

Curriculum vitae

Elisabeth A. Lloyd

DOB: September 3, 1956

History & Philosophy of Science & Med Dept
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December 4, 2022

Education:

Princeton University	1980-84 Ph.D., Department of Philosophy
Harvard University	1983 Graduate Program, Department of Genetics
U. Colorado, Boulder	1976-80 B.A. (Science and Political Theory)
	Phi Beta Kappa <u>Summa cum laude</u> (General Studies)
Queen's University	1974-75

POSITIONS: ACTIVE NOW

Specialty Chief Editor of Climate Detection and Attribution (June 2023-Present)
Frontiers in Climate Change: International Journal

OTHER EDITORIAL ACTIVITIES:

EDITORIAL BOARD:

Biology and Philosophy (1989-present)
Biological Theory: Integrating Development, Evolution, and Cognition (2004 – present)
Philosophy, Theory, and Practice in Biology (2010 — present)
Synthese (2015-present)

REFeree FOR:

Professional Journals:

Acta Theoretica
American Naturalist
Annals of the Association of American Geographers
Archives of Sexual Behavior
Behavior
Behavioral and Brain Sciences
Bioeconomics
Biological Review
Biological Theory
Biology and Philosophy
British Journal of the Philosophy of Science
Bulletin of the American Meteorological Society
Climate Risk Management (2023 added)
Climatic Change
Critica
Earth's Future
Erkenntnis
Ethics
European Journal of the Philosophy of Science

Evolution
 Global Environmental Change
 History and Philosophy of the Life Sciences
 Hypatia
 JAMA (Journal of American Medical Assoc.)
 Journal of Advances in Modeling Earth Systems
 JEZ: Molecular and Developmental Evolution
 Journal of the History of Biology
 Journal of Philosophy
 Journal of Population Biology
 Journal of Sexual Medicine
 Journal of Social and Personal Relationships
 Journal of Theoretical Biology
 Kennedy Institute of Ethics Journal
 Perspectives in Biology and Medicine
 Perspectives on Science
 Philosophy, Theory and Practice in Biology
 Philosophy of Science
 Proceedings of the Royal Society
 Quarterly Review of Biology
 Reproductive Biology
 Science in Context
 Science, Technology and Society
 Science, Technology: Women's Health, Issues, and Care
 Signs
 Studies in History and Philosophy of Science
 Studies in History and Philosophy of Science Part C: Studies in History and Philosophy
 of Biological and Biomedical Sciences
 Studies in History and Philosophy of Modern Physics
 Synthese
 Theoria
 Theoretical Population Biology
 Trends in Ecology and Evolution
 Weather, Climate, and Society

Organizations:

American Council of Learned Societies
 Geological Society of America
 Israel Science Foundation
 Konrad Lorenz Institute (Vienna, Austria)
 National Endowment for the Humanities
 National Science Foundation
 South African National Research Foundation
 Canadian National Research Council
 Social Sciences and Humanities Research Council of Canada
 Templeton Foundation
 Evolution Institute
 UK Leuven (Belgium)
 Notre Dame Institute for Advanced Study
 Harvard University
 Royal Society, London
 Marsden Fund, New Zealand
 Tel Aviv University, Israel
 ETH, Switzerland
 European Commission, Brussels
 Intergovernmental Panel on Climate Change (2020)
 European Research Council

Publishers:

Blackwell Press
Cambridge University Press
Columbia University Press
Harvard University Press
Kluwer Press
MIT Press
Oxford University Press
Palgrave MacMillan
Princeton University Press
Routledge Press
University of Chicago Press
Westview Press
SUNY Press

ACADEMIC FACULTY AND RESEARCH POSITIONS:

Indiana University:

2022-Present	Distinguished Professor Emerita
2019-2022	Distinguished Professor
2001-2022	Arnold and Maxine Tanis Chair of History and Philosophy of Science
1998-2022	Adjunct Professor, Department of Biology
1998-2022	Adjunct Professor, Department of Philosophy
2005-2022	Affiliated Faculty Scholar, The Kinsey Institute for Research in Sex, Gender, and Reproduction
2003-2022	Adjunct Faculty, Center for the Integrative Study of Animal Behavior
2006-2022	Faculty, Cognitive Science Program
2014-2017, 2017-2018, 2018-2020	Affiliate Scientist, National Center for Atmospheric Research (NCAR) Boulder, CO
1998-2001	Professor, Department of History and Philosophy of Science
2000-2004	Chair, Department of History and Philosophy of Science

University of California, Berkeley:

1997- 1999	Professor Department of Philosophy Program in Logic and Methodology
1990-1997	Associate Professor Department of Philosophy Program in Logic and Methodology

1990-1999 Affiliated Faculty
 History and Philosophy of Science Program
 University of California, Davis

1988-1990 Assistant Professor
 Department of Philosophy

University of California, San Diego:

1985-1988 Assistant Professor
 Department of Philosophy

Faculty Visiting Positions:

1998 Visiting Professor
 Department of Philosophy
 Harvard University (Spring Semester)

1990 Visiting Senior Lecturer
 Department of Philosophy
 University of Auckland, New Zealand (May-June)

1990 Co-faculty, with Nancy Cartwright, Timothy Lenoir,
 and Eckhart Forster, Graduate Seminar,
 "German Romanticism and Science"
 Department of Philosophy
 Stanford University (Winter Quarter)

1984-85 Visiting Lecturer
 Department of Philosophy
 University of California, San Diego

1980 Visiting Instructor
 Department of Experimental Studies
 University of Colorado, Boulder
 (Spring Semester)

Research Visiting Positions

2018 Fellow, Evolution Think Tank, Munster Graduate School of
 Evolution, Munster, Germany, May 11-June 9, 2018.
 [CANCELLED DUE TO FAMILY EMERGENCY]

2014-2017,
2017-2018 Affiliate Scientist, National Center for Atmospheric Research (NCAR)
2018-2020 Boulder, CO

2002 Research Associate
 Museum of Comparative Zoology
 Harvard University (Spring Semester)
 (Sponsored by R.C. Lewontin)

1991 Resident Fellow

University of California Humanities Research
Institute, "Biotechnology and Ethics"
(Spring Semester)

- 1989 Fellow
 University of California Humanities Research
 Institute, "Interdisciplinary Research in the
 Humanities" (Winter Quarter)
- 1989 Research Associate
 Museum of Comparative Zoology,
 Harvard University (Fall Semester)
 (Sponsored by S.J. Gould)
- 1983-84 Visiting Scholar
 Department of Genetics,
 Harvard University
 (R.C. Lewontin Lab)

Honors, awards, and fellowships:

Indiana University:

Fellow, American Academy of Arts and Sciences, May 2022
Indiana University Bicentennial Medal Nov. 2020
[Potter Lecture (endowed) Washington State University, Fall 2021 [Cancelled: Covid]]
Richard and Ann Burian Lecture (endowed) Virginia Polytechnic University,
Blacksburg, February 2019
Women's Caucus Prize Symposium for Philosophy of Science Association, 2018, for
"Climate Science and Public Interest"
National Science Foundation Standard Grant 2018-2023 "Big Data and Climate Science:
A Philosophical and Methodological Exploration" SES-#1754740, \$500,748.
Fellow, Evolution Think Tank, Munster Graduate School of Evolution, Munster,
Germany, May 11-June 9, 2018. [Cancelled: Family emergency]
National Science Foundation Faculty Award 2016-17 "What is 'Value Added' in
Regional Climate Modeling?" SES-1632202, \$221,640.
Romanell Lecture for the American Philosophical Association National Office
(endowed), San Francisco, March 2016
Hall Lecture (endowed) Washington University, St. Louis, MO October 2015
Hanna Lecture (endowed), Hamline University, Minneapolis, MN April 2015
Rotman Institute Lecture (endowed), University of Western Ontario, March 2015
Aspasia Lecture (endowed), Groningen, The Netherlands, May 2014
Dewey Lecture (Career retrospective) Central APA, New Orleans, 2013
Philosophy of Science Association Prize, 2005 book, Women's Caucus, 2010
Vern and Bonnie Bullough Prize, Society for the Scientific Study of Sexuality (SSSS):
"Best Book on Sexuality" 2006.
College Arts and Humanities Institute Travel Research Grant, Summer 2010, "Inferring
Causes and the Future: Robustness and Climate"
New Frontiers IU COAS grant 2007-2008 "Philosophical Analysis of Climate Change
Models"
National Science Foundation Faculty Award 2007 "Case Study of Objectivity in Science:
Climate Change"
Dr. Wing-Chun Wong Memorial Lecture, (endowed) Towson University,
November 2007
Stillman Drake Memorial Lecture, (endowed) Congress of Humanities, Toronto,
May 2006 (For Canadian TV One: "Big Ideas" Program)

College Arts and Humanities Institute Fellowship, Fall 2005: "The Anatomy of Objectivity"
Mackay Lecturer, (endowed) St. Lawrence University, February 2005.
Austin/Hempel Lecturer, (endowed) Dalhousie University and King's University College, Halifax, Nova Scotia, October 2003
Renaissance Weekend invitee, 2005

University of California:

Finalist for the Lakatos Prize, 1990
Resident Fellow, UC Humanities Research Institute, 1991
Fellow, UC Humanities Research Institute, 1989
National Science Foundation Scholar's Award, 1987-88
Instructional Improvement Grant for Freshman Seminar, 1993
Humanities Graduate Research Assistance Fellowship 1993, 1995
Affirmative Action Faculty Development Grant, 1986, 1987
National Science Foundation Grant, Summer 1986
UC Committee on Research Grant, 1986, 1988, 1989, 1991, 1992, 1993, 1994, 1997
Regents Summer Faculty Fellowship, 1985
Mentor/Intern Affirmative Action Grant 1992
Undergraduate Research Apprentice Program Grant, Spring 1997

Princeton University:

National Science Foundation Graduate Fellow 1980-1983
Garden State Graduate Award, 1980-1984

University of Colorado:

Phi Beta Kappa
Van Ek Award

Courses taught:

Honors: Human Nature (IU/Bloomington)
Evolution, Religion, and Society (IU/Bloomington)
History and Philosophy of Medicine (IU/Bloomington)
The Science of Sex Differences (IU/Bloomington)
Science and Human Understanding (UC/Berkeley)
Philosophy of Science (UC/Berkeley; U. of Auckland, NZ; Harvard; IU/B)
Intermediate Logic (UC/San Diego)
Introduction to Philosophy (UC/San Diego)
Philosophy of Biology (UC/San Diego, UC/Berkeley)
Logic and Decision Making (UC/San Diego)
Scientific and Metaphoric Thinking (UC/Boulder)
Sex Differences: Origins and Implications (UC/San Diego)
Philosophy and Feminism (U. of Auckland, NZ)
Freshman Seminar: Human Nature (UC/Berkeley)
Human Biology Seminar (IU/Bloomington)
Evolution, Creationism, and Society (IU/Bloomington)
Science and Values (IU/Bloomington)

Graduate seminars:

Climate, Values, and Objectivity (IU/Bloomington)
Models in Science and Philosophy of Science (IU/Bloomington)
History and Philosophy of Evolution and Development (IU/Bloomington)
American Pragmatism and Philosophy of Science (UC/Berkeley; IU/Bloomington)
Scientific Confirmation (UC/San Diego)
Realism and Empiricism (UC/San Diego)
Causation (UC/San Diego)

Science and Feminism (UC/San Diego)
 Laws and Scientific Explanation (UC/Berkeley)
 The Limits to Naturalized Philosophy (UC/Berkeley)
 Laws of Nature (UC/Berkeley)
 Philosophy of Mind (U. of Auckland, NZ)
 German Romanticism and Science (with Cartwright, Lenoir, Forster) (Stanford)
 First Year Graduate Seminar (with John Searle) (UC/Berkeley)
 Objectivity (UC/Berkeley, IU/Bloomington)
 Inductive Inference and Rationality (UC/Berkeley)
 Pragmatism and Truth (UC/Berkeley)
 Scientific Explanation (UC/Berkeley)
 Philosophy of Biology (Harvard, IU/Bloomington)
 Science and Values (IU/Bloomington)
 SJ Gould's Structure of Evolutionary Theory (IU/Bloomington)
 Adaptation/Adaptationism (IU/Bloomington)
 Units and Levels of Selection (IU/Bloomington)
 American Pragmatism (IU/Bloomington)
 Naturalism, Pragmatism, and Philosophy (IU/Bloomington)
 Scientific Methodology*

*Assisted with Graduate Seminar at Scripps Institute of Oceanography (Spring 1986, Spring 1987), with George Somero and Paul Dayton

Areas of specialization:

Philosophy of Science, Philosophy of Biology, Philosophy of Climate Science

Areas of competence:

History of Philosophy (Modern), American Pragmatism, Feminist Philosophy of Science

PUBLICATIONS:

BOOKS:

The Structure and Confirmation of Evolutionary Theory, Greenwood Press, 1988.
 Paperback edition, with New Preface, Princeton University Press, 1994.

Reviewed in: *Philosophical Review*, *Nous*, *Philosophy of Science*, *Biology and Philosophy*, *Choice*, *Acta Biotheoretica*, *Heredity*, *Quarterly Review of Biology*

*Finalist for Lakatos Prize, 1990

Keywords in Evolutionary Biology, Eds. Evelyn Fox Keller & Elisabeth A. Lloyd, Harvard University Press, 1992. Selected for Newbridge Book Clubs.

Reviewed in: *Science*, *Nature*, *BioScience*, *Meta Science*, *Choice*, *Journal of the History of the Behavioral Sciences*, *Isis*, *Science and Technology Book News*, *Center for Theology and Natural Studies Bulletin*, *Taxon*, *London Times Higher Education Supplement*

The Case of the Female Orgasm: Bias in the Science of Evolution,
 Harvard University Press, April 2005. Italian transl. 2006.

Reviewed in: *Academia*, *Archives of Sexual Behavior*, *Archives of Sex Research*, *Biology and Philosophy*, *Canadian Journal of Philosophy*, *Economic Times*, *El Espectador*, *Evolutionary Psychology*, *Genomics Network*, *History and Philosophy of the Life Sciences*, *Isis*, *Journal of Sex Research*, *Journal of Sex and Marital Therapy*, *Journal of the History of the Behavioral Sciences*, *MacLean's*, *Metapsychology*, *Metascience*, *Nature*, *Nerve*, *New Scientist*, *New York Times*, *Other*, *Perspectives in Biology and Medicine*, *Quarterly Review of Biology*, *Seven Oaks*, *Sexualities*, *Evolution*, and *Gender*, *Slate*, *The Age*, *The Australian*, *The Guardian*, *The Lancet*, *Twin Studies and Human Genetics*, *Wellcome Science*

*Media coverage by 40+ newspapers & magazines, in 22 languages, including upper front half page of Science section of NY Times.

*Vern and Bonnie Bullough Prize, Society for the Scientific Study of Sexuality (SSSS): "Best Book on Sexuality" 2006.

*Philosophy of Science Association Women's Caucus Prize, 2010.

Science, Evolution, and Politics. Cambridge University Press, February 2008; Paperback released November 2013.

Reviewed in: *Notre Dame Philosophical Reviews*; *Isis*; *Canadian J. of Philosophy*; *Hypatia*

Climate Modeling: Philosophical and Conceptual Issues. Eds. Elisabeth A. Lloyd and Eric Winsberg, Palgrave/Macmillan, London, UK, February 2018. Doi: 10.1007/978-3-319-65058-6,

Adaptation, in 'Elements' in Philosophy of Biology series, Cambridge University Press. 2021.

Units of Selection, Suarez, Javier, and Elisabeth A. Lloyd, forthcoming in Cambridge UP, 'Elements' Series, 2023, in press.

The Logic of Research Questions (LRQ): Resolving Conflicts in the Sciences, Elisabeth A. Lloyd Editor, likely to be submitted to Oxford UP, an edited collection of available LRQ real-life cases in the sciences: already have essays addressing debates in: Archaeology, Animal Behavior, climate Science, paleoclimatology, ecology, evolutionary theory, neuroscience,, (In Progress)

ARTICLES:

- (1) "The Nature of Darwin's Support for the Theory of Natural Selection," Philosophy of Science 50, March 1983, pp. 112-129.

[This is a proposal to understand Darwin's theories of natural selection and evolution as proposals of informal model outlines (or model "types"), instead of the usual mandated-at-the-time axiomatized sets of sentences. I sketched the basic model outlines and argued that much of Darwin's Origin of Species was full of evidence presented to fill in the blanks present in the model outlines.]

- (2) "A Semantic Approach to the Structure of Population Genetics," Philosophy of Science 51, June 1984, pp. 242-264.
- (3) "Thinking about Models in Evolutionary Theory," Philosophica 37, special issue on Contemporary Issues in Philosophy of Biology, 1986, pp. 87-100.
- (4) "Evaluation of Evidence in Group Selection Debates," Philosophy of Science Association Proceedings, Vol. 1, 1986, pp. 483-493.
- (5) "Mathematical Models and the Structure of Evolutionary Theory," Selected Papers, Sections 8 & 9, 7th International Congress of Logic, Methodology and Philosophy of Science, Reidel, 1987.
- (6) "The Semantic View Defended," invited response to "The Nature of Evolutionary Theory: The Semantic Challenge," Peter B. Sloep and Wim Van der Steen, in Biology and Philosophy 2 (1), January 1987, pp. 23-26.

