

# Philosophy of Science Reading List

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This is my reading list for the FHS course ‘Philosophy of Science’. I am indebted to Adam Caulton and James Read for much of the material on it (and some of the essay questions). A few preliminaries on how this reading list works:

- ‘Core’ reading is compulsory. (*But* there is no need to cite a ‘core’ paper if you don’t end up using it in your essay.)
- Items on the ‘additional’ reading are directly relevant to the essay question(s) provided, but not compulsory. Items on the ‘further’ reading (where I have provided it) are intended to provide additional material which may or may not be directly relevant to your essay (but may be relevant to future exam questions!), or to highlight some of the more recent literature on issues related to the topic, or to highlight some historical background on that topic. Almost all the ‘further’ papers should be intelligible to most second- or third-year undergraduates; where a paper has more advanced (likely mathematical) prerequisites I have flagged it.
- For some of the topics, I have provided multiple essay questions. Obviously you should choose one (and only one); however, I encourage you to think (whilst you are doing the reading) about *why* I have chosen to distinguish these questions.

I have tried to provide DOIs for all items on this list where they exist; any issues locating an item, as well as questions, comments, or suggestions, can be directed to me at [eleanor.march@philosophy.ox.ac.uk](mailto:eleanor.march@philosophy.ox.ac.uk).

## Some advice on choosing topics

I have provided fourteen (14) topics in all, of which you should choose eight (8). Which topics you choose will depend on your interests and what you want to get out of this course. Of course, part of the aim of this course is to prepare you for an exam (and the selection of exam questions has not got significantly more diverse in the last ten or so years).

I would like to emphasise that it is perfectly possible both to maximise the number of questions open to you on the exam *and* cover pretty much any selection of topics in tutorials, *if* you are happy to study a topic whilst knowing that you are much less likely revise it for the exam. (In which case, the list below should provide some guidance on how to do this.) However, if your primary concern is to maximise the number of exam questions available to you, *without* knowing in advance which ones you are more likely to revise, I would suggest the following:

- At least one and at most two of: theory and observation, induction and confirmation, Bayesian confirmation theory

*N.B. If you are the kind of person who can think creatively under exam pressure, I highly recommend Bayesian confirmation theory, as it can be applicable to all sorts of (unexpected) exam questions. On the other hand, questions on Bayesian confirmation theory specifically come up comparatively rarely, so if (like me) you find that exam pressure stifles rather than enhances your creative thinking you may be less likely to use it in the exam.*

- Falsificationism
- Kuhn
- Realism vs. anti-realism
- Constructive empiricism
- Structural realism
- At least one of: objective probability, laws of nature, scientific explanation
- At most one of: inter-theoretic reduction, values in science, feminist philosophy of science

*N.B. Whilst feminist philosophy of science is a brilliant topic, be aware that it is highly unlikely to come up on the exam (although it may be applicable to some exam questions on values in science).*

## Theory and observation

Is there a useful theory-observation distinction? If so, does it apply to terms, sentences, or entities, and what is it used for? If not, why not?

### Core

- Chalmers, Alan F. (2013). *What Is This Thing Called Science?* (4th edition). St Lucia, QLD: UQP. chs. 1-2
- Maxwell, Grover (1999). “The Ontological Status of Theoretical Entities.” In *The Nature of Scientific Theory*, edited by Lawrence Sklar, pp. 1-25. New York: Taylor and Francis. <https://doi.org/10.4324/9781315051963-2>.
- Van Fraassen, Bas C. (1980). *The Scientific Image*. Oxford: Clarendon Press. <https://doi.org/10.1093/0198244274.001.0001>. chs. 2.2 & 3.9
- Quine, W. V. O. (1992). *Pursuit of Truth*. Cambridge, MA: Harvard University Press. ch. 1
- Hacking, Ian (1983). *Representing and Intervening*. Cambridge: CUP. <https://doi.org/10.1017/CB09780511814563>. ch. 10

