

# Kate McCallum

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## Summary

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I am a PhD candidate at the University of Brighton, funded by the Arts and Humanities Research Council TECHNE consortium, completion expected fall 2019. My work consists in fine art practice-led ethnographic research that uses theory from linguistic pragmatics theory to create a broad picture of communication in the world of mathematical research.

I curate public exhibitions showcasing emerging artists in the south of England and exploring art practice as a research method. Themes have included encounters between artists and the mathematical world, a showcase of practice-based methods brought to bear on research into the hidden structures of social media and on abstracted communication, and an exploration of modelling in virtual reality as a tool to allow an exhibition to exist across multiple, interconnected media.

I am co-chair of exhibitions for the Bridges Conference for Mathematics and the Arts; the yearly international show is the largest of its kind in the world.

## Projects

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*Fan Futures* - interdisciplinary collaborative project using AI and natural language processing in the creation of art objects that grapple with the question of the future of humanity. Winner of the Opposites Attract competition at the University of Brighton, with Majed Al-Jefri and Kate Monson. April 2017-

*Speculative Fictions workshop series*, ONCA gallery, Brighton. Workshop series exploring climate change, sustainability and collaborative writing, developed by the University of Brighton in collaboration with the One Network for Conservation and the Arts gallery. This year-long, five-workshop series explores collective imaginings of possible futures in a damaged environment, inspired by the work of Donna Haraway and Anna Tsing. October 2017 -

## Publications

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### Peer-reviewed Journals

“The Aesthetics of Theory Selection and the Logics of Art”, co-authored with Ian O’Loughlin, *Philosophy of Science*, forthcoming.

“FanFutures”, *Journal for Artistic Research*, 17, 2019

“Untangling Knots: Art, Communication, and Practice in Knot Theory Diagramming”, *Journal for Humanistic Mathematics*, 19 (1), 2019

“Strange Tools Indeed: Alva Noë and Art as Reorganisation.” *Essays in Philosophy* (on-line), 19, 2018.

“Mathematics, manifest: a review of *Mathematics: the Winton Gallery*”, *Bulletin for the British Society for the History of Mathematics*, 2017

### Currently under review

“Cognition, emphasis, and the viewer's experience of fine art”, co-authored with Scott Mitchell and Thom Scott-Philips, submitted to *Review of Philosophy and Psychology*

## Peer-reviewed Conference Proceedings

“Making Sense of the Incomprehensible: A Serendipitous Encounter with Naivety as a Tool for Telling Tales in Troubled Times”, *AISB 2018 Symposium: Cybernetic Serendipity Reimagined*, University of Liverpool, Liverpool, United Kingdom, April 4<sup>th</sup>-6<sup>th</sup> 2018, co-authored by Majed Al-Jefri and Kate Monson. **Winner of Best Paper award.**

“Reimagining the Mathematical Paper”, *Proceedings of Bridges 2018: Mathematics, Music, Art, Architecture, Culture* (forthcoming)

“Why Do Mathematics Presentations Sometimes Sound Like Cookery Shows?” *Proceedings of Bridges 2016: Mathematics, Music, Art, Architecture, Culture* (2015), Pages 591-594

“Shape in Mathematics Discourse: An Artist Explorer in Mathematics”, *Proceedings of SHAPES 3.0* (2016), Pages 75-80

“Linguistic Oddities: An Artist Explorer at Mathematics Conferences”, *Proceedings of Bridges 2015: Mathematics, Music, Art, Architecture, Culture* (2015), Pages 503–506

## Catalogues edited

*Bridges Art Exhibition Catalog*, years 2014-2017. Edited by Conan Chadbourne, Robert Fathauer, Katie McCallum, and Nathan Selikoff. Tessellations publishing, 2014-7

## Non-Academic

September 2013 – February 2016 I was in a paid role as the UK correspondent for theartblog.org, writing reviews of current exhibitions and reflective pieces

Regular blogger on my research blog, [infiltratemathematics.wordpress.com](http://infiltratemathematics.wordpress.com)

## Selected Exhibitions and Curation

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### Curation and promotion

**Representation and Abstraction: When Artists and Mathematicians Meet**, University of Brighton centre of CEM, Brighton, February-March 2018

