

## Personal Information

Born in Halifax, Nova Scotia, 13 July 1963. British and Canadian citizen.

## Education

PhD in Computer Science, Queen’s University, Kingston, Canada, 1991. (supervisor: R. D. Tennent)

MSc in Computer Science, Queen’s 1987. (supervisor: Z. Stachniak)

BSc in Computer Science, Dalhousie University, 1985.

## Professional Appointments

Facebook UK Ltd., since 9/2013

University College London. Professor of Computer Science, since 3/2012

Monoidics Ltd. Co-founder + Director, 2009-2013. (Monoidics was acquired by Facebook in 2013.)

Queen Mary, University of London. Professor of Computer Science, 1999-2012; Reader 1996-1999

Microsoft Research Cambridge. Visiting Researcher, Jan-July 2006

Carnegie Mellon University. Visiting Professor, July-Aug 1997

Syracuse University. Assistant Professor, 1990-1995

## Fellowships, Awards, etc

Fellow of the Royal Academy of Engineering, elected 2016

Gödel Prize, 2016. For the invention of Concurrent Separation Logic.

CAV Award, 2016. For the development of Separation Logic and for demonstrating its applicability in the automatic verification of programs that mutate data structures.

Royal Academy of Engineering/Microsoft Research Chair, 2012 (5-year research professorship, interrupted by move to Facebook in 2013)

Most Influential POPL Paper Award, 2011. For POPL’01 paper “BI as an Assertion Language for Mutable Data Structures”

Times Higher Education Research Project of the Year 2008. Runner-up. For “Separation Logic and Space Invader”

Royal Society Wolfson Research Merit Award, 2007

Engineering and Physical Science Research Council (UK) Advanced Research Fellowship, 2003-2009

## Published Papers

1. “Concurrent separation logic”. Stephen Brookes, Peter W. O’Hearn: *SIGLOG News* 3(3): 47-65 (2016)
2. “Moving Fast with Software Verification”. Cristiano Calcagno, Dino Distefano, Jrmly Dubreil, Dominik Gabi, Pieter Hooimeijer, Martino Luca, Peter W. O’Hearn, Irene Papakonstantinou, Jim Purbrick, Dulma Rodriguez: *NASA Formal Methods Symposium* 2015: 3-11
3. “From Categorical Logic to Facebook Engineering”. Peter W. O’Hearn. *LICS* 2015: 17-20
4. “On the relation between Concurrent Separation Logic and Concurrent Kleene Algebra”. Peter W. O’Hearn, Rasmus Lerchedahl Petersen, Jules Villard, Akbar Hussain: *J. Log. Algebr. Meth. Program.* 84(3): 285-302 (2015)
5. “Developments in Concurrent Kleene Algebra”. Tony Hoare, Stephan van Staden, Bernhard Möller, Georg Struth, Jules Villard, Huibiao Zhu, Peter W. O’Hearn. *RAMICS* 2014: 1-18

