

# DR. MAZVIITA CHIRIMUUTA

## CURRICULUM VITAE

### CONTACT

1017 Cathedral of Learning,  
University of Pittsburgh,  
4200 Fifth Avenue, Pittsburgh, PA,  
USA, 15260

**tel:** +1 412 624 5889

**email:** mac289@pitt.edu

### AREAS OF SPECIALISATION

Philosophy of perception (colour); Philosophy of neuroscience and psychology

### AREAS OF COMPETANCE

Philosophy of mind; General philosophy of science

### EMPLOYMENT

September 2017 - present. Associate Professor with tenure,  
Department of History and Philosophy of Science, University of Pittsburgh.

2011- September 2017. Assistant Professor (tenure track),  
Department of History and Philosophy of Science, University of Pittsburgh.

2012 – present. Secondary faculty, Department of Philosophy, University of Pittsburgh.

2011 – present. Adjunct faculty, Center for the Neural Basis of Cognition,  
University of Pittsburgh and Carnegie Mellon University.

2010-2011 Post-doctoral Research Fellow, Department of Psychology,  
University of Birmingham

2010-2012 Honorary Research Fellow, Department of Philosophy,  
University of Bristol

2008-2009 James S. McDonnell Postdoctoral Research Fellow,  
Philosophy, Neuroscience and Psychology program,  
Department of Philosophy, University of Washington at St. Louis.

2005-2008 Australian Research Council Post-Doctoral Fellow, School of  
Philosophy and Bioethics, Monash University.

2004 Post-doctoral researcher, Istituto di Neuroscienze, CNR Pisa, Italy

## **EDUCATION**

2004 - PhD University of Cambridge (Department of Physiology)  
Supervisor: Dr. David Tolhurst

2000 - BSc University of Bristol (First class joint honours, Philosophy & Psychology)

## **RESEARCH GRANTS & FELLOWSHIPS**

2015 Research Grant from University of Pittsburgh: Special Initiative to Promote Scholarship in the Humanities and Creative Arts (\$5,336)

2013 Faculty Fellowship, Humanities Center, University of Pittsburgh.

2010-2011 Wellcome Trust, *Value in People* award. £27,000

2005-2008 Australian Research Council Discovery-Projects Grant, 'The Epistemology of Colour Vision' with Ian Gold. AUS \$202,482  
Role - Chief Investigator.

2000-2003 Doctoral studentship, Medical Research Council of UK

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## **TEACHING**

### **2011-present University of Pittsburgh**

#### *Undergraduate:*

HPS 616/1616 Artificial Intelligence and the Philosophy of Science

HPS 1670 Philosophy of Neuroscience

HPS 1702 Junior/Senior Seminar

CMU 80-220 Philosophy of Science

#### *Graduate:*

HPS 2541 History of the Neurosciences

HPS 2631 Methods and Interpretation in Cognitive Neuroscience

HPS 2635 Central Problems in Systems Neuroscience

HPS 2647 Representation, Perspectives, and Pluralism

HPS 2663 Perception

HPS 2687 Epistemology of Experimental Practices

HPS 2699 Experimentation and Scientific Practice

#### *Directing Thesis Research:*

2018-present Alessandra Buccella, "Objective Perception, Constancy, and Stability for Action: a holistic approach"

#### *Thesis Committee Service:*

Completed Dissertations:

Joseph McCaffrey, "Mental Function and Cerebral Cartography: Functional Localization in Neuroimaging Research" (Defended May 2016)

Lauren Ross, "Causal Explanation in the Biological Sciences: Accounting for Complexity" (Defended April 2016)  
Mikio Akagi, "Cognition in Practice" (Defended March 2016)

2014-present: Lei Jiang, "Representation in the Cognitive Sciences"  
2015-present: David Colaco, "An Investigation of Scientific Phenomena"  
2016-present: Worth 'Trey' Boone, "Nonreductive Integration: Perspectives on Cognitive Neuroscience and the Mind-Brain Relation."  
2016-present: Evan Pence, "Three Paradigms in Animal Cognition"  
2016-present: Morgan Thompson, "Networks in the Life Sciences: Issues in Modeling and Explanation."  
2017-present: Zina Ward, "Individual differences in cognitive science: conceptual, methodological, and ethical issues."