- (7) "Confirmation of Evolutionary and Ecological Models," Biology and Philosophy 2 (3), July 1987, pp. 277-293.
- (8) "The Semantic Approach and its Application to Evolutionary Theory," Philosophy of Science Association Proceedings, Vol. 2, 1988, pp. 278-285.
- (9) "A Structural Approach to Defining Units of Selection," Philosophy of Science 56, September 1989, pp. 395-418.
- (10) "'Intelligent' Evolution and Neodarwinian Straw Men," invited response to "Are Species Intelligent?" by Jonathan Schull, Behavioral and Brain Sciences 13 (1), March 1990, pp. 81-82.
- (11) Evelyn Fox Keller and Elisabeth A. Lloyd, "Introduction," in Keywords in Evolutionary Biology. Eds. Evelyn Fox Keller and Elisabeth A. Lloyd. Cambridge, MA: Harvard University Press, 1992, pp. 1-6.
- (12) "Unit of Selection," in Keywords in Evolutionary Biology. Eds. Evelyn Fox Keller and Elisabeth A. Lloyd. Cambridge, MA: Harvard University Press, 1992, pp. 334-340.
- (13) Elisabeth A. Lloyd and Stephen Jay Gould, "Species Selection on Variability," Proceedings of the National Academy of Sciences 90, January 1993, pp. 595-599.
 [This paper is the product of three years of my arguing to Gould that he was wrong about species selection in his then-current or new publications, both alone and with Elisabeth Vrba. I started in Fall of 1983, and finally persuaded him in Fall, 1986, on a train ride back from visiting Vrba, where he wanted to see if I could persuade Vrba of my analysis, based the draft species selection chapter of my new book, which I utterly failed to do, at least, officially; but Gould was persuaded on the return train ride to Boston, and suggested we publish a paper together, which was first drafted that Fall, 1986. My dissertation book was published anyway with that same analysis in it later (1988) as my first book, and when Vrba next published, she held a compatible view (see her 1989; she and her student later credit that view to "Gould" alone (XX and Vrba), although she knows it is not originally his, having read my chapter, and hosted us for a day at Yale.]
- (14) "Pre-theoretical Assumptions in Evolutionary Explanations of Female Sexuality," Philosophical Studies 69, January 1993, pp. 139-153.
 ** Reprinted in Feminism and Science. Eds. Evelyn Fox Keller and Helen E. Longino, Oxford University Press, 1996.
 ** Reprinted in Feminist Theory: A philosophical anthology. Eds. Anne Cudd and Robin O. Andreasen. Oxford, UK: Blackwell, 2005.
 ** Reprinted in Conceptual Issues in Evolutionary Biology. Ed. Elliott Sober, Cambridge, MA: MIT Press, 2006, pp. 161-172.
- (15) Elisabeth A. Lloyd and Carl Anderson, "Empiricism, Objectivity and Explanation," Midwest Studies in Philosophy, Vol. XVIII, Eds. P.A. French, T.E. Ueling, H.K. Wettstein. Notre Dame, IN: University of Notre Dame Press, 1993, pp. 121-131.
- (16) "Normality and Variation: The Human Genome Project and the Ideal Human Type," in Are Genes Us? The Social Consequences of the New Genetics, Ed. Carl F. Cranor, Rutgers University Press, 1994, pp. 99-112.
 ** Reprinted in The Philosophy of Biology, Eds. David L. Hull and Michael Ruse, New York, NY: Oxford University Press, 1998.

- (17) "Rx: Distinguish Group Selection from Group Adaptation," Invited Response to "Re-introducing Group Selection to the Human Behavioral Sciences," David S. Wilson & Elliott Sober, Behavioral and Brain Sciences 17, 1994, pp. 628-629.
- (18) "Objectivity and the Double Standard for Feminist Epistemologies," Synthese 104, 1995, pp. 351-381.
- **Reprinted in Realist Methodology, Ed. Wendy Olsen, London, UK: Sage Publications, 2010. (Part of Sage Benchmarks of Social Research Methods, published as four reprinted volumes.)
- (19) "Feminism as Method: What Scientists Get that Philosophers Don't," Philosophical Topics 23 (2), Fall 1995, pp. 37-68.
- (20) "The Anachronistic Anarchist," Philosophical Studies 81, 1996, pp. 247-261.
- (21) "Science and Anti-Science: Objectivity and its Real Enemies," in Feminism, Science, and the Philosophy of Science. Eds. Lynn Hankinson Nelson and Jack Nelson. Dordrecht, The Netherlands: Kluwer, 1996, pp. 217-259.
- (22) "Feyerabend, Mill, and Pluralism," Philosophy of Science 64 (4), Sept. 1997, pp. S396-408.
- **Reprinted in The Worst Enemy of Science? Essays in memory of Paul Feyerabend. Eds. John Preston, Gonzalo Munevar, and David Lamb, Oxford, UK: Oxford University Press, 2000, pp. 115-124.
- **Reprinted in Paul Feyerabend in Dialogue, ed. Stefano Gattei, Boston Studies in History and Philosophy of Science, Springer, Forthcoming, 2024.
- (23) "Models," Routledge Encyclopedia of Philosophy in Vol. 6. Eds. Edward Craig and Luciano Floridi, New York, NY: Routledge, 1998, pp. 443-447.
- (24) "Evolution, Theory of," Routledge Encyclopedia of Philosophy in Vol. 3. Eds. Edward Craig and Luciano Floridi, New York, NY: Routledge, 1998, pp. 476-483.

ARRIVED AT INDIANA

- (25) Stephen Jay Gould and Elisabeth A. Lloyd, "Individuality and Adaptation Across Levels of Selection: How Shall We Name and Generalize the Unit of Darwinism," Proceedings of the National Academy of Sciences USA 96 (21), Oct. 1999, pp. 11904-09.
- [This is a theoretical paper following up our key 1993 paper [#13 above] on species selection (see Coyne and Orr, *Speciation*, 2004, and discussion in Gould's Opus, *The Structure of Evolutionary Theory*), in which Stephen Jay Gould announced that he had changed his mind about what is required for species selection, and now agreed with my analysis of species selection (published in my 1988/1994 book), i.e., my analysis of the structure of evolutionary theory. This paper elaborates some of the chief consequences of that commitment regarding the levels and units of selection. This is a top science journal, h-5 index 215, Median 286. Background Point: The "units and levels of selection" has been the central or core research problem for my field of philosophy of biology, from about 1980 until the present.]
- (26) "Evolutionary Psychology: The burdens of proof," Biology and Philosophy 14, April 1999, pp. 211-233.
- **Reprinted in Evolutionary Psychology. Eds. Stefan Linquist and Neil Levy. Farnham, UK: Ashgate Publishing, 2010.

[This article critiquing the foundations of the new field of evolutionary psychology was originally published in the flagship journal in my specialty of philosophy of biology, Biology and

Philosophy. It has been very widely taught and according to the journal website, has been cited 47 times, putting it in the 96th percentile in the Springer database, although GoogleScholar has the citation rate at 132, using its broader database. It was reprinted in this textbook on the new science of “evolutionary psychology” more than a decade after its publication.]

- (27) “Groups on Groups: Some dynamics and possible resolution of the Units of selection debates in evolutionary biology,” Biology and Philosophy 15 (3), 2000, pp. 389-401.

[An article on the central question in the field, the units of selection debates, in a top journal in the field. Philosopher David Hull was especially admiring of this article. According to the journal database it is cited 7 times, putting it in the 83rd percentile of the Springer journal database. Google scholar’s database has it cited 14 times.]

- (28) “Units and Levels of Selection: An anatomy of the units of selection debates,” in Thinking about Evolution: Historical, Philosophical and Political Perspectives. Eds. Rama Singh, Costas Krimbas, Diane Paul, and John Beatty. Cambridge University Press, 2001, pp. 267-291.

**Reprinted (2007, in edited form) in A Cambridge Companion to Philosophy of Biology, Eds David L Hull and Michael Ruse, Cambridge UP.

[This is my first long and complete article outside my 1988 book, and the short 1992 piece in our Keywords, offering a more recent analysis of the units of selection debates as they existed in biology. John Maynard Smith, one of the world’s leading evolutionists, and someone whose work I critique quite sharply in this article, wrote a review of this book, in which my article appeared, and this is part of what he wrote:

“For me, the most stimulating essay in the book is that by Elisabeth Lloyd on Units and Levels of selection. She argues, correctly I believe, that much of the confusion has arisen because the same terms have been used with different meanings by different authors. ... Lloyd’s essay deserves careful reading” (Evolution 55(7) 2001, p. 1497). The article and its descendants are cited 158 times.]

- (29) “Science gone astray: Evolution and rape,” Michigan Law Review 99 (6), 2001, pp. 1536-1559. [The editors of the Michigan Law Review invited me to write an essay review on a ghastly book on the evolution of rape. They were interested in this especially because of the potential that some may use a biological defense of rape, based on the ideas in this book. I wrote a very long, detailed analysis critiquing the book. This essay came to the attention of a social scientist, Cheryl Brown Travis, who invited me to write an article based on my analysis for her book, Evolution, Violence, and Gender. Please see item (33) in this bibliography.]

- (30) “Evolutionary theory, Structure of,” in Encyclopedia of Social and Behavioral Sciences, London: Elsevier, 2001, pp. 5028-5033.

[This essay review of the structure of evolutionary theory is based on my 1994 book, *The Structure and Confirmation of Evolutionary Theory*, published by Princeton Univ. Press.]

- (31) Elisabeth A. Lloyd and Marcus W. Feldman, “Evolutionary Psychology: A view from evolutionary biology,” Psychological Inquiry 13 (2), 2002, pp. 150-156. (published with a rebuttal)

[Leading population geneticist Marcus Feldman was crucial to helping me write this article critiquing a particular pattern manifesting itself in the field of evolutionary psychology, involving their universal use and dependence on oversimplified genetics models, and their correlated lack of using a more complete and sophisticated type of evolutionary genetics model that better represents true evolutionary dynamics. In this paper we also critiqued the methods proposed in a certain paper by a pair of psychologists who had outlined a research program in evolutionary psychology. The journal invited these authors to respond to our paper, and their rebuttal was published side-by-side next to our article,

in this leading journal in theoretical psychology and methodology. I just recently read a nice paper written by a philosopher analyzing these papers – their original paper, our critique, and their rebuttal. This article is cited 53 times according to GoogleScholar.]

- (32) “Reductionism in Medicine: Social aspects of health,” In Promises and Limits of Reductionism in the Biomedical Sciences. Eds. Marc Van Regenmortel and David Hull. J. Wiley and Sons, 2002, pp. 67-82.

[This is a paper in the field of the philosophy of medicine, concerning how social standing can make differences to health outcomes, and reflecting on biomedical methodology and the investments of research funds. It was based on a talk I gave at a conference in Paris in 2001, which concerned reductionism in its various forms as a methodology. This book is co-edited by a prominent European philosopher and one of the two highest status American philosophers of biology, David Hull. (The other is Michael Ruse.)]

- (33) “Violence against Science: Evolution and rape,” in Evolution, Violence, and Gender, Ed. Cheryl Brown Travis, MIT Press, 2003, pp. 235-261.

[This is the paper elaborating my earlier Michigan Law Review paper; this analysis investigates the issues further, and less combatively.]

- (34) Elisabeth A. Lloyd and Stephen Crowley, “Essentialism and human nature,” In Encyclopedia of Life Sciences. London: Nature Publishing Group. [doi:10.1038/npg.els.0003453] (2003)
<http://www.els.net/>

[This is a philosophical piece written for a science encyclopedia with my talented research assistant at the time, Stephen Crowley.]

- (35) “Kanzi, evolution and language,” Biology and Philosophy 19 (4), Sept. 2004, pp. 577-588.

[I was inspired to write this research paper breaking new ground, for a conference where I would meet the trainer of Kanzi, a bonobo claimed to have certain English language capacities or skills. I developed this analysis through using some ideas from primatologist Frans de Waal, with whom I have discussed these issues, and I extended some concepts that he had explored. The paper attacks both Chomsky and Pinker’s views on the origins of the language capacity. This paper is widely assigned in both philosophy and cognitive science classes, and researchers write to me fairly often about it. The Journal says this is cited 5 times, putting it in the 79th percentile of all Springer publications. Google Scholar has recorded 19 citations. Altmetric score is 9, among 3,635,015 research outputs, it is in the **90th percentile**, putting it in the **top 10% of all research outputs ever tracked by Altmetric.**]

- (36) “Why the Gene will not Return,” Philosophy of Science 72, April 2005, pp. 287-310.
** (Prompted a symposium, rebuttal, and co-authored response, published together.)

[When I submitted this paper concerning genic selection and the final fighting ground of the units of selection debates to the top journal in the field of philosophy of science, the official journal of our Philosophy of Science Association, Philosophy of Science, the editor contacted me, asking if it would be OK to turn the publication of my paper into a symposium event in the journal. These are very rare, he said, but he thought, based on the reviewers’ reports, that this paper represented a major turning point in the field, since it successfully vanquished my opponents, the genic selectionists, thereby solving the most pernicious of the unsolved problems still remaining in the units of selection debates. Thus it was important enough to merit a big discussion in the journal. The editor commissioned Ken Waters, a target of mine in this debate, to write an opposing piece responding to my new paper, and then also commissioned me to write a rebuttal to Waters’ piece in turn. I asked my graduate students if they would like to help write my rebuttal, and some of them took up the opportunity to co-author one section of the paper, thus the multiple authorship of item # (37). This paper (#36) is widely assigned to undergraduate and graduate classes, along with its rebuttal paper by Waters, and our rebuttal to Waters, # (37) below. Google Scholar notes it is cited by 46.]

- (37) Lloyd, Elisabeth, Matthew Dunn, Jennifer Cianciolo, and Costas Mannouris, “Pluralism without genic causes?” Philosophy of Science 72, April 2005, pp. 334-341.

- (38) “Units and Levels of Selection,” Stanford Encyclopedia of Philosophy, <http://www.plato.stanford.edu/entries/selection-units/>, August 2005. Revised 2012.

[I was extraordinarily pleased to be the one invited to write the entry on “Units and levels of selection” for the authoritative and popular *Stanford Encyclopedia of Philosophy*. This is a central reference for both undergraduate and graduate students, as well as many faculty, and writing on this most central topic in my field is a most coveted job. I based this piece on my analysis offered in the 2001 paper, (discussed by John Maynard Smith, above,) # (28), but it is also updated with my new analysis of genic selection from the 2005 *Philosophy of Science* paper, # (36) “Why the Gene will Not Return,” & # (37) as well.]

- (39) “Theories,” in The Philosophy of Science: An Encyclopedia, eds. Sahotra Sarkar & Jessica Pfeifer. NY: Routledge. 2006, pp. 822-828.

[The topic of theories and theory structure are central issues in the philosophy of science, and I was delighted to write on them for this useful reference book for the field.]

- (40) “Response to Puts and Dawood’s ‘The Female Orgasm: Adaptation or Byproduct?’ — Been There,” Twin Studies and Human Genetics 9 (4): 603-608 (August 2006)

[Sexology researchers David Puts and Khytam Dawood published a review of my book, *The Case of the Female Orgasm*, in *Twin Studies*, a prestigious journal in human genetics and human evolution, and the editor invited me to write a full-length rebuttal of their review, which I was happy to have the chance to do. They raise the most controversial scientific issue arising out of my book, which concerns whether female orgasm is an evolutionary adaptation, which means it has a reproductive function, or whether it is an evolutionary ‘byproduct’, or, as I like to say, a *bonus* of selection on the male orgasm, due to identical development of organs in both sexes in the womb. While there is zero evidence that orgasm helps reproduction — that is, women with orgasm are not likely to have more or better babies — many scientists just have a belief that this *must* be true, and argue fiercely with me about this. I am not against this idea at all, but I do require *evidence* for it, and point out that the alternative explanation, the so-called ‘byproduct’ or ‘bonus’ one, has good evidence supporting it, while their favored adaptive or function explanation has none. This makes some people quite mad. But it’s not my fault that there is no evidence supporting their favored, functional view! I always encourage them to search for real, good, evidence supporting their hypothesis. The piece has been cited by 6.]

- (41) “Response to Commentators,” Metascience June 2006, pp. 425-433.

[Metascience is an interdisciplinary journal, for philosophers, scientists of all fields, historians and sociologists of science, and general readers from the humanities. The editors choose focal books or articles, and then choose a set of readers to discuss the focal reading, in a “Review Symposium.” The author of the focal reading then is invited to respond to this set of readers’ commentaries, in a “Response to Commentators.” This is a rare and exciting opportunity for constructive discussion across disciplinary boundaries. The editors chose my book, *The Case of the Female Orgasm*, as a focal reading, and invited historian of science Erika Milam, biologist and psychologist Gillian R. Brown, philosopher Stefan Linquist, and sociologist of science Steve Fuller, as readers. It was a great privilege to have such a distinguished set of commentators, and to have my response published in such a widely-read journal. There are 4 citations of this response in print, although the journal has this at 3, which is in the 73rd percentile.]

- (42) Lloyd, Elisabeth A., Richard C. Lewontin and Marcus W. Feldman, “The Generational Cycle of State Spaces and Adequate Genetical Representation,” Philosophy of Science 75 (2): 140-156, 2008.

[This is a very technical piece in philosophy of biology and genetics, and I collaborated with two of the world’s renowned evolutionary population geneticists to support my ideas. But basically, the point is very simple: all of the philosophers (on both sides of the key units of selection issues) had been making a fundamental mistake, in claiming that group and kin selection could be reduced to genic selection through the equivalence of the models, and they all cited a certain 1994 paper when making this claim. I realized that this 1994 paper was mistaken, and set out to prove it (with my two co-authors). Thus, I showed that all the conclusions that the other philosophers had made relying on that equivalence in the 1994 paper, were mistaken. This is a very significant finding, with serious implications for a host of

claims about the units of selection. This joint paper took 3 years to write, especially since I had to travel to both coasts to consult with my co-authors (at Harvard and Stanford). Note that this paper was published in the top journal in the field. There are 16 citations listed in Google Scholar.]

- (43) "Units of selection," The Cambridge Companion to the Philosophy of Biology. Eds. David Hull and Michael Ruse. Cambridge University Press, 2007, 44-65.

[Again, I was especially pleased to be chosen by the two most distinguished people in philosophy of biology, David Hull and Michael Ruse, to write on this most central issue in the field for the Cambridge textbook for the field. I had a health issue when this needed to be prepared for publication, and Hull revised my 2001 essay to be more accessible to undergraduate readers.]

- (44) "A Fantastic Bonus," American Sexuality, June 2007, 3pp. online.

[The Ford Foundation, which runs this web magazine to further public understanding of sexuality, invited me to write a brief, publicly accessible article about my book.]

- (45) Kim Wallen and Elisabeth A. Lloyd "Clitoral variability compared with penile variability supports nonadaptation of female orgasm", Evolution and Development 10:1 (2008) pp. 1-2.

[Neurophysiologist Kim Wallen, from Emory University, and I became collaborators in 2005, and published this paper on the comparative anatomy of men and women based on their common development and evolution, in the founding, top journal in evolutionary developmental biology. There are 50 citations of this paper. This paper has an Altmetric score of 38, and is in the top 5% of all research outputs ever scored by Altmetric. It is in **the 97th percentile of all research outputs ever tracked.**]

- (46) Kim Wallen and Elisabeth A. Lloyd "Inappropriate comparisons and the weakness of cryptic choice: A reply to Vincent J Lynch and D.J. Hosken," Evolution and Development 10:4 (2008) 398-399.

[Wallen and I published this response to our critics in this later issue of the same journal.]

- (47) "Varieties of Support and Confirmation of Climate Models," Proceedings of the Aristotelian Society Supplementary Volume LXXXIII: 217-236, 2009.

**(Respondent: Wendy Parker.)

[I was given the extraordinary honor of being invited to give a keynote lecture at the extremely prestigious Aristotelian Society in Great Britain, in 2009, an opportunity rarely awarded to American scholars, and especially unusual for philosophers of science. I chose to present my new research and analysis concerning climate models and how they are empirically supported, which was very well received. The Society publishes the Keynote lectures in their Proceedings; my paper is cited by 36, according to Google Scholar.]

