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Dr. Julia R. S. Bursten

Employment

- 2021– Associate Professor of Philosophy, University of Kentucky
Affiliated Faculty, Gender and Women’s Studies
- 2016–2021 Assistant Professor of Philosophy, University of Kentucky
- 2015–2016 Assistant Professor of Philosophy, San Francisco State University

Education

- 2015 Ph.D., History and Philosophy of Science, University of Pittsburgh
- 2011 MA, Philosophy, University of Pittsburgh
- 2008 BA, Philosophy, Rice University

Research

Areas of Research

AOS: Philosophy of Science, Philosophy of Chemistry, Philosophy of Physics,
Scientific Modeling

AOC: History of Science, Feminist Philosophy of Science, Science and Values

Edited Volume

- 2020 *Perspectives on Classification in Synthetic Sciences: Unnatural Kinds*. Routledge:
Studies in the History and Philosophy of Technoscience.

Articles

- Forthcoming* ‘Philosophy of Nanoscience and Nanotechnology.’ *Routledge Encyclopedia of Philosophy*
- Forthcoming* [with K. Dhein] ‘Multiscale Modeling in Neuroethology: The Significance of the Mesoscale.’ *Philosophy of Science*
- Forthcoming* ‘Anti-Fundamentalist Lessons for Scientific Representation from Scientific Metaphysics,’ in E. Shech, K. Khalifa and I. Lawler, eds., *Scientific Understanding and Representation: Modeling in the Physical Sciences*. Routledge.

- 2021 [with J. Roberts and C. Risko] ‘Genetic Algorithms and Machine Learning for Predicting Surface Composition, Structure, and Chemistry: A Historical Perspective and Assessment’. *Chemistry of Materials* 33(17): 6589–6615.
- 2021 [with M. Strandmark] ‘Better Learning Through History: Using Archival Resources to Teach Healthcare Ethics to Science Students.’ *European Journal for the Philosophy of Science* 11(3): 1–14.
- 2021 [with C. Kendig] ‘Growing Knowledge: Epistemic Objects in Agricultural Science.’ *Studies in History and Philosophy of Science* 88: 85–91.
- 2021 ‘The Function of Boundary Conditions in the Physical Sciences.’ *Philosophy of Science* 88(2): 234–257.
- 2021 [with M. Chao] ‘Girl Talk: Understanding Negative Reactions to Female Vocal Fry.’ *Hypatia*.
- 2020 ‘Classifying and Characterizing Active Materials.’ *Synthese*.
- 2020 ‘Computer Simulations.’ In Mody, C. and J. Martin, eds., *Between Making and Knowing: Tools in the History of Materials Research*, pp. 195–206. World Scientific Publishing Company.
- 2020 [with C. Grimsley and E. Mayfield] ‘Why Attention is Not Explanation: Surgical Intervention and Causal Reasoning about Neural Models.’ *Proceedings of the 12th Conference on Language Resources and Evaluation*: 1780–1790.
- 2020 ‘Lab Report: Lessons from a Multi-Year Collaboration Between Nanoscience and Philosophy of Science.’ In Brister, E. and R. Frodeman, eds., *A Guide to Field Philosophy: Case Studies and Practical Strategies*, pp. 35–47. Routledge.
- 2020 [with J. Millstone] ‘Nanochemistry Meets Philosophy of Science: A Conversation about Collaborative Classification.’ In J. Bursten, ed., *Perspectives on Classification in Synthetic Sciences: Unnatural Kinds*. pp. 139–160. Routledge.
- 2018 ‘Conceptual Strategies and Inter-Theory Relations: The Case of Nanoscale Cracks.’ *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 62: 158–165.
- 2018 [with S. Finkelstein] ‘Promoting Cognitive Conflict in Health Care Ethics: Moral Reasoning with Boundary Cases.’ In M. Cukurova, J. Hunter, W. Holmes, and V. Dimitrova, eds., *Practitioner and Industrial Track Proceedings of the 13th International Conference of the Learning Sciences(ICLS18)*. University College London, London, UK (23–27 June).
- 2016 ‘Smaller than a Breadbox: Scale and Natural Kinds.’ *British Journal for the Philosophy of Science* 69(1): 1–23.
- 2016 [with J. Millstone and M. Hartmann] ‘Conceptual Analysis for Nanoscience.’ *Journal of Physical Chemistry Letters* 7(10): 1917–1918.
- 2014 ‘Microstructure without Essentialism: A New Account of Chemical Kinds.’ *Philosophy of Science* 81(4): 633–653.
- 2012 ‘Pauling’s Defence of Bent-Equivalent Bonds: A View of Evolving Explanatory Demands in Chemistry’ in *Annals of Science* 69(1): 1–22.

