Prof. David J. Pym **April 2024**

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Education & Professional Qualifications.

- **Sc.D.**, Mathematics, King's College, University of Cambridge, 2009. (This is the higher doctorate.)
- **Ph.D.**, Computer Science, University of Edinburgh, 1991. (Laboratory for Foundations of Computer Science, Theory Programme.)
- **B.A. (M.A.)**, Mathematics, King's College, University of Cambridge, 1985 (M.A. 1989).
- The Institute of Mathematics and Its Applications: **C.Math, FIMA**.
- British Computer Society: **CITP, FBCS**.
- Fellow of the Royal Society for the Encouragement of Arts, Manufactures, and Commerce: **FRSA**.

Academic Appointments & Industry Positions.

- Nov 2013–Present: **Professor of Information, Logic, and Security, University College London**. Head of the Programming Principles, Logic, and Verification Research Group (PPLV, `http://pplv.cs.ucl.ac.uk/`), Department of Computer Science. Also a member of the Information Security Research Group. At UCL, Head of Group is a core management role, with HR responsibility. **UCL CS Public Policy Champion**, UCL Public Policy, Office of the Vice-Provost Research.
- Aug 2020–Present: **Research Fellow**, **Institute of Philosophy**, School of Advanced Study, University of London. **Director** (jointly with Corine Besson) of **CeLL**, the Centre for Logic and Language.
- Nov 2019–Present: **Affiliated Academic Staff**, **Department of Philosophy, UCL**. Seeking to develop joint undergraduate, graduate, and research programmes.
- Apr 2019–Present: **Director**, **EPSRC Centre for Doctoral Training in Cybersecurity** at UCL. This CDT is focussed on an interdisciplinary approach to security — be it information, physical, or strategic/international — from a social scientific perspective. I lead a team of staff from three departments at UCL: Science, Technology, and Engineering Policy, Security and Crime Science, and Computer Science, with expertise in policy, philosophy, economics, logic, mathematics, and systems engineering.
- Oct 2016–Nov 2020: **Turing Fellow, The Alan Turing Institute**. Inaugural Faculty (now renamed Turing) Fellow of the UK's National Institute for Data Science and AI. Led a programme in 'Logic and Learning'. See `https://www.turing.ac.uk/events/logic-and-learning`
- Nov 2016–Oct 2018: **University Liaison Director for UCL, The Alan Turing Institute**. Member of Turing's senior management team — we set up the Institute — with responsibility for liaison with UCL. Oct 2018–Mar 2019, caretaker of successor role of **Turing University Lead** for UCL.
- Mar 2013–Aug 2016: **Director of Cyber-security Research, National Grid**. Engagement to develop a cybersecurity research agenda for National Grid, covering UK and US operations. In practice, the focus was on security architecture and policy.
- Apr 2010–Oct 2013: **6th Century Chair in Logic and SICSA Professor of Computing Science**, University of Aberdeen. Cybersecurity and cloud computing consultancy for Hewlett-Packard Laboratories, Bristol for two TSB-funded projects.
- November 2010–November 2011: **Head of School of Natural & Computing Sciences**, University of Aberdeen. Four departments (*Chemistry*, *Computing*, *Mathematics*, *Physics*). Responsibility for academic (staffing, strategy, etc.) and general management (finance, HR, etc.). Contributions to College of Physical Sciences and University management. About 150 staff in the School. Turnover about £10M.
- Jan 2006–April 2010: **Principal Scientist, Systems Security Laboratory, Hewlett-Packard Laboratories, Bristol**. Led and managed a range of large UK-US multi-site projects internal and external projects, with a mix of funding from HP and the UK Technology Strategy Board (TSB), and a mix of academic and industry partners. Responsibility for strategic planning of research directions and projects and obtaining internal and external funding. Major projects included:
  - Trust Economics: UK TSB funding, about £1.3M plus industry matching; industry and academic partners, UK and US. Lead scientist; project manager;
  - Cloud Stewardship Economics: UK TSB funding, about £1.3M plus industry matching. Lead scientist;
  - Security Analytics: Internal HP-funded project, about 20 internal staff, UK and US. Lead scientist.

