

VITA

JAMES FRANCIS WOODWARD

ADDRESS:

Department of History and Philosophy of Science
1107 Cathedral of Learning
University of Pittsburgh
Pittsburgh, PA 15260

jfw@pitt.edu

website: jameswoodward.org

ACADEMIC POSITIONS

Emeritus, History and Philosophy of Science, University of Pittsburgh, 2022-

Distinguished Professor, History and Philosophy of Science, University of Pittsburgh, 2010- 2022

J. O. and Juliette Koepfli Professor of the Humanities, California Institute of Technology, 2001- 2010

Professor of Philosophy, California Institute of Technology, 1992- 2010

HONORS AND AWARDS

Fellow, American Academy of Arts and Sciences

Fellow, American Association for the Advancement of Science

Fellow, Center for Advanced Study in the Social and Behavioral Sciences for 2015-16.

President, Philosophy of Science Association, 2010-2012

Lakatos Award for *Making Things Happen*, 2005

DISSERTATIONS SUPERVISED

Lauren Ross (Ph. D. 2016)
Jennifer Jhun (Ph. D. 2016)
Haixin Dang (Ph. D. 2019)
Jeff Sykora (Ph.D. 2019)
Jacob Neal (Ph.D. 2021)
Tom Wysocki
Michael Begun
Justin Shinn

PUBLICATIONS

BOOKS

Making Things Happen: A Theory of Causal Explanation. Oxford University Press, 2003. Paperback edition, September, 2005.

Causation With a Human Face: Normative Theory and Descriptive Psychology (October, 2021) Oxford University Press.

ARTICLES

1. "Scientific Explanation," *British Journal for the Philosophy of Science*, (March 1979), 41-67.
2. "On Sklar's Space, Time and Space-Time," *Philosophy of Science*, (June 1979), 287-294. Co-authored with Paul Wolfson.
3. "Developmental Explanation," *Synthese*, (July 1980), 443-466.
4. "Why the Numbers Count," *The Southern Journal of Philosophy*, (Winter 1981), 531-540.
5. "Paternalism and Justification." In *New Essays in Ethics and Public Policy*,

- Canadian Journal of Philosophy*. Supplemental Volume VIII, (1982), 67-89. Reprinted in *Contemporary Moral Issues*, ed. Wesley Cragg, (New York: McGraw-Hill Ryerson Limited), Second Edition.
6. "Glymour on Theory Confirmation," *Philosophical Studies*, (1983), 147-152.
 7. "Explanatory Asymmetries" *Philosophy of Science*, (September 1984) 421-442.
 8. "A Theory of Singular Causal Explanation," *Erkenntnis*, (November 1984) 231-262. Reprinted in D. Ruben (ed.), *Explanation* (Oxford Readings in Philosophy, pp. 246-274. Oxford University Press, 1993).
 9. "Folk Psychology is Here to Stay." *The Philosophical Review*, (April 1985), 197-226. Co-authored with Terry Horgan. Reprinted in *Mind and Cognition: A Reader*, ed. William Lycan (Basil Blackwell Limited, 1990). Also reprinted in John Greenwood, ed., *The Future of Folk Psychology: Intentionality and Cognitive Science* (Cambridge University Press, 1991). Also reprinted in Scott Christensen and Dale Turner, *Folk Psychology*, (Lawrence Erlbaum Associates, 1992).
 10. "Critical Review: Horwich on the Ravens, Projectability and Induction," *Philosophical Studies*, (1985), 409-428.
 11. "Are Singular Causal Explanations Implicit Covering-Law Explanations?," *The Canadian Journal of Philosophy*, (June 1986), 253-279.
 12. "The Non-Identity Problem," *Ethics*, (July 1986), 804-831.
 13. "Explanation in Social Theory: Comments on Alan Nelson," *Ethics*, (October 1986), 187-195.
 14. "On an Information Theoretic Model of Explanation," *Philosophy of Science*, (March 1987), 21-44.
 15. "Reply to Parfit," *Ethics*, (July 1987), 800-816.
 16. "Saving the Phenomena," *The Philosophical Review*, (July 1988), 303-352. Co-authored with James Bogen.

17. "Understanding Regression," *PSA*, 1988, volume 1, 255-269.
18. "Data and Phenomena," *Synthese*, (June 1989), 393-472.
19. "The Causal/Mechanical Model of Explanation," *Scientific Explanation*. Minnesota Studies in the Philosophy of Science, volume 13 (1989), eds. Philip Kitcher and Wesley Salmon, 357-383.
20. "Laws and Causes," (Review Article of Michael Tooley's *Causation: A Realist Approach* and James Fetzer (ed.) *Probability and Causality*). *The British Journal for the Philosophy of Science*, 41 (December 1990), 553-573.
21. "Supervenience and Singular Causal Claims." In *Explanation and Its Limits*. (Royal Institute of Philosophy Conference), ed. Dudley Knowles. Cambridge University Press. (1990), 211-246.
22. "Liberalism and Migration." In *Free Movement: Ethical Issues in the Transnational Migration of People and Money*, eds. Brian Barry and Robert Goodin. Harvester-Wheatsheaf, 1992.
23. "Realism About Laws," *Erkenntnis*, 36 (1992), 181-218. Reprinted in Michael Tooley, ed. *Analytical Metaphysics*.
24. "Observations, Theories and the Evolution of the Human Spirit" (with James Bogen), *Philosophy of Science*, 59 (December 1992), 590-611.
25. "Capacities and Invariance." In J. Earman, A. Janis, G. Massey, and N. Rescher, *Philosophical Problems of the Internal and External Worlds: Essays Concerning the Philosophy of Adolph Grünbaum*. University of Pittsburgh Press. (1993), 283-328.
26. "Essay Review of Paul Humphreys" *The Chances of Explanation*. *The British Journal for the Philosophy of Science*, 45 (1994), 353-374.
27. "Causality and Explanation in Econometrics." In *On the Reliability of Economic Models: Essays in the Philosophy of Economics*, ed. Daniel Little, Kluwer. (1995), 9-61.