6. “The Essence of Reynolds”. S Brookes, PW O’Hearn and US Reddy. *Conference Record of the 41st ACM Symposium on Principles of Programming Languages*, pp251-256, San Diego, January 2014.
7. “Proving Nontermination via Safety”. HY Chen, B Cook, C, Fuhs, K, Nimkar, PW O’Hearn. *TACAS 2014*, pp156-171.
8. “A Primer on Separation Logic (and Automatic Program Verification and Analysis)”. PW O’Hearn. In *Software Safety and Security; Tools for Analysis and Verification*. NATO Science for Peace and Security Series, vol 33, pp286-318, June 2012.
9. Verification Condition Generation and Variable Conditions in Smallfoot. J Berdine, C Calcagno, PW O’Hearn. *CoRR abs/1204.4804*: April, 2012
10. Compositional shape analysis by means of bi-abduction. C Calcagno, D Distefano, P O’Hearn, and H Yang. *Journal of the ACM*, 73 pages, December 2011. (Preliminary version appeared in POPL’09.)
11. On Locality and the Exchange Law for Concurrent Processes. CAR Hoare, A Hussain, B Möller, P O’Hearn, R Petersen, G Struth. *CONCUR 2011 - Concurrency Theory - 22nd International Conference*, , Springer LNCS 6901, pp 250-264
12. The complexity of abduction for separated heap abstractions. N Gorogiannis, M Kanovich and P O’Hearn. *Proceedings of the 18th Static Analysis Symposium*, September 2011
13. Abstraction for Concurrent Objects. I Filipovic, PW O’Hearn, N Rinetzky and H Yang. *Theoretical Computer Science*, vol 411(51-52), pp4379–4398, December 2010. (Preliminary version appeared in ESOP’09)
14. Blaming the client: on data refinement in the presence of pointers. I Filipovic, P O’Hearn, N Torp-Smith and H Yang. *Formal Aspects of Computing*, vol 22(5), pp 547-583, 2010
15. Verifying linearizability with hindsight. PW O’Hearn, N Rinetzky, MT Vechev, E Yahav, G Yorsh. *Proceedings of the 29th ACM Symposium on Principles of Distributed Computing*, pp85-94, 2010
16. Graphical models of separation logic. I Wehrman, CAR Hoare and PW O’Hearn. *Inf. Process. Lett.* 109(17), pp1001-1004, 2009
17. Separation and Information Hiding. PW O’Hearn, H Yang and JC Reynolds. *ACM Transactions on Programming Languages and Systems* 31(3), 49 pages. April 2009. (Preliminary version appeared in POPL’04)
18. Abstraction for Concurrent Objects. I Filipovic, PW O’Hearn, N Rinetzky and H Yang. *Proceedings of the 18th European Symposium on Programming*, Springer Lecture Notes in Computer Science vol 5502, pp252-266, 2009. (Expanded version appeared in TCS’10)
19. Compositional shape analysis by means of bi-abduction. C Calcagno, D Distefano, P O’Hearn, and H Yang. *Conference Record of the 36th ACM Symposium on Principles of Programming Languages*, pp289-300, Savannah, January 2009. (Expanded version in JACM’11.)
20. Separation Logic Tutorial. PW O’Hearn. *Proceedings of the 24th International Conference on Logic Programming*, Springer Lecture Notes in Computer Science vol 5366, pp15-21, 2008.
21. Scalable Shape Analysis for Systems Code. H Yang, O Lee, J Berdine, C Calcagno, B Cook, D Distefano and P O’Hearn. *20th International Conference on Computer Aided Verification*, Princeton, Springer Lecture Notes in Computer Science 5123, pp385-398, 2008.
22. Separation Logic Semantics for Communicating Processes. T Hoare and P O’Hearn. *Proceedings of 1st International Conference on Foundations of Informatics, Computing and Software*, pp3-25. Shanghai. Electr. Notes Theor. Comput. Sci. 212. 2008
23. Resources, Concurrency and Local Reasoning. PW O’Hearn. *Theoretical Computer Science* 375(1-3), pp271-307. May 2007. (Preliminary version appeared in CONCUR’04, LNCS 3170, 49–67.)