  These projects strongly influenced the establishment and agenda of the UK's Research Institute in the Science of Cybersecurity, funded by GCHQ.
  - Led for HP in the EU Open Innovation and Strategy Policy Group.
- Jan 2002–April 2010: **Professor of Logic & Computation, University of Bath**.
- Sep 2000–Dec 2001: **Professor of Logic, QMUL**.
- Sep 1998–Aug 2000: **Reader in Logic**, QMUL.
- Sep 1997–Aug 1998: **Senior Lecturer in Computer Science**, QMUL
- Sep 1994–Aug 1997: **Lecturer in Computer Science**, QMUL.
- Sep 1993–Aug 1994: **Lecturer in Artificial Intelligence**, University of Birmingham.
- Oct 1990–Aug 1993: Research Fellow, University of Edinburgh.
- Oct 1989–Aug 1990: Research Associate, University of Edinburgh.
- Sep 1985–Jul 1986: Research Officer, BR Research, Derby.

Fellowships & Honorary Positions.

- Nov 2021–Present: Fellow of the Royal Society for the Encouragement of Arts, Manufactures and Commerce (FRSA).
- Aug 2020–Present: Honorary Fellow, Institute of Philosophy, School of Advanced Study, University of London.
- Mar 2016–November 2020: Turing Fellow, The Alan Turing Institute (`https://turing.ac.uk`).
- Aug 2012–Jul 2019: Honorary Professor, School of Mathematical and Computer Sciences, Heriot-Watt University, Edinburgh.
- Oct 2003–Dec 2005: Royal Society Industry Fellow, Hewlett–Packard Laboratories, Bristol.
- Jan 1997–Dec 2001: Honorary Fellow, University of Edinburgh.
- Jan 1997–Dec 2001: EPSRC Advanced Fellow.

Editorships.

- *Editor-in-Chief*, Journal of Cybersecurity. OUP.
- *Semantics Corner Editor*, Journal of Logic & Computation. OUP.
- *Editorial Board*, Journal of Computer and System Sciences. Elsevier.
- *Editorial Board*, Journal of Applied Logics: The IFCoLoG Journal of Logics and Their Applications.
- *Editorial Board*, Systems Series, College Publications
- *Editorial Board*, International Journal of Service Science, Management, Engineering and Technology. IGI.

Main Research Contributions. My research is mostly in two areas: logic (mathematical, computational, and computational) and security (logical modelling, policy, economics, and philosophical).

- Driving major developments in proof-theoretic semantics as a foundation for logic and informatics.
- Proof-theoretic semantics: foundations (mathematical, philosophical, computational); extensions to modal and substructural logics.
- Resource semantics: process algebra, bunched, and modal logics as a basis for mathematical systems and security modelling, including models of access control in systems contexts; logical theory and connections with game theory and strategic reasoning.
- Substructural and modal logics, their proof theory and semantics.
- Access control logics that account for system architecture (connects my work in logic and information security).
- Information security economics: connecting economic models of security policy to security behaviour, to security investments, and to (mathematical) system models.
- Public policy in information security: the concept of information stewardship; technology adoption; vulnerability disclosure.
- Categorical models of classical logic/sequent calculus: long-standing open problem solved.
- The semantics and proof theory of bunched logic: provided the basis for separation logic and its subsequent developments: resource semantics.
- The logical theory of reductive logic and proof-search: summarized in an Oxford Logic Guide and other papers.
- Proof theory, computational logic, and categorical model theory for dependent type theory and logical frameworks.

Books.

Current book project

- Security Thinking (working title). This project is intended to deliver an accessible, graduate-level text, of wide interest in advanced industry and government covering topics in the philosophy and economics of security.

