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## Dr. Julia R. S. Bursten

### Employment

- 2016– Assistant Professor of Philosophy, University of Kentucky  
Affiliated Faculty, Gender and Women’s Studies
- 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  
AOC: History of Science, Feminist Philosophy of Science

#### Edited Volume

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

#### Articles

- Forth. [with M. Chao] ‘Girl Talk: Understanding Negative Reactions to Female Vocal Fry.’ *Hypatia*.
- Forth. ‘The Function of Boundary Conditions in the Physical Sciences.’ *Philosophy of Science*.
- Forth. ‘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.’ *Proceedings of the International Conference on the Learning Sciences, RIPI-ICLS* 2128.
- 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 and Shorter 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 By Committee.' *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

- 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 CompuGene 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**

- 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 Sustain•able 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

- 2019–2020 Program Committee, Philosophy of Science Association 2020 Biennial Meeting
- 2018– Steering Committee, Society for the Philosophy of Science in Practice
- 2018– Founder and Network Administrator, Mid/South Philosophy of Science Network
- 2019 Organizer & Host, Mid/South Philosophy of Science Conference, Lexington, KY.
- 2018–2020 Associate Editor, *Engineering Studies*
- 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 *Biology and Philosophy*, the *British Journal for the Philosophy of Science*, *Canadian Journal of Philosophy*, *Dialectica*, *Erkenntnis*, *European Journal for Philosophy of Science*, *Foundations of Chemistry*, *Journal of Philosophical Logic*, *Mind*, Oxford University Press, *Pacific Philosophical Quarterly*, *Philosophy of Science*, *Proceedings of the Royal Society A: Mathematical, Engineering and Physical Sciences*, *Science Education*, *Studies in the History and Philosophy of Modern Physics*, *Studies in the History and Philosophy of Science*, and *Synthese*.

## University of Kentucky Service

- 2020–2021 Dean of the College of Arts and Sciences Search Committee
- 2020– Lunsford Scholars Committee
- 2020 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

- Fall 2020* PHI 715 Seminar in Sciences and Values
- Fall 2019* 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
- Spring 2019* PHI 305 Health Care Ethics  
TA: Kristian Sheeley
- PHI 560 Philosophy of the Scientific Method
- Fall 2018* 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
- Spring 2018* PHI 515 Analytic Philosophy
- Fall 2017* PHI 120 Introduction to Logic  
TAs: Christopher Grimsley and Keith Parkinson
- PHI 305 Health Care Ethics  
TA: MC Cunningham
- Spring 2017* BIO 180 The Interplay of Science and Religion *with Phil Crowley*
- PHI 305 Health Care Ethics
- PHI 560 Philosophy of the Scientific Method
- Fall 2016* PHI 120 Introduction to Logic  
TAs: Kayla Bohannon and Sebastiaan Meisner
- PHI 305 Health Care Ethics

### San Francisco State University

- Spring 2016* Seminar in Philosophical Writing  
Seminar in Natural Kinds
- Fall 2015* Philosophy of Science  
Seminar in Philosophical Writing  
MA Comprehensive Exam Tutorial on *Enquiry Concerning Human Understanding*

### University of Pittsburgh

- Spring 2014* Space, Time, and Matter. *Independently taught course*
- Fall 2010* Myth and Science. *Independently taught course*
- Spring 2010* Einstein: Modern Science and Surprises. *TA to John Norton*
- Fall 2009* Introduction to the Philosophy of Science. *TA to Michela Massimi*

### Student Mentorship

#### Ph.D. Committee Membership

- (Co-Chair) Christopher Grimsley, Philosophy\*
- Lauren Dickey, Philosophy\*
- Drew van't Land, Philosophy\*
- Justin Price, Philosophy, University of South Carolina\*
- Kaylynne Glover, UK Biology\*
- Josiah Roberts, UK Chemistry\*

#### MA Committee Membership

- 2017* (Co-Chair) Monika Chao, SFSU (now a Ph.D. student at UC–Berkeley), “Heard But Misunderstood: Understanding Reactions to Female Vocal Fry.”
- 2017* Aaron Chavez, SFSU (now a Ph.D. student at UC–Davis), “Error in Scientific Practice: On Inference, Measurement Robustness, and Theory-Guidance.”
- 2017* Ian York, SFSU (now a Ph.D. student at Syracuse U.), “A Limit Case to Camp’s Semantics of Slurs.”
- 2016* (Chair) Robert Kok (now a Ph.D. student at U. Utah), “Toward a Minimal Account of Natural Kinds.”

### **Undergraduate and Secondary Thesis Advising**

- 2021\* Stephen Perry, University of Kentucky, “Modeling Between Physics and Mathematics in Boundary Layer Theory”
- 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 Krongel, University of Pittsburgh, “Women and Alchemical Thought in the Middle Ages”

\*In progress