Troy Kaighin Astarte

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Passionate about developing and sharing understanding of computing.

Education

PhD in Computing Science, Newcastle University, 2015–2018
'Formalising meaning: a history of programming language semantics'.
Supervisor: Cliff Jones; panel: Brian Randell, Martin Campbell-Kelly, John Tucker.
Nominated for CPHC/BCS Distinguished Dissertation Prize (awaiting decision).

BSc Computer Science with Industrial Placement, Newcastle University, 2011–2015. Award: first class degree with honours (final mark: 80%).

Earlier education: Lancaster & Morecambe College; Lancaster Royal Grammar School.

Teaching

My passion is for sharing understanding of computing of all kinds, across all delivery styles. I have taught individuals and group sizes up to 60 and love building engagement with innovative methods.

Stage 3 module leader, Newcastle University, 2019–2020
'Understanding Programming Languages' granted students deep insight into programming through formal semantics. I developed research-inspired teaching materials, delivered content and assessment, and supervised demonstrators.

Demonstrating

Delivered dialogue-based teaching and small-group supervision; extensive experience managing large marking workloads. Content covered includes:

Stage 1 mathematics, web design, professional development
Stage 2 software engineering, formal modelling, algorithm design and analysis, group project in software development
Stage 3 server-side web technologies, formal modelling of concurrency, computer security, software verification technologies and formal proof, understanding programming languages
MSc using Linux, history of digital cultures

Training, Newcastle University, 2016–2017
Completed *Introduction to Learning and Teaching in Higher Education* as part of CASAP. Learnt effective techniques for assessment, feedback, support, and lecturing.

Research

My research seeks to understand computing practice and concepts through an interdisciplinary lens. I mix deep technical ability with research questions and methods from humanities, especially history, to reach conclusions about the process and development of computing. I seek to explore context and impact and embed this in my teaching; I would particularly love to investigate pedagogical outcomes. My work attracts international audiences and I have chaired and organised events internationally.

List of publications and talks at end.

Grants awarded

***Separation & Interference: Learning from the history of concurrency.* Awarded by the Leverhulme Trust, 2019–2022.**
This project engages with the variety of approaches to managing concurrency in practical and theoretical systems. Co-wrote grant with PI Cliff Jones.

***PhD Studentship.* Awarded by EPSRC, 2015–2019.**
Awarded by EPSRC. Great teaching inspired my interest in formal semantics and I investigated the origins and impacts of efforts to understand programming languages.

Training

Midlands Graduate School in the Foundations of Computing Science, 2021.
Intensive programme on mathematical and theoretical aspects of computing.

Introduction to Oral History Oral History Society, May 2016.
Methods for interviewing, use of equipment, handling copyright, and other admin.

Post-grad researcher development programme Newcastle University, 2015–2017.
Research skills, academic writing, funding and financing, and university organisation.

Employment

Research associate, Newcastle University, February 2019–
Worked on EPSRC and Leverhulme Trust funded grants, researching history of concurrency. Module leader for successful CSC3321 course.

Teaching assistant, Universiteit van Amsterdam, January 2018, 2019, 2020
Supervised research projects, organised trips and visits, provided pastoral support.

Analyst, Accenture, 2013–2014
Worked in project management, financial planning, and identifying potential industrial partners.

Research assistant, Newcastle University, Summer 2013
Used Python programming for embedded devices to develop effective power consumption monitoring techniques.

Web designer, Advance With Media, Summer 2012
Developed websites for small business clients using the same web technologies in use today.

Admin, events, and engagement

I am dedicated to improving learning and working environments and love finding ways to bring people together to learn.

Organising Committee, People, Places, Practices: Joint BSHM-CSHPM/SCHPM (July 2021). Organising committee. https://www.bshm.ac.uk/node/243/

Chair, Accessibility & Diversity Working Group, BSHM (2021–).

Organising committee, Black Heroes of Mathematics (October 2020). https://ima.org.uk/15025/black-heroes-of-mathematics-conference/

Technical director, Mathematics in Times of Crisis (July 2020). https://www.bshm.ac.uk/events/mathematics-times-crisis-online-conference

Co-chair, proceedings editor, History of Formal Methods 2019 (at FM World Congress, October 2019). https://sites.google.com/view/hfm2019/

Member, EDI Committee, Newcastle University School of Computing (2019–).

Chief organiser and chair, Newcastle Computing: Celebrating 50 Years of Campus-wide Computing (June 2019). http://newcastlecomputing50.ncl.ac.uk

Chair, Newcastle University History Computing Committee (2019–).

Webmaster, British Society for the History of Mathematics (2019–).

Researcher, PROGRAMme virtual research group, (2017–2021).