Previous books

- M. Collinson, B. Monahan, and D. Pym. *A Discipline of Mathematical Systems Modelling.* College Publications, 2012.
- D. Pym and E. Ritter. *Reductive Logic and Proof-search: Proof Theory, Semantics, and Control.* Oxford Logic Guides. OUP, 2004.
- D. Pym. *The Semantics and Proof Theory of the Logic of Bunched Implications.* Springer, 2002.

Main Recent Research Grants.

- EU 'Mosaic' project: International collaboration in logic.
- EPSRC Centre for Doctoral Training in Cybersecurity: Apr 2019–30 Sept 2027; c. £5.4M.
- EPSRC Research Grant: A coalgebraic framework for reductive logic and proof-search (ReLiC). PI, Nov 2018–Nov 2022; c. £1.2M. `https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/S013008/1`.
- EPSRC Programme Grant: Interface Reasoning for Interacting Systems (IRIS). PI, Jan 2018–Dec 2023; c. £7.5M + studentships and some industry support. `https://interfacereasoning.com`.
- EPSRC Programme Grant: Resource Reasoning. PI, Nov 2013–Jun 2016; c. £3.7M.
- EPSRC CEReS Grant: Algebra and Logic for Policy and Utility in Information Security. Overall PI, Nov 2013–Apr 2018; c. £1M.
- EPSRC/GCHQ Research Institute in the Science of Cybersecurity: Productive Security. PI at Aberdeen site, co-I at UCL, Oct 2012–March 2016; c. £300K.

Previously: TSB: Trust Domains (PI at Aberdeen/UCL site); TSB: Cloud Stewardship Economics (Chief Scientist; c. £1.3M); TSB: Trust Economics (Chief Scientist and Project Manager; c. £1.3M); EPSRC: The Semantics of Classical Proofs (Overall PI); EPSRC: Bunched ML (PI, concluded by E. O'Neill when I joined HP Labs); EPSRC: Local Reasoning about State.

Trust Economics strongly influenced the establishment by EPSRC and GCHQ of the Research Institute in the Science of Cybersecurity.

Scientific leadership of a major project — Security Analytics — within HP Labs, running alongside Trust Economics. Commercialized by HP Enterprise Services.

Ph.D. Students.

- *Graduated*: Alex Simpson, Samin Ishtiaq, Pablo Armelín, Jules Bean, Richard McKinley, Mark Price, Adam Beautement, Barry Taylor, Kevin McDonald, Nilufer Tuptuk, Simon Docherty, Jonathan Spring, Hasiba Afzalzada (M.Phil.), Maria Schett, Thomas Cattermole (M.Phil.), Albesë Demjaha, Henry Skeoch, and Alexander Gheorghiu.
- *Current*: Gabriele Brancati (logic, philosophy of information), Pinaki Chakraborty (logic, systems modelling), Ahana Datta (privacy/policy/systems), Marius-Constantin Ilau (logic-based modelling, methodology, security).

Community.