### Additional

- Boyd, Nora Mills and Bogen, James. “Theory and Observation in Science.” In *The Stanford Encyclopedia of Philosophy* (Winter 2021 Edition), edited by Edward N. Zalta. <https://plato.stanford.edu/archives/win2021/entries/science-theory-observation/>.
- Kukla, Andre (1996). “The Theory-Observation Distinction.” *The Philosophical Review* 105 (2): pp. 173-230. <https://doi.org/10.2307/2185717>.
- Feyerabend, Paul K. (1981). “An Attempt at a Realistic Interpretation of Experience.” In his *Realism, Rationalism and Scientific Method*, Philosophical Papers, Volume 1. Cambridge: CUP.
- Lewis, David (1997). “Statements Partly about Observation.” In his *Papers in Philosophical Logic*. Cambridge: CUP. <https://doi.org/10.1017/CB09780511625237.011>.
- Hanson, Norwood R. (1958). *Patterns of Discovery*. Cambridge: CUP. ch. 1

## Induction and confirmation

Is the ‘paradox of the ravens’ just an instance of Goodman’s ‘new riddle’ of induction? Should they be solved the same way?

### Core

- Hempel, Carl G. (1945). “Studies in the Logic of Confirmation I.” *Mind* 54 (13): pp. 1-26.
- Fitelson, Branden and Hawthorne, James (2010). “How Bayesian Confirmation Theory Handles the Paradox of the Ravens.” in *The Place of Probability in Science*, edited by Ellery Eells and James H. Fetzer. Dordrecht: Springer.
- Goodman, Nelson (1983). *Fact, Fiction, and Forecast* (4th edition). Cambridge, MA: Harvard University Press. ch. 3
- Quine, W. V. O. (1969). “Natural Kinds”. In *Essays in honor of Carl G. Hempel*, edited by Nicholas Rescher. Dordrecht: Springer. <https://doi.org/10.1007/978-94-0w17-1466-2>.
- Jackson, Frank (1975). “Grue.” *The Journal of Philosophy* 72 (5): pp. 113-131. <https://doi.org/10.2307/2024749>.

### Additional

- Swinburne, Richard G. (1971). “The Paradoxes of Confirmation: A Survey.” *American Philosophical Quarterly* 8 (4): pp. 318-330.
- Mackie, J. L. (1963). “The Paradox of Confirmation.” *The British Journal for the Philosophy of Science* 13 (52): pp. 265-276. <https://doi.org/10.1093/bjps/XIII.52.265>.
- Swinburne, Richard G. (1968). “Grue.” *Analysis* 28 (4): pp. 123-128. <https://doi.org/10.1093/analys/28.4.123>
- Hempel, Carl G. (1945). “Studies in the Logic of Confirmation II.” *Mind* 54 (214): pp. 97-121. <https://doi.org/10.1093/mind/LIV.214.97>.
- Sober, Elliot (1988). *Reconstructing the Past: Parsimony, Evolution, and Inference*. Cambridge, MA: MIT Press. ch. 2

## Falsificationism

Does falsificationism provide a convincing demarcation criterion between science and non-science?

### Core

- Popper, Karl R. (2002). *Conjectures and Refutations* (2nd edition). London: Routledge. <https://doi.org/10.4324/9780203538074>. chs. 1 & 11
- Lakatos, Imre (1970). “Falsification and the Methodology of Scientific Research Programmes.” In *Criticism and the Growth of Knowledge: Proceedings of the International Colloquium in the Philosophy of Science*, edited by Imre Lakatos and Alan Musgrave. Cambridge: CUP. <https://doi.org/10.1017/CB09781139171434.009>.
- Chalmers, Alan F. (2013). *What Is This Thing Called Science?* (4th edition). St Lucia, QLD: UQP. chs. 5-7
- Godfrey-Smith, Peter (2003). *Theory and reality: an Introduction to the Philosophy of Science*. Chicago, IL: University of Chicago Press. ch. 4
- Lakatos, Imre (1970). “History of Science and Its Rational Reconstructions.” *PSA 1970*: pp. 91-136. <https://doi.org/10.1086/psaprocbienmeetp.1970.495757>.