**2008-2009 Washington University at St. Louis.**

Undergraduate Philosophy, Neuroscience and Psychology (PNP) seminar on perception and action.

Undergraduate (PNP) lecture course on brain, mind and consciousness.

**2007 Monash University.** Undergraduate honours course (4th year) in Philosophy of mind and cognitive science.

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## PUBLICATIONS

### Book

Chirimuuta, M. (2015) *Outside Colour: Perceptual Science and the Puzzle of Colour in Philosophy*. Cambridge, MA: MIT Press

### Reviews and Published Responses

Brown, D. (forthcoming) "Critical Notice of *Outside Color*". *Analysis Reviews*

*Philosophy and Phenomenological Research* (2017) Book Symposium on *Outside Color* with essays by Joshua Gert, Anil Gupta and Mohan Matthen.

Lanthier, J. (2016) "Review of *Outside Color*". *Dialogue: Canadian Philosophical Review*

Murphy, A. (2016) "Review of *Outside Color*". *Journal of Aesthetics and Art Criticism*

Westland, S. (2016) "Review of *Outside Color*". *Perception*

Wright, W. (2016) "Review of *Outside Color*". *Philosophy of Science*

Shook, R. J. (2015) "Review of *Outside Color*". *Choice*

Cohen, J. (2015) "Review of *Outside Color*". *Notre Dame Philosophical Reviews*.  
<http://ndpr.nd.edu/news/61949-outside-color-perceptual-science-and-the-puzzle-of-color-in-philosophy/>

Harris, M. (June 2015) "Does Color Even Exist?". *The New Republic*.

#### Award

Choice award for Outstanding Academic Titles, 2015

#### **Articles - History and Philosophy of Science**

(Available to download at <https://outsidecolour.net/visual/>)

Chirimuuta, M. (forthcoming) "Colour in the Scientific Image". Dibner Lecture in History of Science and Technology, to be published as a pamphlet by the Smithsonian Libraries.

Chirimuuta, M. (2018) "Marr, Mayr, and MR: What functionalism should now be about," *Philosophical Psychology*, 31(3):403-418

Chirimuuta, M. (2017) "Hughlings Jackson and the 'Doctrine of Concomitance': Mind-Brain Theorising Between Metaphysics and the Clinic". *History and Philosophy of The Life Sciences*. 39(26).

Chirimuuta, M. (2017) "Précis of *Outside Color*" *Philosophy and Phenomenological Research* 95(1):215-222

Chirimuuta, M. (2017) "Replies to Gert, Gupta and Matthen". *Philosophy and Phenomenological Research* 95(1): 244-255

Chirimuuta, M. (2017) "Crash Testing an Engineering Framework in Neuroscience: Does the Idea of Robustness Break Down?" *Philosophy of Science* 84: 1140-1151

Chirimuuta, M. (2017) "Explanation in Neuroscience: Causal and non-causal." *British Journal of Philosophy of Science*.

Chirimuuta, M. (2017) "Perceptual Pragmatism and the Naturalised Ontology of Colour." *Topics in Cognitive Science*. 9(1): 151 - 171

Chirimuuta, M. (2016) "Vision, Perspectivism, and Haptic Realism." *Philosophy of Science*. 83(5):746

Chirimuuta, M. (2016) "Why the 'stimulus-error' did not go away." *Studies in History & Philosophy of Science, part A*. 56:33-42

Chirimuuta, M. and Kingdom, F. A. A. (2015) "The Uses of Colour Vision: Ornamental, Practical, and Theoretical." *Minds and Machines* 25(2):213-229

Chirimuuta, M. (2014) "Psychophysical Methods and the Evasion of Introspection." *Philosophy of Science* 81(5):914-926

Chirimuuta, M. (2014) "Minimal Models and Canonical Neural Computations: The Distinctness of Computational Explanation in Neuroscience." *Synthese* 191:127-153

Chirimuuta, M. (2013) "Extending, Changing and Explaining the Brain." *Biology and Philosophy*, 28 (4):613-638

Chirimuuta, M. (2008) "Reflectance Realism and Colour Constancy: What would count as scientific evidence for Hilbert's ontology of colour?." *Australasian Journal of Philosophy*, 86(4), 563-582

### **Articles - Vision Science**

To, M.P.S., M. Chirimuuta, and D. J. Tolhurst (2017) Modelling grating contrast discrimination dippers: the role of surround suppression. *Journal of Vision* 17(12):23. doi:10.1167/17.12.23

Tolhurst, D.J., To, M.P.S., Chirimuuta, M., Lovell, P.G., Chua, P.Y. and Troscianko, T. (2010) Magnitude of perceived change in natural images may be linearly proportional to differences in neuronal firing rate. *Seeing and Perceiving*, 23:349-372.