- Invited to join ARIA's assessment team, 2024.
- Invited Lecture at the 'Proof-Theoretic Semantics and Truth' conference, https://sites.google.com/view/pts-and-truth/home, University of Bristol, December 2023.
- Member of UKRI Interdisciplinary Assessment College (Chair group), August 2023–August 2025.
- Organizer: Tableaux 2023 Workshop on Proof-theoretic Semantics: https://sites.google.com/view/pts-symposium-uk/?pli=1.
- Organizer: UCL Symposium on Proof-theoretic Semantics: https://sites.google.com/view/pts-symposium-uk/?pli=1.
- Panellist, *Workshop on Academic-Policy Collaborations on Human-Centric Algorithmic Governance*, UCL, June 2022. https://www.youtube.com/watch?v=BTzOYZHK8C4&list=PLSWCKLnPiRKYVcVMchF6VOl_4s1Ji8e5n&index=3
- Organizer: UCL Modelling Methodology Workshop, 17 May 2022.
- External assessor for appointment of Chair in Cybersecurity, King's College London, 2022.
- Organizer/PC: 1st Workshop on Approaches to Modelling Heterogeneous Interacting Systems: details. In Association with Financial Cryptography and Data Security '22, Grenada, 2-6 May 2022.
- Lecture, 'Why I care about proof-theoretic semantics', UCL PPLV Symposium on Proof-theoretic Semantics, April 2022.
- Organizer: World Logic Day 2022 at UCL: The meaning of proofs.
- Seminar, Tübingen Logic and Lingusitics Group, December 2020.
- Seminar, Institute of Philosophy, University of London, November 2020.
- Plenary Speaker, Proof-theoretic semantics 2019, Tübingen, Germany, March 2019.
- Invited participant, Schloss Dagstuhl Seminar on Logics for Dependence and Independence, January 2019.
- Invited Speaker, FLoC 2018, ADSL, Workshop on Separation Logic, July 2018.
- External assessor for appointment of Chair in Cybersecurity, King's College London, 2018.
- Lecturer, SYSMICS Logic Summer School, Les Diablerets, Switzerland, August 2018.
- Invited Speaker, 2nd SYSMICS Workshop, Vienna, February 2018.
- Organizer, FLoC 2018 Summer School on Logic and Learning: https://www.floc2018.org/fopss/.
- Organizer, Alan Turing Institute Workshop on Logic and Learning: https://logic-data-science.github.io.
- Organizer, Alan Turing Institute, interest group on Logic for Data Science: https://www.turing.ac.uk/research/interest-groups/logic-data-science
- Invited participant, Shonan seminar on 'Intensional and extensional aspects of computation: From computability and complexity to program analysis and security', National Institute of Informatics, Japan, January 22-25, 2018.
- Invited speaker, Cyber-risk Conference, Laboratoire de Statistique Théorique et Appliquée, Sorbonne, Paris, 6-7 November 2017.
- House of Commons Science & Technology Committee: Presentation on 'Algorithms in decision-making', October 2017.
- Invited speaker, WoLLIC 2017, London.
- Invited speaker, Simons Institute Workshop on Compositionality, Berkeley, 2016.
- Invited speaker, LICS 2016 Logic Mentoring Workshop, New York, 2016.
- Programme Committees/Chair for conferences in logic and security, including CODASPY 2021, 2022, RAMiCS 2021, WEIS (2009–2019, 2021—2024), GameSec (2015–2021), GraMSec, Service Computation, ACySe, DALT, LRPP, WoLLIC, LPAR 2018, ADSL 2019, and ICIS (Associate Editor, 'Cyber-security, privacy, and ethics of IS' track, 2018, 2019).
- Many invited papers/presentations, including: Proof-Theoretic Semantics and Truth 2023; Proof-theoretic semantics, Tübingen, 2019; UCL's Proof-theoretic Semantics Symposia; FLoC 2018; SYSMICS 2018, Vienna; LiCS Logic Mentoring Workshop, NYC, 2016; ALCOP, 2015; HCI International, 2014; The Royal Society, 2014; Security & Cloud Computing, Bletchley Park, 2014; Microsoft Security & Digital Crimes Forum, 2012; Keynote at Information Security Leaders, Edinburgh, 2011; Logics for Action and Mobility (LAM), FLoC 2010.
- External examiner for MSc in Computer Science and MSc in Cybersecurity, University of Southampton, 2018–2022.
- External examiner for CS and EE, Oxford University, 2004–2006.
- PhD examiner at many institutions in UK, France, and Australia.
- Member of UKCRC (UK Computing Research Committee, UK equivalent of the US CRA).
- EPSRC College; ESRC Reviewer; ACU Assessor.
- Reviewer for research funding agencies in Australia, Austria, Canada, France, Netherlands, Norway.
- UK Home Office Working Group: Costs of Cybercrime.
- Contributor to ENISA's report on the economics of information security.