24. Local Action and Abstract Separation Logic. C Calcagno, PW O’Hearn and H Yang. *Proceedings of the 22nd IEEE Symposium on Logic in Computer Science*, pp 366-378, Wroclaw, 2007.
25. Variance Analyses from Invariance Analyses. J Berdine, B Cook, A Chawdhary, D Distefano and P O’Hearn. *Conference Record of the 34th ACM Symposium on Principles of Programming Languages*, pp211-224. Venice, January 2007.
26. Modular Proof of a Non-blocking Stack. M Parkinson, R Bornat and P O’Hearn. *Conference Record of the 34th ACM Symposium on Principles of Programming Languages*, pp297-302. Venice, January 2007.
27. Footprint analysis: A shape analysis that discovers preconditions. C Calcagno, D Distefano, P O’Hearn, and H Yang. *Proceedings of the 14th International Static Analysis Symposium*,
28. Shape Analysis for Composite Data Structures. J Berdine, C Calcagno, B Cook, D Distefano, P O’Hearn, T Wies and H Yang. *19th International Conference on Computer Aided Verification*, Berlin, Springer Lecture Notes in Computer Science 4590, pp178–192, 2007.
29. Verified Software: A Grand Challenge. CB Jones, PW O’Hearn and JCP Woodcock. *IEEE Computer* 39(4), pp93-95, 2006.
30. Automatic Termination Proofs for Programs with Shape-shifting Heaps. J Berdine, B Cook, D Distefano and P O’Hearn. In *18th International Conference on Computer Aided Verification*, Seattle, Lecture Notes in Computer Science 4144, pp386–400, 2006.
31. Beyond Reachability: Shape Abstraction in the Presence of Pointer Arithmetic. C. Calcagno, D Distefano, PW O’Hearn and H Yang. In *13th International Static Analysis Symposium*, Seoul Lecture Notes in Computer Science 4134, pp182-203, 2006
32. Smallfoot: Modular Automatic Assertion Checking with Separation Logic. J Berdine, C Calcagno and PW O’Hearn. In *4th Symposium on Formal Methods for Components and Objects*, Amsterdam, Lecture Notes in Computer Science 4111, pp115-137, 2006.
33. A local shape analysis based on separation logic. D Distefano, P O’Hearn and H Yang. *12th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*, Vienna, Lecture Notes in Computer Science 3920, pp287-302, 2006
34. Strong Update, Disposal, and Encapsulation in Bunched Typing. J Berdine and P O’Hearn. In *Proceedings of the 22nd Conference on Mathematical Foundations of Program Semantics*. pp81-98, 2006.
35. Scalable Specification and Reasoning: Challenges for Program Logic. P O’Hearn. *Verified Software: Theories, Tools, Experiments*, Springer Lecture Notes in Computer Science, vol 4171, pp116-133. Zurich, October 2005.
36. Permission Accounting in Separation Logic. R Bornat, C Calcagno, P O’Hearn and M Parkinson. *Conference Record of the 32nd ACM Symposium on Principles of Programming Languages*, pp259-270. Long Beach, January 2005.
37. Symbolic Execution with Separation Logic. J Berdine, C Calcagno and P O’Hearn. *3rd Asian Symposium on Programming Languages and Systems*. pp52-68, Kyoto, 2005.
38. Separation and Information Hiding. PW O’Hearn, H Yang and JC Reynolds. *Conference Record of the 31st ACM Symposium on Principles of Programming Languages*, pp268-280. Venice, January 2004. (Expanded version appeared in TOPLAS’09)
39. A Decidable Fragment of Separation Logic. J Berdine, C Calcagno and P O’Hearn. *Proceedings of the 24th International Conference on Foundations of Software Technology and Theoretical Computer Science*, Springer Lecture Notes in Computer Science 3328, pp97–109, Chennai, 2004
40. Refinement and Separation Contexts. I Mijajlovic, N Torp-Smith and P O’Hearn, *Proceedings of the 24th International Conference on Foundations of Software Technology and Theoretical Computer Science*, Lecture Notes in Computer Science 3328, pp421-433, Chennai, 2004