### Additional

- Popper, Karl R. (2002). *The Logic of Scientific Discovery* (2nd edition). London: Routledge. <https://doi.org/10.4324/9780203994627>. chs. 1-6
- Hansson, Sven O. (2006). “Falsificationism Falsified.” *Foundations of Science* 11 (3): pp. 275-286. <https://doi.org/10.1007/s10699-004-5922-1>.
- Laudan, Larry (1983). “The Demise of the Demarcation Problem.” In *Physics, Philosophy and Psychoanalysis*, edited by Larry Laudan and R. S. Cohen. Dordrecht: Springer Netherlands. [https://doi.org/10.1007/978-94-009-7055-7\\_6](https://doi.org/10.1007/978-94-009-7055-7_6).
- Newton-Smith, William H. (1999). *The Rationality of Science*. London: Routledge. chs. 3-4
- Agassi, Joseph (1991). “Popper’s Demarcation of Science Refuted.” *Methodology and Science* 24: pp. 1-7.

## Kuhn

What does Kuhn mean when he says that rival scientific theories are ‘incommensurable’? Are there persuasive examples of incommensurability in Kuhn’s sense? What are the implications for scientific progress?

### Core

- Kuhn, Thomas S. (1962). *The Structure of Scientific Revolutions*. Chicago, IL: University of Chicago Press.
- Godfrey-Smith, Peter (2003). *Theory and reality: an Introduction to the Philosophy of Science*. Chicago, IL: University of Chicago Press. chs. 5 & 6
- Lipton, Peter (2003). “Kant on Wheels.” *Social Epistemology* 17 (2): pp. 215–219. <https://doi.org/10.1080/0269172032000144499>.
- Putnam, Hilary (2011). “The Meaning of “meaning”.” In his *Philosophical Papers, Volume 2*: Cambridge: CUP. <https://doi.org/10.1017/CB09780511625251>.
- Kuhn, Thomas S. (1982). “Commensurability, Comparability, Communicability.” *PSA 1982* (2): pp. 668–688. <https://doi.org/10.1086/psaprocbienmeetp.1982.2.192452>.

### Additional

- Oberheim, Eric and Hoyningen-Huene, Paul. “The Incommensurability of Scientific Theories.” In *The Stanford Encyclopedia of Philosophy* (Summer 2024 Edition), edited by Edward N. Zalta and Uri Nodelman. <https://plato.stanford.edu/archives/sum2024/entries/incommensurability/>.
- Davidson, Donald (1973). “On the Very Idea of a Conceptual Scheme.” *Proceedings and Addresses of the American Philosophical Association* 47: pp. 5-20. <https://doi-org.ezproxy-prd.bodleian.ox.ac.uk/10.2307/3129898>.
- Hoyningen-Huene, Paul (1990). “Kuhn’s Conception of Incommensurability.” *Studies in History and Philosophy of Science* 21 (3): pp. 481-492. [https://doi.org/10.1016/0039-3681\(90\)90006-T](https://doi.org/10.1016/0039-3681(90)90006-T)
- Sankey, Howard (1993). “Kuhn’s Changing Concept of Incommensurability.” *The British Journal for the Philosophy of Science* 44 (4): pp. 759-774. <https://doi.org/10.1093/bjps/44.4.759>.
- Fine, Arthur (1975). “How to Compare Theories: Reference and Change.” *Nous* 9 (1): pp. 17–32. <https://doi.org/10.2307/2214339>.

## Bayesian confirmation theory

Does Bayesian confirmation theory provide a convincing account of scientific method?