Teaching.

I am interested in developing research-based teaching methods and in breaking barriers between mathematical, engineering, and social science aspects of teaching in computing. I believe this is particularly important for teaching information security and cybersecurity effectively.

- Currently/recently, at UCL:
  - Currently developing a joint BA in Philosophy and Computer Science and a Master's programme (MASc) in Philosophy, Logic, and AI (both joint between the CS and Philosophy Departments).
  - Developing new modules in Philosophy of Computing and Information, in advanced Logic, and in Proof-theoretic Semantics.
  - Established a 'Politics, Philosophy, and Economics of Security and Privacy' module in UCL's information security Master's programme. This module is intended to introduce students to knowledge and skills in the style of social sciences as applied to security.
  - Supervision of Master's projects in the 'Business Analytics' programme.
- Previously, at Aberdeen:

- Established 4th year module in 'Security'. This module for advanced undergraduates was quite interdisciplinary in nature and emphasized research-based learning.
- Combined 2nd year and Master's modules in information systems.

- Previously, at Bath:
  - 1st year 'Computability and Decidability', joint CS/Math module.
  - 3rd/4th year 'Logic and Its Applications', joint CS/Math module.
- Previously, at QMUL and Birmingham:
  - 3rd year and Master's modules in computability and automated reasoning.
  - 1st year and Master's modules in AI.

Current Writing and Publication Projects.

Here are my main current writing and publication projects, which are mostly aligned with my current UKRI research grants.

- *Proof-theoretic semantics.* Extending the ideas — in which we seek to develop proof-theoretic, as opposed to model-theoretic, notions of validity — from classical logics to substructural logics and modal logics and providing a unified account of deductive and reductive logic.
- *Security Thinking.* A book project, focussed on an accessible, conceptual treatment of the philosophy and economics of security, with Tristan Caulfield and Christos Ioannidis.
- *A conceptual theory of centralized and decentralized (distributed) systems*, with particular application to security and policy in the Internet of Things. Target is the journal *Philosophy and Technology.* With Simon Parkin, Delft University of Technology, The Netherlands.
- *Logic as a modelling technology.* The complex ecosystem information-processing systems and their physical connections motivate the need for mathematical modelling tools that rely less on, for example, systems of differential equations and more upon concepts of location, resource, process, and state. Moreover, the compositional structure of these systems suggests the need for (logical) specifications of the input-output behaviour of the component systems and subsystems.
- *The philosophy and methodology of modelling.* Ecosystems of systems, organizations, and their users evolve in complex and highly interactive ways. Models that seek to predict the behaviour of such systems must capture these evolutions and interactions. It follows that the design of models to address specified behavioural questions must be performed alongside the design of empirical investigations of the systems of interest. We are considering what are appropriate methodologies that support the necessary co-design processes.

Recent Main Publications.

Here is a selection of recent main publications — since 1999 — in each of my main current research areas. Please note that in my areas it is normal to list authors alphabetically and that (refereed) conference publications are considered significant. I am the author of around 200 publications.

Current drafts and older papers may be found via my website. Manuscripts currently submitted for publication include the following:

- Alexander Gheorghiu, Tao Gu, and David Pym. Proof-theoretic semantics for the logic of bunched implications. Submitted, 2023.
- Timo Eckhardt and David Pym. Proof-theoretic Semantics for Modal Logics. In preparation, 2023.
- David Pym, Eike Ritter, and Edmund Robinson. Categorical Proof-theoretic Semantics. Submitted, 2023.
- Alexander Gheorghiu and David Pym. From Proof-theoretic Validity to Base-extension Semantics for Intuitionistic Propositional Logic. Submitted, 2023.
- Alexander Gheorghiu and David Pym. Proof-theoretic Semantics and Tactical Proof. Submitted, 2023.