28. "Conduct, Misconduct and the Structure of Science." (co-authored with David Goodstein). *American Scientist*, September-October, (1996), 479-490. Reprinted in *Exploring Animal Behavior*, eds. Paul Sherman and John Alcock, Sinauer Associates, 1998.
29. "Explanation, Invariance and Intervention." *PSA 1996*, S26- 41.
30. "Causal Modeling, Probabilities and Invariance." in V. McKim and S. Turner *Causality in Crisis? Statistical Methods and the Search for Causal Knowledge in the Social Sciences*, University of Notre Dame Press. (1997), 265 - 317.
31. "Explanation and Invariance" (Abstract) *Proceedings and Addresses of the American Philosophical Association 71*, (1997) 108-109.
32. "Causal Independence and Faithfulness." *Multivariate Behavioral Research 33*, (1998) 129 -148.
33. "Statistics." *The Encyclopedia of Philosophy*. Routledge., 1998
34. "Inside Science" (co-authored with David Goodstein). *The American Scholar*, Autumn, 1999, 83-90.
35. "Independence, Invariance and the Causal Markov Condition" (co-authored with Dan Hausman). *The British Journal for the Philosophy of Science 50*. (1999) 521- 583.
36. "Causal Interpretation in Systems of Equations". *Synthese 121* (1999), 199-257.
37. "Explanation and Invariance in the Special Sciences." *The British Journal for the Philosophy of Science*. 2000, 197-254.
38. "Data, Phenomena, and Reliability" *PSA 1998*, S163- S179.
39. "Law and Explanation in Biology: Invariance is the Kind of Stability that Matters" *Philosophy of Science* (March, 2001), 1-20.

40. "Causation and Manipulability" (2001, updated, 2008) *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu>
41. "Probabilistic Causality, Direct Causes, and Counterfactual Dependence" (2001) in M. Galavotti, P. Suppes, and D. Costantini (eds.) *Stochastic Causality*. Stanford, CA: CSLI Publications, 39- 63
42. "Explanation" (2001) *Blackwell Guide to the Philosophy of Science*. Eds, Machamer and Silberstein, Oxford: Blackwell, pp 37-54.
43. "What is a Mechanism: A Counterfactual Account." *PSA 2000, Vol II, .Philosophy of Science 69* (2002), S366-77.
44. "There is No Such Thing as a Ceteris Paribus Law" *Erkenntnis 57* (2003). (Special Issue on Ceteris Paribus Laws, Earman, Glymour, and Mitchell, eds.), 303-28.
45. "Experimentation, Causal Inference, and Instrumental Realism". (2003) *The Philosophy of Scientific Experimentation*. ed Hans Radder. University of Pittsburgh Press. 87-118.
46. "Explanatory Generalizations, Part I: A Counterfactual Account" (with Christopher Hitchcock). *Nous 37* (2003), 1-24..
47. "Explanatory Generalizations, Part II: Plumbing Explanatory Depth" (with Christopher Hitchcock) *Nous*. 37 (2003), 181-99.
48. "Scientific Explanation".(2003, updated, 2008) *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu>
49. Review Essay of Judea Pearl, *Causality*. (2003) *Economics and Philosophy* 19, pp. 321-340..
50. "Is the mind a system of modules shaped by natural selection?" (with Fiona Cowie) (2004) in C. Hitchcock, Ed., *Great Debates in Philosophy: Philosophy of Science*, New York and Oxford: Blackwell, pp 312- 334.

51. "Modularity and the Causal Markov Condition: A Restatement" (with Dan Hausman) 2004. *The British Journal for the Philosophy of Science*. 55, 147-161.
52. "Counterfactuals and Causal Explanation" (2004) *International Studies in the Philosophy of Science* 18., 41-72.
53. "Evading the IRS" (with James Bogen) in *Correcting the Model: Idealization and Abstraction in Science*, eds. Martin Jones and Nancy Cartwright. Poznan Studies. Rodopi Publishers, Holland, 2005., 233-267.
54. "Manipulation and the Casual Markov Condition" (with Dan Hausman) 2005. *PSA 2002*, vol. 2, pp. 846-856.
55. "Prospects For a Manipulability Account of Causation" in *Logic, Methodology, and Philosophy of Science: Proceedings of the Twentieth International Congress*, ed. P. Hajek, L. Valdes- Villanueva, D. Westerstahl, London: King's College Publications, pp. 333- 348.
56. "Causation with a Human Face", in Price, H. and Corry, R. (eds) *Causation and the Constitution of Reality*. Oxford: Oxford University Press, 2007.
57. "Interventionist Theories of Causation in Psychological Perspective", (2007) In A. Gopnik and L. Schulz (eds.) *Causal Learning: Psychology, Philosophy and Computation*. New York: Oxford University Press, pp. 19-36.
58. "Causal Models in the Social Sciences" in Turner and Risjord, eds. *Handbook of the Philosophy of Science, Volume 8 (Philosophy of Anthropology and Sociology)* Elsevier, 157-210.
59. "Responses to Humphreys, and Sober" (As part of a symposium on *Making Things Happen*). *Metascience* 15 (March, 2006).
60. "Invariance, Modularity, and All That" In Hartmann, Hofer, and Bovens (eds.) *Nancy Cartwright's Philosophy of Science*. Routledge, 2008.
61. "Agency and Interventionist Theories of Causation". In Beebe, Hitchcock, Menzies, eds. *The Oxford Handbook of Causation*. Oxford University Press., 2009.