41. Possible worlds and resources: The semantics of BI. DJ Pym, PW O'Hearn, H. Yang. *Theoretical Computer Science* 315/1, pp257-305, 2004.
42. Resources, Concurrency and Local Reasoning. PW O'Hearn. *Proceedings of 15th Conference on Concurrency Theory*, Lecture Notes in Computer Science 3170, pp49-67, 2004. (Prelim version of TCS'07 paper with same title.)
43. Program Logic and Equivalence in the Presence of Garbage Collection. C Calcagno, P O'Hearn, R Bornat. *Theoretical Computer Science*, 298/3, pp557-581, 2003.
44. PW O'Hearn. On Bunched Typing. *Journal of Functional Programming*, 13(4), pp747-796, 2003.
45. J. Berdine, P. O'Hearn, U. Reddy and H. Thielecke. Linear Continuation-Passing. *Higher-Order and Symbolic Computation*, 15(2/3):181-208, September 2002.
46. A Semantic Basis for Local Reasoning. Hongseok Yang and Peter O'Hearn. *5th Conference on Foundations of Software Science and Computer Systems*, Grenoble, Lecture Notes in Computer Science 2303, pp402-416, 2002.
47. Computability and Complexity Results for a Spatial Assertion Language for Data Structures. C Calcagno, H Yang and P O'Hearn. *Proceedings of the Second Asian Workshop on Programming Languages and Systems*, Dajeon, South Korea, pp108-119, 2001.
48. Local Reasoning about Programs that Alter Data Structures. P O'Hearn, J Reynolds, and H Yang. *Proceedings of 15th Annual Conference of the European Association for Computer Science Logic*, Paris, Springer Lecture Notes in Computer Science 2142, pp1-19, 2001.
49. S Ishtiaq and PW O'Hearn. BI as an assertion language for mutable data structures. *Conference Record of the 28th ACM Symposium on Principles of Programming Languages*, pp14-26. London, January 2001. **(2011 POPL Award paper.)**
50. C. Calcagno, PW O'Hearn and S. Ishtiaq. Semantic Analysis of Pointer Aliasing, Allocation and Disposal in Hoare Logic. *Proceedings of the 2nd ACM-SIGPLAN Symposium on Principles and Practice of Declarative Programming*, Montreal, September 2000.
51. On Garbage and Program Logic. C Calcagno and PW O'Hearn. *Proceedings of Fourth Conference on Foundations of Software Science and Computation Structures*, Springer Lecture Notes in Computer Science 2030, pp137-151, 2001.
52. From Algol to polymorphic linear lambda-calculus. PW O'Hearn and JC Reynolds. *Journal of the Association for Computing Machinery*, 47(1), pp167-223, January 2000.
53. Syntactic Control of Interference Revisited. PW O'Hearn, A J Power, M Takeyama and RD Tennent. *Theoretical Computer Science* 228(1-2), October 1999, pp211-252
54. Bireflectivity. PJ Freyd, PW O'Hearn, M Takeyama, AJ Power, R Street and RD Tennent. *Theoretical Computer Science* 228(1-2), October 1999, pp49-76
55. Objects, Interference, and the Yoneda Embedding. PW O'Hearn and US Reddy. *Theoretical Computer Science* 228(1-2), Oct 1999, pp253-282
56. The logic of bunched implications. PW O'Hearn and DJ Pym. *Bulletin of Symbolic Logic*, 5(2), June 1999, pp215-244
57. Resource interpretations, bunched implications and the  $\alpha\lambda$ -calculus. PW O'Hearn. *Typed Lambda-Calculi and Applications*, Lecture Notes in Computer Science 1581, pp258-278, L'Aquila, 1999.
58. Polymorphism, Objects and Abstract Types. PW O'Hearn. *SIGACT News*, 29(4), pp39-50, December 1998
59. An axiomatic approach to binary logical relations, with applications to data refinement. Y. Kinoshita, PW O'Hearn, A.J. Power, M. Takeyama, and RD Tennent. *Theoretical Aspects of Computer Software*, Sendai Japan, 1997.
60. Domains and Denotational Semantics: History, Accomplishments and Open Problems. M. Fiore, A. Jung, E. Moggi, P. O'Hearn, J. Riecke, G. Rosolini, I. Stark. *Bulletin of the EATCS*, Vol 59, 1996.

61. Note on Algol and Conservatively Extending Functional Programming. PW O’Hearn. *Journal of Functional Programming*, 6(1), pp171–180, 1996.
62. Kripke logical relations and PCF. PW O’Hearn and JG Riecke. *Information and Computation*, 120(1):107-116, July 1995
63. Parametricity and Local Variables. PW O’Hearn and RD Tennent. *Journal of the Association for Computing Machinery*, 42(3), 658-709, May 1995.
64. A Model for Syntactic Control of Interference. PW O’Hearn. *Mathematical Structures in Computer Science*, vol. 3, pp435-465. 1993.
65. Fully Abstract Translations and Parametric Polymorphism. PW O’Hearn and JG Riecke. *Proceedings of the Fifth European Symposium on Programming*, Springer Lecture Notes in Computer Science 788, pp454-468, 1994
66. Relational Parametricity and Local Variables (preliminary report). PW O’Hearn and RD Tennent. *Conference Record of the 20th ACM Symposium on Principles of Programming Languages*, pp171-184. Charleston, January 2005/1993.
67. Semantical analysis of specification logic, part 2. PW O’Hearn and RD Tennent. *Information and Computation* 107(1), pp25-57, 1993.
68. A resolution framework for finitely-valued first-order logics. P O’Hearn and Z Stachniak. *Journal of Symbolic Computation*. Volume 13, Number 3, pp235-254, March 1992.
69. Semantics of local variables. PW O’Hearn and RD Tennent. *Applications of Categories in Computer Science*, London Math. Soc. lecture notes series 177, pp. 217–238. 1992
70. Linear logic and interference control (preliminary report). PW O’Hearn. in *Category Theory and Computer Science*, Springer Lecture Notes in Computer Science 530, 1991.
71. Resolution in the domain of strongly finite logics. Z Stachniak and P O’Hearn. *Fundamenta Informaticae XIII*, 333–351, 1990.
72. Note on theorem proving strategies for resolution counterparts of non-classical logics. Peter W. O’Hearn and Zbigniew Stachniak. *Proceedings of the ACM-SIGSAM International Symposium on Symbolic and Algebraic Computation*, Portland, 1989

### Books Edited

1. G. Leavens, P.W. O’Hearn and S.K. Rajamani, editors. *Verified Software: Theories, Tools, Experiments. Third International Conference*. Springer Lecture Notes in Computer Science, vol 6217, 2010.
2. P.W. O’Hearn and R.D. Tennent, editors. *Algol-like Languages*, volume 1. Birkhauser, Boston, 1997.
3. P.W. O’Hearn and R.D. Tennent, editors. *Algol-like Languages*, volume 2. Birkhauser, Boston, 1998.

