# Neil Robert Bramley

*Curriculum Vitae*

## Education

2013–2017 **PhD, Experimental Psychology**, *UCL*, London.
Title: Constructing the world: Active causal learning in cognition
Supervisors: Prof David Lagnado & Prof Peter Dayan

2012–2013 **MRes, Computer Science**, *UCL*, London.
Project grade: Distinction (84/100)
Overall grade: Merit (80/100)

2010–2011 **MSc, Cognitive & Decision Sciences**, *UCL*, London.
Project grade: Distinction (90/100)
Overall grade: Distinction & class prize (86/100)

2005–2009 **MA (Hons), Philosophy**, *University of Glasgow*, Glasgow.
Dissertation grade: 19/22
Overall grade: 17/22

## Academic experience

2017–present **Moore-Sloan Postdoctoral Associate**, *NYU*, New York, NY.

- Conducting research into human cognition
- Combining behavioral experimentation, modeling & big data
- Associated with Cognition and Computation lab and NYU Center for Data Science
- Funded by Moore-Sloan Data Science Environment

2016 **Programme participant**, *University of Cambridge*, Cambridge, UK.
"Probability and Statistics in Forensic Science" (summer school length) workshop at the Isaac Newton Institute for Mathematical Sciences

2015 **Visiting researcher**, *UC Berkeley*, Berkeley, CA, USA.
Bogue fellowship funded research visit to Tom Griffiths' Computational Cognitive Science lab.

2015 **Visiting researcher**, *NYU / MIT*, New York, NY / Cambridge, MA.
Bogue fellowship funded research visit to Josh Tenenbaum's Computational Cognitive Science lab and Todd Gureckis' Computation and Cognition lab.

*637, 60 5th Avenue – New York, NY, 10003 – USA*
*+1 (929) 309 3173* • *neil.bramley@nyu.edu* • *neilrbramley.com*
*NeilBramley* • *neilbramley*

2011–2012 **Research assistant**, *Queen Mary, University of London*, London, UK.
Biological & Experimental Psychology Group
Responsibilities:
- Designing and programming pilot experiments for grant application
- Writing an (ultimately successful) ESRC grant application "Cognitive causal models of dynamic control"
- Securing endorsements from major UK energy regulators and suppliers

## Teaching experience

2012–2016 **Lecturer**, *UCL*, London, UK.
Ad-hoc lecturer for MSc, MRes psychology and cognitive science courses while studying for PhD at UCL
Topics taught:
- PSYCGD04: Knowledge, Learning & Inference, Experimental Psychology
  - Active learning (2014, 2016)
- PSYC1103: Introduction to Psychological Experimentation, Experimental Psychology
  - Causal representation (2015)
- PSYCGD01: Philosophy of Cognitive Science, Experimental Psychology
  - Theories of consciousness (2013)
  - Integrated information theory (2014, 2015)

2011–2014 **Teaching assistant**, *UCL*, London, UK.
Courses:
- PSYCGD05 Programming for Cognitive Science (MATLAB, python, javascript)
- PSYCGR01 Generic Research Skills (statistics)
- PSYCH1103 First Year Psychology Laboratory

Responsibilities:
- Leading tutorials
- Providing in class support
- Marking, holding office hours

2011–2016 **Private tuition**, *UCL*, London, UK.
Private statistics and programming tuition at MSc level for cognitive science students

## Publications

### Forthcoming

1. **Bramley**, N. R., T. Gerstenberg, J. B. Tenenbaum, and T. M. Gureckis (in revision). Intuitive experiments in the physical world. http://doi.org/10.17605/osf.io/u9y4c.
2. Coenen, A., A. Ruggeri, N. R. **Bramley**, and T. M. Gureckis (in revision). Beliefs about sparsity affect causal experimentation.
3. **Bramley**, N. R., A. Rothe, J. B. Tenenbaum, F. Xu, and T. M. Gureckis (submitted). Grounding compositional hypothesis generation in specific instances.
4. Davis, Z. J., N. R. **Bramley**, and R. E. Rehder (submitted). Causal structure learning with continuous variables in continuous time.
5. Davis, Z. J., N. R. **Bramley**, R. E. Rehder, and T. M. Gureckis (submitted). A causal model approach to dynamic control.
6. Meng, Y., N. R. **Bramley**, and F. Xu (submitted). Children's causal interventions combine discrimination and confirmation.

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7. **Bramley**, N. R., T. Gerstenberg, R. Mayrhofer, and D. A. Lagnado (in prep). Unifying intervention and time in causal learning. Ed. by J. Livengood.
8. **Bramley**, N. R., R. Mayrhofer, T. Gerstenberg, and D. A. Lagnado (in prep). Interventions in continuous dynamic systems.
9. Li, Z., N. R. **Bramley**, and T. Gureckis (in prep). Modeling engagement via the temporal dynamics of belief, surprise and suspense.
10. Schulz, E., M. Hofer, A. Rothe, N. R. **Bramley**, G. Kachergis, L. Bertram, V. Crupi, B. Meder, and J. D. Nelson (in prep). Charting the Landscape of Human Curiosity.