I directed and curated this exhibition, partly to bring my research to a relevant audience, and partly to encourage contact between undergraduates in different disciplines within the university, with an emphasis on experimental and exploratory approaches. It culminated in an exhibition in two parts:

1. A project bringing undergraduates in mathematics and fine art together to conceive, plan and realise an exhibition of work documenting their encounters
2. An exhibition of creative practice relating to my PhD research

<https://artistsandmathematiciansmeet.wordpress.com/>

**CORRESPONDENCE**, Prestamex House, Brighton, February 2015

A large show of 14 emerging artists that took place across real and virtual platforms, exploring accessibility and the arts and the politics of representation on different platforms. Awarded £500 funding from IdeasTap. This exhibition took over an entire floor of the Prestamex building in Brighton with a large-scale show that was mirrored by a component in Second Life.

<https://correspondencearchived.wordpress.com/>

For the last four years I have co-curated the **Annual Exhibition of the Bridges Conference for Mathematics and the Arts** ([bridgesmathart.org](http://bridgesmathart.org)), which has taken me to Canada, Finland, the United States and South Korea. The exhibition includes work from around 120 international artists and requires detailed advanced planning with host institutions around the world, as well as coordinating a team of volunteers and communicating extensively with artists before the exhibition begins. This is the largest exhibition of mathematical art in the world and has been reviewed in numerous national newspapers in its host countries.

**A Conjecture on Space**, The Rose Hill, Brighton January 2018

In collaboration with Karl M. V. Waugh, an interactive audio-visual installation exploring attitudes to mathematics and the limits of control

**Surface and Knowledge**, ONCA Gallery, Brighton, August 2016

A collaboration with Jesse Benjamin, showing work that has played a part in practice-based research projects.

<https://infiltratemathematics.wordpress.com/2016/08/28/surface-knowledge/>

**(in)commensurable**, Gallery 40, Brighton, December 2015

A cross-disciplinary exhibition exploring five artists' encounters with mathematics. This included sound and multimedia work from Jon Adams, Rebecca E. Davies, James W. Hedges and Karl M. V. Waugh

[www.incommensurable.org](http://www.incommensurable.org)

**Scale**, Art Nouveau, Brixton, February 2013

Co-curated exhibition and short film night with Jacob V Joyce, an emerging artist whose work explores queer and de-colonising concerns. The exhibition showcased work on the theme of scale, relativity and culture.

## Exhibitions

**Çifteyav**, an exhibition and research project curated by Çağla Özbek and 1 Emrah Serdan, inviting fifteen artists to locate the “knot”s in their respective artistic practices in the inclusive and open structure of an envelope. 2019.

**Imaginative Objects: Reading the Image in Research**, University of Brighton, April 2019

2019 Creative Futures exhibition exploring the use and interpretation of images in research processes.

**Making Representations**, Phoenix Gallery, Brighton, March 2019

A three-day project at Phoenix Gallery Brighton, including a one-day symposium and exhibition opening, led by five artist-researchers whose work touches on questions of representation - architectural, filmic, mathematical, linguistic and photographic.

**Marks Make Meaning**, University of Brighton main gallery, March 2018

Exhibiting animations from my current PhD research in an exhibition featuring work by Anthony Gormley and Rachel Whiteread

<http://arts.brighton.ac.uk/whats-on/gallery/gallery-exhibitions-2018/marks-make-meaning-drawing-across-disciplines>

**Night Contact** curated by Thurston Moore, Brighton Photo Biennial 2014

Contributor to **We Value Your Thoughts**, a document envisioned as a point of departure for discussion and consideration for an exhibition titled Recluse Networking: The Workshop Day One, 26 October 2013 at Standpoint Gallery in London

Exhibit at **Nowhere**, Aragón, Spain. Large-scale sculpture made from recycled materials raising awareness of local environmental issues and campaigns. This project was awarded £300 of funding to aid in its realisation and involved the co-ordination of a small team of volunteers.