### Software Tools Projects

- SMALLFOOT (with J Berdine, C Calcagno), 2001-2005. The first verification tool to use Separation Logic. Defined ‘symbolic execution’ method used in both interactive and automatic follow-up tool work. Released on Q public license, 15/12/2005.
- SPACE INVADER (with C Calcagno, D Distefano, H Yang), 2005-2008. Initiated proof-theoretic approach to heap analysis, where program analysis works by conducting proof-search in Separation Logic. Produced the the first automatic verifications of the use of pointer structures in entire industrial programs, Microsoft and Linux device drivers up to 10K LOC. Released on BSD license in 2008.
- ABDUCTOR (with C Calcagno, D Distefano, H Yang), 2008-2010. Automates a ‘scientific method’ for reasoning about computer memory. Boosted accurate data structure analysis to millions LOC.

- INFER. With many colleagues at Facebook. Infer runs on codemods to Facebook’s mobile apps, leading to hundreds of bugs being fixed each month before being committed to production. InfaR has been opensourced and is also used at other companies including Uber and Spotify.

### Keynotes, Invited Tutorials, etc.

1. “Deploying the Infer Program Analyzer at Facebook.” TAPAS, Edinburgh, September 2016
2. “Moving Fast with Software Verification.” APLAS, Pohang Korea, November 2015
3. “Moving Fast with Software Verification.” ICFEM, Newcastle, October 2015
4. “Moving Fast with Software Verification.” CAV, San Francisco, July 2015
5. “From Categorical Logic to Facebook Engineering.” LICS+ICALP joint invited talk, Kyoto, July 2015
6. “The Essence of Reynolds.” Tribute talk given at POPL, San Diego, January 2014.
7. “Program Logic and Analysis.” POPL Programming Languages Mentoring Workshop. San Diego, January 2014.
8. “The Essence of Reynolds.” Tribute talk given at HigherOrder Programming with Effects workshop, Boston, September 2013.
9. “Program Logic and Analysis.” POPL Programming Languages Mentoring Workshop. Rome, January 2013.
10. “Algebraic Laws of Concurrency and Separation.” 13th International Conference on Relational and Algebraic Methods in Computer Science (RAMiCS 13). Cambridge UK. September 2012
11. “Separation Logic.” Invited tutorial, POPL 2012, Philadelphia.
12. “Algebra, Logic, Locality, Concurrency.” Joint invited lecture for 1st International Conference on Certified Programs and Proofs (CPP) and 7th Asian Symposium on Programming Languages and Systems (APLAS), Taiwan, December 2011.
13. “Reasoning About Programs using a Scientific Method.” 13th International Conference on Formal Engineering Methods, November 2011.
14. “Reasoning About Programs using a Scientific Method.” Joint London Mathematical Society/BCS-FACS Evening Seminar. November 2010.
15. “Abductive, Inductive and Deductive Reasoning about Resources.” *24th Annual Conference on Computer Science Logic*, Brno, August 2010
16. “Lectures on Separation Logic (4 lectures).” Featured Invited Lecturer, *Midlands Graduate School*, April 2010.
17. “Proof Theory, Semantics and Operating Systems.” Keynote, *Midlands Graduate School Christmas Seminar*, December 2008.
18. “Separation Logic Tutorial.” *25th International Conference on Logic Programming*, Udine, December 2008.
19. “Separation Logic and Concurrency.” 5 Lectures. *Laser Summer School on Concurrency and Correctness*, Elba, August 2008.
20. “Space Invading Systems Code.” Keynote lecture, at *18th International Symposium on Logic-Based Program Synthesis and Transformation*, Valencia, July 2008. (Plenary invited lecture for a meeting of 4 conferences.)
21. “Tutorial on Separation Logic.” Invited tutorial, at *30th International Conference on Computer Aided Verification*, Princeton, July 2008.
22. “Separation Logic Semantics of Communicating Processes” Keynote lecture, at *1st International Conference on Foundations of Informatics, Computing and Software*, Shanghai, June 2008.

