

Joshua Samuel Harvey

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RESEARCH

2019-2020 **Postdoctoral Researcher, Dept Experimental Psychology, University of Oxford**
Funding The Arts and Humanities Research Council
Advisor Prof Hannah Smithson
Project [The Ordered Universe: Interdisciplinary readings of medieval science](#)

EDUCATION

2015-2019 **DPhil Candidate in Engineering Science, Pembroke College, University of Oxford**
Affiliations Engineering Science, Experimental Psychology, The Oxford Research Centre in the Humanities
Supervisors Prof Clive Siviour (ES), Prof Hannah Smithson (EP)
Thesis [Modern engagements with medieval science: sensing and perceiving light and sound](#)
Funding The Andrew W. Mellon Foundation, The Clarendon Fund

Sept 2018 **European Summer School on Visual Neuroscience, Rauschholzhausen, Germany**

July 2018 **Vision Understanding and Machine Intelligence Summer School, Porto, Portugal**

2015 **Visiting Scientist, Instituto Butantan, Brazil**
Affiliations Laboratory of Pain and Signalling, supervised by Dr Vanessa Zambelli
Project [The biochemical mechanisms of action of animal venom-derived analgesics](#)

2014-15 **Part II Masters Student, Weizmann Institute of Science, Israel**
Affiliations Visiting Student at the Department of Molecular Cell Biology, supervised by Prof Moshe Oren
Thesis [Signal crosstalk between oncogenes and tumour suppressor genes in the Hippo pathway](#)

2011-15 **M.Biochem in Biochemistry (with honours), 2.i, Trinity College, University of Oxford**
Supervisor Prof Louis Mahadevan
Research placement at Weizmann Institute of Science, Israel (Summer 2012)

INTERNSHIPS

Spring 2017 Mathematics, Modelling & Simulation, The National Physical Laboratory
Data-driven signal clustering and analysis of MRI myocardial perfusion data

Summer 2014 Journals Department, The Royal Society of Tropical Medicine and Hygiene
Quantitative analysis of competitor journal performance and publication trends

FUNDING AND AWARDS

2019 ICVS Student Travel Award
2018 Pembroke College Santander Graduate Scholarship
2018 The Colour Group of Great Britain WD Wright Travel Award
2015-18 Clarendon Scholarship and Andrew W. Mellon Foundation Studentship
2015 Rayhan Davis Scholarship
2015 Oxford Undergraduate Research Award
2014-15 Trinity College Titley Scholarship for academic achievement
2014 Trinity College Mitchell Fund Award for research
2012-14 Trinity College Titley Exhibition for academic achievement
2012 Trinity College Sarah and Nadine Pole Scholarship for research

TEACHING

Seminars and summer schools

- 2019** RealVision Training School, Pembroke College, Oxford
Practical workshop on rendering and computer graphics for psychophysics
Practical workshop on suprathreshold scaling methods in psychophysics
Lecture on material perception
- 2019** Seminar on Perception, Structuring Nature summer school, Humboldt-Universität zu Berlin
- 2017-19** Course director, OxNet summer school, University of Oxford (lectures, seminars and tutorials)
- 2018/19** Seminar on Perception, OxNet students, University of Sunderland
- 2017** Graduate workshop with Prof Giles Gasper, Department of History, Swansea University

Tutorials (University of Oxford)

- 2019** Part 1 Perception tutor for PPL/EP undergraduates
Regents Park, St Edmund's Hall, St Catherine's Colleges (7 students)
- Topics** [Vision \(colour, spatial, motion\)](#), [hearing](#), [mental imagery](#), [multisensory integration](#)
- 2018** Prelims Sensory Processes and Perception tutor for PPL/EP undergraduates
Brasenose College (3 students)
- Topics** [Neural signals](#), [vision](#), [perception and action](#), [computational neuroscience](#)

Practicals (University of Oxford)

- 2019** Module leader, Part 1 Perception Core Practical for PPL/EP undergraduates
Lectures, practical (contrast sensitivity function), assessment (59 students)
- 2017-2019** Programming demonstrator (Matlab), Engineering Science undergraduates