Chirimuuta, M., Morrone, M.C. & Burr, D. (2007). Perceptual learning of modality specific visual attentional effects. *Vision Research*, 47, 60-70

Chirimuuta, M., & Tolhurst, D.J. (2005). Does a Bayesian model of V1 contrast coding offer a neurophysiological account of human contrast discrimination? *Vision Research*, 45, 2943-2959

Chirimuuta, M., & Tolhurst, D.J. (2005). Accuracy or identification of grating contrast by human observers. *Vision Research*, 45, 2960-2971

Chirimuuta, M., Clatworthy, P.L. & Tolhurst, D.J. (2003). Coding of the contrasts in natural images by visual cortex (V1) neurons: A Bayesian approach. *Journal of the Optical Society of America A*, 20, 1253-1260.

Clatworthy, P.L., Chirimuuta, M., Lauritzen, J.S. & Tolhurst, D.J. (2003). Coding of the contrasts in natural images by populations of neurons in primary visual cortex (V1). *Vision Research*, 43, 1983-2001.

### **Book Chapters**

Chirimuuta, M. (forthcoming) "Charting the Heraclitean Brain: Perspectivism and Simplification in Models of the Motor Cortex," in McCoy & Massimi (eds.) *Scientific Perspectivism*. New York: Routledge,

Chirimuuta, M. (2018) "Vision". In Sprevak and Colombo (eds.), *The Routledge Handbook of The Computational Mind*

Chirimuuta, M. (2018) "The Development and Application of Efficient Coding Explanation in Neuroscience" in Saatsi and Reutlinger (eds.) *Explanation Beyond Causation*. Oxford: Oxford University Press.

Chirimuuta, M. (forthcoming) Colour and the Philosophy of Science. In Brown and MacPherson (eds.), *The Routledge Handbook of Philosophy and Colour*

Chirimuuta, M. (2014) The Metaphysical Significance of Colour Categorization: Mind, World, and their Complicated Relation. In Anderson, Biggam, Hough & Kay (eds.) *Colour Studies: a Broad Spectrum*. Amsterdam and Philadelphia: John Benjamins

Chirimuuta, M. & Paterson, M.W.D. (2014) A Methodological Molyneux Question: Sensory Substitution, Plasticity and the Unification of Perceptual Theory. In D. Stokes & M. Matthen (eds.) *Perception and its Modalities*, Oxford University Press.

Chirimuuta, M (2011) Touchy-Feely Colour. In Biggam, Hough and Simmons (eds.) *New Directions in Colour Studies*. Amsterdam and Philadelphia: John Benjamins

Tolhurst, D.J., To, M.P.S., Chirimuuta, M., Lovell, P.G., Chua, P.Y. and Troscianko, T. (2011) Magnitude of perceived change in natural images may be linearly proportional to differences in neuronal firing rate. In J. A. Soloman (ed.) *Fechner's Legacy in Psychology: 150 Years of Elementary Psychophysics*. Leiden and Boston: Brill (reprint of *Seeing and Perceiving* 2010 publication)

Chirimuuta, M. & Gold, I.J. (2009) The embedded neuron, the enactive field?. In Bickle, J. (ed.) *Handbook of Philosophy and Neuroscience*. Oxford: Oxford University Press. (Paperback edition published in 2012.

### **Published Peer-Reviewed Proceedings**

Tolhurst, D.J. and Chirimuuta, M. (2004). The accuracy with which human observers identify the contrast of sinusoidal gratings. *Journal of Physiology* 557P, C64.

