

# Mark Batty

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## Education

Ph.D. Computer Science, University of Cambridge, expected finish 2012.  
Diploma in Computer Science, Passed with Distinction, University of Cambridge, 2007.  
MMath Masters in Mathematics, 2:1, University of Nottingham, 2005.

## Employment

Research Associate, Fraser Research, Princeton, NJ, USA, October 2007 – October 2008.  
*I took a clean-slate, global-scale network design from the concept stage to a working prototype.*

## Research Vision

*I will prove the specifications of real-world systems, and provide intelligent tools to help regular programmers by defining rigorous semantics for hardware and languages.*

## Research

*In Computer Science, conferences are the predominant publication venue, and POPL is in the top tier. Furthermore, I was the lead author in Mathematizing C++ concurrency.*

### *Conference Papers*

Mathematizing C++ concurrency. M. Batty, S. Owens, S. Sarkar, P. Sewell, and T. Weber. In Proc. 38th ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL), 2011. *peer reviewed, 12 pages, 49 papers accepted of 209.*

Clarifying and compiling C/C++ concurrency: from C++0x to POWER. M. Batty, K. Memarian, S. Owens, S. Sarkar, and P. Sewell. In Proc. 39th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL), 2012. *peer reviewed, 12 pages, 44 papers accepted of 205.*

Nitpicking C++ concurrency. J. C. Blanchette, T. Weber, M. Batty, S. Owens, and S. Sarkar. In Proc. 13th International ACM SIGPLAN Symposium on Principles and Practice of Declarative Programming (PPDP), 2011. *peer reviewed, 11 pages, 16 papers accepted of 36.*

### *Under Submission*

Lem: A Lightweight Tool for Heavyweight Semantics. S. Owens, P. Böhm, M. Batty, and P. Sewell. *currently under submission.*

### *Workshop Papers*

Relaxed memory models must be rigorous. F. Z. Nardelli, P. Sewell, J. Ševčík, S. Sarkar, S. Owens, L. Maranget, M. Batty, and J. Alglave. In Proc. Exploiting Concurrency Efficiently and Correctly – (EC)<sup>2</sup>, 2009.

## C++ Standard Committee Papers

- N3196: Omnibus Memory Model and Atomics Paper. P. McKenney, M. Batty, C. Nelson, H. Boehm, A. Williams, S. Owens, S. Sarkar, P. Sewell, T. Weber, M.Wong, L. Crowl, B. Kosnik. November 11, 2010.
- N3132: Mathematizing C++ Concurrency: The Post-Rapperswil Model. M. Batty, S. Owens, S. Sarkar, P. Sewell, T. Weber. August 23, 2010.
- N3125: Omnibus Memory Model and Atomics Paper. P. McKenney, M. Batty, C. Nelson, H. Boehm, A. Williams, S. Owens, S. Sarkar, P. Sewell, T. Weber, M.Wong, L. Crowl. August 22, 2010.
- N3136: Coherence Requirements Detailed. M.Wong, B. Kosnik, M. Batty. August 20, 2010.
- N3074: Updates to C++ Memory Model Based on Formalization. P. McKenney, M. Batty, C. Nelson, N.M. Maclaren, H. Boehm, A. Williams, P. Dimov, L. Crowl. March 11, 2010.
- N3045: Updates to C++ Memory Model Based on Formalization. P. McKenney, M. Batty, C. Nelson, N.M. Maclaren, H. Boehm, A. Williams, P. Dimov, L. Crowl. February 15, 2010.
- N3057: Explicit Initializers for Atomics. P. McKenney, M. Batty, C. Nelson, N.M. Maclaren, H. Boehm, A. Williams, P. Dimov, L. Crowl. March 11, 2009.
- N2955: Comments on the C++ Memory Model Following a Partial Formalization Attempt. M. Batty. September 28, 2009.

## Conference and Seminar Presentations

### *Mathematizing C++ concurrency*

- Technische Universität Dresden (TUD), Faculty of Computer Science, February 4, 2011.
- 38th ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL), Austin USA, January 26, 2011.
- Multi-Core Memory Models and Concurrency Theory, Schloss Dagstuhl - Leibniz Center for Informatics, January 6, 2011, *by invitation*.
- Institut national de recherche en informatique et en automatique (INRIA), Paris Rocquencourt, November 15, 2010.

## Teaching

### *University of Cambridge*

- Multicore Semantics and Programming (MPhil ACS), Guest Lecture, November 2011.
- Multicore Programming (MPhil ACS), Guest Lecture, November 2010.
- Semantics of Programming Languages (Undergraduate), Supervisions, 2009, 2010, 2011.
- Further Java (Undergraduate), Demonstrations, 2010, 2011.
- Foundations of Computer Science (Undergraduate), Demonstrations, 2010, 2011.
- Programming in Java (Undergraduate), Demonstrations, 2009, 2010.

### *Harvard University*

- Advanced Topics in Programming (PhD), Guest Lecture, November 2011.

## Professional Activities

- Reviewer for 23rd International Conference on Computer Aided Verification (CAV), 2011.
- Adviser to ISO IEC JTC1/SC22/WG21 – The C++ Standards Committee, attending meetings at: Madrid, Spain, March 2011.

Batavia, IL, USA, November 2010.

Rapperswil, Switzerland, August 2010.

Adviser to ISO IEC JTC1/SC22/WG14 – The C Standards Committee, attending meetings at:  
Washington DC, USA, October 2011.

Invited member of the BSI C++ Panel, joined November 2011.

## Advising

Danish Zeb, MPhil ACS, Relaxed Memory Models, Isabelle/HOL and SMT, 2010.

Robin Message, intern, Fraser Research, 2008.

Simon Hay, intern, Fraser Research, 2008.

## Conferences and Workshops Attended

38th ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL), Austin USA, January 2011.

Multi-Core Memory Models and Concurrency Theory, Schloss Dagstuhl - Leibniz Center for Informatics, January 2011.

The European Joint Conferences on Theory and Practice of Software (ETAPS), March 2009.

LASER Summer School on Software Engineering: Concurrency and Correctness, September 2008.

Last updated: November 21, 2011