62. "Sensitive and Insensitive Causation". *The Philosophical Review*.115. (January, 2006), 1-50.
63. "Some Varieties of Robustness". *The Journal of Economic Methodology*. 13 (2006), 219-240. (As part of a symposium on John Aldrich, "When are Inferences Too Fragile to be Believed?")
64. "Explanation" in Psillos and Curd, eds *The Routledge Companion to the Philosophy of Science*. Routledge, 2008, pp. 171-181.
65. "Mental Causation and Neural Mechanisms " in Hohwy and Kallestrup, eds. *Being Reduced: New Essays on Reduction, Explanation, and Causation*. Oxford University Press, 2008, pp 218-262.
66. "Cause and Explanation in Psychiatry: An Interventionist Perspective" in Kendler and Parnas, (eds.) *Philosophical Issues in Psychiatry: Explanation, Phenomenology and Nosology*, Johns Hopkins University Press, 2008, pp. 132-184.
67. "Comments on John Campbell's Causation in Psychiatry in Kendler and Parnas, (eds.) *Philosophical Issues in Psychiatry: Explanation, Phenomenology and Nosology* Johns Hopkins University Press, 2008, pp 216- 235.
68. "Experimental Investigations of Social Preferences" *The Oxford Handbook of Philosophy of Economics*. Oxford University Press, pp. 189-222.
69. "Reply to Strevens" *Philosophy and Phenomenological Research* 77 (2008): 193-212.
70. "Moral Intuition: Its Neural Substrates and Normative Significance" (co-authored with John Allman *Journal of Physiology- Paris* 101 (2007), pp. 179–202
71. "Social Preferences in Experimental Economics" *PSA 06*, vol. 2, *Philosophy of Science* 75, 646 - 657.

72. “What are Moral Intuitions and Why Should We Care About Them? A Neurobiological Perspective” (Co-authored with John Allman) *Philosophical Issues* 18 (2008) (Special Issue on Interdisciplinary Core Philosophy: Ethics), ed W. Sinnott-Armstrong, 164-185.
73. “Why Do People Cooperate as Much as They Do” In Mantzavinos (ed) *Philosophy of the Social Sciences: Philosophical Theory and Scientific Practice*. Oxford University Press, 2009, pp 219- 265.
74. “Psychological Studies of Causal and Counterfactual Reasoning”, in *Understanding Counterfactuals/Understanding Causation*. Oxford University Press. ed Hoerl, McCormack, Beck. 2011, pp 16-53.
- 75 . “Causal Perception and Causal Understanding” in *Causation, Perception, and Objectivity: Issues in Philosophy and Psychology*, Oxford University Press, ed. Johannes Roessler. 2011, pp 229-263.
- 76 “Data and Phenomena: A Restatement and a Defense” *Synthese* 182 (2011) 165-179
77. “A Philosopher Looks at Tool Use and Causal Understanding” In McCormack, Hoerl, and Butterfill,. eds. *Tool use and causal cognition*. Oxford University Press, 2011, pp 18-50.
78. “Data, Phenomena, Signal, and Noise” 2010 *.Philosophy of Science* 77, No. 5: 792-803
79. “Just do it? Just do it? Investigating the Gap between Prediction and Action in Toddlers' Causal Inferences” (Co-authored with L. Bonawitz et al.). 2010. *Cognition* 115: 104-117.
80. “Causation in Biology: Stability, Specificity, and the Choice of Levels of Explanation”. 2010. *Biology and Philosophy* 25: 287-318.
81. “The Structure and Dynamics of Scientific Theories: A Hierarchical Bayesian Perspective” (Co-authored with L. Henderson et al.) 2010. *Philosophy of Science* 77: 172-200.

82. “Reciprocity: Empirical Evidence and Normative Implications” (2012) In Harold Kincaid, ed. *Oxford Handbook of Philosophy of Social Science*. Oxford University Press, pp 581-606.
83. “Counterfactuals All the Way Down?” (Symposium on Marc Lange: *Laws and lawmakers: Science, Metaphysics, and the Laws of Nature*) *Metascience* (2011) 20:27–33.
84. “Causes, Conditions, and the Pragmatics of Causal Explanation”. In *Philosophy of Science Matters: The Philosophy of Peter Achinstein*, G. Morgan (ed.) Oxford University Press. 2011, pp 247-257.
85. “Mechanisms Revisited” *Synthese* 83 (2011) 409-427.
86. “Causation, Interactions Between Philosophical Theories and Psychological Research” (2012) *Philosophy of Science* 79 :961-972
87. “Laws, Causes, and Invariance” (2013) in *Metaphysics and Science* Stephen Mumford and Mathew Tugby, (eds.) Oxford University Press, pp 48-72.
88. “Mechanistic Explanation: Its Scope and Limits” (2013) *Proceedings of the Aristotelian Society Supplementary Volume lxxxvi*pp 39-65.
89. “Simplicity in the Best Systems Account of Laws of Nature “ (2014) *British Journal for Philosophy of Science* 65: 91- 123.
90. “A Functional Account of Causation” (2014) (Philosophy of Science Association Presidential Address). *Philosophy of Science* 81: 691-713.
91. “From Handles to Interventions: Commentary on R.G. Collingwood, “The So-Called Idea of Causation” (2014) *The International Journal of Epidemiology* 43: 1714-1718.
92. “Scientific Explanation” (2015) in L. Sklar ed. *Physical Theory: Method and Interpretation*. Oxford University Press, pp 9-37.
93. “Empirical Investigations of Human Causal Judgment” (2015) *Oxford Studies in Experimental Philosophy* volume 1, Edited by Tania Lombrozo, Joshua

Knobe, and Shaun Nichols, pp 294-234.