### Core

- Chalmers, Alan F. (2013). *What Is This Thing Called Science?* (4th edition). St Lucia, QLD: UQP. ch. 12
- Howson, Colin and Urbach, Peter (1993). *Scientific Reasoning: The Bayesian Approach*. Chicago, IL: Open Court. ch. 7
- Glymour, Clark (2016). “Why I am not a Bayesian.” In *Readings in Formal Epistemology*, edited by Horacio Arló-Costa et al. Springer, Cham. [https://doi.org/10.1007/978-3-319-20451-2\\_8](https://doi.org/10.1007/978-3-319-20451-2_8).
- Horwich, Paul (1993). “Wittgensteinian Bayesianism.” *Midwest Studies in Philosophy* 18 (1): pp. 62-77. <https://doi.org/10.1111/j.1475-4975.1993.tb00257.x>
- Salmon, Wesley C. (1990). “Rationality and Objectivity in Science, or Tom Kuhn Meets Tom Bayes.” In Savage, C. W. (1990). In *Scientific theories*, Minnesota Studies in the Philosophy of Science 14, edited by C. W. Savage. Minneapolis, MN: University of Minnesota Press.

### Additional

- Earman, John (1992). *Bayes or Bust?*. Cambridge, MA: MIT Press. ch. 5
- Rosenkrantz, Roger (1983). “Why Glymour Is a Bayesian.” In *Testing Scientific theories*, Minnesota Studies in the Philosophy of Science 10, edited by John Earman. Minneapolis, MN: University of Minnesota Press.
- Dorling, Jon (1979). “Bayesian Personalism, the Methodology of Scientific Research Programmes, and Duhem’s Problem.” *Studies in History and Philosophy of Science* 10 (3): pp. 177-187. [https://doi.org/10.1016/0039-3681\(79\)90006-2](https://doi.org/10.1016/0039-3681(79)90006-2).
- Strevens, Michael (2001). “The Bayesian Treatment of Auxiliary Hypotheses.” *The British Journal for the Philosophy of Science* 52 (3): pp. 515-537. <https://doi.org/10.1093/bjps/52.3.515>.
- Lin, Hanti. “Bayesian Epistemology.” In *The Stanford Encyclopedia of Philosophy* (Summer 2024 Edition), edited by Edward N. Zalta & Uri Nodelman. <https://plato.stanford.edu/archives/sum2024/entries/epistemology-bayesian/>.

## Further

- Henderson, Leah (2014). “Bayesianism and Inference to the Best Explanation.” *The British Journal for the Philosophy of Science* 65 (4): pp. 687-715. <https://doi.org/10.1093/bjps/axt020>.
- Pettigrew, Richard (2020). “What Is Conditionalization, and Why Should We Do It?” *Philosophical Studies* 177 (11): pp. 3427-3463. <https://doi.org/10.1007/s11098-019-01377-y>.
- Jackson, Elizabeth G. (2020). “The Relationship between Belief and Credence.” *Philosophy Compass* 15. <https://doi.org/10.1111/phc3.12668>.
- Wenmackers, Sylvia (2019). “Infinitesimal Probabilities.” In *The Open Handbook of Formal Epistemology*, edited by Richard Pettigrew and Jonathan Weisberg. The PhilPapers Foundation. <https://philpapers.org/archive/PETTOH-2.pdf>.
- Mahtani, Anna (2019). “Imprecise Probabilities.” In *The Open Handbook of Formal Epistemology*, edited by Richard Pettigrew and Jonathan Weisberg. The PhilPapers Foundation. <https://philpapers.org/archive/PETTOH-2.pdf>.



## Realism vs. anti-realism

Critically evaluate the ‘no miracles’ argument in favour of scientific realism. How does scientific realism fare in light of (a) the pessimistic meta-induction, and (b) the underdetermination problem?