- (48) "Confirmation and Robustness of Climate Models," Philosophy of Science 77: 971-984 (December 2010)

[I organized a symposium at the 2008 Philosophy of Science Association meeting, a fiercely competitive situation in which only one out of four proposals was accepted that year. Moreover, of those Symposia actually on the program, only a minority of symposium papers were then invited for publication. This paper is a continuation and refinement of my research concerning how climate models are compared with and confirmed by empirical and experimental evidence. This is also the context in which I introduced my first preliminary ideas about robustness in climate science reasoning. This paper is cited by 47.]

- (49) Lloyd, Elisabeth A and Sean Valles "Behavioural Phenotypes: Goals and Methods." In: Encyclopedia of Life Sciences 2010, John Wiley & Sons, Ltd: Chichester
<http://www.els.net/> [DOI: 10.1002/9780470015902.a0005856.pub2]

[This is mostly a methodology paper on an evolutionarily and psychological significant topic. I asked one of my graduate students who knows the field, Sean Valles, to co-author it with me.]

- (50) Kim Wallen and Elisabeth A. Lloyd, "Sexual Arousal in Women: Genital Anatomy and Orgasm in Intercourse," Hormones and Behavior (May) 59(5): 780-792, 2011.
[It has been a great mystery and a topic of scientific research for at least a century: why do some women have orgasms with vaginal intercourse and some do not? In this research paper, published in a top journal in sex physiology, Kim Wallen and I present evidence that we have the answer to that question: anatomical differences, specifically, the distance from the vaginal opening (in our measurements, the urinary opening) and the clitoris. We present two datasets that confirm this finding, one French and one American, in which there is a very robust correlation between this measured distance and whether the woman reliably has orgasm with intercourse or not. The difference between types is greater than two standard deviations, and r is 0.6 for the combined datasets. We can even predict whether or not a woman will have an orgasm reliably with intercourse, on the basis of her measurements, with these data. Our findings caused a big splash in the world of sex research, and also in the general press, e.g., an article on our discovery was an "Editor's Pick" on the front webpage of CNN. Our findings have been confirmed by other research groups using MRI measurements. 49 citations on Scopus: Among the highest-scoring outputs from this source. This paper has been cited 96 times, according to Google Scholar. High attention score (99th percentile) compared to outputs of the same age, and it has a score 243. Altmetric tracked 11,588,726 research outputs across all sources so far. Compared to these this one has done particularly well and is in the 99th percentile.]
- (51) Jun Otsuka, Trin Turner, Colin Allen, and Elisabeth A. Lloyd, "Why the Causal View of Fitness Survives," Philosophy of Science 78(2): 209-224, 2011.
[One of the chief emerging problems in the field of philosophy of biology has been the status of natural selection theory: some analysts have counter-intuitively claimed that it is merely statistical, instead of being both statistical and causal. In this paper, my co-authors and I contradict the results of an author arguing for a statistical interpretation of the theory. The paper emerged out of a reading group Sander Gliboff and I organize in my department, called the Biology Studies Reading Group. We read this paper one evening, and we felt our critiques were good enough to publish, so my colleague Colin Allen and I had the students write up a draft, and then we completed the paper, submitted it, and it was accepted without revisions at the top journal in the field. The paper has been cited 14 times.]
- (52) "The role of 'complex' empiricism in the debates about satellite data and climate models" Studies in the History and Philosophy of Science 43: 390-401, 2012.
[This is both a case study in the history of recent science and a presentation of a new view of how to analyze and understand the philosophy of climate science. It took me four or five years to learn enough climate science, by reading and talking with the climate scientists at NCAR (the National Center for Atmospheric Research) in Colorado during the summers and at the American Geophysical Union meetings in December in San Francisco, to understand and write up this episode. Along the way, I developed a new vision of the philosophy of climate science that is very different from conventional philosophy of other sciences. I propose this new approach, "complex empiricism," in this paper, and use several climate scientists' own words to elaborate this view. I take this article as a launching pad for the new view, as well as the founding of a significantly detailed case study of the debate about satellite data and climate models, for philosophers and historians to reference in the future. I'm told that this piece is taught in both undergraduate and graduate classes in philosophy of science and ethics. It is also popular among climate scientists. And I received an invitation from the editors of a volume, Models and Experiment, being published with University of Chicago Press, inviting me to include a version of this research paper in their volume. Unfortunately, it came at a bad time for me, and I had to decline the invitation. The paper has been cited 17 times.]
- (53) Major Revision of "Units and Levels of Selection," Stanford Encyclopedia of Philosophy, <http://www.plato.stanford.edu/entries/selection-units/>, (August 2005; March 2012).
- (54) "The evolution of female orgasm: New evidence and response to feminist critiques," (2012) In Sex, Reproduction, and Darwinism, Eds. Filomena de Sousa and Gonzalo Munevar. London, UK. Pickering and Chatto, pp. 109-125. OR 2013?

[This essay contains what at the time was a brand new argument and analysis concerning alternative methodologies in evolutionary research that I was just developing, later called the “Logic of Research Questions.” I present this as a contrast between methods, called: “methodological adaptationism” versus the “the evolutionary factors view.” I use the female orgasm example as a case study, but it is not the main point of the paper. I also present some new analysis and rebuttals to some feminist critiques of my 2005 book here, which I have not addressed elsewhere.]

- (55) Wallen, Kim, PZ Myers, and Elisabeth Lloyd, (2012) “Zietsch & Santtila’s study is not evidence against the byproduct theory of female orgasm,” Animal Behaviour **84**: e1-e4. doi.10.1016/j.anbehav.2012.05.023.

[There was world-wide publicity for a critique by Zietsch and Santtila of my 2005 book that was published in Animal Behaviour in September, 2011. I received many scientific and popular press inquiries about their paper, American but especially international. The authors set out to test the byproduct/bonus account of female orgasm (see above info in # (40)) with a population of thousands of identical and fraternal twins, using genetical information, and they claimed to have shown that the byproduct/bonus account was shown to be false. But their research contained a fatal and fundamental mistake in its methods, and so did not prove anything at all against either the byproduct account or my book. Because of this fatal mistake, the journal, Animal Behaviour, agreed to let me and my co-authors publish a critique exposing their mistake, and showing that they had failed to show that there was anything wrong with my book. Kim Wallen and PZ Myers helped me with some arguments here, while I drafted the entire final article as it was published in Animal Behaviour. This paper is cited 7 times, and has an Altmetric score of 16, “Altmetric has tracked 11,352,457 research outputs across all sources so far. Compared to these this one has done particularly well and is **in the 93rd percentile; it’s in the top 10% of all research outputs ever tracked by Altmetric.**”]

- (56) “Gould and Adaptation: San Marco 33 years later,” In Stephen J. Gould’s Legacy: Nature, History, Society, G. Danieli, ed. Springer, 2013. DOI: 10.1007/978-88-470-5424-0_2.

[This was a talk for a conference honoring legendary evolutionist and paleontologist Stephen Jay Gould on the occasion of the tenth anniversary of his death. In this article, I further developed my analysis contrasting methods of evolutionary inquiry: “methodological adaptationism” vs. “the evolutionary factors view.” The ideas were very well received in Venice, Italy, where I gave the talk. While I was there in Italy, they also published an interview with me in the Sunday magazine for *La Repubblica*. Because my book was translated into Italian back in 2006, they take an interest in my work there.]

- (57) “Constitutional Failures of Meritocracy and their Consequences,” HOPOS, journal of the International Society for the History of Philosophy of Science, Vol 3, Spring 2013, pp. 142-144.

[I was invited to write this piece after a discussion ensued regarding women’s participation in a Feyerabend conference, or lack thereof. This piece draws on my previous work on Feyerabend and my feminist work. It is cited three times.]

- (58) “Philosophical Adventures,” Dewey Lecture, Proceedings and Addresses of the American Philosophical Association (2013) Vol. 87 pp. 93-113.

[The Dewey Lecture is a unique invitation to reminisce about the influences on one’s career and ideas, and to offer a personal retrospective on how one’s philosophical ideas developed. I felt greatly honored to be chosen to give a Dewey Lecture.]

- (59) Justin Garcia, Kim Wallen, Elisabeth A. Lloyd and Helen Fisher (2014) “Orgasm occurrence across sexual orientations in a probability sample of U.S. singles,” Journal of Sexual Medicine **11** (11) pp. 2645-2652. DOI: 10.1111/jsm.12669.

[I helped compose the questions on “orgasm” for this national questionnaire, and then I co-wrote the article with Justin Garcia. The article was broadly written up in the national and international press, being very well-received on topics of great public interest. There were **45 citations**, according to Google Scholar. The Altmetric Attention score was 544, in the 99th percentile

compared to outputs of the same age and 98th percentile compared to outputs of the same age and source. “Altogether, Altmetric has tracked 11,587,328 research outputs, and this one has done particularly well and is in **the 99th percentile**.” I was interviewed by a variety of publications, including a long interview in the Guardian.]

- (60) Lloyd, Elisabeth and Vanessa Schweizer, "Objectivity and 'Intuitive Logics' vs. Cross-Impact Balance (CIB) Approaches to Environmental Futures," Synthese 191 (10), 2049-2088, (2014) 7/1. doi: 10.1007/s11229-013-0353-6.
<https://link.springer.com/article/10.1007/s11229-013-0353-6>

**Cited in Ch. 21, IPCC (UN's Intergovernmental Panel on Climate Change) 5th Assessment Report (AR5 WGII, p. 1183) 2014.

**Diamond Award from Synthese for ten most downloaded papers of 2014.

**Chosen among the 100 Ground-breaking articles chosen by Editors-in-Chief for Springer's "Change the World" 2016 Open Access Event.

[With 14 citations, this article is in the 90th percentile in CrossRef. According to Synthese. According to GoogleScholar, it has 37 citations. It has an Altmetric Attention score of 14, which is in the 90th percentile of outputs of this age and source. Altmetric has tracked 8,642,273 research outputs across all sources so far. Compared to these this one has done particularly well and is in **the 92nd percentile**. However, I am most excited about it being cited in the fifth IPCC (Intergovernmental Panel on Climate Change) Report, sponsored by the UN, a sign that my work is accepted or respected in the climate science community.]

- (61) "Structure of Evolutionary Theory," International Encyclopedia of Social and Behavioral Sciences 2nd Edition. Wm. Durham, Ed. London: Elsevier, 2015, in press.

[This is an update and expansion of my earlier piece for the Encyclopedia, # (30). I added my analysis of Darwin's own work in *On the Origin of Species*, as well as adding discussions of alternative analyses of the structure of the theory. The Editor-in Chief for the Encyclopedia, James Wright, wrote me a personal note about my newly revised, expanded article, which I was so grateful to receive as I was recovering from my spinal surgery: "Dr. Lloyd, please accept my thanks for an exceptionally clear and persuasive treatment of a difficult, complex topic. I learned a great deal from working through your essay."]

- (62) "Orgasm (evolution)" The International Encyclopedia of Human Sexuality, Eds. Patricia Whelehan & Anne Bolin: John Wiley and Sons, Ltd. 2015, pp. 831-860.
 DOI: 10.1002/9781118896877.wbiehs322

[This topic is highly controversial, and I was very happy to be tapped as a leading voice on the subject for this authoritative publication. They gave strict guidelines about how many words, what kinds of detail, and keywords, how many references, and so on, so it was an interesting writing exercise!!]

- (63) "Model robustness as a confirmatory virtue: The case of climate science," Studies in History and Philosophy of Science, (2015) 49: 58-68. DOI.org/10.1016/j.shpsa.2014.12.002.

[I have delineated a new form of robust inference that is used quite commonly by climate scientists, in their inferences about causes of climate change, but that has not been discussed by philosophers when they analyze robustness. This paper aims to remedy that neglect by the philosophers. I have tested my analysis of what I call "model robustness" on a number of climate scientists, and I was invited to give a presentation of my work to a conference of climate scientists on July 2, 2013, at the meeting of the "International ad hoc Detection and Attribution Group" in Boulder, at the National Center for Atmospheric Research (NCAR). This is the international group of scientists from which the lead authors of the chief reports on the causes of climate change, from the IPCC, the National Academy of Sciences, and other national and international studies, are drawn. I felt it was an enormous privilege to be invited, as a philosopher, to speak to this very distinguished group of climate researchers. The journal in which the paper is published is the top interdisciplinary journal in my field of history and philosophy of science, and the paper

has been cited by 28 publications according to Google Scholar since its publication in 2015. Comparable rankings from other journals would put this in the 90th-99th percentile rankings of citations.]

- (64) “Adaptationism and the Logic of Research Questions: How to think clearly about evolutionary causes,” Biological Theory, (July 2015 online) (15,000+ words) DOI 10.1007/s13752-015-0214-2. December 2015, Volume 10, Issue 4, pp 343-362.

[This paper addresses and answers a 50-year old puzzle in evolutionary biology, especially of animal behavior, involving the nature of adaptation and evidence for it and other alternative explanations. While the most famous paper on this topic is Gould and Lewontin’s 1979 “Spandrels of San Marco” piece, my paper goes further than theirs in explaining the logical form of adaptive explanations and their alternatives, while building on their approach. In the writing of the paper, I introduce a new method in philosophy of science, the “Logic of Research Questions,” a tool which has been adopted by a number of other researchers and students since the publication of this paper and the lectures I have given presenting its solution of this problem, including Gunter Wagner (biology), JR Griesemer (philosophy), Samuel Ryan Ketcham (philosophy), Anna Warrener (archeology), Ann-Sophie Barwich (cognitive science), Lynda Delph (biology), Michael Wade (biology), Ted Shepherd (climate science), and Naomi Oreskes (history of science). The paper has been downloaded over 1,500 times from the Journal’s website, and according to Google Scholar, has been cited 36 times since its publication four years ago. The journal’s incorrect number of citations at 25, puts it in the 92nd percentile of citation rank, so the Google citation score at 41 would likely be much higher. According to Altmetric, it is one of the highest-scoring outputs from this source, and has a High Attention score of 15 compared to outputs of the same age and source (Top scoring, first). In sum, “Altmetric has tracked 14,777,570 research outputs across all sources so far. Compared to these this one has done particularly well and is in the 90th percentile.”]

- (65) Stephan Lewandowsky, John Cook, Klaus Oberauer, Scott Brophy, Elisabeth A. Lloyd, Michael Marriott, “Recurrent Fury: Conspiratorial Discourse in the blogosphere triggered by research on the role of Conspiracist ideation in climate denial” Journal of Social and Political Psychology, 3 (1) (2015) <http://jspp.psychopen.eu/article/view/443> : <http://dx.doi.org/10.5964/jspp.v3i1.443>

[In this paper, the authors address a controversy in the field of climate science involving Lewandowsky’s analysis of conspiracism in climate denial using cognitive science. My role was in developing a logical analysis of a brand new form of conspiracist ideation, and in checking the evidential support and confirmation of the various claims made in the paper. This role was continued in the later paper on “Thuncing”, below, but this is where it started. This article has accumulated 41 citations since being published less than four years ago, and has been downloaded a record-breaking (for the journal) 28,115 times. Its Attention score of 61 is in the top 5% of research outputs scored by Altmetric, and is in the 97th percentile compared to outputs of the same age. “Altmetric has tracked 12,140,050 research outputs across all sources so far. Compared to these this one has done particularly well and is in the 98th percentile.”]

- (66) Theis KR, Dheilly NM, Klassen JL, Brucker RM, Baines JF, Bosch TCG, Cryan JF, Gilbert SF, Goodnight CJ, Lloyd EA, Sapp J, Vandenkoornhuyse P, Zilber-Rosenberg I, Rosenberg E, Bordenstein SR. (2016). Getting the hologenome concept right: an ecoevolutionary framework for hosts and their microbiomes. *mSystems* 1(2):e00028-16. doi: 10.1128/mSystems.00028-16.

[This piece, an ‘Editor’s Pick’, which has 160 citations as of May 5, 2020, has been extremely successful and widely-cited across biological fields. I was invited to contribute to this multi-authored paper because my work on holobionts as units of selection (see #80, below), became well-known among the biological community before publication. I contributed a discussion of holobionts’ identities and requirements for the paper, helping the co-authors with the fundamental definitions in the paper. This paper has an Attention Score of 106, and was recommended in F1000 Prime, a leading recommendation system. Altmetric has tracked 13,361,327 research outputs across all sources so far. Compared to these this one has done particularly well and is in the 98th percentile.]

- (67) “What a Difference Research Questions can make!” (2016) Proceedings and Addresses of the American Philosophical Association Vol. 90. Romanell Prize Lecture. pp. 129-153.

[I was chosen by the National office of the American Philosophical Association to give the prestigious Romanell Prize Lecture in 2016. There is only one such Prize offered each year, which comes with a monetary award, as well as the opportunity to give an hour-long lecture, with an hour of commentary (in this case, by James R. Griesemer). The lecture is later published in the Proceedings. In this lecture, I presented my new analysis based on the “logic of research questions” of adaptation, and offered some novel analyses of new previously unpublished examples taken from biological science to this philosophical audience. The lecture is supposed to be based on a “naturalistic” approach to philosophy, which fairly characterizes my usual approach.]

- (68) Stephen Lewandowsky, John Cook, & Elisabeth A. Lloyd (2016) “The ‘Alice in Wonderland’ Mechanics of the rejection of (climate) science: Simulating coherence by conspiracism,” Synthese 195(1): 175-196. DOI: 10.1007/s11229-016-1198-6. Sept 19, 2016 online.
<https://link.springer.com/article/10.1007/s11229-016-1198-6>

[This co-authored and co-conceived paper focuses on the self-contradictory nature of claims by climate deniers, and the way that this self-contradiction is not a problem for them because of their conspiracist ideation. It touches on some of the key issues being debated today in the public forum in the US, in which those who deny climate warming and the anthropogenic nature of climate warming are pitted against the consensus of climate scientists who agree that it exists as anthropogenic climate change. The paper was published in fall of 2016. The journal says it has five citations, putting it in the 79th percentile, but it has accumulated 31 citations according to Google Scholar, again putting this paper in the top 5% of Attention Score rankings, at 165. It is the **#1 scoring paper of 1,068 outputs from this source, Synthese**, and is at the 98th percentile of outputs of the same age in Attention Score. This paper is in the **99th percentile of all research outputs ever tracked by Altmetric from any source, of any type**, out of 11,699,632 research outputs. This is also a very influential paper in the public sphere, and was written up in the Guardian newspaper, as well. The paper has been downloaded 19,000 times from the journal’s website.]

- (69) “Models in the Biological Sciences,” in L. Magnani & T. Bertolotti, Handbook of Model-Based Science, Springer, (2017) pp 899-914.

[I was asked to write this because of my early, pioneering work in model-based reasoning in philosophy. I have analyzed biological models since the beginning of my career in graduate school, and this piece goes all the way back to that work. I was honored to be chosen to participate in this authoritative collection of leading authors working in this now-hot field of analysis in the sciences and philosophy.]