Proof-theoretic Semantics, Foundations of Logic, and Applied Logic

(1) Alexander Gheorghiu, Tao Gu, and David Pym. A Note on an Inferentialist Approach to Resource Semantics. To appear, *Proc. Scandinavian Logic Symposium 2024*, Reykjavik, 2024.
(2) Alexander Gheorghiou, Tao Gu, and David Pym. Inferentialist Resource Semantics. To appear, *Proc. Mathematical Foundations of Programming Semantics (MFPS)*, Oxford, June 2024.
(3) Timo Eckhardt and David Pym. Proof-theoretic Semantics for Modal Logics. *Logic Journal of the IGPL* jzae004, `https://doi.org/10.1093/jigpal/jzae004`, 2024.
(4) David Pym, Eike Ritter, and Edmund Robinson. Categorical Proof-theoretic Semantics. *Studia Logica*, 2024. `https://doi.org/10.1007/s11225-024-10101-9`
(5) Alexander Gheorghiu and David Pym. Defining Logical Systems via Algebraic Constraints on Proofs. *Journal of Logic and Computation*, 2023.
(6) Alexander Gheorghiu, Tao Gu, and David Pym. Proof-theoretic-semantics for Intuitionistic Multiplicative Linear Logic. Proc. Tableaux 2023.
(7) Alexander Gheorghiu and David Pym. NEGATION-AS-FAILURE IN THE BASE-EXTENSION SEMANTICS FOR INTUITIONISTIC PROPOSITIONAL LOGIC. *Bulletin of the Section of Logic*, Polish Academy of Sciences, Łódź University Press, 2023.
(8) Alexander Gheorghiu, Tao Gu, and David Pym. Proof-theoretic-semantics for Intuitionistic Multiplicative Linear Logic (Extended Abstract). To appear, *Proc. TLLA*, 2023.
(9) Alexander Gheorghiu and David Pym. Semantical Analysis of the Logic of Bunched Implications. *Studia Logica*, 2023. doi: `https://doi.org/10.1007/s11225-022-10028-z`
(10) M. Bujorianu, T. Caulfield, and D. Pym. Modelling and Control of Complex Cyber-Physical Ecosystems. To appear, *Proc. 1st IFAC Workshop on Control of Complex Systems, COSY 2022*, Bologna, Italy, 24–25 November 2022.
(11) David Pym, Eike Ritter, and Edmund Robinson. Proof-theoretic Semantics in Sheaves (Extended Abstract). *11th Scandinavian Logic Symposium*, Bergen, June 2022.

(12) Alexander Gheorghiu and David Pym. Generalizing Rules via Algebraic Constraints (Extended Abstract). *11th Scandinavian Logic Symposium*, Bergen, June 2022.

(13) Alexander Gheorghiu and David Pym. Semantics ex Proof and Refutation (Extended Abstract). Presented (by Alexander Gheorghiu) at Bilateralism & Proof-Theoretic Semantics, Ruhr University Bochum, March 17–18, 2022.

(14) T. Caulfield, M.-C. Ilau, and D. Pym. Engineering Ecosystem Models: Semantics and Pragmatics. *Proc. 13th SIMUtools 2021*. Springer, 2021.

(15) T. Caulfield, M.-C. Ilau, and D. Pym. Metamodelling for Ecosystems Security. *Proc. 13th SIMUtools 2021*. Springer, 2021.

(16) A. Baldwin, T. Caulfield, M.-C. Ilau, and D. Pym. Modelling Organizational Recovery. *Proc. 13th SIMUtools 2021*. Springer, 2021.

(17) T. Caulfield, Albesë Demjaha, and David Pym. Found in Translation: Co-design for Security Modelling. To appear, *Proc. STAST 2021*.

(18) David Pym. The Origins of Cyberspace. In: *The Oxford Handbook of Cybersecurity*, Paul Cornish (editor). In press, OUP, 2021.