INVITED TALKS

- April 2019** Medieval VFX: optics, visual perception and attention in polychrome sculpture
Colour and Visual Computing Laboratory, Norwegian University of Science and Technology
- April 2019** Metal matters: materiality and perceptual realness in medieval polychrome sculpture
'Perceiving matter' seminar at Museum of Cultural History, University of Oslo
- Nov 2018** Mechanisms of visual vocabulary: Optics & visual perception of medieval polychrome sculpture, The Colour Group of Great Britain, City University, London
- May 2018** Medieval and modern visual alchemy: Material and digital 'transmutation' of chromatic statistics, The Media Lab, Massachusetts Institute of Technology
- March 2018** Metallic properties of rendered and real objects
Executive members of The Estée Lauder Companies, Pembroke College, Oxford
- Feb 2018** A history of seeing sound: from medieval phonetics to high-speed photography
The Cavendish Laboratory, University of Cambridge
- Dec 2017** The scientific world of Robert Grosseteste: natural phenomena in historical perspective with Dr Giles Gasper, Department of History, Swansea University
- April 2017** On the generation, visualization, and perception of sound
Aspectus and *Afectus*: Understanding and Feeling Conference, Georgetown University

PUBLICATIONS

Harvey JS, White RC, Smithson HE, McLeish TCB, Howard DM, Coleman J; “Instrumental motions: Shaping and perceiving speech sounds” in Gasper GEM, McLeish TCB, Panti C, Smithson HE eds. “Knowing and Speaking: Robert Grosseteste’s *De artibus liberalibus* ‘On the Liberal Arts’ and *De generatione sonorum* ‘On the Generation of Sounds’. Edition, Translation, and Interdisciplinary Analysis, No. 1 in The Scientific Works of Robert Grosseteste, Oxford, Oxford University Press (forthcoming, 2019)

Harvey JS, Smithson HE, Siviour CR, Gasper GEM, Sønnesyn SO, McLeish TCB, Howard DM; “A thirteenth-century theory of speech”, *Journal of the Acoustical Society of America*, **146**, 937-947 (2019)

Harvey JS, Morimoto T, Spitschan M; “The neon fruit illusion: a fresh recipe for colour science demonstrations”, *Perception*, **48**, 242-247 (2019)

Pearce AM, **Harvey JS**, Smithson HE, White RC; “Hand-foot coupling: An advantage for crossed legs”, *Perception*, **48**, 356-359 (2019)

Harvey JS, Siviour CR, Smithson HE; “From spectra to perceptual color: Visualization tools for the dimensional reduction achieved by the human color sense”, *Eurographics 2018* [poster and short paper]

Harvey JS, Smithson HE, and Siviour CR; “Raw high-speed schlieren footage of acoustic waves in air for subsequent computational analysis and audio recovery,” *Data in Brief*, **19**, 1647-1649 (2018)

Harvey JS, Kollandsrud K, Smithson HE; “Not all that glitters: probing material perception with a physical imitation-gold stimulus”, *Perception*, **47**, 572-572 (2018) [abstract]

Harvey JS, Smithson HE, and Siviour CR; “Visualization of acoustic waves in air and subsequent audio recovery with a high-speed schlieren imaging system: Experimental and computational development of a schlieren microphone,” *Optics and Lasers in Engineering*, **107**, 182-193 (2018)

Harvey JS, Farrant TJ; “*Aspectus* and *Affectus*: Robert Grosseteste, Understanding and Feeling, a report from the conference at Georgetown University”, *Revista Española de Filosofía Medieval*, **24**, 279-283 (2017)

Farrant TJ, **Harvey JS**; “Understanding and feeling: theological and psychological reflections through the lens of *Aspectus* and *Affectus*”, *Bulletin de Philosophie Médiévale*, **59**, 262-272 (2017)

Harvey JS, Smithson HE, Siviour CR, Gasper GEM, Sønnesyn SO, Tanner BK, McLeish TCB; “Bow-shaped caustics from conical prisms: a 13th-century account of rainbow formation from Robert Grosseteste’s *De iride*,” *Applied Optics*, **56**:19, G197-G204 (2017)

Young LK, **Harvey JS**, Hauerich AK, Siviour CR, Smithson HE; “Testing and validation of the use of an AOSLO for studying fixational eye movements”, *Journal of Eye Movement Research* (in preparation)