- (70) Elisabeth A Lloyd and Stephen Jay Gould (2017) “Exaptation revisited: Changes imposed by evolutionary psychologists and behavioral biologists,” Biological Theory. DOI 10.1007/s13752-016-0258-y

[This was originally started in 2002 as a co-authored piece with me as the lead author. I drafted the original version, and Gould added comments and contributions to the arguments. It was later revived with a new argument based on my “Logic of Research Questions” (see above #64) making up an additional half of the new paper and published. The paper has many readers on Research Gate, where it is read alongside the original “logic of research questions” paper on adaptationism. The article has been downloaded 415 times from the Journal Website, with eighteen personalized recommendations, although it has also been downloaded from my Research Gate site, and has 3 citations, according to the journal, putting it in the 70th Percentile. This paper of 13,750+ words achieved an Attention Score of 9 on Altmetric. It is #18 of 136 outputs from the same source (i.e., the journal, Biological Theory, competing against myself in another BT article), and has a high attention score compared to outputs of the same age (82nd percentile).] “Altmetric has tracked 11,569,319 research outputs across all sources so far. Compared to these this one has done well and is in the **87th percentile**.”]

- (71) Michael Mann, Elisabeth A. Lloyd, and Naomi Oreskes (2017) "Assessing climate change impacts on extreme weather events: Proof of Concept for an alternative (Bayesian) approach," Climatic Change 144:131-142 DOI 10.1007/s10584-017-2048-3.
++With Springboard Commentary by Peter Stott, David J. Karoly, and Francis W. Zwiers, at <https://link.springer.com/article/10.1007%2Fs10584-017-2049-2>.

[The original conception for this paper was developed over lunch between Mann and me, in a discussion of my project on climate change attribution with Oreskes. I had been exploring alternatives to risk-based approaches to attribution, and in discussing these, we hit on the idea of pursuing the Bayesian approach. Mann is responsible for the technical part of the argument in the paper. This paper was controversial enough and original enough to provoke the editors of the journal, Climatic Change, to commission a rebuttal/response piece by leaders of the methods that we are critiquing in our paper. The paper got immediate attention in the media, and has already been discussed on blogs, etc., since it was published in August, 2017. It has been downloaded 1,300 times from the journal website. The journal says it has been cited 8 times, putting it in the 82nd percentile, while Google Scholar says it's been cited 17 times. It has an Altmetric attention Score of 87. This is obviously a hot topic, lest one think it is the topic alone, this paper is #107 of 4,819 outputs from Climatic Change, and #4 of 71 outputs of the same age from the same journal. "Altmetric has tracked 13,347,908 research outputs across all sources so far. Compared to these this one has done particularly well and is in the **98th percentile**."]]

** Cited in Ch. 12, p. 123, IPCC (UN's Intergovernmental Panel on Climate Change) 6th Assessment Report (AR6 WG1) August, 2021.

- (72) David A. Frederick, H. Kate St. John, Justin R. Garcia, & Elisabeth A. Lloyd (2018) "Differences in orgasm frequency among gay, lesbian, bisexual, and heterosexual men and women in a U.S. national sample," Archives of Sexual Behavior: January 2018 Vol 47 (1): 273-288. DOI 10.1007/s10508-017-0939-z (published February 17, 2017 online)

**See interviews in the Guardian, Esquire, Vice, CNN, and more below.

[I was responsible for several of the statistical analyses being run, and participated in, and wrote, a decent part of the analysis of this paper; hence last author credit, a privileged placement in biological publications. This paper was of major interest to both the scientific community and the public, and was featured in major write-ups in the Guardian, Nature, Time, and the Washington Post, among 127 others. We performed a survey of an unprecedented 54,000+ people when searching for the ways that human females achieve orgasm in the context of sexual interaction with both men and women. This feminist study is the largest survey ever performed on lesbian orgasm rates, and only the second one ever done (the first being Garcia et al., #59, above). This paper has an Altmetric score of 1600, and has been cited 87 times since February 2017, according to Google. According to the journal it has been cited 50 times, putting it in the 93rd percentile, and has been downloaded 21,000 times. " This article is in the 99th percentile of the 266,842 tracked articles of a similar age in all journals and the 97th percentile (ranked 2nd) of the 49 tracked articles of a similar age" in this journal. Altmetric has tracked 13,421,387 research outputs across all sources so far. Compared to these this one has done particularly well and is in the **99th percentile**." Lest one think it is just the topic, it is #3 in 2,488 outputs from the same source, and in the **99th percentile** of all outputs of the same age.]]

- (73) "Orgasms and Objectification" (2017) Comment on "The Specificity of Women's Sexual Response and Its Relationship with Sexual Orientations: A Review and Ten Hypotheses" by Meredith L. Chivers. Archives of Sexual Behavior 46: 1191-1194. DOI 10.1007/s10508-017-0970-0

[In this commentary, which has over 600 downloads, I took on a neglected theory, objectification, from psychology and sociology to analyze the theories offered by Chivers. I suggest novel alternative experiments and hypotheses to consider in light of objectification theory. The paper is in the **94th percentile of citation** compared to Arts and Humanities articles of the same age and document type, and has a Field-weighted citation impact on Scopus of 5.87 (A FWCI greater than 1.0 means the article is more cited than expected according to the average, taking into account the year, document type and discipline.)]

- (74) Major Revision of “Units and Levels of Selection,” Stanford Encyclopedia of Philosophy, <http://www.plato.stanford.edu/entries/selection-units/>, (August 2005; March 2012; April 2017).

[The Stanford Encyclopedia of Philosophy has evolved into an authoritative source in the profession, worthy both of citation and class and seminar assignments. This piece, the culmination of work begun in 1982, and ongoing since then, has been cited 150 times in both the philosophical and biological literature. This recent revision required three months of work, involving a text the size of a small book, over 23,400 words. Because this was a major revision much of this was altered or is completely new.]

- (75) Stephen Lewandowsky, Elisabeth A. Lloyd, and Scott Brophy (2017) “When THUNCing trumps thinking: What distant alternative worlds can tell us about the real world” Argumenta, special issue on conspiracism, DOI [10.23811/52.arg2017.lew.llo.bro](https://doi.org/10.23811/52.arg2017.lew.llo.bro)

[Scott Brophy and I defined the core possible worlds semantics of this paper, in which we offer a new definition of a type of conspiracism that we introduced in our 2015 paper together. The possible world semantics present the core of the proposed definition, and distinguish it from all other approaches. I also developed the contrasting structures of normal and conspiracist ideation with regard to the basic reasoning early on in the paper, with Lewandowsky, which frames it.]

- (76) “Multilevel Selection and Units of Selection Up and Down the Biological Hierarchy,” (2017) in Routledge Handbook of Evolution and Philosophy, ed. Richard Joyce, Routledge Press: New York, NY, pp. 19-34.

[Joyce has edited an authoritative volume for philosophy of evolutionary biology. I offer a discussion and presentation of my analysis of units of selection for the general reader. The book was reviewed and called “a superb introduction to the field.”]

- (77) Talia Shirazi, Kaytlin Renfro, Elisabeth A. Lloyd and Kim Wallen (2017) “Women and orgasm during intercourse; Women’s reports and men’s estimates vary with question semantics,” Archives of Sexual Behavior, doi.org/10.1007/s10508-017-1102-6.

[In my 2005 book, I emphasized that there was a paucity of scientific literature concerning whether women had simultaneous clitoral stimulation, when they were reporting on their orgasm rates during intercourse, and what conditions they thought were understood when answering questions about this. Talia Shirazi and co-authors of this paper took up the challenge I laid down there, and performed research concerning whether or not the wording of surveys about female orgasm makes a difference on average to the answers to those surveys; i.e., whether it matters whether we explicitly ask about simultaneous clitoral stimulation when surveying about female orgasm. We present and analyze the results of this experiment. The findings indicate that it does, indeed, make a substantive difference whether clitoral stimulation is included in the survey wording, and that both men and women answer survey questions differently when such wording is included. This article has been cited six times since publication, putting it in the 98th percentile, and has an Attention Score of 111 with Altmetric, and has been downloaded nearly 750 times; put in context, this means that the piece stands at the 97th percentile compared to outputs of the same age and source. Altmetric has tracked 12,039,608 research outputs across all sources so far. Compared to these this one has done particularly well and is in the **98th percentile**. It’s in the top 5% of all research outputs ever tracked by Altmetric.”]

- (78) Correction to Talia Shirazi, Kaytlin J. Renfro, Elisabeth A. Lloyd and Kim Wallen (2017) “Women and orgasm during intercourse; Women’s reports and men’s estimates vary with question semantics,” Archives of Sexual Behavior, doi.org/10.1007/s10508-017-1102-6 [Correction of one author’s middle initial.]

- (79) Joan Roughgarden, Eugene Rosenberg, Ilana Silber-Rosenberg, Scott Gilbert, and Elisabeth A. Lloyd, (2018) “Holobionts as units of selection and a model of their population dynamics and evolution” Biological Theory, <https://doi.org/10.1007/s13752-017-0287-1> published online in 2017

[There are three components to this paper. My analysis of holobionts as units of selection serves as the middle segment of this paper, while the last segment is a population genetics model

composed by Joan Roughgarden, and the first segment is composed by Gilbert and the Rosenbergs. This middle segment, while it bears close resemblance to my work on holobionts in item #80 as units, is NOT the same, and I have made major advances in this analysis, which centers on the use of M. Wade's epigenetic work on maintaining mutualists, which are radical and unpopular—though well-supported—theoretical claims. This work is quite a bit more advanced than that presented in my previous work on the topic, which is published in the MIT book, item #80, and it provides the initial foray into territory later staked out in Lloyd and Wade (2019) (Item #83). This has been cited 14 times according to the journal, giving a rank of 87th percentile; Google Scholar says it's been cited 31 times. This article, at 18,520+ words, was published online in November 2017, and has an Altmetric Attention score of 25. Altmetric has tracked 13,260,816 research outputs across all sources so far. Compared to these this one has done particularly well and is in the **95th percentile**: it's in the top 5% of all research outputs ever tracked by Altmetric.]

- (80) “Holobionts as units of selection: Holobionts as interactors, reproducers, and manifestors of adaptation,” (2018) In *Landscapes of Collectivity in the Life Sciences*, eds. Snait B. Gissis, Ehud Lamm, and Ayelet Shavit, Vienna Series in Theoretical Biology, MIT Press, January 5, 2018. Pp. 351-367.

[A holobiont is simply the collected community of a large organism, like a cow or human, and its microorganisms, for example, those millions of organisms living in the gut and on the skin. There is a question in evolutionary biology about whether these holobionts can evolve as wholes, that is, altogether as entire communities that largely benefit each other, or whether they always should be seen as breaking apart into individually evolving things. In this paper, I offer a novel analysis and argument on the basis of which they should be seen as evolving entities in their entirety, altogether as whole communities. This is accomplished by defining the evolving entities in particular ways, as you can see in the title of the paper: as “interactors,” etc. This is a very controversial position. A more developed position is offered in Roughgarden, Rosenberg, Silber-Rosenberg, Gilbert, and Lloyd, (2018), and my current position is offered in Lloyd and Wade (2019). This paper is cited 14 times according to Google scholar.]

- (81) “A Glimpse of Philosophy of Biology and Collectivities Today,” (2018) In *Landscapes of Collectivity in the Life Sciences*, eds. Snait B. Gissis, Ehud Lamm, and Ayelet Shavit, Vienna Series in Theoretical Biology, MIT Press, January 5, 2018. Pp. 291-301

[This is an introduction to my field in the book in which my original essay on holobionts as units of selection appears. It is from the conference at which I first was challenged to develop these ideas, in Israel.]

- (82) Elisabeth A. Lloyd and Naomi Oreskes (2018) “Climate change attribution: When is it appropriate to accept new methods?” *Earth's Future*
<https://doi.org/10.1002/2017EF000665>

** This article had the honor to be chosen by the collected editors of the American Geophysical Union journals, because it “features significant research, current research trends, and science policy related to climate,” and thus reprinted in *Commentaries on Climate* 6 (3) March 2018: 311-325. Doi: 10.1002/eff2.v6.3

** Adopted and applied by Thomas Knutson, Suzana J. Camargo, Johnny C. L. Chan, Kerry Emanuel, Chang-Hoi Ho, James Kossin, Mrutyunjay Mohapatra, Masaki Satoh, Masato Sugi, Kevin Walsh, and Liguang Wu (May 2019) in *BAMS (Bulletin of the American Meteorological Society)* for hurricane analysis, for first time: “Tropical Cyclones and Climate Change Assessment: Part I Detection and Attribution”: <https://doi.org/10.1175/BAMS-D-18-0189.1>

** spurred new research direction in climate science: Dale Durran, *BAMS* 2020:

<https://doi.org/10.1175/BAMS-D-20-0026.1>

[In this paper, Naomi Oreskes and I analyze a contemporary debate in the climate attribution community concerning a proposed addition to method, the “storyline” approach. We find that resistance to the method has been unproductive, and that there are social values identifiably involved. The paper has already been cited by seventeen papers, and has an *Altmetric* ranking of 87. It has a high attention score compared to other outputs of the same age, at the **96th percentile**. *Altmetric* has tracked 13,937,306 research outputs across all sources so far. Compared to these this

one has done particularly well and is in the **98th percentile**. In addition, while we recommended a radical change in statistical standards of evidence for climate practitioners, our approach was nevertheless taken up by the leading hurricane researchers (Knutson and Emanuel), who were known for their conservatism in these matters.]

** Cited in Ch. 1, p. 33; Ch 12, p. 123; Ch Atlas, p. 23, IPCC (UN's Intergovernmental Panel on Climate Change) 6th Assessment Report (AR6 WG1) August, 2021.

(83) Elisabeth A. Lloyd and Michael J. Wade "Criteria for holobionts from community genetics" *Biological Theory* September 2019, Volume 14, Issue 3, pp 151–170;

Doi [10.1007/s13752-019-00322-w](https://doi.org/10.1007/s13752-019-00322-w)

[Evolutionary theorist and geneticist Michael Wade and I proposed a new theoretical approach—as well as a simple new genetical model implementing that approach—to understanding the evolution of holobionts. This article is a fuller realization of what I had only sketched in previous writings on holobionts as units of selection (in publications #76, 79, & 80). It also applies my Logic of Research Questions framework to the problems of holobionts, to contrast them from the genic approach, casting them in sharp relief as the chief topic of research programs. For example, we assume neither of two usual dogmas, that holobionts must be vertically inherited in order to be evolutionarily effective, nor that holobionts must be represented in Maynard Smith/Szathmary-style hierarchical, multilevel model-types. Both assumptions are mistaken, and lead to errors, as we show.

This piece has an Altmetric attention score of 9 so far, and is in the top 25% of all articles ranked by Altmetric, with a citation from 35 papers according to Google, since online publication in May, 2019. Accessed Altmetric and Google Sept 9, 2022]

(84) Elisabeth A. Lloyd and Ted Shepherd (2020) "Environmental Catastrophes, Climate Change, and Attribution," Annals of the New York Academy of Sciences.

DOI:10.1111/nyas.14308 [open access]

[In this paper, climate scientist Ted Shepherd and I discuss evolutionary and ecological catastrophes or disasters resulting from extreme weather events, and we perform the service of uniting disparate literatures, the biological and the physical / climatological for the first time, thus uniting two of my specialities in a single paper. Our ultimate goal is to tie together biological understandings of extreme environmental events with physical understandings of extreme weather events into joint causal accounts. This requires fine-grained descriptions, in both space and time, of the ecological, evolutionary, and biological moving parts of a system together with fine-grained descriptions, also in both space and time, of the extreme weather events. We find that both the "storyline" method of extreme event attribution and the "risk-based" approach have uses in such descriptions, although the storyline method tend to give more useful causal analyses; thus, we rely on it more heavily. We introduce a number of preliminary examples of such studies, as instances of what could be pursued in the future in much more detail.]

** Cited in Ch. 10, p. 90, IPCC (UN's Intergovernmental Panel on Climate Change) 6th Assessment Report (AR6 WG1) August, 2021.

(85) Elisabeth Lloyd, Melissa Bukovsky, and Linda Mearns (2020) "Analysis of the disagreement about Added Value by Regional Climate Models," Synthese August 17, 2020
<https://doi.org/10.1007/s11229-020-02821-x>

[In this paper climate scientists Linda Mearns and Melissa Bukovsky from the National Center for Atmospheric Research and philosopher of science Elisabeth Lloyd analyze some of the critiques of regional climate models using tools developed by Lloyd. More specifically, the authors use Lloyd's Logic of Research Questions to investigate complaints about regional climate models by global modelers and others, finding that in some important cases, investigators are simply asking different research questions, and thus need to use different types of climate models in their answers. In other cases, we find an unwillingness to consider the available evidence supporting the use of regional climate models, or a rejection of its relevance in the right places. The article is highly controversial.]

** Cited in Ch. 10, p. 58. IPCC (UN's Intergovernmental Panel on Climate Change) 6th Assessment Report (AR6 WG1) August, 2021.

** Summary of citations in IPCC 6th Assessment Report (AR6 WG1) August, 2021:

Ch 1: 1-33 Lloyd and Oreskes 2018
Ch 10: 10-58 Lloyd, Bukovsky and Mearns 2020
Ch 10: 10-90 Lloyd and Shepherd 2020;
Lloyd, Bukovsky and Mearns 2020
Ch 12: 12-123 Lloyd and Oreskes 2018
Mann, Lloyd and Oreskes 2017
Atlas: A-23 Lloyd and Shepherd 2020

(86) Eric Winsberg, Naomi Oreskes, and Elisabeth A. Lloyd "Severe Weather Event Attribution: Why values won't go away" Studies in History and Philosophy of Science, 84 (2020) 142–149
[We argue, basing our paper on previous work by Lloyd and Oreskes (2018), that the "risk-based" or probabilistic method of climate attribution is no more value-free than the "story-line" method when it comes to the issue of attributing severe weather events to climate change, although it claims to be. It has an Altmetric score of 45, "In the top 5% of all research outputs scored by Altmetric; One of the highest-scoring outputs from this source (#5 of 472); High Attention Score compared to outputs of the same age (94th percentile); High Attention Score compared to outputs of the same age and source (99th percentile)"]

(87) Elisabeth A. Lloyd, Naomi Oreskes, Sonia Seneviratne, and Edward Larson, 2021. "Climate Scientists set the bar of proof too high." Climatic Change, April 2021
<https://doi.org/10.1007/s10584-021-03061-9>.

[This is co-authored with a leading historian of Science, Naomi Oreskes, as well as a recently ranked eight-in-the-world Swiss climate scientist, Sonia Seneviratne, as well as a law professor from Pepperdine. It follows a line of inquiry I started to pursue in Fall of 2018, following a court case, and quickly involved Naomi and Sonia in. From Abstract: Standards of proof for attributing real world events/damage to global warming should be the same as in clinical or environmental lawsuits, argue Lloyd et al. The central question that we raise is effective communication. How can climate scientists best and effectively communicate their findings to crucial non-expert audiences, including public policy makers and civil society? To address this question, we look at the mismatch between what courts require and what climate scientists are setting as a bar of proof. Our first point is that scientists typically demand too much of themselves in terms of evidence, in comparison with the level of evidence required in a legal, regulatory, or public policy context. Our second point is to recommend that the Intergovernmental Panel on Climate Change recommend more prominently the use of the category "more likely than not" as a level of proof in their reports, as this corresponds to the standard of proof most frequently required in civil court rooms. This has also implications for public policy and the public communication of climate evidence."