### Core

- Ladyman, James (2002). *Understanding Philosophy of Science*. London: Routledge. ch. 5
- Laudan, Larry (1981). “A Confutation of Convergent Realism.” *Philosophy of Science* 48 (1): pp. 19-49, 1981. <https://doi.org/10.1086/288975>.
- Quine, W. V. O. (1975). “On Empirically Equivalent Systems of the World.” *Erkenntnis* 9 (3): pp. 313-328. <https://doi.org/10.1007/bf00178004>.
- Psillos, Stathis (1999). *Scientific Realism: How Science Tracks Truth*. London: Routledge. chs. 4-6 & 8
- Kukla, Andre (1994). “Non-Empirical Theoretical Virtues and the Argument from Underdetermination.” *Erkenntnis* 41 (2): pp. 157–170. <https://doi.org/10.1007/BF01128825>.

### Additional

- Saatsi, Juha T. (2005). “On the Pessimistic Induction and Two Fallacies.” *Philosophy of Science* 72 (5): pp. 1088–1098. <https://doi.org/10.1086/508959>.
- Magnus, P. D. and Callender, Craig (2004). “Realist Ennui and the Base Rate Fallacy.” *Philosophy of Science* 71 (3): pp. 320-338. <https://doi.org/10.1086/421536>.
- Henderson, Leah (2017). “The No Miracles Argument and the Base Rate Fallacy.” *Synthese* 194, pp. 1295–1302. <https://doi.org/10.1007/s11229-015-0995-7>.
- Jones, Roger (1991). “Realism about What?” *Philosophy of Science* 58 (2): pp. 185–202. <https://doi.org/10.1086/289611>.
- Musgrave, Alan (1992). “Discussion: Realism about What?” *Philosophy of Science* 59 (4): pp. 691–697. <https://doi.org/10.1086/289702>.

## Further

- Stein, Howard (1989). “Yes, but... Some Skeptical Remarks on Realism and Anti-Realism.” *Dialectica* 43 (1), pp. 47-65. <https://doi.org/10.1111/j.1746-8361.1989.tb00930.x>.
- Myrvold, Wayne C. (2020). “—It would be possible to do a lengthy dialectical number on this;.” *Studies in History and Philosophy of Modern Physics* 71 (1): pp. 209-219. <https://doi.org/10.1016/j.shpsb.2019.12.001>.
- Glymour, Clark (1977). “The Epistemology of Geometry.” *Noûs* 11 (3): pp. 227-251. <https://doi.org/10.2307/2214764>.  
*Prerequisites: a little differential geometry (as one might encounter in e.g. a first physics course on GR)*
- Knox, Eleanor (2011). “Newton-Cartan Theory and Teleparallel Gravity: the Force of a Formulation.” *Studies in History and Philosophy of Modern Physics* 42 (1): pp. 264–275. doi:10.1016/j.shpsb.2011.09.003.  
*Prerequisites: a little differential geometry (as one might encounter in e.g. a first physics course on GR) and a basic understanding of tetrad notation*
- Wallace, David (2023). “The Sky Is Blue, and Other Reasons Quantum Mechanics Is Not Underdetermined by Evidence.” *European Journal for Philosophy of Science*, 13 (4). <https://doi.org/10.1007/s13194-023-00557-2>.  
*Prerequisites: a basic understanding of the measurement problem in QM*

## Constructive empiricism

Does constructive empiricism provide a viable alternative to scientific realism?

### Core

- van Fraassen, Bas C. (1980). *The Scientific Image*. Oxford: Clarendon Press. <https://doi.org/10.1093/0198244274.001.0001>. chs. 1-4
- Ladyman, James (2002). *Understanding Philosophy of Science*. London: Routledge. ch. 6.2
- Ladyman, James (2000). “What’s Really Wrong with Constructive Empiricism? Van Fraassen and the Metaphysics of Modality.” *The British Journal for the Philosophy of Science* 51 (1): pp. 837-856.
- Monton, Bradley and van Fraassen, Bas C. (2003). “Constructive Empiricism and Modal Nominalism.” *The British Journal for the Philosophy of Science* 54 (3): pp. 405-422. <https://doi.org/10.1093/bjps/54.3.405>.
- Muller, F. A. (2005). “The Deep Black Sea: Observability and Modality Afloat.” *The British Journal for the Philosophy of Science* 56 (1): pp. 61-99. <https://doi.org/10.1093/phisci/axi103>.