(19) Alexander Gheorghiu, Simon Docherty, and David Pym. Reductive Logic, Proof-search, and Coalgebra: A Perspective from Resource Semantics. To appear, *Outstanding Contributions to Logic* volume in honour of Samson Abramsky (M. Sadrzadeh and A. Palmigiano, editors). Springer, 2021

(20) David Pym and Will Venters. Modelling interfaces in the decentralized Internet of Things. *Proc. ICIS 2020, India*, AIS eLibrary: `https://aisel.aisnet.org/icis2020/iot_smart/iot_smart/3/`.

(21) Paul Brunet and David Pym. Pomsets with Boxes: Protection, Separation, and Locality in Concurrent Kleene Algebra. In: *5th International Conference on Formal Structures for Computation and Deduction (FSCD 2020)*, Leibniz International Proceedings in Informatics (LIPIcs) 167, 8:1–8:16, 2020. DOI: 10.4230/LIPIcs.FSCD.2020.8. `https://drops.dagstuhl.de/opus/volltexte/2020/12330/`.

(22) D. Galmiche, P. Kimmel, and D. Pym. A Substructural Epistemic Resource Logic: Theory and Modelling Applications. *Journal of Logic and Computation*, 29(8), 1251–1287, December 2019. DOI: `https://doi.org/10.1093/logcom/exz024`.

(23) David Pym. Resource semantics: logic as a modelling technology. ACM SIGLOG News, April 2019, Vol. 6, No. 2, 5–41. `https://dl.acm.org/citation.cfm?id=3326940`.

(24) David Pym. Reductive logic & proof-theoretic semantics: a coalgebraic perspective. In: *Proc. Proof-theoretic Semantics: Assessment and Future Perspectives*, P. Schröder-Heister and T. Piecha (editors), Third Tübingen Conference on Proof-theoretic Semantics, 27–30 March 2019: `https://publikationen.uni-tuebingen.de/xmlui/handle/10900/93935`.

(25) S. Docherty and D. Pym. Stone-type Dualities for Separation Logics. To appear: *Logical Methods in Computer Science*, 15(1), 2019. DOI: 10.23638/LMCS-15(1:27)2019

(26) S. Docherty and D. Pym. Intuitionistic Layered Graph Logics: Semantics and Proof Theory. *Logical Methods in Computer Science*, 14(4:11), 2018,1–36.

(27) S. Docherty and D. Pym. Modular Tableaux Calculi for Separation Theories. *Proc. FoSSaCS 2018*, LNCS 10803:441–458,2018. `https://doi.org/10.1007/978-3-319-89366-2_24`.

(28) S. Docherty and D. Pym. A Stone-type duality theorem for Separation Logic via its underlying bunched logics. *Proc. MFPS 2017*. DOI: 0.1016/j.entcs.2018.03.012

(29) F. Dahlqvist and D. Pym. Coalgebraic completeness-via-canonicity for distributive substructural logics. *Journal of Logical and Algebraic Methods in Programming* 93 (2017) 1–22.

(30) S. Docherty and D. Pym. Intuitionistic layered graph logic. Short version of IJCAR paper to appear in IJCAI 2017 Sister Conference Best Paper Track.

(31) D. Galmiche, P. Kimmel, and D.Pym. A Substructural Epistemic Resource Logic. *Proc. ICLA 2017*. LNCS 10119: 106–122, 2017.

(32) G. Anderson, G. McCusker, and D. Pym. A logic for the compliance budget. *Proc. GameSec 2016*, LNCS 9966: 370–381, 2016.

(33) S. Docherty and D. Pym. Intuitionistic layered graph logic. *Proc. IJCAR 2016, Coimbra Portugal*. LNCS 9706: 469–486, 2016.

(34) G. Anderson and D. Pym. A Substructural Modal Logic of Utility. Accepted, *J. of Logic & Computation, 2016*.

(35) J.-R. Courtault, D. Galmiche, and D. Pym. A Logic of Separating Modalities. *Theoretical Computer Science*, 637, 30–58, 2016.