**Ori**, The Brick Box, Brixton, August 2012

Exhibiting the work *Corners, Around*

**Mull it over**, Collate presents, Brighton, December 2011

Part of an exhibition of 2-Dimensional work, exhibiting a number of photographs from projects during my time in a self-sufficient community in Aragón, Spain

**Rhizomatic**, Departure Gallery, Southall, International Trading estate, October-November 2010

Exhibiting the work *From Wire to Line*

**Residency in the Open Market**, The Open Market, Brighton September – October 2010

Culminating in the work *Storage Device Capacity*

**University of Brighton Burt Brill and Cardens Degree Show**, The University of Brighton, May 2010

Exhibiting the work *Grey Shades Reconstruction Centre*

**The Claremont**, Hove, May 09 – September 09

Exhibiting the work *Shift: Unsteady*

**Side by Side**, University of Brighton Gallery, Grand Parade, Brighton April 09  
Exhibiting the work *Shift: Unsteady*

## Funding and Awards

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Best paper award at AISB 2018 Symposium: Cybernetic Serendipity Reimagined, University of Liverpool

Awarded a 3-month AHRC-funded placement at the Royal Institution in London, the foremost institution for the communication of science and home of the famous Christmas Lectures. This placement will see me joining the existing media team at this prestigious organisation and working on evening events, YouTube content and podcasts communicating complex contemporary scientific advances to a public audience. April – July 2018 worth £6200

Highly competitive AHRC funding from the TECHNE consortium for my PhD research, an art practice-led approach to diagramming and mathematics communication, awarded June 2016, worth £60,000

Awarded funding by IMAGINARY.org for the IMAGINARY conference, Berlin, July 2016, worth £500

Awarded the first ever McLaren Bursary from the University of Brighton to pursue my MRes research, September 2015, worth £3000

Awarded funding from IdeasTap for commissioning, advertisement and running costs of *CORRESPONDENCE*, December 2014, worth £500

June and Sidney Crown University-Wide Dissertation Prize 2010 awarded to “[Art and the Mathematical Theorem: When Parallel Lines Meet](#)”, worth £1000. Also the subject of a feature in Spindle magazine.

## Invited talks

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“Materials and Practices in Mathematical Communication: An Artist's Ethnography of Research Mathematics”, invited talk at the University of Hamburg, 18<sup>th</sup> June 2018

“Situating Mathematical Communication: An Artist's Ethnography of Research Mathematics”, invited talk at *Mathematical Collaboration II* at St. Andrew's, Edinburgh, 8<sup>th</sup> April 2018

“Situating Mathematical Communication: An Artist's Ethnography of Research Mathematics”, invited talk at the *University of Brighton Postgraduate Research Forum*, 21<sup>st</sup> February 2018

“Situating Mathematical Communication: an Art Practice Approach to the Settings, Interactions and Material Practices of Contemporary Mathematical Research”, invited colloquium at the University of Brighton, 12<sup>th</sup> May 2017

“Situating Mathematical Communication”, invited colloquium at Pacific University, Oregon, USA, 4<sup>th</sup> April 2017

Invited panellist at *Knots in Science and Art*, a Leverhulme-funded event with Sir Michael Atiyah filmed for online public broadcast, at the University of Edinburgh, 30<sup>th</sup> November 2016

## Conference Presentations

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“Situating Mathematical Communication: An Artist's Ethnography of Research Mathematics”, Graduate Symposium at *10th International Conference on the Theory and Application of Diagrams*, June 18th-22nd 2018

“Making Sense of the Incomprehensible: A Serendipitous Encounter with Naivety as a Tool for Telling Tales in Troubled Times”, *AISB 2018 Symposium: Cybernetic Serendipity Reimagined*, University of Liverpool, Liverpool, United Kingdom, April 4<sup>th</sup>-6<sup>th</sup> 2018 —co-presenting with Majed Al-Jefri and Kate Monson. **Winner of Best Paper award.**

“FanFutures”, *Artificial Lives*, University of Sussex, 1<sup>st</sup>-2<sup>nd</sup> December 2017—co-presenting with Majed Al-Jefri and Kate Monson

“Hushed Tones: the Modern Art Gallery as Intensifier”, *Beyond Meaning*, Athens, Greece, 13<sup>th</sup> – 15<sup>th</sup> September 2017—co-presenting with Scott Mitchell