23. “Concurrent Separation Logic.” Keynote lecture, at *Workshop on Verification of Concurrent Algorithms*, Cambridge, May 2008;
24. “Separation Logic and Concurrent Resource Management.” *6th International Symposium on Memory Management*, Montreal, October 2007;
25. “Separation Logic Semantics of Communicating Processes.” *18th Conference on Concurrency Theory*, Lisbon, September 2007;
26. “Proof Procedures for Separation Logic.” Invited lecture, at *Fifth International Workshop on Satisfiability Modulo Theories*, Berlin, July 2007;
27. “Separation Logic and Program Analysis” Invited lecture, at *13th International Static Analysis Symposium*, Seoul, August 2006.
28. “Concurrent Separation Logic.” Invited tutorial, at *22nd Conference on Mathematical Foundations of Program Semantics*, Genoa, May 2006.
29. “Local Action.” Keynote Lecture, at *6th Coalgebras Workshop*, Vienna, April 2006.
30. “Smallfoot: Automatic Modular Verification using Separation Logic.” Invited lecture, at *Formal Methods for Components and Objects*, Amsterdam, November 2005;
31. “Resources, Concurrency and Local Reasoning”, Invited tutorial (with S Brookes) at: *15th Conference on Concurrency Theory*, London, September 2004.
32. “Resources, Concurrency and Local Reasoning”, Plenary invited lecture at: *European Joint Conferences on Theory and Practice of Software*, Barcelona, April 2004.
33. “Separation and Information Hiding”, International Workshop on Aliasing, Confinement and Ownership in Object-oriented Programs, Darmstadt, July 2003.
34. “Local Reasoning about Programs that Alter Data Structures”, *Computer Science Logic*, Paris, September 2001.
35. “Local Reasoning about Shared Mutable Data Structure”, Workshop of EU Project: Applied Semantics. Darmstadt, Germany, March 2001.
36. “Reasoning about Shared Mutable Data Structure” (with J.C. Reynolds), SPACE: Symposium on Program Analysis and Computing Environments for Memory Management. London, January 2001.
37. “Semantics of Storage”, 16th annual symposium on Mathematical Foundations of Program Semantics, Hoboken, New Jersey, April 2000.
38. “Resource Interpretations of Bunched Implications,” Inaugural Workshop, Équipe Preuves, Programmes et Systèmes, CNRS, Université de Paris 7. 4-6 October 1999.
39. “Objects, Local State and Linear Polymorphism,” Workshop on Foundations of Object-Oriented Languages, San Diego, January, 1998
40. “From Algol to Polymorphic Linear Lambda-Calculus” Linear Logic ’96, Tokyo, March 1996.
41. “Kripke Logical Relations and PCF”, Conference on Logic, Domains and Programming Languages, Darmstadt, May 1995.
42. “Semantics of Storage”, Tutorial at ACM Workshop on State in Programming Languages, San Francisco, 1995.

## Research Grants

1. EPSRC Programme Grant. Resource Reasoning. £3.2M. 1 January 2010 to 31 December 2015. (PI, with coPI’s Cook and Yang at QM; Gardner and Calcagno at IC). The PI position on this grant was assumed by Pym on 1/11/13.  
In the words of EPSRC: ‘Programme grants are a flexible mechanism for providing funding to address significant major research challenges.’