Altmetric=95. Dec 4, 2022: "Altmetric has tracked 22,605,515 research outputs across all sources so far. Compared to these this one has done particularly well and is **in the 98th percentile: it's **in the top 5% of all research outputs ever tracked** by Altmetric. This article is in the 96th percentile (ranked 10,245th) of the 337,441 tracked articles of a similar age in all journals and the 84th percentile (ranked 13th) of the 78 tracked articles of a similar age in Climatic Change"
Climatic Change, the Journal counts 6091 accesses from their site.
6 citations

(88) Elisabeth A. Lloyd and Theodore G. Shepherd (2021) Climate change attribution and legal contexts: evidence and the role of storylines. Climatic Change (July 2021) 167:28
<https://doi.org/10.1007/s10584-021-03177-y>

[This is co-authored with a leading climate modeler and attribution scientist. From Abstract: In a recent very influential court case, *Juliana v. United States*, climate scientist Kevin Trenberth used the “storyline” approach to extreme event attribution to argue that greenhouse warming had affected and will affect extreme events in their regions to such an extent that the plaintiffs already had been or will be harmed. The storyline approach to attribution is deterministic rather than probabilistic, taking certain factors as contingent and assessing the role of climate change conditional on those factors. The US Government’s opposing expert witness argued that Trenberth had failed to make his case because “all his conclusions of the injuries to Plaintiffs suffer from the same failure to connect his conditional approach to Plaintiffs’ local circumstances.” The issue is whether it is possible to make statements about individual events based on general knowledge. A similar question is sometimes debated within the climate science community. We argue here that proceeding from the general to the specific is a process of deduction and is an entirely legitimate form of scientific reasoning. We further argue that it is well aligned with the concept of legal evidence, much more so than the more usual inductive form of scientific reasoning, which proceeds from the specific to the general (Altmetric: (Feb 13, 2022) Score 14. This article is in **87th percentile** (ranked 43,741st) of the 337,487 tracked articles of a similar age). 2901 article accesses.

(89) “Varieties of Data-Centric Science: Regional Climate Modeling and Model Organism Research” *Philosophy of Science*, online Feb 12, 2022 pp. 1 - 42

DOI: <https://doi.org/10.1017/psa.2021.50>

In Print Form, *Philosophy of Science* (2022), 00, 1–22 doi:[10.1017/psa.2021.50](https://doi.org/10.1017/psa.2021.50)

[From Abstract:

“Modern science’s ability to produce, store, and analyze big datasets is changing the way that scientific research is practiced. Philosophers have only begun to comprehend the changed nature of scientific reasoning in this age of “big data.” To further our understanding, we identify two varieties of data-focused science by analyzing practices in climate modeling and biology, arguing that the information architectures of systems that organize, store, and disseminate data are importantly revealing. We identify distinct species of data-centric practices: phenomena-laden in biology and phenomena-agnostic in climate modeling, each better suited for its own domain of application, though each entail tradeoffs.” This was mostly funded by a \$500+K NSF Lloyd research grant. Check stats]

(90) Theodore G Shepherd and Elisabeth A. Lloyd, (2021) “Meaningful Climate Science,” *Climatic Change* 169: 17 <https://doi.org/10.1007/s10584-021-03246-2>

[Abstract

Within the climate science community, useable climate science has been understood as quantitative, usually as a best estimate together with a quantified uncertainty. Physical scientists are trained to produce numbers and to draw general, abstract conclusions. In general, however, people relate much better to stories and to events they have experienced, which are inevitably contingent and particular. Sheila Jasanoff has argued elsewhere that the process of abstraction in climate science “detaches knowledge from meaning”. Perhaps useable climate science is, then, meaningful climate science. We argue here that the development of meaningful climate science can be achieved by adopting a storyline approach to climate variability and change. By ‘storyline’ we mean a physically selfconsistent unfolding of past events or of plausible future events or pathways. Storylines represent a combination of qualitative and quantitative information, where the qualitative element represents a packaging or contextualization of the quantitative aspects, which ensures that data can be meaningfully interpreted. Viewed from this perspective, we show that physical climate storylines can be aligned with several well-established vehicles for translation of knowledge between diverse communities: narratives, boundary objects, and data journeys. They can therefore be used as a ‘pidgin language’ to enrich the set of tools available to climate scientists to bring meaning to climate knowledge.

Altmetric: Score: 17. (Feb 13,2022), “This article is in the **88th percentile** (ranked 46,587th) of the 420,259 tracked articles of a similar age in all journals.]

(91) Ann-Sophie Barwich and Elisabeth A. Lloyd (2022) "More than meets the AI: The Possibilities and Limits of Machine Learning in Olfaction," Frontiers in Neuroscience, 16:981294. doi: 10.3389/fnins.2022.981294

[Seen over 3,000 times at the journal website. Altmetric score of 12 on Mar 23, 2023: In the top 25% of all research outputs scored by Altmetric. High Attention Score compared to output of the same age (87th percentile). High Attention Score compared to outputs of the same age and source (**91st percentile**)]

(92) Christopher ChoGlueck and Elisabeth A Lloyd "Values as Heuristics: A Contextual Empiricist Account of Assessing Values Scientifically" (Synthese, in Press)

[Abstract: Feminist philosophers have discussed the prospects for assessing values empirically, particularly given the ongoing threat of sexism and other oppressive values influencing science and society. Some advocates of such tests now champion a "values as evidence" approach, and they criticize Helen Longino's contextual empiricism for not holding values to the same level of empirical scrutiny as other claims. In this paper, we defend contextual empiricism by arguing that many of these criticisms are based on mischaracterizations of Longino's position, overstatements of certain claims, and false dichotomies. Her contextual empiricism not only allows for the empirical support and disconfirmation of values, but Longino explicitly discusses when values can be empirically adjudicated and emphasizes the crucial role of the community for standards of evidence. We support contextual empiricism and elaborate a less direct account of "values as heuristics" by reviewing Longino's theory of evidence and then using a case study from Elisabeth Lloyd on the biology of female orgasm, demonstrating the disconfirmation of androcentric values in evolutionary science. Within Longino's and Lloyd's contextual empiricism, values do not get treated as empirical evidence to be directly assessed by individuals, but rather values are heuristic tools to build models whose use can be validated or invalidated by communities based on their empirical fruitfulness in the logic and pragmatics of research questions in specific historical and cultural contexts."]

(93) Elisabeth A. Lloyd and Theodore G. Shepherd "Foundations of Attribution in Climate-Change Science" (invited by Environmental Research Climate; under revision)

["Abstract

Attribution — the explanation of an observed change in terms of multiple causal factors — is the cornerstone of climate-change science. For anthropogenic climate change (ACC), the central causal factor is evidently ACC itself, and one of the primary tools used for attribution is aggregation of data. This approach has served climate-change science well. However, the landscape is changing rapidly. First, there is an increasing focus on regional or local aspects of climate change, and on singular or unprecedented events, which require disaggregation. Second, and relatedly, climate change is increasingly apparent in observations at the local scale, which is challenging the primacy of model projections. Third, the explosion of climate data is leading to more phenomena-laden methodologies such as machine learning. All this demands a re-think of how attribution is performed and causal explanations are constructed. Here we use Lloyd's (2015) 'Logic of Research Questions' framework to show how the way in which the attribution question is framed can strongly constrain its possible and responsive answers. In particular, we contrast the traditional attribution question "What was the effect of ACC on X?" with the question "What were the causal factors leading to X, and was ACC among them?" for three examples: a global-scale thermodynamic phenomenon, a regional climate phenomenon, and an extreme event. In contrast to the first question, the second question — which is the storyline approach — decouples attribution from future risk. By so doing, it is shown to allow for a wider range of possible and responsive answers than the first question, including that of singular causation. This flexibility is important when uncertainties are high. As a result, the second question mitigates against the sort of epistemic injustice that can arise from the first question, for which the only possible and responsive answer is a single, definitive one."]

(94) Massive Revision of "Units and Levels of Selection," Stanford Encyclopedia of Philosophy, <http://www.plato.stanford.edu/entries/selection-units/>, (August 2005; March 2012;

April 2017; May 2022; accepted and in press, 47,000+ words total).

[The Stanford Encyclopedia of Philosophy has evolved into an authoritative source in the profession, worthy both of citation and class and seminar assignments. This Stanford EP piece, the culmination of work begun in 1982, and ongoing since then, has been cited 231 times in both the philosophical and biological literature. This newest revision required 26 months of work, involving a text the size of a medium book, over 46,200 words. Because this was a major revision most of this is completely new. There is new emphasis on (although not the new introduction of) the distinction between two schools of genetics that approach units of selection in very different ways, and what consequences this has for understanding group, kin, and genic selection, as well as a variety of equivalence claims among them. Sections concerning units in early evolution (“major transitions”) and in the treatment of holobionts are much expanded.]

WORK IN PROGRESS:

- (95) Lloyd, Elisabeth, Sud Rao (new co-author), David Sloan Wilson and Elliott Sober (Wisconsin, Madison) “Evolutionary Mismatch and what to do about it: A basic tutorial,” was in final draft, to anchor book as collection of essays on evolutionary mismatch (waiting for other articles for book). Published on The Evolution Institute’s website since 2011, by David Sloan Wilson. Updated by Sud Rao and co-authors and slightly expanded for publication in 2022, and submitted, under review.

[David Sloan Wilson organized 30+ biologists to participate in this project on evolutionary mismatch, and commissioned me to write the master set of standards of evidence for cases of such mismatch, (which I actually took straight from the last chapter of my 1984 dissertation, written at Harvard when I was in RC Lewontin’s lab as an exchange graduate student in Genetics from Princeton’s Philosophy Department). Wilson volunteered Elliott Sober and himself to help me write this up. The draft was finished, and was simply awaiting the rest of the essays for volume to submit for publication, since 2013, which it was lightly revised by the co-authors and workshop participants. This piece has been revised and reviewed by the group of 30+ biologists, which includes John Endler, the evolutionist who wrote the original book (1986, *Natural Selection in the Wild*) on standards of evidence for cases of natural selection. Despite being published only on the Website of The Evolution Institute, it has been cited 53 times in its 2012 form.

In 2020 or so, Elliott Sober and I were contacted by a student of DS Wilson’s, Sud Rao, who wanted to update the paper and submit it to be published in a philosophy or evolutionary journal. This is an approved version with the new co-author, now as second author.]

- (96) Justin Donhauser, Elisabeth A. Lloyd, Pardeep Pall (2022) “Robust Weather Event Attribution: a more complete approach.” (under revision)
- (97) Diaconis, Persi, Elisabeth Lloyd, and Brian Skyrms “Variety of Evidence Revisited” (under revision).
- (98) Michael J. Wade and Elisabeth A. Lloyd, an additional paper on the squid/Vibrio case as a Demibiont (in progress)
- (99) Justin Garcia, David Frederick, Elisabeth A. Lloyd, Connie Lu “Never have I ever? Motivations for Faking and Never Faking Orgasm” (in draft)
- (100) Owe my Response to essays collected in *Festschrift* written in response to my work: Michael Dietrich (Chair, Pittsburgh) and Samuel Ryan Ketcham (Indep) (Eds.), for Pittsburgh University Press. (in progress)

Book Reviews and Other:

Invited Contributor (by interview): Taking the Naturalistic Turn, or How Real Philosophy of Science is Done, Werner Callebaut, ed., University of Chicago Press, 1993.

"Reductionism in Biology Today," in the University of Chicago's Undergraduate Core Curriculum Reader, Fall 1994. (13 ms pages)

"Altruism Revisited," essay review of E. Sober and D.S. Wilson's Unto Others: The Evolution and Psychology of Unselfish behavior. Quarterly Review of Biology 74 (4), Dec. 1999, pp. 447-449.

Participant interviewed in: "Lingua Franca Roundtable, May 1997," in The Sokal Hoax: The sham that shook the academy. Eds. The Editors of Lingua Franca, University of Nebraska Press, 2000, pp. 253-265.

"Memorium for Stephen Jay Gould," Biology and Philosophy 17, 2002, pp. 303-304.

Essay Review of R.C. Lewontin, The Triple Helix, Journal of Bioeconomics 61, 2004, pp. 97-104.

"Philosophical Approaches to levels of selection" (Review of S. Okasha) Trends in Ecology and Evolution October 2007 Vol 22 (10) pp. 513-514.

"The Life and Work of Cavalli-Sforza" (Review of Stone and Lurquin) Biological Theory, Fall 2007, Vol 2 (4): 431-432.

PRESENTATIONS:

- (1) "The Structure of Population Genetics Theory," 7th International Congress of Logic, Methodology and Philosophy of Science, July 1983. Abstract published in the Proceedings.
- (2) "Selection Models and the Darwinian Theory of Natural Selection," World Congress of Philosophy, Montreal, August 1983.
- (3) "Formalization: Competitor or tool of historically sophisticated philosophy of science," workshop presented with M.B. Williams at the History, Philosophy and Social Studies of Biology Conference, St. Mary's, Notre Dame, June 1985.
- (4) "Evaluation of Evidence in Group Selection Debates," Philosophy of Science Association, October 1986.

INVITED LECTURES:

- (5) "Population Genetics and the Semantic Approach to Theories," delivered to the Philosophy Department, University of California, San Diego, January 1984.
- (6) "Confirmation of Scientific Theories: The Case of Evolutionary Theory," delivered to the Philosophy Department, University of Colorado, Boulder, March 1984.
- (7) "The Confirmation of Scientific Theories," delivered to the Philosophy Department, University of Wisconsin, Milwaukee, February 1985.
- (8) "The Confirmation of Scientific Theories," delivered to the Philosophy Department, University of California, San Diego, February 1985.
- (9) "The Structure of Evolutionary Theory," delivered to the Philosophy Department, Brown University, February 1985.

- (10) "Evolutionary Biology" and "Interrelations of Mathematical Models in Evolutionary Theory," delivered to the Unit for the History, Philosophy and Social Aspects of Science, Vrije Universiteit, Amsterdam, March 1985.
- (11) "Evolutionary Explanations of Human Female Sexuality," delivered to the Kirkland Historical Studies of Science and Technology Conference, Hamilton College, New York, September 1985.
- (12) Commentator, American Philosophical Association, Eastern Division, on "The Structure of The Origin of Species," by Doren Recker, December 1985.
- (13) "Is Altruism Genetically Possible?" delivered to the Philosophy Department, University of Colorado, Boulder, March 1986.
- (14) "Patient Values in Medical Decisions," delivered to the public symposium on "Medical Miracles: Views from the Humanities," UC San Diego, May 1986.
- (15) "Is Female Orgasm Adaptive? Evolutionary Explanations of Human Female Sexuality," delivered to the Women's Studies Colloquium, Princeton University, October 1986.
- (16) "Group Selection," delivered to the Genetics Department, Harvard University, October 1986.
- (17) "Hierarchy and Causality in Evolutionary Theory," invited symposium lecture delivered to the American Philosophical Association, Pacific Division, March 1987.
- (18) "Problems in Human Evolutionary Explanations" delivered to the Philosophy Department and the History and Philosophy of Science Program, Stanford University, May 1987.
- (19) "Adaptation and Human Evolution," delivered to the Kirkland Historical Studies of Science and Technology Conference, Haverford College, September 1987.
- (20) "Is Female Orgasm Adaptive? Evolutionary Explanations of Human Female Sexuality," delivered to the Cultural History Colloquium, UC Berkeley, November 1987.
- (21) "Reductionism and Hierarchy in Evolutionary Theory," delivered to the Department of Philosophy, UC Berkeley, February 1988.
- (22) "Confirmation in the Evolution of Social Behavior," delivered to the International Conference on the Evolution of Social Behavior, sponsored by the Florence Center for the History and Philosophy of Science, Florence, Italy March 1988.
- (23) "Hierarchy in Evolutionary Theory," delivered to the Philosophy Department Colloquium, Princeton University, March 1988.
- (24) "A Defense of Feminist Empiricism: The Case of Androcentrism Regarding Human Evolution," Plenary Speaker, Second Research Conference of the University of California Council of Women's Programs, UC Davis, April 1988.
- (25) "Reductionism in Evolutionary Theory," delivered to the History and Philosophy of Science Colloquium, UC Davis, April 1988.
- (26) "Sociobiology: Abuse of Science?" delivered to "Contemporary Issues in Health Care" seminar, UC San Diego, May 1988.
- (27) "Species Selection," NSF-sponsored Conference on Evolutionary Biology, Ohio State University, July 1988.

- (28) Speaker, Symposium on "The Semantic View of Evolutionary Theory," Philosophy of Science Association, October 1988.
- (29) "Gender as a Methodological Category," delivered to the joint meeting of the Society for the Social Studies of Science and the European Association for the Study of Science and Technology, Amsterdam, November 1988.
- (30) "Autonomy and Competence in Medical Decision Making: The Case of A.C.," delivered to the "Life at the Limits" Conference, UC Irvine, March 1989.
- (31) "Evolutionary Theory: Some Basic Issues and how they Relate to Theories of Cognition," Cognitive Science Colloquium, UC Berkeley, May 1989.
- (32) "Human Evolution and Tool Use," delivered to Anthropology Department Seminar, UC San Diego, May 1989.
- (33) "Philosophy of Science meets the Technical Detail of Evolutionary Biology," Plenary speaker, "Shifting Frames in History, Philosophy and Social Studies of Biology," History, Philosophy and Social Studies of Biology Conference, London, Ontario, June 1989.
- (34) "Parsimony, testability, and discovery in units of selection debates," delivered in a session on "The Role of Epistemic Values in Biological Methodology," History, Philosophy and Social Studies of Biology Conference, London, Ontario, June 1989.
- (35) Participant, "Epistemology and the Philosophical Foundations of Probability Theory," Conference, Princeton University, September 1989.
- (36) Plenary Speaker, "Narrative in Science and Fiction," delivered to the Western Humanities Conference, Salt Lake City, October 1989.
- (37) "Reductionism and Evolutionary Theory," delivered to the Department of Philosophy, University of Pennsylvania, October 1989.
- (38) Participant, NSF-sponsored workshop on "Foundations of Development and Evolution," Santa Fe Institute, November 1989.
- (39) "Adaptationism" delivered to the Department of Zoology, Oxford University, November 1989.
- (40) "Social and Theoretical Bias in Evolutionary Explanations," delivered to the Center for the Sociology of Invention, Ecole Nationale Supérieure des Mines, Paris, December 1989.
- (41) "What Evolutionary Biology cannot tell us about the Mind," delivered to the Centre de Recherche en épistémologie appliquée, Ecole Polytechnique, CNRS, Paris, December 1989.
- (42) "Scientific Confirmation," delivered to the Centre de Recherche en épistémologie appliquée, Ecole Polytechnique, CNRS, Paris, December 1989.
- (43) "Evolution and Cognition," delivered to the Belgian Society for Logic and Philosophy of Science, Brussels, December 1989.
- (44) "Variety of Evidence," delivered to the Department of Philosophy, University of Western Ontario, February 1990
- (45) "Bias in Evolutionary Explanations of Women's Sexuality" delivered to the Women's Studies Program, University of Western Ontario, February 1990.