### Peer reviewed articles

11. **Bramley**, N. R., T. Gerstenberg, R. Mayrhofer, and D. A. Lagnado (2018). Time in causal structure learning. *Journal of Experimental Psychology: Learning, Memory & Cognition*.
12. **Bramley**, N. R., P. Dayan, T. L. Griffiths, and D. A. Lagnado (2017). Formalizing Neurath's ship: Approximate algorithms for online causal learning. *Psychological Review* **124**(3), 301–338.
13. **Bramley**, N. R., R. Mayrhofer, T. Gerstenberg, and D. A. Lagnado (2017). Causal learning from interventions and dynamics in continuous time. In: *Proceedings of the 39$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
14. Coenen, A., N. R. **Bramley**, A. Ruggeri, and T. M. Gureckis (2017). Beliefs about sparsity affect causal experimentation. In: *Proceedings of the 39$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
15. Schulz, E., E. D. Klenske, N. R. **Bramley**, and M. Speekenbrink (2017). Strategic exploration in human adaptive control. In: *Proceedings of the 39$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
16. **Bramley**, N. R., T. Gerstenberg, and J. B. Tenenbaum (2016). Natural science: Active learning in dynamic physical microworlds. In: *Proceedings of the 38$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, pp.2567–2573.
17. McCormack, T., N. R. **Bramley**, C. Frosch, F. Patrick, and D. A. Lagnado (2016). Children's Use of Interventions to Learn Causal Structure. *Journal of Experimental Child Psychology* **141**, 1–22.
18. **Bramley**, N. R., P. Dayan, and D. A. Lagnado (2015). Staying afloat on Neurath's boat: Heuristics for sequential causal learning. In: *Proceedings of the 37$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, pp.262–267.
19. **Bramley**, N. R., D. A. Lagnado, and M. Speekenbrink (2015). Conservative forgetful scholars: How people learn causal structure through interventions. *Journal of Experimental Psychology: Learning, Memory & Cognition* **41**(3), 708–731.
20. **Bramley**, N. R., T. Gerstenberg, and D. A. Lagnado (2014). The order of things: Inferring causal structure from temporal patterns. In: *Proceedings of the 36$^{th}$ Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society, pp.236–242.

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### Posters

21. **Bramley**, N. R., J. D. Nelson, M. Speekenbrink, V. Crupi, and D. A. Lagnado (2014). *What should causal learners value?* Poster presented at the Annual Meeting of the Psychonomic Society.
22. **Bramley**, N. R., M. Speekenbrink, and D. A. Lagnado (2013). *Mechanisms of active causal learning*. Poster presented at the 35th Annual Meeting of the Cognitive Science Society.

### Miscellaneous

23. **Bramley**, N. R. (2014). *Book Review: Future-Minded: The Psychology of Agency and Control by Magda Osman*. In: *The London School of Economics Review of Books*.

### Theses

24. **Bramley**, N. R. (2017). "Constructing the world: Active causal learning in cognition". PhD thesis. UCL.
25. **Bramley**, N. R. (2013). "Algorithms for active causal learning". MRes thesis, UCL.
26. **Bramley**, N. R. (2011). "Mechanisms of active causal learning". MSc thesis, UCL.

## Supervision

**Graduate student projects**

Anselm Rothe (2017) – *Active learning strategies in the game Mastermind*
Ethan Ludwin–Peery (2017) – *Testing the assumptions of the intuitive physics theory*
Zach Davis (2017) – *Complex control with continuous variables in continuous time*
Zhiwei Li (2017) – *Predicting engagement via the temporal dynamics of belief, surprise and suspense*

**Masters dissertations**

Pablo León Villagrá (2015)– *Eliminating Markov violations by distinguishing structure and noise*
Alexandra Surdina (2014) – *Should I stay or should I go? Decisions under temporal uncertainty*
George Deane (2014) — *Integrated information theory: An empirical theory of phenomenal consciousness*

## Grants

NSF "Exploring the logic of discovery" – Computational Cognition, as co-PI with Professors Fei Xu and Tom Griffiths, Berkeley (in revision)

## Awards and Scholarships

£500 EPS Grindley Grant (2016)
£1204 SLMS Graduate School Conference Fund (2016)
$500 Robert J. Glushko and Pamela Samuelson Foundation Award for top 20 student papers at CogSci (2015)
£1470 SLMS Graduate School Conference Fund (2015)

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£3000 Bogue Research Fellowship from UCL funding 3 month visit to UC Berkeley and NYU in the USA (2015)