Reviews, Blog Posts, and Newsletter Pieces

- 2019 'Field Notes on Conference Climate: A Decade with the Philosophy of Science Association Women's Caucus.' *American Philosophical Association Newsletter on Feminism and Philosophy* 19(1): 36–38. Available at <https://bit.ly/2YFf8YM>
- 2019 Review of *Macroscopic Metaphysics: Middle-sized Objects and Longish Processes*, by Paul Needham. *International Studies in the History and Philosophy of Science* 33: 63–64.
- 2018 'How Should We Be Feminists in our Classrooms?' *Science Visions*. January 2018. Available at <https://womenscaucus.philsci.org/blog-article-pages/97-how-should-we-be-feminists-in-our-classrooms>
- 2017 Review of *Essays in the Philosophy of Chemistry* edited by Eric Scerri and Grant Fisher. *British Journal for the Philosophy of Science Book Reviews* 2017. Available at <http://bit.ly/2pSJkAx>
- 2016 [with M. Roco, J. Schummer, P. Weiss, et al.] 'Nano on Reflection.' *Nature Nanotechnology* 11(10): 828–834.
- 2016 Review of *Toward a New Dimension: Discovering the Nanoscale* by Anne Marcovich and Terry Shin. *Isis* 107(4): 902–903.
- 2016 'On the Semiotics of the "I Bicep-Heart-Vaguterus Girls Who Powerlift" Shirt.' Fit is a Feminist Issue guest post, March 4, 2016. Available at <https://bit.ly/3b7CuLI>.
- 2015 'Leveling the Job Market Playing Field: Let's All Get ByCommittee.' *Science Visions*. August 2015. Available at <https://womenscaucus.philsci.org/blog-article-pages/41-leveling-the-job-market-playing-field-let-s-all-get-bycommittee>.
- 2011 Review of *The Disappearing Spoon, and Other True Tales of Madness, Love, and History of the World from the Periodic Table of the Elements* by Sam Kean. *Spontaneous Generations* 5(1).

Presentations

- 2021 [with M. Strandmark] 'Using Historical Archives in Research Ethics Training: UK's Special Collections Research Center.' University of Kentucky College of Medicine Research Ethics Lecture Series. Lexington, KY.
- 2021 [with J. Jhun and C. Rice] 'New Directions in Multiscale Modeling: Beyond Reduction and Emergence' (Poster). Philosophy of Science Association Biennial Conference. Baltimore, MD.
- 2021 [with C. Kendig] 'Growing Knowledge: Epistemic Objects in Agricultural Work.' Philosophy of Science Association Biennial Conference. Baltimore, MD.
- 2021* [with C. Kendig] 'Philosophy of Agricultural Extension.' University of Adelaide Food Values Research Group.
- 2020* [with C. Kendig] 'Growing Knowledge: Epistemic Objects in Agricultural Work.' The Biological Engineering Collaboratory Seminars 2020.