- (46) "Cognition and Evolution," delivered to the History and Philosophy of Science Colloquium, UC Davis, April 1990.
- (47) Participant, "Role of Women Scientists in Changing Ideas about Primate Societies," conference, Department of Anthropology, UC San Diego, May 1990.
- (48) "Evidence and Bias in Evolutionary Explanations," delivered to the Department of Philosophy, University of Auckland, New Zealand, June 1990.
- (49) "Quine, Empiricism, and Feminism," symposium paper delivered to the American Philosophical Association, Pacific Division, March 1991.
- (51) "What is Genetic Disease?" Delivered to "Genes R Us", Conference on the Legal, Ethical, and Social Implications of the Human Genome Project, UC Irvine, May 1991.
- (53) "Locker Room Science: Bias in Evolutionary Explanations of Women's Sexuality," delivered to the Center for the Critical Analysis of Contemporary Culture: Science, Technology and Culture, Rutgers University, November 1991.
- (54) "Surprising Results: New Models of Variety of Evidence," Symposium on Bayesian Confirmation Theory, with Brian Skyrms, John Earman, and Allan Franklin, Pitzer College, November 1991.
- (55) "Pre-theoretical Assumptions in Evolutionary Explanations of Female Sexuality," delivered to Symposium, "New Directions in Philosophy of Science," American Philosophical Association, Pacific Division, March 1992. (Chosen by the APA Program Committee as among the best papers at the conference, and published in Philosophical Studies.)
- (56) "Partial Exchangeability and a new Bayesian model of Variety of Evidence", Recent Advances in Philosophy of Science Conference, Princeton University, May 1992.
- (58) "Cultural Evolution," delivered to the Symposium, "Evolutionary Biology" with Richard Lewontin and Elliott Sober, American Philosophical Association, Eastern Division, December 1992.
- (59) Commentator, Conference on Richard Posner's Sex and Reason, Stanford University, March 1993.
- (60) "Philosophy and Computational Neuroanatomy," Invited Session comment on Chris Cherniak, delivered to the American Philosophical Association, Pacific Division, March 1993.
- (62) "Reductionism in Biology Today," Keynote Address delivered to the Philosophy Colloquium, University of North Carolina, Chapel Hill, October 1993
- (63) "Emerging Consensus: the Dynamics and Resolution of the Units of Selection debates in evolutionary biology," delivered to the Symposium on the work of David Hull, California Academy of Sciences, February 1994.
- (64) "What Philosophers Need to Know," delivered to the Forum on Philosophy and Education, UC Berkeley, February 1994.
- (65) "The Secret Life of Objectivity," delivered to the Philosophy Department Colloquium, University of Chicago, March 1994.
- (66) "Social Bias in Evolutionary Explanations," delivered to the Conceptual Foundations of Science Colloquium, University of Chicago, March 1994.
- (67) "Types of Species Selection," delivered to the Paleontology Group, University of Chicago, March 1994.

- (68) "Social Bias in Evolutionary Explanations," delivered to the Philosophy Department Colloquium, Northwestern University, March 1994.
- (69) Respondent to Noam Chomsky, Howison Lecture, UC Berkeley, April 1994.
- (70) "Philosophy of science as foundational science," delivered to the Conference, "Is There Any Practical Value of the History or Philosophy of Science for the Research Scientist?" UC Berkeley, May 1994.
- (71) "Objectivity and Analytic Metaphysics," delivered to the Philosophy Department Colloquium, UCLA, May 1994.
- (73) "Objectivity and Pragmatism," delivered to the History and Philosophy of Science Department, University of Pittsburgh, December 1994.
- (74) "Locker Room Science: Bias in Evolutionary Explanations of Women's Sexuality," delivered to the "Recasting the Sciences" Conference, University of Denver, January 1995.
- (75) "The Anachronistic Anarchist," delivered to the Feyerabend Symposium, American Philosophical Association, Pacific Division, March 1995. (Chosen by the APA Program Committee as among the best papers at the conference, and published in Philosophical Studies.)
- (77) "Science and Anti-Science," delivered to the "Social and Cultural Studies of Science" Roundtable, International Society for the History, Philosophy, and Social Studies of Biology, Leuven, Belgium, July 1995.
- (78) "Feyerabend, Mill, and Pluralism," invited Symposium, "Paul Feyerabend and His Legacy," Philosophy of Science Association Meetings, Cleveland, November 1996 (Published in Philosophy of Science, Sept 1997).
- (79) "Units of Selection," delivered to the History and Philosophy of Science Department, Indiana University, December 1996.
- (80) "Progress," invited Symposium, "Scientific Rationality and Progress," Eastern Division APA, Atlanta, December 1996.
- (81) "Scientific Objectivity," delivered to the Philosophy of Science Program, University of Minnesota, Minneapolis, March 1997.
- (82) "Radical critiques of Science," invited symposium lecture delivered to the Radical Philosophy Association, Oakland, March 1997.
- (83) "Scientific Objectivity," delivered to the Philosophy Department, Northwestern University, April 1997.
- (84) "Objectivity: Philosophical and Scientific," delivered to the Philosophy Department and the History and Philosophy of Science Colloquium, University of Colorado, Boulder, November 1997
- (85) "Philosophical Methods," Scientific Prematurity Conference, UC Berkeley, December 1997.
- (86) "News from the Front" delivered to the Genetics Colloquium, Harvard University, March 1998.
- (87) "Feminist philosophy in real life," Invited Symposium, "The Science Wars," Central Division APA, Chicago, May 1998.
- (88) "What can Evolutionary Biology do for Psychology?" History & Philosophy of Science Colloquium, Northwestern, October 1998.

(89) "John Dewey's Pragmatism" delivered to the "Mind, Machines, and Metaphysics" Seminar, Indiana University, November 1998.

(90) "Genes as Causes" delivered to the Bar-Hillel Colloquium for the History, Philosophy and Sociology of Science, Edelstein Center of Hebrew University & Van Leer Institute, Jerusalem, Israel, January 1999.

(91) "Distinctly Human? Language, sex, and the pitfalls of searching for human uniqueness" delivered to the Virgil C. Aldrich Utah Philosophy Colloquium on Human Nature, University of Utah, Salt Lake City, February 1999.

(92) "The Biological Irreality of Essences" delivered to the "Debating Essentialism" conference, University of California, Riverside, March 1999.

(93) "Is female orgasm an adaptation?" delivered to the Kinsey Institute for Sex Research, Indiana University, April 1999.

(94) "Species of Objectivity and their Hybrids" delivered to the Ohio University Philosophy Forum in honor of Arthur Fine, Ohio University, Athens, Ohio, May 1999.

(95) "Selection and Adaptation," Keynote address delivered to Bioquest conference, Beloit, Wisconsin, June 1999.

(96) "Higher level selection" Symposium lecture, International Society for the History, Philosophy, and Social Studies of Biology, Oaxaca, Mexico, July 1999.

(97) "What objectivity means" delivered to the International Society for Logic, Methodology, and Philosophy of Science, Cracow, Poland, August 1999.

(98) "What feminist philosophers of science really say" Keynote Address delivered to the Tennessee Philosophical Association, Vanderbilt University, Nashville, Tenn, November 1999.

(99) "Distinctly human? Language and the pitfalls of searching for uniqueness," delivered to the Philosophy Department, Williams College, Williamstown, MA, December 1999.

(100) "Objectivity: A Framework", delivered to the Philosophy Department, Northwestern University, March 2000.

(101) "Objectivity: A Double Standard?", delivered to the New York Society for Women in Philosophy, March 2000.

(102) "Objectivity: A Framework", delivered to the Philosophy Department, University of Illinois, Chicago, April 2000.

(103) "Scientific Criticizing and Theorizing in Action: Evolutionary explanations of female sexuality", Invited Lecture, APA Pacific Division, Albuquerque, April 2000.

(104) "Reductionism in complementary models", INSERM 2000 Conference: Promises and limits of reductionism in the biomedical science, CNRS, Paris, May 2000. (Paper & Discussion published.)

(105) "Levels of selection", delivered to the Program in Philosophy of Physical and Social Sciences, London School of Economics, June 2000.

(106) Invited Participant: "Groups, Multi-level selection, and Evolutionary Dynamics," Santa Fe Institute, January 2001.

- (107) "Sorting out the Units of Selection," W.D. Hamilton International Symposium, Indiana University, April 2001.
- (108) "What makes Evolutionary Psychology so Compelling," ISHPSSB Conference, Quinnipiac, CT., July 2001.
- (109) "Adaptationism," delivered to Philosophy of Biology class, Stanford University, February 2002.
- (110) "Developmental Explanation of Female orgasm," Pittsburgh Workshop in Philosophy of Biology, March 2002.
- (111) "Something about Eve," discussion with Evolution Study Group, King's University College and Dalhousie University, Halifax, Nova Scotia, August 2002.
- (112) "Exaptation and Function" delivered to Symposium in honor of Stephen Jay Gould, Philosophy of Science Association, Milwaukee, WI., November 2002.
- (113) "Exaptation and Function," delivered to the Boston Colloquium in the Philosophy of Science, Boston University, November 2002.
- (114) "Something about Eve" delivered to the Philosophy Department at University of Calgary, Calgary, March 2003.
- (115) "The Notion of Bias in Scientific Theories," delivered to the Philosophy of Science Study Group, University of Calgary, Calgary, March 2003
- (116) "Something about Eve" delivered to the History and Philosophy of Science Department, Indiana University, March 2003.
- (117) Commentator on Elliott Sober "Intelligent design is untestable. What about natural selection?" and Christopher Stephens, "Selection, drift and the 'forces' of evolution". Symposium in Philosophy of Biology, Central APA, Cleveland April 2003.
- (118) "Animal language: More than just talk," 39th Annual Taft-Philosophy Colloquium, Perspectives on the Animal Mind, University of Cincinnati, April 2003.
- (119) "Species Selection," Presidential Plenary session, International Society of History, Philosophy, and Sociology of Science, Vienna, July 2003.
- (120) "Hierarchical Selection Theory," Boston Colloquium in the Philosophy of Science, September 2003.
- (121) "Evolution, Sex, and Scientific Bias: What Is Female Orgasm For? Austin/Hempel Lecture, Dalhousie University and King's University College, Halifax, Nova Scotia, October 2003.
- (122) "Objectivity: An Anatomy" Austin/Hempel Lecture, Dalhousie University and King's University College, Halifax, Nova Scotia, October 2003.
- (123) "The Evolution of Female Orgasm" delivered to the Women's Sexualities Conference, Kinsey Institute, Indiana University, November 2003
- (124) "Objectivity: An Anatomy," Philosophy Department, University of Washington, Seattle, November 2003
- (125) "Sorting out the Units of Selection," Biology Department, University of Washington, Seattle, November 2003.
- (126) "How should we understand bias in scientific explanations?" MIT, Cambridge, March 2004

- (127) "A Problem with Genetic Pluralism," History and Philosophy of Science Program, Notre Dame, April 2004.
- (128) "Dror on Voodoo and Sudden Death," Commentary, Princeton Workshop in the History of Science, Princeton University, May 2004
- (129) "What's really wrong with Genic Selection", International Workshop on Reductionism and Complexity, Oslo, Norway, September, 2004
- (130) "Species selection and analyzing the units of selection problems," Biology Department, University of Oslo, Norway, October, 2004.
- (131) Mackay Lecturer, St. Lawrence University, February 2005. "The Case of the Female Orgasm: Bias in Evolutionary Science"
- (132) Keynote Lecturer, with rebuttal lecture, British Society for the Philosophy of Science meetings, "Why the Gene will not Return", Manchester July 2005
- (133) Invited Symposium lecture, "Why genic models cannot be confirmed except through hierarchical selection", International Society for the History, Philosophy, and Social Studies of Biology, Guelph, Ontario, July 2005. (Presented by Michael Weisberg.)
- (134) "Why the Gene will not Return", Stanford University Philosophy Department, October 2005.
- (135) "Does Female orgasm have an evolutionary function?" Brooklyn Public Library, March 2006
- (136) Stillman Drake Memorial Lecture, Canadian Society for the History and Philosophy of Science, Congress of Humanities, York University, Toronto, May 2006
- (137) "The Evolution of Female Orgasm," Keynote lecture, International Academy of Sex Research, Amsterdam, July 2006
- (138) "How to analyse bias," Gender Roundtable, Future Directions in Biology conference, Bloomington, Indiana, July 2006.
- (139) "The gene in its context: The six necessary state spaces" Future Directions in Biology conference, Bloomington, Indiana, July 2006.
- (140) "The Evolution of Female Orgasm" American Anthropological Association: San Jose, Presidential session on 'The Orgasm' November 2006
- (141) "The Evolution of the Female Orgasm" Rome Science Festival (January 2007)
- (142) "The Case of the Female Orgasm" Pittsburgh Center for the Philosophy of Science (March 2007)
- (143) "The Case of the Female Orgasm: Adaptationism and Bias" Anthropological Sciences Department, Stanford University (April 2007)
- (144) "The Evolution of Female Orgasm" International Society of the History, Philosophy, and Social Studies of Biology, Exeter (July 2007)
- (145) "The Politics of Orgasm" Kinsey Institute, Indiana University (October 2007)
- (146) "Analyzing bias in Evolutionary Science" Bowling Green University (October 2007)

- (147) "The Case of the Female Orgasm: Understanding Bias in Evolutionary Explanations", Dr. Wing-Chun Wong Memorial Lecture, Towson University (November 2007)
- (148) "Scientific Skeptics and Global Climate Change" UC San Diego (March 2008)
- (149) "Confirmation of Climate Models" Philosophy of Science Association, Pittsburgh (November 2008)
- (150) "Analyzing Bias" Eastern APA, Philadelphia (December 2008)
- (151) "Women and Nature: Sexuality and evolution" Eastern APA, Philadelphia (December 2008)
- (152) "Darwinian evolution and female orgasm: Explanations and Puzzles" Appalachia State University, North Carolina (April 2009)
- (153) "Confirmation of climate models" Inland Northwest Philosophy Conference (May 2009)
- (154) "Varieties of support and confirmation of climate models" Plenary session, Aristotelian Society Norwich, United Kingdom (July 2009)
- (155) "Bias in Evolutionary Explanations of the Female Orgasm," Plenary session at 150 Years after *Origin* Conference. University of Toronto (November 2009)
- (156) "Robustness and inferences to causes," American Geophysical Union, San Francisco (December 2009)
- (Talks scheduled for Fall 2010 were cancelled due to health issues)
- (157) "The Darwinian puzzle of female orgasm: Evolutionary solutions and feminist responses," Smith College, Northampton, MA (Feb 2010)
- (158) "When the models are right and the data are wrong: Climate modeling of the Troposphere" at Models and Experiment Workshop, San Francisco State University (March 2010)
- (159) "Adaptationism in Action." University of California, Santa Barbara (February 2011)
- (160) "The role of 'Simple Empiricism' in the debates about satellite data and climate models," Epistemology of Models and Simulations Conference, University of Pittsburgh (April 2011)
- (161) "Evidence for Adaptations: Confirmation of Evolutionary Models" Evolutionary Mismatch and What to Do about it Conference, Durham, NC May 2-4, 2011.
- (162) "Adaptationism in Action," International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB), Salt Lake City, July 2011.
- (Eulogy for David Hull, ISHPSSB, Salt Lake City, July 2011)
- (163) "The Evolution of female orgasm: Explanations and Evidence," Biohumanities Public Forum, Salt Lake City Public Library, (July 2011).
- (164) "The Principle of Variety of Evidence and its Significance to Climate Science," with Linda Mearns, American Geophysical Union, San Francisco (December 2011)
- (165) "Tales of the Evolution of Female Orgasm and Adaptationist and Sexist Biases in Research," presented to the Feminist Science Studies Group and Philosophy Department, University of Michigan, Ann Arbor, February 2012

(166) "Proposal for evidential guidelines for case studies: Mismatch in detail," presented to Mismatch workshop of Evolution Institute/NESCent, April 2012, Durham NC.

(167) "Gould and Adaptation: San Marco 33 years later," at "Stephen J. Gould's Legacy: Nature, History, Society", Venetian Institute of Science, Letters, and Arts, Venice, Italy May 10th-12th, 2012

(168) Inaugural Lecture, "The logic of Research Questions: Adaptationism in Action in the Case of the Female Orgasm," Philosophy of Biology at Madison, (POBAM) University of Wisconsin, Madison, May 31, 2012

(169) "Guidelines for case studies of Mismatch for Evolutionary Applications: The condensed list," presented to Mismatch workshop of Evolution Institute/NESCent, Durham, NC, October, 2012.

(170) "Model robustness as a confirmatory virtue: Variety of evidence and climate science," Invited Symposium, Climate Science, American Philosophical Association, Eastern Division, December 2012, Atlanta, GA.

(171) Dewey Lecture, (Endowed), delivered to the American Philosophical Association, Central Division, New Orleans, February 2013

(172) "Climate Change: How should we understand the robustness of the models?" Philosophy Department, SUNY Stony Brook, May, 2013.

[TALKS CANCELLED DUE TO SPINAL SURGERY FROM CAR ACCIDENT:

Lecture, Lethbridge, Canada, March 2013

Laura C. Harris lecture, (Endowed), Denison University, Ohio, March 2013

University of Miami, Symposium on Climate Models and their Limits, April 2013

ISHPSSB, France, Symposium Talk: "Adaptationism, the Null Hypothesis, and the Lack of a Stopping Rule" July 2013]

(173) "Thinking about being Robust: Causes, Convergence, and Climate Models," Invited Keynote at the International ad hoc Detection and Attribution Group (IDAG) Conference at NCAR (National Center for Atmospheric Research), Boulder, CO, July 2013

(174) "Darwinian Evolution and the female orgasm: Puzzles and explanations," for Darwin Week, University of Northern Iowa, February 2014.

(175) "Model robustness as a confirmatory virtue: The case of climate models," History and Philosophy of Science Department, Indiana University, April 2014

(176) Aspasia Lecturer, (Endowed) Groningen, The Netherlands, May, 2014

(177) "*Model robustness* as a confirmatory virtue: The case of climate science," Lecture delivered to Philosophy Department, Groningen University, May, 2014

(178) "What's wrong with Evolutionary Psychology" to Stephen Stich's class "Human Nature and Human Diversity," Rutgers University, NJ. February 2015

(179) "The Orgasm Wars," delivered as the Rotman Center Speaker Series Lecturer, University of Western Ontario, Canada, March 2015

(180) "Robustness as a confirmatory virtue: The case of climate models," delivered to the Department of Philosophy, University of Western Ontario, London, Ontario, Canada, March 2015.