£79,600 London Centre for Financial Computing and Analytics 4-year EPSRC PhD scholarship (2012 – 2016)

£150 Award for best performing student in MSc Cognitive Decision Sciences (2011)

## Invited talks

Oct 2017 Tenenbaum Lab, MIT, Cambridge, MA, USA

Aug 2017 ILCC series, Informatics Forum, University of Edinburgh, UK

Mar 2017 ConCats, NYU, New York, NY

Mar 2016 Summerfield lab, Experimental Psychology, University of Oxford, UK

Oct 2015 London Judgment and Decision Making Group, UCL, London, UK

Jul 2015 Decision Making Symposium, Birkbeck, London, UK

Mar 2015 Computational Cognitive Science Lab, UC Berkeley, CA, USA

Feb 2015 Centre for Logic, Language and Cognition, University of Turin, Italy

May 2014 Max Planck Institute for Human Development, Berlin, Germany

## Conference & Workshop Presentations

Oct 2017 Moore Sloane Data Science Summit, New Orleans, LA, USA

Jul 2017 CogSci2017, London, UK

Feb 2017 Gureckis lab talk, NYU, New York, NY, USA

Aug 2016 CogSci2016, Philadelphia, PA, USA

Aug 2016 ICT16, Brown University, Providence, RI, USA

Aug 2015 CogSci2015, Pasadena, CA, USA

Jul 2014 Decision making Bristol, University of Bristol, UK

Jul 2013 SPUDM24, ISCE, Barcelona, Spain

Jul 2013 MathPsych, Potsdam, Germany

Mar 2012 TeaP (Conference on Experimental Psychology), Mannheim, Germany

Feb 2012 Causality Workshop, Causal Cognition Group, UCL, London, UK

Aug 2011 Causality Workshop, Causal Cognition Group, UCL, London, UK

Mar 2011 English Graduate Conference on Lies and Deception, UCL, London, UK

## Symposia and conferences organised

Aug 2018 "Program induction" CogSci018, Madison, Wisconsin
Discussants: Josh Tenenbaum, Noah Goodman, Steven Piantadosi, Marie Almaric, Eric Schulz, Neil Bramley. More TBC.

Aug 2016 "Beyond Bayes nets" ICT16, Brown University
Discussants: James Woodward, Anna Coenen, Neil Bramley, Elias Bareinboim and Steven Sloman

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Sep 2013 "Forecasting, monitoring, controlling: Dealing with a dynamic world", UCL
One day conference featuring Brad Love, Magda Osman, Nigel Harvey, Stephan Lewandowsky, Stian Reimers and many others

## Professional service

2012–present **Reviewer**.
*Journal of Experimental Psychology: General* (1), *Journal of Experimental Psychology: Learning, Memory & Cognition* (5), *Memory & Cognition* (4), *Cognition* (1), *Psychological Science* (1), *Cognitive Science* (2), *Topics in Cognitive Science* (1), *Journal of Behavioral Decision Making* (1), *Experimental Psychology* (1), *Quarterly Journal of Experimental Psychology* (1), *Open Mind* (1), *Annual Meeting of the Cognitive Science Society* (10).

2017–present **Seminar series organizer**, *NYU*, New York, NY.
ConCats (Concepts and categories) series in Psychology department.
Responsibilities:
- Inviting and hosting speakers

2012–2016 **Seminar series organizer**, *UCL*, London, UK.
London Judgment and Decision Making Seminar Series
Responsibilities:
- Inviting and hosting speakers
- Managing a small budget

## Computer skills

Modelling / statistics: C, Cogent, Lisp, Mathematica, MATLAB, Python, Pytorch, R, Scikit Learn, SPSS, Stan, WinBUGS

Web development: AWS, ActionScript, Box2D, CSS, Flash, Flex, HTML5, Git, Java, Javascript, Jekyll, Perl, PHP, PsiTurk, Ruby, SQL

Misc: Illustrator, LaTeX, Sublime, Microsoft Office

## Languages

English **Native**

Spanish **Intermediate**

German **Basic**

## References


Prof David Lagnado
Experimental Psychology
University College London
26 Bedford Way, 203
London, WC1H, 0AP
+44 20 7679 5389
d.lagnado@ucl.ac.uk

Prof Peter Dayan
Gatsby Computational Neuroscience Unit
University College London
25 Howlands Street, 241
London, W1T 4JG
+44 20 3108 8101
dayan@gatsby.ucl.ac.uk

Prof Todd Gureckis
New York University
Department of Psychology
6 Washington Place, 859
New York, NY 10003
+1 212 998 3794
todd.gureckis@nyu.edu

Prof Tom Griffiths
University of California, Berkeley
Department of Psychology
Tolman Hall, 3123
Berkeley, CA 94720
tom_griffiths@berkeley.edu

(more available upon request)

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