94. “Interventionism and Causal Exclusion” (2015) *Philosophy and Phenomenological Research* 91: 303- 347

95. “Methodology, Ontology, and Interventionism” (2015) *Synthese*. 192 (11):3577-3599.

96. “The Problem of Variable Choice” (2016) *Synthese* 193 (4):1047-1072.

97. “Emotion versus Cognition in Moral Decision-Making: A Dubious Dichotomy” (2016). In *Moral Brains: The Neuroscience of Morality* , ed. Mathew Liao, pp 87-119.

98. “Unificationism, Explanatory Internalism, and the Autonomy of the Special Sciences”. (2016) In *The Philosophy of Philip Kitcher* (ed. Pfeifer and Couch) Oxford university Press, pp 121- .

99. “Causation in the Sciences” (2016) In *The Oxford Handbook of Philosophy of Science*, (ed.) Paul Humphreys , New York: Oxford University Press, pp 163-184. (This consists of two versions: a print version for the published volume and a much longer (19k words) version for the on-line version of this volume.)

100. Koch’s Postulates: An Interventionist Interpretation” (with Lauren Ross) (2016) in *Studies in History and Philosophy of Science Part C: Studies in the History and Philosophy of Biological and Biomedical Sciences*, pp 35-46.

101. “Justice and Reciprocity: The Case for Non-Ideal Theory” (2016) *Social Philosophy and Policy* 33, pp 122-154.

102. “Intervening in the Exclusion Argument” (2017) In *Making a Difference: Essays on the Philosophy of Causation* (ed) Beebe, Hitchcock and Price. Oxford: Oxford University Press, pp 251-268.

103. “Interventionism and the Missing Metaphysics: A Dialog” (2017) In *Metaphysics and the Philosophy of Science* (ed. Mathew Slater and Zanja Yudell), pp 193-227.

104. “Explanation in Neurobiology: An Interventionist Perspective” (2018) *In Explanation and Integration in Mind and Brain Science*. (ed. David Kaplan). Oxford University Press.
105. “Normative Theory and Descriptive Psychology in Understanding Causal Reasoning: The Role of Interventions and Invariance” (2018) *In Philosophy of Psychology: Causality and Psychological Subject*, (ed. Gonzalez) Berlin: de Gruyter
106. “Causal Cognition: Physical Connections, Proportionality, and the Role of Normative Theory” *In Philosophy of Psychology: Causality and Psychological Subject*, (ed. Gonzalez) Berlin: de Gruyter.
107. “Some Varieties of Non-Causal Explanation” (2018) *In Explanation Beyond Causation* ed. Juha Saatsi and Alex Reutlinger. Oxford University Press, pp 117-137.
108. “Laws: An Invariance- Based Account” (2018). *In Laws of Nature: Metaphysics and Philosophy of Science* (ed.) Lydia Patton and Walter Ott. Oxford University Press.
109. “Physical Modality, Laws and Counterfactuals” (2020) in *Synthese* Published online (2017) at doi:10.1007/s11229-017-1400-5.
- 110 “Explanatory Autonomy: The Role of Proportionality, Stability, and Conditional Irrelevance” (2021) *Synthese* 198: 237–265
111. “Counterfactuals in the Real World” (with Mark Wilson) . *In Proceedings of Conference on Algorithms and Complexity in Mathematics, Epistemology, and Science*. Ed Fallion.
112. “Causal Judgment: What Can Philosophy Learn from Experiment? What Can It Contribute to Experiment?” (2019) In Samuels and Wilkenfeld (ed.) *Advances in Experimental Philosophy of Science*. London: Bloomsbury Academic.
113. “Mechanisms and Causation in Biology” To appear in a volume of *Minnesota Studies in Philosophy of Science on Causation and Biology*, Waters and Woodward (eds.)

114. “Causal Attribution, Counterfactuals, and Disease Interventions” (2020) In Eyal, Hurst, Murray, Schroeder, and Wikler (eds) *Measuring the Global Burden of Disease: Philosophical Dimensions*. Oxford: Oxford University Press.
115. “Downward Causation and Levels” To Appear in a volume on Hierarchy and Levels of Organization in the Biological Sciences. Konrad Lorenz Institute.
116. “Levels: What are They and What Work Do They Do?” (2020) in Kendler and Parnas ed. *Philosophical Issues in Psychiatry V: The Problems of Multiple Levels, Explanatory Pluralism, Reduction and Emergence*. Cambridge: Cambridge University Press
117. “On Wolfgang Spohn’s *Laws of Belief*” (2019) *Philosophy of Science* 86: 759–772
- 118: “Causal Complexity, Conditional Independence and Downward Causation” *Philosophy of Science* (2020) 87: 857-67.
- 119 “Causal Responsibility and Robust Causation” (co-authored with Grinfeld, Lagnado, Gerstenberg, and Usher.) *Frontiers in Psychology* (2020)
120. “Flagpoles Anyone? Causal and Explanatory Asymmetries” *Theoria* (published online, 2021) pp 1-52.
121. “Top-Down Causation in Psychiatric Disorders: A Clinical-Philosophical Inquiry” (2021) (co-authored with Kenneth Kendler), Forthcoming in *Psychological Medicine*. 51(11):1783-1788.
122. “Mysteries of Actual Causation: It’s Complicated” (2022) in *Advances in Experimental Philosophy of Causation* (ed. Willemsen, Wiegmann, Beebe, Systema) Bloomsbury Press, 35-62.
123. “Downward Causation Defended” (2021). In Gabriel and Voosholz (eds) *Top-Down Causation and Emergence*. Springer. 217-251.