(181) with Vanessa Schweizer, "Philosophy and Conceptualizing the human dimensions of climate Change," SRPoiSE Conference, Detroit, March, 2015.

(182) "Climate change, satellite data, and why the models were right," Hanna Lecturer, (Endowed) Hamline University, Minneapolis, MN, April 2015

(183) "The orgasm debate: How social and theoretical biases lead us astray," Hanna Lecturer, (Endowed) Hamline University, Minneapolis, MN, April 2015

(184) "Hierarchical evolutionary theory and Species selection," faculty, Marine Biological Laboratory Seminar in the History of Biology, Wood's Hole, MA, May, 2015.

(185) "The Logic of research questions and Group Functions," for the "Landscapes of collectivities: the life sciences" Conference, Tel Aviv University, Israel, June, 2015.

(186) "Adaptationism in Action: The Logic of Research Questions" International Society for the History, Philosophy, and Social Studies of Biology, Montreal, July 2015.

(187) Brown Bag Lecture: "A Philosopher of science on the loose at NCAR: Two projects," delivered to IMAGe, National Center for Atmospheric Research, Boulder, CO September 2015.

(188) "The female orgasm debates: How social and theoretical biases influence science," for the Committee on History and Philosophy of Science, University of Colorado, Boulder, September 2015

(189) "The female orgasm debates: How social and theoretical biases lead us astray," Hall Lectures, (Endowed) Washington University, St. Louis, MO, October 2015.

(190) "*Model robustness* in climate science," Hall Lectures, (Endowed) Washington University, St. Louis, MO, October 2015.

[[Keynote Lecturer, "Sincere and insincere criticism of climate science: We can tell genuine critique vs. conspiratorial thinking apart," Conference: The Epistemic value of dissent in climate science. Bielefeld, Germany, October 2015]] Cancelled due to ill health

(191) "Model robustness: An example from climate science," for Philosophy Department, University of Colorado, Boulder, December 2015.

(192) "What is wrong with the way that many animal behaviorists and anthropologists ("adaptationists") research evolutionary traits?" Sawyer Endowed Lecture, Illinois Institute of Technology, Chicago, Illinois, February 2016

(193) "What is wrong with the way that many animal behaviorists and anthropologists ("adaptationists") research evolutionary traits?" DEX Conference, UC Davis, March 2016

(194) "What a Difference Research Questions can make!" Romanel Prize Lecture, 2015-2016 American Philosophical Association National Office Prize, Pacific Division, San Francisco, CA, March 2016 Respondent: James R. Griesemer.

(195) "Host-microbiota evolutionary ecology: ramifications for managing microbiomes" session presenter. "Unseen Partners: Microbial Communities that Support Human and Environmental Health." University of Michigan, Ann Arbor, Michigan, May 16-17, 2016.

(196) "Evaluating the New Theory of the evolution of female orgasm," Humanities Center, Yale University, October 2016.

(197) "The disagreement about value added by Regional climate models," presented to "Climate Science, Disagreement, and Policy: A multidisciplinary investigation". Dublin Institute for Advanced Studies and the National University of Ireland, November 2016.

- (198) "Slowing down: On why nature built women to have difficulty coming with intercourse," to be presented at A Night of Philosophy and Ideas, Brooklyn Pubic Library, January 2017.
- (199) Presentation, "Class: Agnotology: the Cultural Production of Ignorance," History of Science Department, Harvard University, March 2017.
- (200) Presentation, Class: Philosophy of Science, Philosophy Department, Sydney University, Australia, (Skype), April 2017.
- (201) "The disagreement about value added by Regional climate models" University of Chicago, April 14, 2017.
- (202) "Climate change attribution: When is it appropriate to add an approach?" Invited Lecture to Biology Department, Indiana University, Dec 8, 2017.
- (203) "Climate change attribution: When is it appropriate to accept new methods?" University of Michigan Philosophy Department Colloquium, Ann Arbor, February 2018.
- (204) "The role of social values in analyzing extreme events: the conflicts between different methods" University of California, Irvine, Department of Logic and Philosophy of Science, Irvine, CA, March 9, 2018.
- (205) Holobionts and Processual Philosophy of Biology, Conference: 'A Process Ontology for Contemporary Biology', Royal Society, London, March 21-23, 2018.
- (206) Invited Symposium Lecture with two commentators, "What is Worse—Warning or no Warning? Values and Extreme Climate Events." American Philosophical Association Meeting, Pacific Division, San Diego, CA, March 29, 2018.
- (207) Conference Lecture, Science and Values, Hobart and William Smith Colleges, Finger Lakes, NY, September 2018.
- (208) Plenary Lecture, "Climate Science and Philosophy of Science," Conference of the Russian Society for the Philosophy of Science, Moscow, Russia, September 2018.
- (209) "Choices of values in attribution of climate change to extreme events", City University of New York, New York, November, 2018
- (210) Prize-winning lecture, Symposium at Philosophy of Science Association, Seattle, November, 2018.
- (211) "The intersection of social values and methods in attributing climate change to extreme events: A Controversy," to the Philosophy of Science Program and Philosophy Departments, University of Minnesota, November 2018.
- (212) "The genetics of Holobionts," Presentation to the Biology Interest Group, University of Minnesota, Philosophy Department, November 2018.
- (213) Invited Colloquium Lecture, University of Kentucky Biology Department, Lexington, KY January 2019
- (214) Richard and Anne Burian Endowed Lecture, Virginia Polytechnic University, Philosophy Department, February 2019
- (215) Invited speaker, Conference on Regional Climate modeling: Workshop on Storylines, Oslo, Norway, April, 2019.

(216) "Can Storylines Provide Legal Evidence for Climate Change?" Lecture to the Meteorology Department, Reading University, UK, April 2019

(217) "Sex bias in philosophy and science," Women's Leadership Conference, Indiana University, October 26, 2019.

(208) "What do we Need to Provide Legal Evidence for Climate Change?" for "Usable Climate Science and the Uses of History," Co-organized by Deborah Coen and Adam Sobel, Yale University, New Haven, CT, November 7-8, 2019.

(209) Invited Symposium lecture with commentator, "The Disagreement about Value Added by Regional Climate Models," in Symposium, "Modeling and Climate Change," Eastern American Philosophical Association, January 8, 2020, Philadelphia, PA.

(210) "What is the appropriate level of evidence for climate change?", Johns Hopkins University, Philosophy Department, February 13, 2020.

(211) "What is the appropriate level of evidence for climate change?", University of Georgia, Philosophy Department, February 21, 2020

(212) Lightening talk, with Stuart Gluck, American Geophysical Union Fall Meeting, Dec 2020

(213) Poster Chair and speaker: Philosophy of Science Association, Jan 2021

(214) Physics Department Colloquium speaker, Indiana University February 2021

(215) Invited colloquium speaker, Rock Ethics Program, Penn State U. March 2021

(216) Bar-Hillel Colloquium for the History, Philosophy and Sociology of Science, Hebrew University, Jerusalem, March 2021

(217) Invited Lecture: Climate Change Graduate School, University of Graz, Austria, April 29, 2021

(218) Symposium Lecture: Holobionts, Symbionts, and Demibionts: "Demibionts and Holobionts" with Mike Wade, ISHPSSB, online, July 2021

[CANCELLED PSA INVITED SYMPOSIUM LECTURE, NOV 2021]

(219) Commentator, Tanner Lectures by Richard Wrangham, Stanford University, Postponed until March 2022.

(220) "How Climate Models are Confirmed," to Summer School at Reading University, UK, June 6, 2022.

(221) "Values in Climate Attribution," to Summer School at Reading University, UK, June 6, 2022.

[Too sick to lecture rest of 2022, 2023, plus eye injury, crushed disc, back surgery, and 3rd Covid infection, Vit B12 Severe Deficiency.]

FORTHCOMING LECTURES:

"Lineage Selection," Invited Symposium Lecture, European Philosophy of Science Association, Budapest, September, 2023.

PROFESSIONAL ACTIVITIES:

President 1997-1999

International Society for the History, Philosophy, and Social Studies of Biology
(President-Elect 1995-1997) (Past-President 1999-2001)

Advisory Committee (elected), Human Biology Program, Indiana University, 2011-2014

Executive Committee, Central Division,
American Philosophical Association (1999-2002)

Governing Board, Philosophy of Science Association (1999-2001, 2001-2003)

Program Committee Member:

International Society for the History, Philosophy, and Sociology of Biology, 1989
Society for the Social Studies of Science, 1989

American Philosophical Association, Pacific Division, 1988-1991

Philosophy of Science Association, 1990-1992, 2005-2006

American Philosophical Association, Central Division, 1998-2000

Philosophy of Biology at Madison (POBAM) 2013-2014

International Conference of Models and Simulations 6, 2014

International Conference of Models and Simulations 7, 2015-2016

American Philosophical Association, Central Division, 2016-2018

Advisory Board to the Eastern APA Program Committee (2003-2005)

Board of Directors:

International Society for the History, Philosophy, and Social Studies of Biology
(1991-1995)

Chair, Nominating Committee:

Philosophy of Science Association (1990-92)

Chair, Nominating Committee:

International Society for the History, Philosophy, and Social Studies of Biology
(1999-2001)

Nominating Committee, Central Division,

American Philosophical Association (2000 - 2001)

Panel Member:

National Science Foundation Scholars Award: Science, Technology and Society, 2001-2004

Twice-yearly National Science Foundation panel to award Postdoctoral and Senior Postdoctoral Fellowships in History and Philosophy of Science, 1988, 1989.

National Endowment for the Humanities, July 1999.

National Institutes of Health Ethics Advisory Committee, for "Diversity in Human DNA Sequences" research program March 2000-2007

Member:

APA Matchette Prize Selection Committee (1993-95)

Participating Member, Evolutionary Mismatch Working Group of the Evolution Institute-NESCent, Durham, NC, (2008-2015, multi year project involving 30+ biologists and 2 philosophers), organized by David S. Wilson

Women's Caucus Prize Symposium Review Committee, (2016-2018; 2018-2020),
Philosophy of Science Association

Women's Caucus Prize Symposium Review Committee, (2018-2020; 2020-2022),
Philosophy of Science Association

Ethics Board Member, "National Institutes of Health Ethics Advisory Committee," for
"Diversity in Human DNA Sequences" research program, Cavalli-Sforza's
laboratory at Stanford, March 2000 – 2008 (paid)

Ethics Board Member, "National Institutes of Health Advisory Committee," for
"Diversity in Human DNA Sequences" research program, Kidd's Laboratory at
Yale Medical School. June 2004 – 2008 (paid)

Advisory Committee member, NSF-funded NIRT, Center for Nanotechnology in Society,
University of South Carolina August 2003-2007

Consulting Faculty member, Ford Foundation grant to the School of Journalism and the
Kinsey Institute: "Turning Sexual Science into News: Development of a Training
Approach" 2005-2006

External Review Committees:

UC San Francisco, Program in the History of the Life Sciences, 1987

University of Auckland, Department of Philosophy, Auckland, New Zealand, 1992

National Science Foundation: "Committee of Visitors", 1992,

Oversight committee to evaluate past three years of NSF Studies in Science
and Technology Program, make recommendations for next three years.

Conference Co-organizer:

"Medical Miracles: Views from the Humanities," UC San Diego, May 1986.

"Women Studies and the Academy," UC San Diego, April 1987.

"Is There Any Practical Value of the History or Philosophy of Science for the Research
Scientist?" UC Berkeley, May 1994.

Co-organizer of BAPS (1988-1994): co-founded with Nancy Cartwright, coordinated,
and sponsored monthly meetings of the Bay Area Philosophy of Science
Study Group, an informal group which includes faculty and graduate
students from UC Berkeley, UC Davis, UC Santa Cruz, University of San
Francisco, and Stanford.

Organizer of Biology Studies Reading Group at Indiana University (2004- present)
Founded, coordinate, sponsor bi-weekly meetings of the IU multidisciplinary
group studying all aspects of history, social aspects, and philosophy of
biology. (5-12 attendees, depending on reading)

Organized Symposium at Philosophy of Science Biennial conference, 2008, Climate
Science and Philosophy of Science

Organized Symposium at Philosophy of Science Biennial conference, 2020, Big Data,
Climate Science and Philosophy of Science

Co-organize (with climate scientists Jeffrey Kiehl, Linda Mearns, Maoyi Huang,
Jaideep Ray) Session at American Geophysical Union Annual meeting 2009,
2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017 2018, 2019, 2020,
2021; Evaluation and Confirmation of Climate Models; Uncertainty
Quantification of Climate Change, Earth System, and Integrated Assessment
Models. Average of 200-300 attendees each year.

Organize bi-weekly “laboratory” meetings with philosophy of biology and climate doctoral students at IU’s History and Philosophy Department, for practice presentations and mutual criticism of papers (2008- present) (5-9 attendees)

Organize History and Philosophy of Statistics Reading Group with Michael Trosset, Statistic Department, (Inaugurated in 2014) for interested graduate students from both History and Philosophy of Science and the stats department. We read methodology and history of statistics papers and discuss their implications.

Member:

American Philosophical Association
Philosophy of Science Association
International Society for the History, Philosophy and Social
Studies of Biology
American Geophysical Union

Associate: Behavioral and Brain Sciences

EDITORIAL ACTIVITIES:

Associate Editor:

Philosophy of Science (1999-2004)

Advisory Board:

Feminist Philosophy Quarterly (2014-2019)

Editorial Board:

Biology and Philosophy (1989-present)
Biological Theory: Integrating Development, Evolution, and Cognition (2004 – present)
Philosophy, Theory, and Practice in Biology (2010 — present)
Synthese (2015-present)

REFeree FOR:

Professional Journals:

Acta Theoretica
American Naturalist
Annals of the Association of American Geographers
Archives of Sexual Behavior
Behavior
Behavioral and Brain Sciences
Bioeconomics
Biological Review
Biological Theory
Biology and Philosophy
British Journal of the Philosophy of Science
Bulletin of the American Meteorological Society
Climate Risk Management (2023 added)
Climatic Change
Critica
Earth’s Future
Erkenntnis
Ethics
European Journal of the Philosophy of Science
Evolution
Global Environmental Change
History and Philosophy of the Life Sciences

Hypatia
 JAMA (Journal of American Medical Assoc.)
 Journal of Advances in Modeling Earth Systems
 JEZ: Molecular and Developmental Evolution
 Journal of the History of Biology
 Journal of Philosophy
 Journal of Population Biology
 Journal of Sexual Medicine
 Journal of Social and Personal Relationships
 Journal of Theoretical Biology
 Kennedy Institute of Ethics Journal
 Perspectives in Biology and Medicine
 Perspectives on Science
 Philosophy, Theory and Practice in Biology
 Philosophy of Science
 Proceedings of the Royal Society
 Quarterly Review of Biology
 Reproductive Biology
 Science in Context
 Science, Technology and Society
 Science, Technology: Women's Health, Issues, and Care
 Signs
 Studies in History and Philosophy of Science
 Studies in History and Philosophy of Science Part C: Studies in History and Philosophy
 of Biological and Biomedical Sciences
 Studies in History and Philosophy of Modern Physics
 Synthese
 Theoria
 Theoretical Population Biology
 Trends in Ecology and Evolution
 Weather, Climate, and Society

Organizations:

American Council of Learned Societies
 Geological Society of America
 Israel Science Foundation
 Konrad Lorenz Institute (Vienna, Austria)
 National Endowment for the Humanities
 National Science Foundation
 South African National Research Foundation
 Canadian National Research Council
 Social Sciences and Humanities Research Council of Canada
 Templeton Foundation
 Evolution Institute
 UK Leuven (Belgium)
 Notre Dame Institute for Advanced Study
 Harvard University
 Royal Society, London
 Marsden Fund, New Zealand
 Tel Aviv University, Israel
 ETH, Switzerland
 European Commission, Brussels
 Intergovernmental Panel on Climate Change (2020)
 European Research Council

Publishers:

Blackwell Press
 Cambridge University Press
 (Consultant: Development of a new Series in Philosophy of Biology (1990-92))
 Columbia University Press
 Harvard University Press
 Kluwer Press
 MIT Press
 Oxford University Press
 Palgrave MacMillan
 Princeton University Press
 Routledge Press
 University of Chicago Press
 Westview Press
 SUNY Press

Consultant for:

Ethology
 New Scientist
 Science
 Cosmopolitan
 Women's Health
 Men's Health
 Vogue
 Glamour
 Herald Times
 Esquire
 Discovery Channel
 Dr. Oz
 Washington Post
 National Geographic Television
 CNN Health
 New York Times
 ABC News/Fusion

Listed in:

2000 Outstanding Scholars of the 21st Century (1st and 2nd Edition)
 Dictionary of International Biography (25th-35rd Eds) (also 2011, 2012)
 Who's Who in American Education (5th Edition)
 Who's Who in the West (25th Edition)
 Who's Who of American Women (20th Edition, 25th Edition)
 Contemporary Authors (1993-)
 International Authors and Writers Who's Who (15th Edition)
 The Writer's Directory (1995, 2006, 2015)
 International Who's Who of Women
 Men of Achievement (17th Edition)
 Who's Who among American Teachers (8th & 9th Edition)
 Who's Who in American Law 14th Ed.
 Empire Who's Who (2006-2007 Ed.)
 Great Lives of the 21st Century
 2000 Outstanding Intellectuals of the 21st Century (1st, 2nd Edition)
 Cambridge Blue Book of Foremost International Intellectuals (2007)
 Great Women of the 21st Century (1st Edition) 2006-2008
 Who's Who in America (62nd ed. 2008)
 Asian/ American Who's Who (Vol V) (2008)
 International Who's Who of Professional and Business Women (2009)

Biltmore Who's Who
 Who's Who in America 2009-2022
 American Men and Women of Science (2008-2015)
 World Who's Who of Women (15th Edition)
 Cambridge Who's Who (15th Ed.) (New in 2011)
 Who's Who in America (1999 through 2022)

SUPERVISION OF STUDENTS:

Dissertation Chair (with year of completion):