(36) G. Anderson and D. Pym. A Calculus and Logic of Bunched Resources and Processes. *Theoretical Computer Science* 614:63-96, 2016.

(37) T. Caulfield and D. Pym. Modelling and Simulating Systems Security Policy. Joint work with Tristan Caulfield. In *Proc. SIMUTools 2015*, ACM Digital Library, `http://discovery.ucl.ac.uk/1468683/`. doi: `10.4108/eai.24-8-2015.2260765`.

(38) F. Dahlqvist and D. Pym. and Completeness via canonicity for distributive substructural logics: a coalgebraic perspective. *Proc 15th Int. Conf. on Relational and Algebraic Methods in Computer Science (RAMiCS 2015)*, LNCS 9348: 119-135, 2015.

(39) G. Anderson and D. Pym. Substructural modal logic for optimal resource allocation. Paper 5, *Proc. Strategic Reasoning 2015*, St. Catharine's College, Oxford, September 21-22, 2015.

(40) G. Anderson and D. Pym. Trust Domains in system models: algebra, logic, utility, and combinators. *J. of Logic & Computation*, 2015: doi: 10.1093/logcom/exv030.

(41) M. Collinson, K. McDonald, and D. Pym. Layered Graph Logic as an Assertion Language for Access Control Policy Models. *J. of Logic & Computation*, 2015. doi: 10.1093/logcom/exv020.

(42) M. Collinson, K. McDonald, and D. Pym. A Substructural Logic for Layered Graphs. *J. of Logic & Computation* 24 (4):953-988, 2014. doi: 10.1093/logcom/exu002. Erratum: *J. of Logic & Computation*, 2015. doi: 10.1093/logcom/exv019.

(43) D. Pym, E. Ritter, and E. Robinson. A Proof-theoretic Analysis of the Classical Matrix Method. *J. of Logic & Computation* 24 (1): 283-301, 2014.

(44) M. Collinson, B. Monahan, and D. Pym. *A Discipline of Mathematical Systems Modelling.* College Publications, 2012.
(45) M. Collinson, B. Monahan, and D. Pym. Semantics for Structured Systems Modelling and Simulation. *Proc. Simutools 2010.* ACM Digital Library and EU Digital Library. doi: 10.4108/ICST.SIMUTOOLS2010.8631.
(46) A. Beautement et al. Modelling the Human and Technological Costs and Benefits of USB Memory Stick Security. In *Managing Information Risk and the Economics of Security.* M. Eric Johnson (editor), Springer, 2009: 141–163.
(47) M. Collinson, D. Pym, and E. Robinson. Bunched Polymorphism. *Mathematical Structures in Computer Science* 18(6), 1091–1132, 2008.
(48) G. McCusker and D. Pym. A Games Model of Bunched Implications. *Proc. CSL '07*, LNCS 4646: 573–588.
(49) D. Pym, P. O'Hearn, and H. Yang. Possible Worlds and Resources: The Semantics of BI. *Theoretical Computer Science* 315(1):257–305.
(50) C. Führmann and D. Pym. On Categorical Models of Classical Logic and the Geometry of Interaction *Mathematical Structures in Computer Science*, 17, 957–1027, 2007.
(51) C. Führmann and D. Pym. On the Geometry of Interaction for Classical Logic (Extended Abstract). *Proc. LICS 04*, IEEE Comp. Soc. Press, 2004, 211–220.
(52) C. Führmann and D. Pym. Order-enriched categorical models of the classical sequent calculus. *Journal of Pure and Applied Algebra*, 204(1), 21–78, 2006.
(53) J. Harland and D. Pym. Resource-distribution via Boolean constraints. *ACM Transactions on Computational Logic* 4(1), 56–90, 2003.
(54) D. Pym, E. Ritter, and L. Wallen. On the intuitionistic force of classical search. *Theoretical Computer Science* 232 (2000) 299-333.
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