124. "Levels, Kinds and Multiple Realizability: The Importance of What Does Not Matter" (2022) In *Levels of Reality in Science and Philosophy: Re-examining the multi-level structure of reality*. (Eds Shenker, Hemmo, Ioannidis, Vishne) Springer.
125. "Irreversible (One-hit) and Reversible (Sustaining) Causation" (with Lauren Ross). (2022) *Philosophy of Science* 89: 889-898.
126. "Responses to Commentaries on 'Flagpoles Anyone? Causal and Explanatory Asymmetries'" (2022) *Theoria* 111-129.
127. (Joint with many others) *Ontologies in the Behavioral Sciences: Accelerating Research and the Spread of Knowledge* (2022) National Academies of Science, Engineering and Medicine Consensus Report.
128. "Modeling interventions in multi-level causal systems: supervenience, exclusion and underdetermination" (2022) *European Journal for the Philosophy of Science* 12: 1-34.
129. "Sketch of Some Themes for a Pragmatic Philosophy of Science" in *The Pragmatists Challenge*. (2023) (ed. Andersen, Mitchell) Oxford: Oxford University Press. 15-66.
130. "Causal Approaches to Scientific Explanation" (2023) (with Lauren Ross) *Stanford Encyclopedia of Philosophy*
131. "Polygene Risk Scores: A Philosophical Exploration" (2023) (with Ken Kendler) *Philosophy of Medicine* 4.
132. "Polygene Risk Scores and Randomized Experiments" (Forthcoming) (with Ken Kendler and Lauren Ross) *Brain and Behavioral Sciences*.
133. "Reflections on Some Strategies for Causal Inference in Psychiatry" (Forthcoming in a volume edited by Kendler and Parnas, Cambridge University Press.)
134. "Comments on Zachar" (Forthcoming in a volume edited by Kendler and Parnas, Cambridge University Press.)

135. "Emotional and Utilitarian Appraisals of Moral Dilemmas are Encoded in Separate areas and Integrated on Ventromedial Prefrontal Cortex" (2015) (with Antonio Rangel, Cendri Hutcherson and Leila Montaser-Kouhsari) *Journal of Neuroscience*, 2015, 35(36):12593-12605.

Work in Progress/Papers under submission

"The Worldly Underpinnings of Causation" (with Naftali Weinberger and Porter Williams). Available on Philsci Archive.

Paper on Phenomena in Psychology (with Denny Borsboom and many others)

"There is No Such Thing As A Statistical Explanation" . Available on Philsci Archive.

REVIEWS

Paul Horwich, Probability and Evidence. *Erkenntnis*, (1985), 213-219.

Peter Achinstein, The Nature of Explanation. *Ethics*, (1985), 359-360.

D.M. Armstrong, What is a Law of Nature? *Ethics*, (1985), 949-951.

Henry Kyburg, Epistemology and Inference. *Ethics*, (1985), 391.

Rolf Sartorius, ed. Paternalism. *Ethics*, (1985), 353-354.

Robert Ackerman, Data, Instruments and Theory. *Philosophy of Science*, (1986), 455-458.

W. Essler, H. Putnam and W. Stegmuller, eds. Epistemology, Methodology and Philosophy of Science. *Ethics*, (1988), 621.

William Lowrance, Modern Science and Human Values. *Ethics*, (1988), 630-631.

Wesley Salmon, Scientific Explanation and the Causal Structure of the World. *Nous*, (1988), 322-324.

Paul Humphreys' The Chances of Explanation. *Philosophy of Science*, 60, no. 4 (1993), 671-673.

David Ruben's Explaining Explanation. Forthcoming in *Philosophy and Phenomenological Research*.

Ronald Giere, Science Without Laws. *Philosophy of Science*.69 (2002) 379-84

Jean Changeux, The Physiology of Truth. (Review co-authored with Ralph Adolphs) *Science* 306 (2004): 1684.

Samuel Bowles and Herbert Gintis A Cooperative Species: Human Reciprocity and Its Evolution *The Journal of Economic History* / Volume 72 / Issue 02 / May 2012, pp 564 – 566.

SELECTED TALKS.

"Polygene Risk Scores" ISH, Toronto, July, 2023.

"Some Reflections on Actual Causation and Causal Selection" Society for Philosophy and Psychology, Pittsburgh, June, 2023.

"The Wordly Underpinnings of Causation" Tel Aviv University, May 2023.

"Reflections on Some Strategies for Causal Inference in Psychiatry" Conference on " Causality in Psychiatric Research and Practice" Copenhagen, May 2023.

"Comments on Zachar" Conference on " Causality in Psychiatric Research and Practice" Copenhagen, May 2023

"Batter(man)ing Fundamentalism: Reflections on Autonomy, Reduction and the Meso-scale in *A Middle Way*" Batterman workshop. Pittsburgh January, 2023. Slides available at Philsci Archive.

"Polygene Risk Scores: A Philosophical Exploration" (joint with Ken Kendler) Conference on New Perspectives on Causation in the Life Sciences, University of Kent, June 2022.