Michael Dietrich (co-chair with Philip Kitcher) (June 1989)
 Dartmouth/ Pittsburgh HPS Chair (Professor, Editor-in-Chief of J. History of Biology)
 Bojana Mladenovic: (May 1996)
 Williams College (Associate Prof.)
 Eric Schwitzgebel: (May 1997)
 Univ. of California, Riverside (Professor)
 Mathias Frisch: (May 1998)
 Univ. of Maryland, College Park; Hannover (Professor)
 Ina Roy: (May 1998) MD Stanford
 Oregon State University (Instructor)
 Paul Pojman: (co-chair with Michael Friedman) (May 2000)
 Deceased.
 Mark Borrello: (co-chair with Fred Churchill) (February 2002)
 Univ. Minnesota (Assoc. Prof., Program Co-chair of ISHPSSB)
 Rasmus Winther: (October 2003)
 Univ. of Calif. Santa Cruz (Assoc. Prof.)
 Anthony Perez-Miller (HPS, IU) (in Military)
 Alex Klein (Philosophy): (Aug. 2007)
 Calif. State Univ., Los Angeles (Assoc. Prof.)
 Canada Research Chair, McMaster U. Canada
 Melinda Fagan: (June 2007) (NSF Graduate Fellow)
 Rice, Univ. of Utah (Assoc. Prof.) U Utah, (Sterling McMurrin Chair)
 Sean Valles: (May 2010)
 Lyman Briggs College, Michigan State Univ. (Assoc. Prof.)
 Steven Lawrie (HPS, IU) (Withdrew)
 Laura Seger (HPS, IU) (Withdrew)
 Jun Otsuka: (May 2014)
 University of Kyoto, Japan (Prof.)
 Trin Turner (HPS, IU) (Withdrew)
 Wes Evans (HPS, IU)
 Oklahoma State Univ. (Instructor)
 Kimberly Brumble (HPS, IU) (transferred to Calgary)
 Samuel Ryan Ketcham (HPS, IU)
 Nicholas Zautra (HPS, CogSci, IU) Guam Univ.
 (Assist Prof.)
 Rick Morris (Philosophy, Univ. Calif. Davis)(Fall 2019)
 Chris ChoGlueck (HPS, IU) (NSF Graduate Fellow)(Aug. 2019)
 New Mexico Tech. (Assistant Prof.)
 Monica Morrison (Philosophy, IU) (January 2021) (COAS Dissert.
 Fellowship) National Center for Atmospheric Research (Postdoc)
 Daniel Lindquist (Philosophy, IU) (May 2021) (Nelson Scholarship)
 Shannon Abelson (Philosophy, IU) (Nelson Scholarship)
 Suzanne Kawamleh (Philosophy, IU) (Wells Fellowship)
 Ryan O'Loughlin (HPS, IU) (Expected May 2022)
 Dan Li (HPS, IU) (Expected May 2023)

- Jun Otsuka: (HPS IU) (May 2014) (Philosophy of biology, evolutionary genetics, statistics, theory structure; author of the best-selling book on statistics in all of Japan; soon available in English, Routledge)
University of Kyoto, Japan (Professor)
- Nicholas Zautra (HPS, CogSci, IU: MA , ABD) Guam Univ.
(Assist Prof.) (Philosophy of biology and cognitive science, antireductionism in science, methodology)
- Rick Morris (Philosophy, Univ. Calif. Davis)(Fall 2019) (Outside member, but very active, on Dissertation on evolutionary mismatch, which I helped pioneer in approach and definition).
- Chris ChoGlueck (HPS, IU) (NSF Graduate Fellow)(Aug. 2019) (Philosophy of biology; contraceptive biology; values in science; feminist HPS)
New Mexico Tech. (Assistant Prof.)
- Monica Morrison (Philosophy, IU) (January 2021) (COAS Dissert. Fellowship) (philosophy of climate science; modeling in science; values in models; social structure of science's effects on modeling projects).
National Center for Atmospheric Research (Postdoc)
- Daniel Lindquist (Philosophy, IU) (May 2021) Philosophy of science; philosophy of biology; Hegel's philosophy of biology; history of modern philosophy; Kantian philosophy (Nelson Scholarship)
- Shannon Abelson (Philosophy, IU) (May 2023) philosophy of scientific modeling and theory, methodology of model building and testing; astrophysics, cosmology) (Nelson Scholarship)
- Suzanne Kawamleh (Philosophy, IU) (May 2023) (Philosophy of medicine; machine learning in medicine) (Wells Fellowship)
- Ryan O'Loughlin (HPS, IU) (May 2022) (philosophy of climate science; model evaluation and testing; robustness in modeling sciences; methodology in model building) Assistant Professor, CUNY (City University of New York), Queens
- Dan Li (HPS, IU) (May 2023) (Methodology in modeling sciences; philosophy of climate modeling; data science and machine learning in the sciences; values and machine learning; values in the sciences; feminist HPS)
- Ryan Ketcham (HPS, IU) (Expected December 2023) (Integrated HPS of Sociobiology controversy)

RECENT PRESS:

Coverage in scientific, national, and international media

(2011):

New Scientist: <https://www.newscientist.com/article/mg18624991-800-review-the-case-of-the-female-orgasm/>

Science et Vie (France)

Popular Science: <https://www.popsoci.com/science/article/2011-09/what-point-female-orgasm>

Pharyngula: <https://scienceblogs.com/pharyngula/2011/09/11/why-do-women-have-orgasms>
Salon.com: https://www.salon.com/2011/09/11/orgasm_3/
Dan Savage: Savage Love Column: <https://www.straight.com/article-471786/vancouver/women-can-have-orgasms-because-men-must>
Las Ultimas Noticias (Chile)
La Repubblica (Italy) <https://www.repubblica.it/scienze/2011/09/13/news/orgasmo-21626960/>
Wired <https://www.wired.com/2011/09/female-orgasm/>
The Calcalist (Israel)
CNN (Oct 2011) Ian Kerner: <http://thechart.blogs.cnn.com/2011/10/13/are-female-orgasms-really-just-a-bonus/>
Discovery Channel (TV documentary)

2012:

CNN Health (Jan. Editor's Choice column, front page):
<http://thechart.blogs.cnn.com/2012/01/05/why-is-the-female-orgasm-so-elusive/>
Cracked (humor): http://www.cracked.com/article_19700_the-5-weirdest-reasons-we-have-sex-according-to-science.html
Tom Tomorrow (humor)
Ca m'intresse (Paris)
Discovery "Curiosity" (November)
British documentary film development (Emma George): http://www.documentary-campus.com/p/around_the_world_in_80_orgasms/

The Daily Beast (2009): <https://www.thedailybeast.com/the-orgasm-gap>
New York Times, Natalie Kitroeff, Nov12, 2013: <https://well.blogs.nytimes.com/2013/11/11/women-find-orgasms-elusive-in-hookups/>

2014/2015:

Appearances in *Cosmo* (May 2014)
Appearance in *Gendai* (March 2015)(Weekly Japanese magazine, circ. 500,000)
Appearance *Herald Times* (January 2015)
Appearance in *Pacific Standard* (November 2015)

2016/2020:

Appearance in *Glamour* (April 2016)
Appearance in *Science* (Aug 2016)
Appearance in *The Guardian* (July 2016)
Appearance in *The Guardian* (October 2016)
Appearance in *The New York Times*, article by Carl Zimmer (Aug 2016)
Appearance in CNN (Aug 2016; Oct 2016)
Appearance in NPR (Aug 2016)
Appearance in *The Yale Daily Review* (Aug 2016)
Radio appearance on Irish Public Radio (Aug 2016)
Radio appearance National Post Radio, Sirius, (Nov 1, 2016)
Appearance in *The Guardian* (Feb 23, 2017)
<https://www.theguardian.com/lifeandstyle/2017/feb/23/golden-trio-of-moves-boosts-chances-of-female-orgasm-say-researchers>
Appearance in *Uproxx* (Feb 27, 2017)
Appearance in *Esquire* (Feb 27, 2017)
Appearance in *Vice* (Feb 27, 2017)
Appearance in Huffington Post (Feb 23, 2017)
Appearance in CNN (March, 2017)
Recommendation in *F1000* (Feb 8, 2017)
Appearance in *Shape* (May 2017)
Appearance in Huffington Post (Dec 6, 2017)

Appearance in The Guardian (Sept 30, 2019)
<https://www.theguardian.com/science/2019/sep/30/rabbits-may-hold-key-to-solving-mystery-of-human-female-orgasm>
 Appearance in NOVA PBS (Sept 30, 2019): <https://www.pbs.org/wgbh/nova/article/evolution-female-orgasm-ovulation-rabbits/>
 Appearance in Yale News (October 9, 2019)
<https://yaledailynews.com/blog/2019/10/09/157921/>
 Appearance in Slate (Dec 19, 2019) <https://slate.com/technology/2019/12/attribution-science-field-explosion-2010s-climate-change.html> [interview]
 Appearance in *Forbes* Jan. 6, 2020 <https://www.forbes.com/sites/rogerpielke/2020/01/06/three-rules-for-accepting-climate-event-attribution-studies/#5905cee066ee> By Roger Pielke “Three Rules For Accepting Climate “Event Attribution” Studies” [Focus on and Quotation of Lloyd and Oreskes 2018.]

Reference in or consultant for the below:

Women’s Health
 Men’s Health
 Vogue
 Cosmopolitan special issue (March 2015)
 Dr. Oz (2014)
 Glamour (2014, 2015, 2016)
 Herald Times (January 2015)
 Esquire (January 2015)
 Marie Claire (May 2015)
 Washington Post (November 2014)
 New York Times (November 2014)
 IFLScience (May 2015)
 ABC News/Fusion (October 2015)
 Salon (Feb 2016)
 The New Scientist (February 2016)
 American Council on Science and Health (April 6, 2016)
 Health Day (April 2016)
 Medical Express (April 2016)
 Fusion (April 30, 2016)
 Millenium Post (August 2016) (Recurrent Fury)
 The Conversation (August 10, 2016) (Recurrent Fury)
 The Guardian (Sept 23, 2016) (Alice)
 CNN (October 2016)
 CNN (3/10/17)
 Newsweek (February 3, 2017)
 The Inverse (February 23, 2017) <https://www.inverse.com/article/28231-best-sex-moves-orgasm-science>
 Fox News (March 10, 2017)
 El Mundo (April 9, 2017)
 BuzzFeed (4/18/17)
 Health on India (June 5, 2017)
 Chronicle of Higher Education (6/12/17)
 Huffington Post (July 3, 2017)
 Vice (8/7/17) <https://www.vice.com/pl/article/vbe4p4/mezczyzni-mowia-jak-wyobrazaja-sobie-kobiece-orgazmy>
 SVT.se (Aug 15, 2017)
 Maxim (Aug 30, 2017)
 Women’s Health (Sept 5, 2017)
 Health Medicinet (Sept 6, 2017)
 International Business Times (Sept 10, 2017)
 Newsweek (Sept 21, 2017)

Medical Daily (Sept 22, 2017)
Maxim (Sept 23, 2017)
True Viral News (Sept 25, 2017)
Die Tageszeitung (Oct 11, 2017)
Huffington Post (October 26, 2017)
Vice (October 29, 30, 2017)
Science News (Dec 14, 2017): "These weather events turned extreme thanks to human-driven climate change," (citation of Mann, Lloyd and Oreskes 2017)
Women's Health (December 21, 2017)
<https://www.womenshealthmag.com/health/a19976452/cervix/>
UnionTimes San Diego (December 30, 2017)

Newsweek (Feb 3, 2018) When is the best age for sex for women? <https://www.newsweek.com/what-makes-sex-good-5000-people-share-what-they-want-bed-new-survey-798463>

Maxim (March 8, 2018): Could not find link

Stern (March 17, 2018) <https://www.stern.de/neon/herz/liebe-sex/sexbewusst/orgasmus-mythen-und-ihre-urspruenge---sexwissen-im-video--klitoral--vaginal--egal--7927076.html>

Lenta.ru (March 18, 2018): <https://lenta.ru/news/2018/03/18/orzagn/>

Cosmopolitan (March 21, 2018): <https://www.cosmopolitan.com/uk/love-sex/sex/a19508041/study-lesbian-women-orgasm-more/>

Bustle (April 17, 2018) MysteryVibe's "Close The Orgasm Gap" Campaign Wants Everyone To Achieve Equal Pleasure, <https://www.bustle.com/p/mysteryvibes-close-the-orgasm-gap-campaign-wants-everyone-to-achieve-equal-pleasure-8809640>

Stern (4/27/18): <https://www.stern.de/neon/herz/liebe-sex/sexbewusst/orgasmus-mythen-und-ihre-urspruenge---sexwissen-im-video--klitoral--vaginal--egal--7927076.html>

Men's Health (May 16, 2018): <https://www.menshealth.com/sex-women/a19539937/sexual-techniques-for-guaranteed-orgasm/>

Bustle (May 15, 2018): <https://www.bustle.com/p/5-ways-we-perpetuate-the-orgasm-gap-that-you-never-realized-according-to-a-psychologist-9016467>

The Philadelphia Inquirer (May 18, 2018) "The orgasm gap explained: Why she's just not as into it", <https://www.inquirer.com/philly/health/the-orgasm-gap-explained-why-shes-just-not-as-into-it-20180518.html>

Cosmopolitan (May 28, 2019) <https://www.cosmopolitan.com/uk/love-sex/sex/a20949010/sexual-performance-orgasm-anxiety/>

The Guardian (June 19, 2018): <https://www.theguardian.com/lifeandstyle/2018/jun/19/multiple-orgasm-clitoris-science-research>

Irish Times.com (June 20, 2018): <https://www.irishtimes.com/life-and-style/health-family/the-multiple-orgasm-does-it-exist-and-who-knows-for-sure-1.3537381>

The Guardian (July 19, 2018): <https://www.theguardian.com/lifeandstyle/shortcuts/2018/jul/19/the-psychology-of-orgasms-why-faking-it-today-could-ruin-your-sex-life-tomorrow>

Der Spiegel (June 25, 2018): <http://www.spiegel.de/gesundheit/sex/weiblicher-orgasmus-die-klitoris-ist-der-schluesel-a-1214068.html>

El Pais (June 29, 2018): <https://smoda.elpais.com/placeres/sexo/por-que-hombres-tienen-orgasmos-mas-rapidamente/>

The Guardian (July 9, 2018) Do lesbians have better sex than straight women?
https://www.theguardian.com/lifeandstyle/2018/jul/09/do-lesbians-have-better-sex-than-straight-women?CMP=tw_t_gu#new_tab

Slate (July 10, 2018): Slate France

Global News (July 10, 2018): <https://globalnews.ca/news/4323647/lesbians-better-sex/>

Vice (July 24, 2018): https://www.vice.com/en_au/article/evpmgk/a-sex-therapist-explains-the-biggest-myths-about-the-female-orgasm

Le Monde (29 July 2018): https://www.lemonde.fr/m-perso/article/2018/07/29/pourquoi-les-femmes-ont-elles-moins-facilement-des-orgasmes-que-les-hommes_5337198_4497916.html?xtmc=orgasme&xtcr=30

Teinteresa (Aug 8, 2018): http://www.teinteresa.es/salud/hombres-culpa-mujeres-heterosexuales-orgasmos_0_1751225187.html

Women's Health (Aug 9, 2018): <https://www.womenshealthmag.com/sex-and-love/a19954247/why-can-t-i-climax/>

Quartz (Sept 9, 2018): <https://qz.com/quartz/1381643/its-a-myth-that-victorian-doctors-used-vibrators-to-give-their-patients-orgasms/>

Health (Sept 12, 2018): <https://www.health.com/sex/how-to-have-more-orgasms>

Common Dreams (Sep 15, 2018): "The New York Times Should Hire Climate Scientist Michael Mann as Op-Ed Columnist on Global Warming,"
<https://www.commondreams.org/views/2018/09/15/new-york-times-should-hire-climate-scientist-michael-mann-op-ed-columnist-global>, (citation of Mann, Lloyd, and Oreskes 2017).

El Pais (15 Sept 2018)
https://elpais.com/elpais/2018/09/15/album/1536998078_457281.html#foto_gal_4

Common Dreams (15 Sept 2018) <https://www.commondreams.org/views/2018/09/15/new-york-times-should-hire-climate-scientist-michael-mann-op-ed-columnist-global>

Aeon (Sep 26, 2018) <https://aeon.co/ideas/i-holobiont-are-you-and-your-microbes-a-community-or-a-single-entity>

Focus (Oct 19, 2018): https://www.focus.de/gesundheit/ratgeber/maenner/freundschaft-mit-dem-penis-schliessen-orgasmusschwierigkeiten-bei-maennern-warum-sie-fuer-den-hoehepunkt-ueben-muessen_id_9774551.html

The Independent (Oct 19, 2018): <https://www.independent.co.uk/life-style/women/sex-education-orgasms-teach-jess-phillips-labour-mp-grazia-interview-a8623471.html>

Health (Nov. 28, 2018): <https://www.health.com/sex/sex-resolutions-new-year>

Le Monde (Jan 13, 2019) Altmetric

She Knows (Jan 28, 2019)
<http://ct.moreover.com/?a=38376782862&p=1pl&v=1&x=TVgaPESXLmQZlhebELpV3Qdd>

Der Spiegel (Jan 31, 2019) Kleine Panik! <https://www.spiegel.de/gesundheit/sex/penis-krise-bei-maennern-kleine-panik-a-1250403.html>

Bustle (Mar 27, 2019) <http://ct.moreover.com/?a=38856646114&p=1pl&v=1&x=ceJDwgUsuO4CoGwtEs18zg>

NBC News (Apr 6, 2019) <https://www.nbcnews.com/better/lifestyle/orgasm-gap-why-it-exists-what-women-can-do-about-ncna983311>

Cosmopolitan (Spanish) (April 23, 2019) <https://www.cosmopolitan.com/es/sexo-amor/sexo/a27109284/mujeres-solteras-orgasmo/>

Metro UK (April 30, 2019) Altmetric, no link

El Confidencial (May 11, 2019) http://ct.moreover.com/?a=39197196905&p=1pl&v=1&x=H2lyvEgdnC8_p5RLHNUZ5A

Psychology Today (May 20, 2018): "Orgasm Gap: Picking Up Where the Sex Revolution Left Off," <https://www.psychologytoday.com/us/blog/stress-and-sex/201805/orgasm-gap-picking-where-the-sex-revolution-left>

De Volkskrant (May 31, 2019) <https://www.volkskrant.nl/columns-opinie/laten-we-het-gesprek-aangaan-over-seks-en-instemming~b5682864/>

Salon (June 2, 2018) "The orgasm gap: Picking up where the sexual revolution left off" https://www.salon.com/2018/06/02/the-orgasm-gap-picking-up-where-the-sexual-revolution-left-off_partner/

Refinery29 (June 4, 2019) http://ct.moreover.com/?a=39386781616&p=1pl&v=1&x=AtsLhgTW8vFIFmvOGa_AmA

msn (Jun 6, 2019) <https://www.msn.com/en-us/lifestyle/advice/what-happens-to-your-relationship-when-you-stop-having-sex/ar-AACrJ1k>

Refinery29 (June 11, 2019) https://www.refinery29.com/en-us/how-to-foreplay?utm_source=feed&utm_medium=rss

Women's Health (June 14, 2019) <https://www.womenshealthmag.com/sex-and-love/a19954247/why-can-t-i-climax/>

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