Chirimuuta, M. and D.J. Tolhurst (2004). Contrast masking and facilitation in human psychophysical experiments using natural scene stimuli. *Journal of Physiology* M. 555P C163

Chirimuuta, M., Clatworthy, P.L. & Tolhurst, D.J. (2003). Computer simulation of the role of priors in the visual cortex (VI) contrast code. *Journal of Physiology*, 548P, p.115

Clatworthy, P.L., Chirimuuta, M., Lauritzen, J.S., Tolhurst, D.J. (2001).

Computer models of contrast coding by pools of neurons in primary visual cortex (V1). *J. Physiol.* 536.P, 41-42P.

### **Book Reviews and Critical Notes**

Beck, O., M. Chirimuuta, R. Rosenhagen, S. Siegel, D. Smithies and A. Springle (2018) "Discussion of Susanna Siegel's 'Can Perceptual Experiences be Rational?'" *Analytic Philosophy* 59(1): 175-190

Chirimuuta, M. (2011) *Perception*. Review of Bence Nanay (ed.) *Perceiving the World*. 40(7), 883-885.

Chirimuuta, M (2010). *International Studies in the Philosophy of Science*. Review of Jonathan Cohen's *The Red and the Real*. 24: 3, 339 – 342.

Chirimuuta, M (2009). Review of Robert Arp's *Scenario Visualization*. *Quarterly Review of Biology*, 84(2), 198.

### **Service as Editor**

2015 Special Issue for *Minds and Machines* on colour in philosophy and science  
Chirimuuta, M. (2015) "Editorial for Special Issue on Philosophy of Colour"  
*Minds and Machines* 25(2):123-132

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## **PRESENTATIONS (2011-2018)**

### **Invited Talks**

2018 "Your Brain is Like a Computer: Function, Analogy, Simplification"  
Conference on Analogical Reasoning, MCMP-LMU Munich  
Rutgers Center for Cognitive Science, colloquium

"On the Objectivity of Colour"  
Conference on Applied Neo-Pragmatism, William & Mary College

"Prediction, Explanation, and the 'Limits of Science'"  
Colloquium, Department of Philosophy, University of Edinburgh  
Workshop on Explanation, University of Birmingham

"Charting the Heraclitean Brain".  
Philosophy-Neuroscience-Psychology Speaker Series, University of Glasgow  
Department of Philosophy, University of Birmingham

"Why do birds fly, why do neurons fire action potentials, why do neuroscientists talk about representations?" Institute of Philosophy, London.

2017 "Prediction, Explanation, and the 'Limits of Science'" VisCog Lab Meeting, Department of Psychology, Carnegie Mellon University.

"Revisiting the Fallacy of Misplaced Concreteness". Workshop on Grounding the Sensible Qualities, Dept. of Philosophy, UC Berkeley

"The Irreducibility of Colour: Why Primitivists Should be Adverbialists". Workshop on Primitive Colours and Non-Reductive Minds, Brandon University.

"Hughlings Jackson and the 'Doctrine of Concomitance'". History & Philosophy of Science Colloquium series, University of Chicago.

"Colour in the Scientific Image". Dibner Lecture in History of Science and Technology, Smithsonian Museum of American History, Washington DC.

"Why do birds fly, why do neurons fire action potentials, why do neuroscientists talk about representations?"

Keynote lecture at the Graduate Philosophy Conference, University of Waterloo, Ontario.

University of Cincinnati, Philosophy Colloquium series.

2016 "Colour in the Scientific Image". Einstein Forum, conference on vision, Potsdam.

"MetaScience and MetaPhysics: A Friendly Polemic." Keynote lecture at the PhilMiLCog 2016 Conference, University of Western Ontario.

"The Indecisive Murmur of Colour". Washington and Lee College, Colloquium Series.

"Efficient Coding Explanations of Neural Systems."  
Department of Philosophy, McGill University

2015 "The Irreducibility of Color."  
Institute for Research in Cognitive Science, University of Pennsylvania;  
Department of Philosophy, University of Wisconsin, Milwaukee.

"Iconicity and the Secondary Qualities". Workshop on Iconicity, Department of Philosophy, UCLA.

"Ontology of Colour, Naturalised." Minnesota Center for Philosophy of Science, Colloquium Series.

2013 "Colour and the Brain." Mind-Brain Conference, Korea Institute for Advanced Study.



“Efficient Coding Explanation in Neuroscience.” Explaining without Causes Workshop, University of Cologne.