2. EPSRC Platform Grant. Extreme Reasoning. £720K. 1/12/2008 to 31/12/2011. (PI, with coPI’s Curzon, Honda, Oliva, Malacaria, Martin)  
In the words of EPSRC: ‘Platform Grants provide underpinning funding to world leading research groups.’
3. EPSRC Grant. Modularity and Resource Separation. £266,116. 01 October 2006 to 30 September 2009.
4. EPSRC Grant. Smallfoot: Static Assertion Checking for C programs. £324,918 01 August 2006 to 31 July 2009.
5. Microsoft PhD Studentship (in support of Aziem Chawdhary): Automatic Program Verification with Separation Logic. 1 Oct 2005 to 30 Sept 2008. £60,000.
6. EPSRC Visiting Fellowship Research Grant (in support of Jim Royer): Towards a Compositional Model of Complexity at Higher Types. £7050. 15 September to 14 December 2004.(with S Riis).
7. EPSRC Grant: Applications of Local Reasoning. £145K. 1 January, 2004 to 31 December, 2006. Research grant paired with advanced fellowship.
8. EPSRC Grant: Bunched ML (with EP Robinson). £167K. 1 November, 2003 to 31 October, 2006. The Bath site of this grant, under David Pym, has a further £152K.
9. EPSRC Advanced Fellowship: Local Reasoning: Foundations and Applications. £250K. 1 October, 2003 to 31 September, 2008.
10. Nuffield Foundation Summer Research Fellowship, in support of A. Chawdhary. £1.5K. Summer, 2003.
11. ESPRIT Working Group: APPSEM II. 60,000euros (approx). 2003-2006.
12. EPSRC Visiting Fellowship Research Grant (in support of John Reynolds): Concurrency and Code Pointers in Spatial Pointer Logic. £46,077. 15 July 2002 to 15 Jan 2003.
13. EPSRC Visiting Fellowship Research Grant (in support of A. Banerjee, D. Naumann and H. Yang): Abstraction, Confinement and Heap Storage. £8,850. 1 August 2002 to 31 September 2002.
14. EPSRC Grant: Local Reasoning about State (with D. Pym and R. Bornat). £149K. 1 March 2001 to 28 Feb 2004
15. EPSRC grant: Verified Bytecode (with R. Bornat). £169,196. 1 Dec, 1997 to 30 Nov, 2000.
16. EPSRC Visiting Fellowship Research Grant (in support of U.S. Reddy): Parametricity and Reflexive Graphs. £4,750. 1 May, 1998 to 31 July, 1998.
17. EPSRC grant: Logic Programming, Imperative Programming and Categorical Semantics (with E. Robinson and D. Pym). £149,500. 21 July, 1997 to 20 July, 2000.
18. EPSRC Visiting Fellowship Research Grant (in support of J.C. Reynolds): Types, State and Polymorphism. £6,783. 1 August, 1997 to 31 July, 1998.
19. National Science Foundation (USA). Research initiation award. \$90,000. Awarded May 1992. Period: June 1, 1992 to Dec 31, 1995.
20. Natural Sciences and Engineering Council of Canada Postgraduate Scholarship, 1987-1989

### Advisory and Editorial Boards

- Foundations and Trends in Programming Languages, editor, 2013-present.
- Journal of Automated Reasoning, editor, 2007-present.
- Journal of Computing Science and Engineering, editor, 2007-present.
- Theoretical Computer Science, guest editor, Reynolds Festschrift, 2007.
- Asian Association for the Foundations of Software, advisory board, 2003-present.
- Semantic Structures in Computation (Chapman-Hall book series), editor, 2002-present.



- UK Computing Research Committee, member, 2007-present
- EPSRC peer review college, 2003-present
- Executive Committee for UK Computer Science Grand Challenge on Dependable Systems Evolution, 2004-2009

## Conferences and Workshops

### *Conference Program Committees*

TACS'97, FOOL'99, CTCS'99, MFPS'97, MFPS'99, MFPS'01, POPL'02, LICS'02, FSTTCS'02, FSTTCS'03, IWACO'03, CSL'05, ESOP'05, ESOP'06, APPSEM'06, Transact'06, POPL'06, IWACO'07, ICFEM'07, WOLLIC'07, CC'08, Coordination'08, VSTTE'08, PSPL'10, MFPS'10, FOSSACS'11, MFPS'11, MFPS'12, RAMICS'12, POPL'13, WoLLiC'13, VSTTE'13, VM-CAI'14

### *Special Sessions*

- Special session on state at *North American Jumelage  $\lambda$ -calculus Workshop*, Ottawa, October, 1994 (with RD Tennent)
- Special session in honour of Peter Landin, 14th Symposium on Mathematical Foundations of Program Semantics, Queen Mary, London, May 1998
- Special session on object-oriented programming, MFPS 1999, New Orleans
- Session on Object-oriented Programming, APPSEM Meeting, Pisa, August 1999.
- Special session on Spatial Logics, MFPS, New Orleans, May 2002 (with P Gardner)
- Special Session for John Reynolds's 70th birthday, MFPS 2005, Birmingham (with )
- Special Session for Bob Tennent's 65th birthday, MFPS 2009, Oxford (with D Ghica)
- Special Session for John Reynolds's 75th birthday, MFPS 2010, Pittsburgh (with S Brookes)