- 2020* 'Quantum Dots and the Quantum-Classical Interface.' Midwest Summer School in the Philosophy of Physics.
- 2020* [with C. Kendig] 'The Role of Agricultural Extension in the Construction and Communication of Scientific Knowledge.' 2020 Baker Colloquium: Doing Science in a Pluralistic Society. Dayton, OH.
- 2020 'Scale Separation, Scale Dependence, and Multiscale Modeling' University of Tennessee Department of Philosophy Colloquium Series. Knoxville, TN.
- 2019 'Matters of Scale and Scales of Matter: Conceptual Challenges in Multiscale Modeling of Nanomaterials.' University of Cincinnati Department of Philosophy Seminar Series. Cincinnati, OH.
- 2019 'Philosophy for Applied Science: Using Philosophy of Science in Nanoscience and Agricultural Science.' University of Kentucky Department of Plant Pathology Seminar Series. Lexington, KY
- 2019 'Scale Separation, Scale-Dependence, and Multiscale Modeling in the Physical Sciences: A Tour Through Philosophical Issues in Nanoscience.' International Congress on Logic, Methodology, and Philosophy of Science and Technology. Prague, CZ.
- 2019 'Scale Separation, Scale-Dependence, and Multiscale Modeling in the Physical Sciences.' American Philosophical Association-Pacific Division Meeting. Vancouver, BC.
- 2019 'Scale Separation, Scale-Dependence, and Multiscale Modeling in the Physical Sciences.' South Carolina Department of Philosophy Colloquium Series. Columbia, SC.
- 2018 'Nucleation as Universal Behavior.' Philosophy of Science Association Biennial Meeting. Seattle, WA.
- 2018 'Against the Hierarchical View of Theories.' Society for the Philosophy of Science in Practice Biennial Meeting. Ghent, BE.
- 2018 'Promoting Cognitive Conflict in Health Care Ethics.' International Conference on the Learning Sciences. London, UK.
- 2018 'Classification in Nanoscience and Synthetic Biology.' TU-Darmstadt Compu-Gene Summer School. Darmstadt, DE.
- 2018 'Inter-Theory Relations and Shape Memory Alloys.' Second Georgetown Active Materials Project Summer School. Washington, DC.
- 2018 'Philosophical Issues in Nanoscience.' Centre College Seminar in Physics and Philosophy. Danville, KY.
- 2018 'Philosophical Issues in Condensed Matter Physics.' University of Kentucky Department of Physics Seminar Series. Lexington, KY.
- 2018 'Conceptual Concerns for Nanoscience.' Mid-South Philosophy of Science Workshop. Lexington, KY.
- 2018 'Against the Hierarchical View of Theories.' Models and Simulations 8. Columbia, SC.

- 2017 ‘Conceptual Analysis and Chemical Information: A Philosophical Case Study in Nanoscience.’ National Meeting of the American Chemical Society. San Francisco, CA.
- 2017 ‘Nanoscale Materials and Active Materials.’ Georgetown Active Materials Project Summer School. Washington, DC.
- 2017 ‘Philosophical Issues in Modeling Nanoscale Systems.’ University of Kentucky Department of Chemical and Materials Engineering Seminar Series. Lexington, KY.
- 2017 ‘Multi-Scale Modeling and Inter-Theory Relations.’ TU–Darmstadt CompuGene Winter School. Darmstadt, DE.
- 2016 ‘Multi-Scale Modeling in Nanoscience.’ Philosophy of Science Association Biennial Meeting. Atlanta, GA.
- 2016 ‘Multi-Scale Modeling: Beyond Hierarchical Relations.’ Society for the Philosophy of Science in Practice Biennial Meeting. Glassboro, NJ.
- 2016 ‘Multi-Scale Modeling in Nanoscience.’ Boston University Colloquium on Methodological Issues in Multi-Scale Modeling, Boston Center for the Philosophy and History of Science. Boston, MA.
- 2016 ‘Smaller Than A Breadbox: Classification at the Nanoscale.’ Unnatural Kinds Workshop, San Francisco, CA.
- 2016 ‘Boundary Work: Collaboration Between Philosophy of Science and Nanoscience.’ University of Kentucky Department of Philosophy Colloquium Series, Lexington, KY.
- 2016 ‘Multi-Scale Modeling: Beyond Non-Mereological Relations.’ Southern California Philosophy of Physics Workshop Series, Irvine, CA.
- 2016 ‘Matters of Scale: Explanatory Strategies in Nanoscience.’ University of California–Irvine Department of Logic and Philosophy of Science Colloquium Series, Irvine, CA.
- 2016 ‘Reconciling Physical and Biological Metaphysics of Structure.’ Comments on CK Waters, “How Science Can Inform Metaphysics: Insights from Biological Practice,” American Philosophical Association–Pacific Division Meeting, San Francisco, CA.
- 2016 ‘Boundary Work: Collaboration Between Philosophy of Science and Nanoscience.’ Purdue Lectures in Ethics, Policy, and Science, West Lafayette, IN.
- 2016 ‘*Surface* Tension.’ University of Washington Department of Philosophy Colloquium Series, Seattle, WA.
- 2015 ‘Boundary Work: Philosophy Meets Nanoscience.’ Society for Philosophy of Science in Practice Biennial Meeting. Aarhus, DK.
- 2015 ‘Philosophy of Science as Scientific Problem-Solving.’ SPSP pre-conference workshop on teaching philosophy of science to scientists. Aarhus, DK.
- 2015 ‘*Surface* Tension.’ Irvine–Pittsburgh–Princeton Graduate Conference in Philosophy of Physics. Princeton, NJ.