"The Wordly Underpinnings of Causation" (based on joint work with Nafali Weinberger and Porter Williams) Conference on Causal Perspectivalism, University of Birmingham, June, 2022.

"Responses to Commentators" (Part of Invited Book Symposium on *Causation with a Human Face*) American Philosophical Association, Pacific Division, April, 2022)

"Irreversible (One-hit) and Reversible (Sustaining) Causation" (with Lauren Ross). Philosophy of Science Association meetings, November, 2021.

"Flagpoles Anyone? Causal and Explanatory Asymmetries," UCLA, February, 2020

"Downward Causation, Conditional Independence and Autonomy" American Philosophical Association, Pacific Division Meeting, April 2019.

"Some Reflections on the Psychology and Neurobiology of Moral Decision-Making" United States Naval Academy, April, 2019.

"Causal Complexity, Conditional Independence, and Downward Causation" Philosophy of Science Association Meetings, Seattle, November, 2018.

"Flagpoles Anyone? Independence, Invariance and the Direction of Causation" Carnegie- Mellon University, September, 2018.

"Downward Causation, Conditional Independence and Abstraction" Workshop at the University of Copenhagen, August 2018.

"Levels: What are They and Work Do They Do?" Workshop on Philosophical Issues in Psychiatry V: The Problems of Multiple Levels, Explanatory Pluralism, Reduction and Emergence. Copenhagen, May 2018.

"Levels and Downward Causation". Workshop on Hierarchy and Levels of Organization in the Biological Sciences. Konrad Lorenz Institute, Vienna, March, 2018.

“Downward Causation Defended” Central Division APA, Chicago, February 2018

“Flagpoles Anyone? Independence, Invariance and the Direction of Causation”
UC, Irvine, February, 2018.

“Causal Judgment: What Can Philosophy Learn from Experiment? What Can It
Contribute to Experiment?” Ranch Metaphysics Workshop. Tucson, AZ. January,
2018.

“Causal Reasoning in Physics” Workshop on “Where is Causation?” Umea,
Sweden, October, 2017

“Causation with a Human Face” Center for Advanced Study in the Behavioral
Sciences, February, 2017.

“Causation with a Human Face” Stanford University, January, 2017.

Symposium on Wolfgang Spohn’s *Laws of Belief* Eastern Division, American
Philosophical Association, January 2017.

“Normative theory and descriptive psychology in understanding causal reasoning:
The role of invariance/stability” August 2016, International Conference on
Thinking, Brown University.

Comments on Mathias Frisch, “Causal Reasoning in Physics” American
Philosophical Association, Pacific Division, April, 2016.

“Flagpoles Anyone? Independence, Invariance and the Direction of Causation”
Conference in Honor of John Worrall. London School of Economics, March, 2016.

“Physical Modality, Grounds, and Invariance” Conference on New Trends in the
Metaphysics of Science. University of Paris/Sorbonne. December, 2015.

“Flagpoles Anyone? Independence, Invariance, and the Direction of Explanation”
Conference on “Hempel and Beyond”. University of Cologne, September, 2015.

“Objectivity in Variable Choice for Causal Inference” Conference on Objectivity
in Science. Tilburg University. June, 2015.

“Sketch of a Pragmatist Philosophy of Science” Conference on PragMAPS: Pragmatism at the Intersection of Metaphysics and Philosophy of Science. University of Oslo. June 2015.

“ Explanation in Neurobiology: An Interventionist Perspective” Conference in honor of Dan Hausman. University of Wisconsin, Madison, May, 2015.

“Some Issues concerning explanation in neurobiology: interventionism, mechanism and beyond” Workshop in honor of James Bogen, University of Pittsburgh, March 2015.

“ Causal Attribution, Causal Modeling and Disease Interventions” Workshop sponsored by the Institute for Health Metrics and Evaluation as part of Global Burden of Disease Project. Geneva, Switzerland, June, 2014.

“ Causal Attribution, causal modelling and disease interventions” Workshop sponsored by the Institute for Health Metrics and Evaluation as part of Global Burden of Disease Project. Geneva, Switzerland, June, 2014.

“Methodology, Ontology, and Interventionism” New directions in pragmatic metaphysics for philosophy of science, Simon Fraser University, April, 2014.

“Normative Theory and Descriptive Psychology in Understanding Causal Reasoning: The Role of Interventions and Invariance” Conference at the University of A Coruna, Spain on *Philosophy of Psychology: The Conception of James Woodward* March, 2014

“Causal Cognition: Physical Connections, Proportionality, and the Role of Normative Theory” Conference at the University of A Coruna, Spain on *Philosophy of Psychology: The Conception of James Woodward* March, 2014.

“Interventionism Defended: Methodology, Circularity and Truth Conditions” Workshop on Causation: New Prospects, College de France, December, 2013.

“Causal Cognition: Physical Connections, Proportionality, and the Role of Normative Theory” To appear in a volume edited by W. Gonzalez, tentative title *Philosophy of Psychology: The Conception of James Woodward*

“Causation: Interactions Between Philosophical Theories and Psychological Research” Department of Philosophy, Johns Hopkins University, January, 2014.

“Mechanistic Explanation in Biology: Its Scope and Limits” Missouri Philosophy of Science (MOPS) Workshop, U of Missouri, October, 2013.

“Mechanism and Explanation in Biology: Its Scope and Limits” Congress on Logic and Philosophy of Science, University of Ghent, September, 2013.

“Interactions between Normative (Philosophical/ Computational) Theories of Causation and Empirical Research on Causal Cognition” Workshop on Causality: Perspectives from Different Disciplines, Therme Vals, Switzerland, August, 2013.