“Colour Metaphysics, and the Brain.” Keynote lecture at the Biosciences Annual Retreat, University of Pittsburgh.

“Perceptual Pragmatism and the Secondary Qualities.” Colloquium at Humanities Center, University of Pittsburgh.

“Colour Adverbialism.” Workshop on Colour and Content, University of Antwerp.

2012 “Colour: In Search of the ‘Basic Phenomenological Facts’”. Barnard-Columbia Perception Workshop, Dept. of Philosophy, Barnard College.

“Ontology for Vision Science”. Behrmann-Tarr-Plaut lab meeting, Dept. of Psychology, Carnegie-Mellon University.

“Some puzzles about brain computer interface.” Intelligent Systems Program seminar series, University of Pittsburgh.

2011 “The Inner (and Outer) Workings of Colour” Dept. of History & Philosophy of Science, University of Pittsburgh

“The Inner (and Outer) Workings of Colour” *More or Less: Varieties of Cortical Colour Vision*, Vancouver BC.

### **Conference Presentations - Philosophy**

2018 “ Why neuroscience (as opposed to neurotechnology) needs theory, and why it may not get it: The case of decoding algorithms” Meeting of the American Philosophy Association, Pacific Division at San Diego

2017 “Critical Response to *The Multiple Realization Book* by Tom Polger and Larry Shapiro.” *The Southern Society for Philosophy and Psychology*, Savannah.

2016 “Crash Testing an Engineering Framework in Neuroscience: Does the idea of robustness break down?”. Re-Engineering Biology Conference, Pittsburgh Center for Philosophy of Science.

“Critical Response to ‘Epistemic charge and the problem of hijacked experience’ by Susanna Siegel.” Pittsburgh Conference on Perceptual Reason.

“Brief Introduction to *Outside Color*” and “Responses to Pautz, Cohen and Gert”. Book symposium on *Outside Color* at the Meeting of the American Philosophical Association, Pacific Division, San Francisco.

“Brief Introduction to *Outside Color*” and “Responses to Brown and Gupta”. Book symposium on *Outside Color* at the *Center for Philosophy of Science*, Pittsburgh.

2015 “Perspectives on the Brain”. ISHPSSB, Montreal.

2014 “The Stimulus error, “Equivocal Correlation”, and Perceptual Constancy”. &HPS5, Vienna.

“Efficient coding explanation in neuroscience: Causal and non-causal”. *British Society for the Philosophy of Science*, Cambridge UK.

“Vision, Perspectivism, and Haptic Realism”. *PSA Symposium on Perspectivism*, Chicago.

2013 ““Cool Experiments” and “False Models”: Intervening and Representing in Neural Systems”. *Workshop on Experimentation in Neuroscience, Philosophy of Science Center*, Pittsburgh, PA

“Colour Relationism and Categorisation” *British Society for the Philosophy of Science*, Exeter UK

“Minimal Models and Canonical Neural Computations” *Lunchtime talk, Philosophy of Science Center*, Pittsburgh, PA

2012 “Psychophysics and the Evasion of Introspection.” Symposium on introspective evidence in the cognitive neuroscience of perception (organisers: Uljana Feest and Gary Hatfield). *Philosophy of Science Association*, San Diego CA.

“Colour Relationism is Realism Enough.” *Joint Session of the Aristotelian Society and the Mind Association*, Stirling UK.

“Philosophy and the Colour Categories”. *Progress in Colour Studies 12*, Glasgow UK.

“Cognitive contributions to color constancy: a case for a subjectivist color ontology” first author: Abdul-Kareem H Ahmed. *Cognitive Neuroscience Society*, Chicago IL.

“What’s to be Learned from Neural Decoding Models?” *British Society for the Philosophy of Science*, Stirling UK.

2011 “Extending, Changing, and Explaining the Brain.” *Society for the Philosophy of Science in Practice*, Exeter UK.

“Changing our Minds about Plasticity and Localisation of Brain Function” *Institute of British Geographers – Symposium on Plasticity*, London UK.

### **Poster Presentation - Psychology**

2012 "Attentional Effects of Working Memory Load and Consolidation During Visual Search" with Kamen Tsvetanov and Glyn W. Humphreys. *Vision Sciences Society*, Naples FL.