- 2015 ‘Multi-Scale Modeling: Beyond Anti-Mereological Relations.’ Bay Area Philosophy of Science colloquium series. Davis, CA.
- 2015 ‘Challenges to Philosophy of Science from Nanoscience.’ John Templeton Foundation Reduction and Emergence in Physics Project, Workshop on Multi-Scale Modeling, Pittsburgh, PA.
- 2015 ‘*Surface* Tension.’ University of Illinois–Urbana-Champaign Department of Philosophy Colloquium Series, Champaign-Urbana, IL.
- 2015 ‘*Surface* Tension.’ San Francisco State University Department of Philosophy Colloquium Series, San Francisco, CA.
- 2015 ‘*Surface* Tension.’ University of Kentucky Department of Philosophy Colloquium Series, Lexington, KY.
- 2014 ‘*Surface* Tension: Scale and Conceptual Change in Philosophy of Nanoscience.’ Chemical Structure Symposium, Philosophy of Science Association Biennial Meeting, Chicago, IL.
- 2014 ‘Boundary Work: Nanoscience Meets Philosophy at Material Surfaces.’ History of Interdisciplinarity Symposium, History of Science Society Annual Meeting, Chicago, IL.
- 2014 ‘*Surface* Tension: How Nanoscience Challenges Traditional Theories of Explanation,’ International Society for the Philosophy of Chemistry Annual Meeting, London, UK.
- 2014 ‘The Structure–Property Paradigm in Chemistry and Nanoscience,’ Structure in Chemistry and Physics Workshop Series, Durham, UK.
- 2014 ‘*Surface* Tensions,’ Carnegie Mellon University Department of Philosophy Colloquium Series, Pittsburgh, PA.
- 2013 ‘Epistemology and the Synthetic: Lessons from Nanosynthesis,’ *Methods for Making* symposium at 4th Biennial Society for Philosophy of Science in Practice Meeting, Toronto, ON.
- 2013 ‘Toward a Philosophy of Synthetic Science.’ Rice University Cultural Studies of Science, Technology, Engineering, Mathematics and Medicine Lecture Series, Houston, TX.
- 2012** ‘Reconsidering Explanation: Lessons from Nanosynthesis.’ Philosophy of Science Association Biennial Meeting, San Diego, CA.
- 2012 ‘Nanosurfaces: How Scale Can Shape Structure and Behavior.’ Structure in Chemistry and Physics Workshop Series, Chemical Heritage Foundation, Philadelphia, PA.
- 2011 ‘Bonding in Hypervalent Molecules.’ *Is There a Nature of the Chemical Bond?* symposium at European Philosophy of Science Association conference, Athens, GR.
- 2011 ‘Studies in Chemical Explanation: Structure and Synthesis.’ 3rd Biennial Society for Philosophy of Science in Practice Meeting, Exeter, UK.
- 2010 ‘Whence the Defense of the Banana Bond.’ History of Science Society Annual Meeting, Montréal, QC.

2010 ‘Characterizing Explanations of Chemical Bonds.’ Models and Simulations 4, Toronto, ON.

2010 ‘How Pauling Bent the Double Bond.’ Special Collections Resident Scholar Lecture Series, Oregon State University, Corvallis, OR.