### *Conference Organization*

- 2nd ACM-Sigplan Workshop on State in Programming Languages, San Francisco, January, 1995 (co-organizer, with US Reddy);
- 14th Symposium on Mathematical Foundations of Program Semantics, Queen Mary, London, May 1998 (Local Organizer, with E Robinson)
- The Semantic Challenge of Object-Oriented Programming, Dagstuhl, Germany, June 1998 (with L Cardelli, A Jung, J Palsberg).
- Pointerfest, London, August 2002.
- Spatial Logics Workshop, Nottingham, April 2003 (with P Gardner).
- Grand Challenge Workshop on Dependable Systems Evolution, Queen Mary, November 2003.
- SPACE'04 Workshop, Venice, January 2004 (General chair).
- Logics for Resources, Programs and Processes. Turku Finland, July 2004 (with D Galmiche and DJ Pym).
- Logics for Dynamic Data. Chennai, India. December 2004 (with U Reddy)
- Grand Challenge Workshop on Software Verification. ETAPS Workshop, Edinburgh. April 2005
- SPACE'06 Workshop, Charleston, January 2006 (General chair).
- The Challenge of Software Verification, Dagstuhl, Germany, July 2006 (with M Broy, P Cousot and J Misra).
- Frontiers of Computational Reasoning, Microsoft Cambridge, April 2009 (with H Yang).

- Concurrency Theory Workshop: Reasoning about Separation, Resource, Interference, Atomicity, OWHY. London. Jan 2009 (with M Parkinson)
- Third International Workshop on Verified Software: Theory, Tools and Experiments. Edinburgh, August 2010 (with G Leavens, S Rajamani)

## Teaching and Academic Administration

### *Departmental Responsibilities at UCL*

- Founder and Head of PPLV Research Group, 2012–2013
- Deputy coordinator for Research Excellence Framework submission, 2012-2013

### *Departmental Responsibilities at Queen Mary*

- Seminar Organiser (1997 and 98/99)
- BSc Teaching Committee (1998/99)
- BSc Project Co-ordinator (1997/98 and 98/99)
- MSc IT Project Co-ordinator (2000/01)
- Chair of Taught Courses Committee (2000-03)
- Review of BSc Curriculum (2003-03)
- Head of Theoretical Computer Science Research Group (2003-2012)

### *Teaching at Queen Mary*

- Master’s course in Program Semantics. Autumn 97 and 98
- Compilers and Interpreters. Spring 97, 99, Winter 00, Autumn 01.
- Computability. Fall 98 (1/3)
- Computer Systems 3. Spring 98 (1/3) and 99 (1/3)
- Introduction to Algorithms. Spring 98 (1/2)
- Introduction to Programming. Fall 98 (1/4), Autumn 98, Fall 99, Fall/Spring 2000.
- Foundations 3, Autumn 2002.
- Language and Communication), Winter 2002, 03, 09.

### *Teaching at Syracuse*

- Numerous courses at Syracuse University, 1990-1995, from 1st year through to PhD level. 4 years teaching Introduction to Programming. Introduced Scheme programming into first year.
- Instituted course on mobile robotics.
- Redesigned first year curriculum for CS majors; designed (with 2 others) curriculum for service courses (for non-CS majors).

## PhD Students and RAs

Steve Cooper. PhD 1997, Syracuse University. (Now Associate Professor at Stanford)

Paul Levy. PhD 2001, Queen Mary. (Now Lecturer and EPSRC Advanced Fellow at Birmingham)

Cristiano Calcagno. PhD 2002 (jointly supervised by E Moggi and I). RA 2002-2004. (Now at Facebook)

Josh Berdine, PhD 2003, Queen Mary. RA from 2003-2005. (Now at Microsoft Research Cambridge)

Ivana Mijajlović, PhD 2007, Queen Mary. RA from 2007-2009.

## Peter W O’Hearn, Curriculum Vitae

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Akbar Hussain, PhD 2013

Stefano Guerrini, RA 1997-1998. (Now Lecturer at Università di Roma)

Hayo Thielecke, RA 1997-2000. (Now a Lecturer at Birmingham)

Samin Ishtiaq, RA 1998-2000. (Now at Microsoft Research Cambridge)

Dino Distefano, RA 2004-2007. (Now at Facebook)

Rasmus Petersen, RA, 2007-2009. (Now Postdoc at Microsoft Research Cambridge.)

Noam Rinetzky, RA 2008-2010. (Now Assistant Professor at Tel Aviv University)

Nikos Gorogiannis, RA 2010-2012. (Now Lecturer at Middlesex)

Jules Villard, RA 2010-2013. (Now RA at Imperial)