systems*, 1995 – 1998.

External committee member for Zhong Shao (Princeton 1994), Karen Bernstein (SUNY Stony Brook 1996), Peter Bailey (The Australian National University 1997), and Nick Afshartous (NYU 1999).

**Refereed conference and workshop papers:**

“Toward a parallel implementation of Concurrent ML,” *Proceedings of the Workshop on Declarative Aspects of Multicore Programming (DAMP 2008)*, January 2008, with Y. Xiao.

“Status Report: The Manticore Project,” *ACM SIGPLAN Workshop on ML*, October 2007, with M. Fluet, N. Ford, M. Rainey, A. Shaw, and Y. Xiao.

“Metaprogramming with Traits,” *European Conference on Object-Oriented Programming (ECOOP '07)*, July-August 2007, with A. Turon.

“Specialization of CML message-passing primitives,” *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL '07)*, January 2007, with Y. Xiao.

“Manticore: A heterogeneous parallel language,” *Proceedings of the Workshop on Declarative Aspects of Multicore Programming (DAMP 2007)*, January 2007, with M. Fluet, M. Rainey, A. Shaw, and Y. Xiao.

“Application-specific foreign-interface generation,” *Generative Programming and Component Engineering (GPCE '06)*, October 2006, with C. Song.

“Type-sensitive control-flow analysis,” *ACM SIGPLAN Workshop on ML*, September 2006.

“A foundation for trait-based metaprogramming,” *Workshop on Foundations and Developments of Object-oriented Languages (FOOL/WOOD '06)*, January 2006, with A. Turon.

“A typed calculus of traits,” *Workshop on Foundations of Object-oriented Languages (FOOL 11)*, January 2004, with K. Fisher.

“A framework for interoperability,” *Workshop on multi-language infrastructure and interoperability (BABEL '01)*, September 2001, with K. Fisher and R. Pucella.

“Asynchronous exceptions in Haskell,” *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '01)*, June 2001, with S. Marlow, S. Peyton Jones, and A. Moran.

“Protium: An infrastructure for partitioned applications,” *Proceedings of the Eighth Workshop on Hot Operating Systems (HotOS-VII)*, January 2001, with C. Young et al.

“Local CPS conversion in a direct-style compiler,” *Third ACM SIGPLAN Workshop on Continuations*, January 2001.

“Extending Moby with inheritance-based subtyping,” *European Conference on Object-Oriented Programming (ECOOP '00)*, June 2000, with K. Fisher.

“A calculus for compiling and linking classes,” *European Symposium on Programming (ESOP '00)*, March 2000, with K. Fisher and J. Riecke.

“Inheritance-based subtyping,” *Workshop on Foundations of Object-oriented Languages (FOOL 7)*, January 2000, with K. Fisher.

“The design of a class mechanism for Moby,” *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '99)*, May 1999, with K. Fisher.

“Classes in Object ML via Modules,” *Workshop on Foundations of Object Oriented Languages (FOOL 3)*, July 1996, with J. Riecke.

“Simple Objects for Standard ML,” *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '96)*, May 1996, with J. Riecke.

“First-class Synchronous Operations,” *International Workshop on Theory and Practice of Parallel Programming*, November 1994, LNCS 907.

“Unrolling Lists,” *ACM Conference on Lisp and Functional Programming (LFP '94)*, June 1994, with A. Appel and Z. Shao.

“A Portable and Optimizing Back End for the SML/NJ Compiler,” *International Conference on Compiler Construction (CC 5)*, April 1994, with L. George and F. Guillame.

“Early Experiences with Olden,” *Sixth Workshop on Languages and Compilers for Parallel Computing*, August 1993, with M. Carlisle, L.J. Hendren and A. Rogers.

“Supporting SPMD execution for dynamic data structures,” *Fifth Workshop on Languages and Compilers for Parallel Computing*, August 1992, with L.J. Hendren and A. Rogers.

“Abstract value constructors,” *ACM Workshop on ML and its Applications*, June 1992, with W.E. Aitken.

“Attribute grammars in ML,” *ACM Workshop on ML and its Applications*, June 1992, with S.G. Efremidis and K.A. Mughal.

“eXene,” *Third International Workshop on Standard ML*, September 1991, with E.R. Gansner.

“CML: A Higher-order Concurrent Language,” *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '91)*, June 1991.

“Synchronous Operations as First-class Values,” *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI '88)*, June 1988.

“Concurrent Garbage Collection on Stock Hardware,” *Third International Conference on Functional Programming Languages and Computer Architecture*, September 1987, with S.C. North.

“A Foundation for Programming Environments,” *Second ACM SIGSOFT/SIGPLAN Symposium on Practical Software Development Environments*, December 1986, with E.R. Gansner.