**These talks were presented virtually due to the COVID-19 pandemic.*

***Due to injury, this talk was presented on my behalf by Thomas Pashby.*

Grants, Fellowships, and Awards

2022 National Science Foundation EPSCoR Fellowship, “The Epistemology of Agricultural Science”

2021 National Endowment for the Humanities Summer Stipend, “Making Knowledge: Synthesis and the Aims of Science”

2020 University of Kentucky College of Arts and Sciences Outstanding Teaching Award

2019 SEC U Faculty Exchange Fellowship, “Philosophy of Nanoscience in South Carolina”

2018 University of Kentucky Office for the Vice President of Research grant, “Hosting a Regional Philosophy of Science Conference”

2018 Sustainable Pedagogies Workshop Fellowship

2017 University of Kentucky Office for the Vice President of Research grant, “Building a Regional Network for Philosophy of Science”

2014 University of Pittsburgh Department of History and Philosophy of Science Graduate Teaching Award

2010–2015 National Science Foundation Graduate Research Fellowship

2011 Society for the History of Alchemy and Chemistry Young Scholar Fellowship

2010 Linus Pauling Resident Scholar Fellowship

Professional Service

2022–2024 Chair, Nominating Committee, Philosophy of Science Association

2021 Invited Discussant, Science Education, University of Cincinnati Workshop on Public Engagement with Science

2020–2023 Editorial Board, Philosophy of Science Archive

2019–2021 Program Committee, Philosophy of Science Association 2021 Biennial Meeting

2018– Steering Committee, Society for the Philosophy of Science in Practice

2018– Associate Editor, *Engineering Studies*

2018–2020 Founder and Network Administrator, Mid/South Philosophy of Science Network

2019 Organizer & Host, Mid/South Philosophy of Science Conference, Lexington, KY.

2018	Organizer & Host, Mid/South Philosophy of Science Workshop, Lexington, KY.
2018	Program Committee, Models and Simulations 8.
2017–2018	Philosophy of Science Association Committee on Outreach and Engagement
2016–2017	Philosophy of Science Association Committee on Diversity and Climate
2016	Panelist, SPSP Pre-Conference Workshop on Qualitative Methods in Philosophy of Science, Glassboro, NJ
2016	Co-Organizer & Host, Unnatural Kinds Workshop, San Francisco, CA
2015–2018	Co-Chair, Philosophy of Science Association Women’s Caucus
2015–2020	Editor, Science Visions , newsletter of the PSA Women’s Caucus
	Reviewer for <i>Biology and Philosophy</i> , the <i>British Journal for the Philosophy of Science</i> , <i>Canadian Journal of Philosophy</i> , <i>Dialectica</i> , <i>Erkenntnis</i> , <i>European Journal for Philosophy of Science</i> , <i>Foundations of Chemistry</i> , <i>Journal of Philosophical Logic</i> , <i>Mind</i> , Oxford University Press, <i>Pacific Philosophical Quarterly</i> , <i>Philosophy of Science</i> , <i>Proceedings of the Royal Society A: Mathematical, Engineering and Physical Sciences</i> , <i>Science Education</i> , <i>Studies in the History and Philosophy of Modern Physics</i> , <i>Studies in the History and Philosophy of Science</i> , and <i>Synthese</i> .

University of Kentucky Service

2021–	Chair, Philosophy Department Diversity, Equity, and Inclusion Committee
2020–	Lunsford Scholars Committee
2020–2021	Dean of the College of Arts and Sciences Search Committee
2020–2021	Chair, Philosophy Department Graduate Admissions Committee
2019–2020	Philosophy Department Executive Committee
2017–2018	Co-Chair, Programming Committee, Keys To Our Common Future: A Year of Events on Civics and Citizenship (University of Kentucky College of Arts and Sciences)
2017–2018	Philosophy Department Executive Committee
2016	Panelist, Frontiers in Genetics and Genomics: A Panel Discussion in Honor of T.H. Morgan’s 150th Birthday. Lexington, KY

Teaching

University of Kentucky

Spring 2022	PHI 305 Health Care Ethics
	PHI 650 Seminar in Scientific Modeling
	PHI 767/790 Research Group in Philosophy of Science
Fall 2021	PHI 120 Introduction to Logic