PRESENTATIONS

Harvey JS, Smithson HE; “Material qualities, image statistics, and visual features of coated metal surfaces,” 25th Symposium of the International Colour Vision Society, Riga, Latvia, July 2019 [presentation]

Harvey JS; “Seeing sound as movement in the medieval mind,” International Medieval Congress, Leeds, UK, July 2019 [presentation]

Harvey JS, Smithson HE; “Mechanisms of visual vocabulary in medieval polychrome sculpture,” European Conference on Visual Perception, Trieste, Italy, Aug 2018 [poster]

Harvey JS; “Medieval and modern materials: practice, optics, and visual perception,” The Ordered Universe and International Robert Grosseteste Society Conference, Oxford, UK, April 2018 [presentation]

Spitschan M, **Harvey JS**, Morimoto T, Smithson HE; “Real metameric illuminants with maximum melanopsin contrast”, AVA Spring Meeting, Bradford, UK, March 2018 [presentation]

Harvey JS, Morimoto T, Spitschan M, Smithson HE; “Do observers optimise visual search of materials during an illuminant discrimination task?”, The Probabilistic Brain Workshop, Durham, March 2018 [poster]

Harvey JS, Morimoto T, Spitschan M, Smithson HE; “Not all that glitters: probing material perception with a physical imitation-gold stimulus”, Applied Vision Association Xmas Meeting 2017, Dec 2017 [poster]

Harvey JS; “Sensory perception: medieval motivations and insights”, Department of Engineering Science, University of Oxford, May 2017 [presentation]

Harvey JS; “Mapping Grosseteste’s medieval vowels: production, propagation, perception”, Ordered Universe Symposium, University of Notre Dame, Rome Global Gateway, April 2016 [presentation]

Harvey JS; “Exploring the crosstalk between p53 and the Hippo effector Taz”, Laboratory of Pain and Signalling, Instituto Butantan, São Paulo, Aug 2015 [presentation]

PUBLIC ENGAGEMENT

- Jan 2019** Public lectures and hands-on demonstrations, Napa Lighted Art Festival, CA
"Beyond color: from medieval color spaces to metamers" (with Alexandra Carr)
"Beyond the material: art, science and lustre" (with Prof Henrike Lange)
- Aug 2018** Illusion exhibit at *Un Mare Di Illusioni*, European Conference on Visual Perception, Trieste
"Metamesmerizing!"
- Feb 2018** Public lecture and hands-on demonstration, e-Luminate Festival, Cambridge
"Weaving a rainbow"
- Dec 2017** Hands-on demonstrations and talks at Being Human Festival, Oxford
"Discover medieval optics"
- Nov 2015** Poster presentation and public hands-on demonstrations at Being Human Festival, Durham
"De luce: a medieval big bang" and "De colore: Grosseteste's treatise on colour"

ASSOCIATIONS

The Applied Vision Association, the Colour Group of Great Britain, the International Colour Vision Society

SKILLS

- Programming** Matlab with a focus on Signal/Image/Audio Processing, Statistics, Optimisation
Python (TensorFlow), R, JavaScript, HTML5 and CSS, LaTeX
- Graphics** Blender, physically-based rendering, Inkscape, GIMP
- Wet Lab** Tissue culture, qPCR, Western blots, flow cytometry, immunofluorescence
microscopy, perfusion fixation and nociception assays (mouse)
- Optics** High speed photography, schlieren imaging, digital image correlation, electronics
- Psychophysics** Display technology, experiment design (PsychToolbox, PsychoPy), eye tracking,
suprathreshold scaling, colorimetry

OTHER ROLES

- 2016-18** Graduate Welfare Officer, Pembroke College, University of Oxford
- 2017** Organiser, Ordered Universe symposium at Pembroke College (budget of ~£7,500)
- 2014-15** Secretary and Webmaster, Trinity College Chapel Choir
- 2013-15** Bass choral exhibitor, Trinity College Chapel Choir
- 2013-14** Treasurer, Trinity College Music Society (budget of ~£2,500)

OTHER INTERESTS

Choral music, science and art, history of science, travelling, world cuisine

REFERENCES

Prof. Hannah Smithson (Advisor)
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Prof. Clive Siviour (DPhil Supervisor)
Tutorial Fellow in Engineering Science
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