“SYNED – A Language-based Editor for an Interactive Programming Environment,” *COMPCON Spring 83*, February 1983, with E.R. Gansner, et al.

**Journal papers:**

“Optimizing nested loops using local CPS conversion,” *Higher-Order and Symbolic Computation*, Vol 14, Nr. 2/3, Sept. 2002.

“Inheritance-based subtyping,” *Information and Computation*, Vol. 177, Nr. 1, August 2002, with K. Fisher.

“AML: Attribute Grammars in ML,” *Nordic Journal for Computing*, Vol. 4, Nr. 1, Spring 1997, with S.G. Efremidis, K.A. Mughal and L. Søråas.

“Supporting SPMD Execution for Dynamic Data Structures,” *ACM Transactions on Programming Languages and Systems*, Vol. 17, Nr. 2, March 1995, with M. Carlisle, L.J. Hendren, and A. Rogers.

“A Multi-threaded Higher-order User Interface Toolkit,” *User Interface Software*, Vol. 1 of *Trends in Software*, Wiley, 1993, with E.R. Gansner.

#### **Book chapters:**

“The Essence of Concurrent ML,” Chapter 1 of *ML with Concurrency*, F. Nielson (Ed), Springer-Verlag, 1997, with P. Panangaden.

“Concurrent ML: Design, application and semantics,” *Functional Programming, Concurrency, Simulation and Automated Reasoning*, P. Lauer (Ed.), Springer-Verlag, 1993.

“A Foundation for User Interface Construction,” Chapter 14 of *Languages for Developing User Interfaces*, B. Myers (Ed), Jones and Bartlett, 1992, with E.R. Gansner.

#### **Books:**

*The Standard ML Basis Library*, Cambridge University Press, 2002, edited with E.R. Gansner.

*Concurrent Programming in ML*, Cambridge University Press, 1999.

#### **Selected technical reports:**

“Statically typed traits,” *TR-2003-13*, Department of Computer Science, University of Chicago, December 2003, with K. Fisher.

“Object-oriented aspects of Moby,” *TR-2003-10*, Department of Computer Science, University of Chicago, September 2003, with K. Fisher.

“Principles and a preliminary design for ML2000,” *AT&T Bell Labs Technical Memorandum*, March 1999, with ML2000 working group.

“Foundations for Moby classes,” *AT&T Bell Labs Technical Memorandum*, December 1998, with K. Fisher.

“A High-performance Garbage Collector for Standard ML,” *AT&T Bell Laboratories Technical Memorandum*, December 1993.

“Abstract value constructors: Symbolic constants for Standard ML,” *TR 92-1290*, Department of Computer Science, Cornell University, June 1992, with W.E. Aitken.

“Higher-order Concurrency,” *TR 92-1285* (Ph.D. dissertation), Department of Computer Science, Cornell University, June 1992.

“An operational semantics of first-class synchronous operations,” *TR 91-1232*, Department of Computer Science, Cornell University, August 1991.

“Concurrent Programming with Events – The Concurrent ML Manual,” *unpublished*, November 1990.

“Asynchronous Signals in Standard ML,” *TR 90-1144*, Department of Computer Science, Cornell University, 1990.

“First-class synchronous Operations in Standard ML,” *TR 89-1068*, Department of Computer Science, Cornell University, 1989.

“A Value-oriented Approach to Synchronization,” *AT&T Bell Laboratories Technical Memorandum*, 1986.

“Generating Execution Facilities for Integrated Programming Environments,” *AT&T Bell Laboratories Technical Memorandum*, 1984, with C.M.R. Kintala.

“Multiple Entry-point Parsers for Language-based Editors,” *Bell Laboratories Technical Memorandum*, 1983, with C.M.R. Kintala.

### **Selected software Projects:**

**Manticore:** I started the Manticore project to explore the design and implementation of a parallel functional programming language for multicore architectures. Our language combines a functional sequential core language with data-parallel constructs and explicit concurrency mechanisms.

**Moby:** I am the principal implementor of the Moby compiler and run-time system. Moby is a experimental language that combines a ML-style module system with support for class-based object-oriented programming.

**Standard ML of New Jersey:** I have been heavily involved in the implementation of SML/NJ since 1989. My contributions include the run-time system and garbage collector, the SPARC code generator, and most of the SML'97 Basis Library code.

**Concurrent ML:** I have implemented the language ideas of my thesis research into a concurrent extension of SML/NJ. CML is part of the SML/NJ distribution and is being used throughout the world in both research and commercial applications.

**eXene:** Using CML, Emden Gansner and I have built a multi-threaded X Window System toolkit, which includes a rich set of widgets. This system has been part of the SML/NJ distribution since 1993 and is now supported by Ally Stoughton at Kansas State University.