	PHI 515 Analytic Philosophy
	PHI 767/790 Research Group in Philosophy of Science
<i>Spring 2021</i>	PHI 100 Introduction to Philosophy: Problems of Knowledge and Reality
	PHI 560 Philosophy of Scientific Method
	PHI 395/767/790 Research Group in Philosophy of Science
<i>Fall 2020</i>	PHI 715 Seminar in Sciences and Values
<i>Fall 2019</i>	PHI 120 Introduction to Logic
	TAs: Keith Parkinson and Kristian Sheeley
	PHI 305 Health Care Ethics
	TA: Lizzie Martin
	PHI 395 Independent Work in Philosophy: Science and Values
	Weekly laboratory class with 3 science majors, involving on- and off-campus field trips
	PHI 740 Departmental Teaching Practicum
<i>Spring 2019</i>	PHI 305 Health Care Ethics
	TA: Kristian Sheeley
	PHI 560 Philosophy of the Scientific Method
<i>Fall 2018</i>	PHI 300H The Interplay of Science and Religion
	TAs: Kaylynne Glover and James Lincoln
	PHI 650 Seminar in the Philosophy of Physics
	PHI 740 Departmental Teaching Practicum
<i>Spring 2018</i>	PHI 515 Analytic Philosophy
<i>Fall 2017</i>	PHI 120 Introduction to Logic
	TAs: Christopher Grimsley and Keith Parkinson
	PHI 305 Health Care Ethics
	TA: MC Cunningham
<i>Spring 2017</i>	BIO 180 The Interplay of Science and Religion <i>with Phil Crowley</i>
	PHI 305 Health Care Ethics
	PHI 560 Philosophy of the Scientific Method
<i>Fall 2016</i>	PHI 120 Introduction to Logic
	TAs: Kayla Bohannon and Sebastiaan Meisner
	PHI 305 Health Care Ethics

San Francisco State University

<i>Spring 2016</i>	Seminar in Philosophical Writing
	Seminar in Natural Kinds
<i>Fall 2015</i>	Philosophy of Science
	Seminar in Philosophical Writing
	MA Comprehensive Exam Tutorial on <i>Enquiry Concerning Human Understanding</i>

Student Mentorship

Postdoctoral Supervision

<i>In Progress</i>	(with Jeremy Van Cleve) Kelle Dhein, UK Lyman T. Johnson Postdoctoral Fellow
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Ph.D. Supervision

<i>In Progress</i>	Ryan McCoy, UK Philosophy
<i>In Progress</i>	Clayton Houdeshell, UK Philosophy
2022	Christopher Grimsley, UK Philosophy, “Contextualizing Artificial Intelligence: The History, Values, and Epistemology of Technology in the Philosophy of Science”

MA Supervision

2017	(with Ásta) Monika Chao, SFSU Philosophy, “Heard But Misunderstood: Understanding Reactions to Female Vocal Fry”
2016	Robert Kok, SFSU Philosophy, “Toward a Minimal Account of Natural Kinds”

Committee Membership

<i>In Progress</i>	Colby Clark, UK Philosophy Ph.D.
<i>In Progress</i>	Rebekah Duke, UK Chemistry Ph.D.
<i>In Progress</i>	Lauren O’Dell, UK Philosophy Ph.D.
<i>In Progress</i>	John Quinn, UK Chemistry Ph.D.
2021	Drew van’t Land, UK Philosophy Ph.D., “Care Working Conditions: The Ethics and Politics of Social Reproductive Labor from Aristotle to Marxist Feminism”
2021	Josiah Roberts, UK Chemistry Ph.D., “Determining Material Structures and Surface Chemistry by Genetic Algorithms and Quantum Chemical Simulations”

- 2021 Justin Price, University of South Carolina Philosophy Ph.D., “Models in Scientific Inquiry”
- 2017 Aaron Chavez, SFSU Philosophy MA, “Error in Scientific Practice: On Inference, Measurement Robustness, and Theory-Guidance”
- 2017 Ian York, SFSU Philosophy MA, “A Limit Case to Camp’s Semantics of Slurs”

Undergraduate and Secondary Thesis Supervision

- 2021 Stephen Perry, University of Kentucky, “For a New Account of Mathematics”
- 2020 Madison von Deylen, University of Kentucky, “Coercive Mating Tactics and the Social Construction of Rape”
- 2019 Beau Revlett, University of Kentucky, “Improving Three Formal Methods for Social Justice Practice”
- 2015 Simone Traub, Pittsburgh Science and Technology Academy, “Big Science, Little Science, and the Public”
- 2014 Alexandra Kröngel, University of Pittsburgh, “Women and Alchemical Thought in the Middle Ages”