“Mechanistic Explanation: Its Scope and Limits” Joint Meeting of Aristotelian Society/Mind Association Exeter, UK, July, 2013

“The problem of Variable Choice” Workshop on Methodology and Ontology, Virginia Tech, May, 2013.

“Causation: Interactions between Philosophical Theories and Psychological Research” Ohio State University, April, 2012.

“Causation: Interactions between Philosophical Theories and Psychological Research” University of Wisconsin Madison, February, 2012.

“A Functional Account of Causation” PSA 2012 meetings, November, 2012, San Diego

“An Interventionist Account of Causation, HKUST, May, 2012

“Causation: Interactions Between Philosophical Theories and Psychological Research” Lingnan University May, 2012

“Mechanisms Reconsidered” Lingnan University, May, 2012

“Mechanisms in Biology” Center for Philosophy of Science Workshop, University of Minnesota, May, 2012

“Emotion versus Cognition in Moral Decision-Making: A Dubious Dichotomy”
NYU workshop on the moral brain, March, 2012

“Causation: Interactions Between Philosophical Theories and Psychological Research” University of North Carolina colloquium in philosophy, November, 2011.

“Looking Times and Infant Causal Understanding” McDonnell Conference on Causal Learning, Montreal, April, 2011.

“Mechanisms Reconsidered” Conference on Counterfactuals and Mechanisms Ecole Normale Superieure, Paris, March 2011

“Causation in Biology: Stability, Specificity, and Proportionality” Alberto Coffa Memorial Lecture. Indiana University. November 2010

“Causation: Interactions between Philosophical Theories and Psychological Research” Philosophy of Science Association Meeting, Montreal, November, 2010

“Causation in biology: Stability, Specificity and the Choice of Levels of Explanation” Keynote address. British Society for Philosophy of Science. July 2010.

“Causal Learning and Judgment: Covariation and Contact Mechanics” Opening Celebration Conference. Center for Formal Epistemology. Carnegie Mellon University, June, 2010.

“Cooperation and Reciprocity : Empirical Evidence and Normative Implications” Conference for Oxford Handbook of Social Science, Birmingham, Alabama, April 2010

“Comments on Jonathan Waskan’s “In Search of a Non-Counterfactual Foundation for Mechanistic Explanation” American Philosophical Association Meetings, Pacific Division. San Francisco. April, 2010.

“Causation in biology: Stability, Specificity and the Choice of Levels of Explanation” Rice University, Houston, March 2010

“Causation in Biology: Stability, Specificity, and the Choice of Levels of Explanation” Keynote at Virginia Tech Graduate Student Conference, November, 2009.

“Learning about causal relationships: action and observation, covariation and contact mechanics” Cognitive Development Society, San Antonio, October, 2009.

“Laws, Counterfactuals, and Invariance”, Metaphysics of Science conference, Nottingham, September, 2009

“Causation in Genetics (and elsewhere in Biology): Stability, Specificity, and the Choice of Levels of Explanation” Behavioral Genetics Association, Minneapolis, June 2009

“Causation in Biology: Stability, Proportionality, and Specificity” Society for Philosophy of Science in Practice, Minneapolis, June 2009

“Why Do People Cooperate? Empirical Evidence and Normative Implications” Pacific APA, Vancouver, April, 2009.

“Why Do People Cooperate? Empirical Evidence and Normative Implications” Evolution, Game Theory and the Social Contract Conference, UC-Irvine, March, 2009

“Causal Perception and Causal Cognition” American Philosophical Association, Philadelphia, December, 2008.

“Data, Phenomena, Signal, and Noise” Philosophy of Science Association Meetings, Pittsburgh, November, 2008.

“Data and Phenomena: A Restatement and a Defense” Heidelberg, September, 2008.

“A Philosopher Looks at Tool Use”, University of Warwick, July, 2008.

“Moral Intuition: Neural Substrates and Moral Significance”, University of Arizona, April, 2008.

“Causal Perception and Causal Cognition” Center for Advanced Studies in the Behavioral Sciences, Stanford, April, 2008.

“Some Problems of Variable Choice in Causal Representation”, UC-Berkeley, April, 2008.

“Moral Intuition: Neural Substrates and Moral Significance” American Philosophical Association, Pacific Division, March, 2008.

“Causation, Physics, and the Special Sciences” University of Pittsburgh workshop on causation, January, 2008.

“Causation and Counterfactuals” University of Warwick, December, 2007.

“Moral Intuition: Its Neural Substrates and Normative Significance” Joint Caltech-Tamagawa University Workshop on Social Cognitive Neuroscience, December, 2007.

“Causation in Biology: Stability, Specificity, and the Choice of Levels of Explanation”, Center for Philosophy of Science, University of Pittsburgh, October, 2007.

“Causation in Biology: Stability, Specificity, and the Choice of Levels of Explanation”, University of Maryland conference. April, 2007.

“Social Preferences in Experimental Economics” Philosophy of Science Association Meetings, Vancouver, November, 2006.

“Cause and Mechanism in Biology” Boston Studies Colloquium on Causation in Biology and Physics, October, 2006.

“Some Issues in the Empirical Psychology of Causal Judgment”. Society for Philosophy and Psychology (St. Louis). June, 2006.

“Mental Causation” University of Copenhagen. (Conference on Philosophical Issues in Psychiatry), May, 2006.

“Experimental Investigations of Social Preferences” University of Alabama,

Birmingham. (Conference on Philosophy of Economics), May, 2006

“Some Issues in the Empirical Psychology of Causal Judgment”. London School of Economics. May, 2006.