“Gestalt and Anomaly: the aesthetics of theory selection and the logics of art”, *International Conference for the Philosophy of Science*, Lisbon, Portugal, 14th-16th December 2016—co-presenting with Ian O’Loughlin

“An Embodied Approach to Diagramming in the Field of Mathematics”, *Embodied Methodologies*, Royal Holloway, University of London, 4<sup>th</sup>-5<sup>th</sup> November 2016

“Guided Interpretation in Mathematical Diagramming”, animation-based film showed at *Memory and Perception*, Rich Mix, London, 3<sup>rd</sup> November 2016

“Doing Mathematics: Content and Practices in Situated Abstraction”, *Ninth Meeting on Embodied and Situated Language Processing*, Pucón, Chile, 6th-9th October, 2016—co-presenting with Ian O’Loughlin

“Why Do Mathematics Presentations Sometimes Sound Like Cookery Shows?”, *Bridges Conference for Mathematics and the Arts*, Jyvaskyla, Finland, August 2016

“Shape in Mathematics Discourse: An Artist Explorer in Mathematics”, *SHAPES 3.0*, part of CONTEXT, Larnaca, Cyprus, November 2015

“Linguistic Oddities: An Artist Explorer at Mathematics Conferences”, *Bridges Conference for Mathematics and the Arts*, Baltimore, USA, July 2016

## Teaching and student-centred workshops

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Paid lecturer position as dissertation supervisor for third-year students on Fine Art Critical Practice at the University of Brighton, giving individual tutorials to help students to develop their final long essay for assessment. I also had responsibility for marking these essays and taking part in the moderation process.

*Art Practice as Research*, workshop with third-year students of Fine Art Sculpture, 28<sup>th</sup> December 2017

*Artists’ Diagramming and the Problem of Representation*, workshop with first-year students of Fine Art Sculpture, 3<sup>rd</sup> December 2017

*An Artist Explorer in Mathematics: Observing the Communicative Practices and Material Settings of Abstract Thought*, talk given to third-year mathematics undergraduates, 14<sup>th</sup> March 2017

*Curating a Gallery Show*, talk and seminar for first-year fine art undergraduates, 11<sup>th</sup> March 2015

## Service to the Field

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Student representative member of the College Research and Ethics Committee 2016 – 2017

Served as a reviewer for the *Journal for Mathematics and the Arts*

## Media work

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April – July 2018 I will be on a placement at the prestigious Royal Institution, an organisation world-famous for science communication and the Christmas Lectures, developing media for public engagement such as podcasts and YouTube videos.

I have grown the following of @BridgesMathArt, the twitter for the Bridges Conference for Mathematics and the Arts, from the ground up to 1,587 followers. This twitter has been featured in several articles and 'best of twitter' lists, in the Guardian newspaper and on wired.com.

My research is documented on the online blog [infiltratemathematics.wordpress.com](http://infiltratemathematics.wordpress.com)

September 2013 – February 2016 I wrote for [theartblog.org](http://theartblog.org) as their UK correspondent, and have been published in the South London Press

## Public Workshops

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*Hyperbolic Crocheted Coral Reef*, Bright Sparks, Brighton Science Festival, July 2015

A workshop explaining how the hyperbolic geometry of coral works and can be modelled using crochet

White Night, The Open Market, Brighton, October 2010

Collaborative light sculpture *Transformations*

October 2009

*Build a Giant Forest* - The Big Draw, Kew Gardens, London

Collaborating on a large-scale drawing in time, led by Tom Grimsey

## Volunteering

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*Brighton Women's Centre* - volunteer supporting women to access information about services and the law, including a paid role with the Financial Inclusion project. This role involved training in ethical practice, sensitivity to many aspects of diversity, and active listening as a support method.—September 2013 - January 2015

## Education

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2019 (expected) – University of Brighton - Linguistics and Fine Art PhD with practice-based component

PhD research: *Situating Mathematical Communication: An Artist's Ethnography of Research Mathematics*

2016 - MRes Arts and Cultural Research (Distinction)

2010 - Fine Art Sculpture BA – (First Class Honours)

2006 – University of Hertfordshire - Foundation Diploma in Art & Design (Distinction)