Co-organiser, Strachey 100: Celebrating the life and work of Christopher Strachey (November 2016). https://www.cs.ox.ac.uk/strachey100/

Board member, Post-graduate researcher development programme (2015–2017).

Student Governer, Lancaster & Morecambe College (2009–2011).

Professional organisation memberships

British Computer Society (professional member); **ACM SIGCSE** (member); **British Society for the History of Mathematics** (council member).

List of Publications

Troy Kaighin Astarte. ""Difficult things are difficult to describe": The role of formal semantics in European computer science, 1960–1980". In: *Abstractions and Embodiments: New Histories of Computing and Society.* Ed. by Janet Abbate and Stephanie Dick. Forthcoming. Johns Hopkins University Press, 2022

Troy K. Astarte. *The history of programming language semantics: an overview.* Technical Report CS-TR-1533. Newcastle University School of Computer Science, June 2020

Troy K. Astarte, ed. *HFM 2019 - History of Formal Methods Workshop. In: Formal Methods. FM 2019 International Workshops. Porto, Portugal, October 7–11, 2019, Revised Selected Papers, Part II.* Lecture Notes in Computer Science 12233. Springer-Verlag, 2020. DOI: 10.1007/978-3-030-54997-8

"HFM2019 Organizers' Message", In: *ibid.*

"What have formal methods ever done for us? An audience discussion", In: *ibid.*

Troy K. Astarte. "Formalising Meaning: a History of Programming Language Semantics". PhD thesis. Newcastle University, June 2019

Cliff B. Jones and Troy K. Astarte. "Challenges for semantic description: comparing responses from the main approaches". In: *Proceedings of the Third School on Engineering Trustworthy Software Systems.* Ed. by Jonathan P. Bowen, Zili Zhang, and Zhiming Liu. Vol. 11174. Lecture Notes in Computer Science. 2018, pp. 176–217. DOI: 10.1007/978-3-030-02928-9_6

Cliff B. Jones and Troy K. Astarte. *Challenges for semantic description: comparing responses from the main approaches.* Technical Report CS-TR-1516. Newcastle University School of Computer Science, Nov. 2017

Troy K. Astarte and Cliff B. Jones. "Formal Semantics of ALGOL 60: Four Descriptions in their Historical Context". In: *Reflections on Programming Systems - Historical and Philosophical Aspects.* Ed. by Liesbeth De Mol and Giuseppe Primiero. Springer Philosophical Studies Series, 2018, pp. 83–152. DOI: 10.1007/978-3-319-97226-8_4

Cliff B. Jones and Troy K. Astarte. *An exegesis of four formal descriptions of ALGOL 60.* Technical Report CS-TR-1498. Newcastle University School of Computer Science, Sept. 2016

Book reviews

Troy Kaighin Astarte. "Mage Merlin's Unsolved Magical Mysteries (review)". In: *LMS Newsletter* 493 (Mar. 2021), pp. 59–60

Troy K. Astarte. "The Discrete Charm of the Machine: Why the World Became Digital (review)". In: *British Journal for the History of Mathematics* 35.1 (2020), pp. 89–91. DOI: 10.1080/26375451.2019.1681827

Conference talks

Troy K. Astarte. *There will be a time-fight tomorrow: Old problems in new logics.* 26th International Congress of History of Science and Technology. Forthcoming. July 2021

Troy K. Astarte, David E. Dunning, and Martin Campbell-Kelly. *Reflecting on the history of software.* Royal Society Computer History Event: 'Computers and Computer People, 1950s-1990s'. Mar. 2021

Troy K. Astarte and B. T. Denvir. *ALGOL 60 @ 60: its place in formal semantics.* Peter Landin Semantics Seminar. Dec. 2020

Troy K. Astarte. *On the Difficulty of Describing Difficult Things.* History and Philosophy of Computing 5, Bergamo. Oct. 2019

Troy K. Astarte. *Origins and Impacts of Formal Semantics.* European Society for the History of Science Biennial Conference, London. Sept. 2018

Troy K. Astarte. *Towards an Interconnected History of Semantics.* BSHM Research in Progress, Oxford. Feb. 2018

Troy K. Astarte. *Towards an Interconnected History of Semantics.* History and Philosophy of Computing, Brno, Oct. 2017

Troy K. Astarte. *Formalism in the Forest: the 1964 IFIP Formal Language Description Languages Working Conference.* BSHM Research in Progress, Oxford. Feb. 2017

Troy K. Astarte. *Formalism in the Forest: the 1964 IFIP Formal Language Description Languages Working Conference.* PLASMA Seminar, York. Oct. 2016

Troy K. Astarte. *Formal Semantics of ALGOL 60: a comparison of four descriptions.* History and Philosophy of Programming 3. June 2016

Thank you for reading!