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## **SERVICE**

### **Dept. History & Philosophy of Science, University of Pittsburgh**

2016-present. Director of Graduate Studies

2016-2017. Member of search committee for senior faculty position

2015-2016. Member of search committee for junior faculty position

2015-2016. Organiser for HPS graduate student teaching practicum

2011-2015. Webmaster

2013-14. Writer and committee member for Instant HPS public information video, "Is your brain a computer?"

[https://www.youtube.com/watch?v=-8q\\_UXpHsaY](https://www.youtube.com/watch?v=-8q_UXpHsaY)

### **Dietrich School of Arts and Sciences, University of Pittsburgh**

2016-2017. Member of search committee for new Dean of the school

2017-2018. Member of two ad-hoc committees to review applications for tenure and promotion.

Fall 2018 onwards. Member of diversity committee.

### **Center for Philosophy of Science, University of Pittsburgh**

2013 Organiser for workshop on Experimentation in Neuroscience

2015 Co-organiser for workshop on Robustness in Neuroscience

### **Programme Committee Service**

2017 "Scientific Knowledge Under Pluralism" conference, hosted by Center for Philosophy of Science, University of Pittsburgh.

2016 Philosophy of Science Association meeting in Atlanta.

2015 Society for Philosophy and Psychology meeting at Duke University

2014 "Explanation Beyond Causation" conference, hosted by the Munich Center for Mathematical Philosophy

"Overcoming Mind-Brain Dualism in 21st Century Medicine" conference, hosted by Center for Philosophy of Science, University of Pittsburgh.

### **Peer Reviewing**

*Australasian Journal of Philosophy* (2010, 2016)

*Baltic International Yearbook for Cognition Logic and Communication* (2014)

*British Journal of Philosophy of Science* (2008, 2009, 2011, 2012, 2014, 2017)  
*Erkenntnis* (2014, 2017)  
*European Journal of Philosophy of Science* (2013, 2018)  
*History and Philosophy of the Life Sciences* (2015)  
*Latu Sensu* (2012)  
*Mind* (2012)  
*Minds and Machines* (2016, 2017, 2018)  
*Philosophy of Science* (2012, 2015, 2017)  
*Philosophical Psychology* (2013)  
*Philosophical Quarterly* (2013)  
*Philosophical Studies* (2015)  
*Studies in HPS* (2018)  
*Studies in HPS, Part C* (2014, 2016, 2017, 2018)  
*Synthese* (2015, 2016, 2017, 2018)

Research Foundation Flanders (FWO), grant proposal review (2015)

Reviewer of book proposals for Bloomsbury/Continuum:

2014 *The AI Wars: History and Legacy of the Great Philosophical Objections to Artificial Intelligence*

2015 *A Cultural History of Color*

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## OTHER ACTIVITIES & QUALIFICATIONS

DipABRSM in Pianoforte Performance, 2003

### Non-Academic Writing

“Colour as a Puzzling Guide to Our World” blog post for Munsell Color System, November 2015 <http://munsell.com/color-blog/subjective-objective-colour/>

“The Reality of Color Is Perception” in *Nautilus Magazine* July 2015  
<http://nautil.us/issue/26/color/the-reality-of-color-is-perception>

Invited series of posts on *Outside Color* for the Brains Blog, May 2015  
<http://philosophyofbrains.com/category/books/mazviita-chirimuuta-outside-color>

### Interviews

With Elizabeth Fernandez for the Spark Dialog podcast, November 2017  
<http://sparkdialog.com/color-interpretation/>

With Jeff Nova (Colorhythm Institute) at public philosophy event, “Seeing Red”, San Francisco, October 2016. Video recording to be posted online.

With Carrie Figdor for *New Books in Philosophy*  
<http://newbooksinphilosophy.com/2015/09/15/m-chirimuuta-outside-color-perceptual-science-and-the-puzzle-of-color-in-philosophy-mit-2015/>

With Kevin Berger for *Nautilus Magazine*  
<http://nautil.us/issue/26/color/ingenious-mazviita-chirimuuta>

With John Roman for the Rotman Institute, University of Western Ontario  
<http://www.rotman.uwo.ca/interview-with-dr-mazviita-chirimuuta/>