“Sensitive and Insensitive Causation” University of Cincinnati (Taft Lecture, as part of a conference on explanation). May, 2006.

“Sensitive and Insensitive Causation” London School of Economics, (Lakatos Award Lecture) May, 2006.

“Sensitive and Insensitive Causation” University of Calgary, March, 2006

“Sensitive and Insensitive Causation” Ohio University, March, 2006

“Sensitive and Insensitive Causation” Presentation at a workshop on Contingency and Causal Explanation, UNAM, Mexico City, October, 2005.

“Interventionist Theories of Causation in Psychological Perspective”. Plenary lecture at European Society for Philosophy and Psychology, Lund, Sweden, August, 2005.

“Causation in Biology” Presentation at International Society for the History, Philosophy, and Social Studies of Biology, Guelph, Ontario, July, 2006.

“Experimental Economics and Social Preferences” Economic Science Association, June, 2005.

“Causation in Physics and the Special Sciences” Talk at Conference on Reduction, Arrhus, Denmark. May, 2005.

“Interventionist Theories of Causation in Psychological Perspective”. Presentation at workshop at University of Warwick, April, 2005.

“Causation with a Human Face” Talk at UC, Irvine. March, 2005.

“An Interventionist Interpretation of Causation”. Causal Republicanism Workshop. Venice. May, 2004.

“Response to Paul Humphreys and Elliott Sober” Author Meets Critics Session for *Making Things Happen*. American Philosophical Association. Central Division, April, 2004

“An Interventionist Interpretation of Causation in Psychological Perspective” Workshop at Institute for Advanced Study in the Behavioral Sciences, Palo Alto, November, 2003

“Sensitive and Insensitive Causation” International Conference for Logic, Methodology, and Philosophy of Science, Oviedo. August, 2003.

“Prospects for a Manipulability Theory of Causation” International Conference for Logic, Methodology, and Philosophy of Science, Oviedo. August, 2003

“Sensitive and Insensitive Causation” Stanford, May, 2003.

“Invariance, Modularity, and All That: Comments on Cartwright” Conference on Nancy Cartwright’s philosophy of science. Konstanz, Germany, December, 2002.

“Counterfactuals and Causal Explanation” PSA 2002 workshop. Milwaukee, November, 2002

“Manipulation and the Casual Markov Condition” (with Dan Hausman) PSA 2002. Milwaukee, November, 2002

“A Plea for Invariance”, Conference on Explanation in the Natural and Social Sciences, Ghent, May, 2002.

"What is a Mechanism? A Counterfactual Account", Philosophy of Science Association Meetings, Vancouver, November, 2000

"Experimentation, Causal Inference, and Instrumental Realism" Conference on Experimentation. Amsterdam, June, 2000.

"Explanation and Invariance in the Special Sciences", University of Pittsburgh, April, 2000

"Law and Explanation in Biology", MIT, November, 1999.

"Data, Phenomena and Reliability" Philosophy of Science Association Meetings, Kansas City, October, 1998.

"Causality and Invariance" World Congress of Philosophy, Boston, August, 1998.

"Causality and Invariance" UCLA, May, 1998.

"Causal Interpretation in Systems of Equations", Stanford University, April, 1998.

"Explanation and Invariance" UCSD, March, 1998.

"Explanation and Invariance " American Philosophical Association, Philadelphia, December, 1997

"Causality and Invariance" Conference at University of London, October, 1997.

"Explanation, Invariance, and Intervention." Philosophy of Science Association Meetings, Cleveland, November 1996.

"Intervention, Invariance and Explanation." Conference on Quantities in Science. University of California, Irvine, April 1996.

"Explanation." Marschak Colloquium, UCLA, April 1996.

"Intervention, Invariance and Explanation." Pacific Division APA, March 1996.

"Causality and Invariance." Cambridge University, June 1994.

"Causality in Econometrics." London School of Economics, June 1994.

"Causality and Invariance." London School of Economics, May 1994.

"Causal Modeling, Probabilities and Invariance." At a conference on "Causality in Crisis? The New Debate About Causal Structures in the Social Sciences" at Notre Dame, October 1993.

"Capacities and Invariance." Wayne State, March 1993.

Comments on Ruth Anna Putnam's "Expressivism as Moral Psychology." Carnap and Reichenbach Symposium, UCLA, October 1991.

"Supervenience and Singular Causal Claims." University of Southern California, May 1991.

"Reasoning from Data to Phenomena." Conference on Reasoning About Phenomena, University of Western Ontario, November 1990.

"Supervenience and Singular Causal Claims." Royal Institute of Philosophy Conference on Explanation and Its Limits. Glasgow, September 1989.

"Liberalism and Migration." Ethikon Institute Conference on the Transnational Migration of People and Money. Mont Saint Michel, September 1989.

"Understanding Regression." Philosophy of Science Association Meetings, October 1988. Contributed Paper.

Comments on John Robertson's "Parfit's Non-Identity Problem." American Philosophical Association, Central Division Meetings, May 1987.

"Realism, Relativism, Phenomena, and Experiment." American Philosophical Association, Pacific Division Meetings, March 1987. Invited Symposium.

Workshop on "Saving the Phenomena." Philosophy of Science Association Meetings, Pittsburgh, October 1986. Invited paper.

"Causality and Regression." American Philosophical Association, Pacific Division Meetings, March 1986. Invited session.

"Data and Phenomena." Indiana University, February 1986.

"Parfit and Population Problems." University of Colorado, February 1986.