### Additional

- Monton, Bradley and Mohler, Chad. “Constructive Empiricism.” In *The Stanford Encyclopedia of Philosophy* (Summer 2021 Edition), edited by Edward N. Zalta. <https://plato.stanford.edu/archives/sum2021/entries/constructive-empiricism/>.
- Psillos, Stathis (1999). *Scientific Realism: How Science Tracks Truth*. London: Routledge. ch. 9.
- Ladyman, James (2004). “Constructive empiricism and modal metaphysics: A reply to Monton and van Fraassen.” *The British Journal for the Philosophy of Science* 55 (4): pp. 755-765. <https://doi.org/10.1093/bjps/55.4.755>.
- Rosen, Gideon (1994) “What Is Constructive Empiricism?” *Philosophical Studies* 74 (2) pp. 143-178. <https://doi.org/10.1007/BF00989801>.
- van Fraassen, Bas C. (1994). “Gideon Rosen on Constructive Empiricism.” *Philosophical Studies* 74 (2): pp. 179-192. <https://doi.org/10.1007/BF00989802>.

## Further

- Hardcastle, Valerie Gray (1994). “The Image of Observables.” *The British Journal for the Philosophy of Science* 45 (2): pp. 585-597. <https://doi.org/10.1093/bjps/45.2.585>.
- Lipton, Peter (1993). “Is the best good enough?” *Proceedings of the Aristotelian Society* 93 (1): pp. 89-104. <https://doi.org/10.1093/aristotelian/93.1.89>.
- Teller, Paul (2001). “Whither Constructive Empiricism?” *Philosophical Studies* 106 (1): pp. 123-150. <https://doi.org/10.1023/A:1013170506726>.
- Asay, Jamin and Bordner, S. Seth (2015). “A Modest Defense of Manifestationalism.” *Synthese* 192 (1): pp. 147-161. <https://doi-org/10.1007/s11229-014-0556-5>.
- Cartwright, Nancy (2007). “Why be Hanged for Even a Lamb?” In *Images of Empiricism: Essays on Science and Stances, with a Reply from Bas C. van Fraassen*, edited by Bradley Monton. Oxford: OUP. <https://doi.org/10.1093/acprof:oso/9780199218844.003.0003>

## Structural realism

Is there a coherent and distinctive form of structural realism? If so, on what grounds (if any) is it to be preferred to scientific realism? If not, why not?

OR:

‘The distinction between structural realism and scientific realism is really about whether we should prefer mathematics or natural language as a way to represent the world. So since modern physics is (mainly) couched and practiced in the language of mathematics, any viable form of realism must be a form of structural realism.’ Discuss.

### Core

- Worrall, John (1989). “Structural Realism: The Best of Both Worlds?” *Dialectica* 43 (1): pp. 99–124. <https://doi.org/10.1111/j.1746-8361.1989.tb00933.x>.
- Psillos, Stathis (1995). “Is Structural Realism the Best of Both Worlds?” *Dialectica* 49 (1): pp. 15–46. <https://doi.org/10.1111/j.1746-8361.1995.tb00113.x>.
- Ladyman, James (1998). “What is structural realism?” *Studies in History and Philosophy of Science* 29 (3): pp. 409–424. [https://doi.org/10.1016/S0039-3681\(98\)80129-5](https://doi.org/10.1016/S0039-3681(98)80129-5).
- van Fraassen, Bas C. (2006). “Structure: Its Shadow and Substance.” *The British Journal for the Philosophy of Science* 57 (2): pp. 275–307. <https://doi.org/10.1093/bjps/axl002>.
- Wallace, David (2022). “Stating Structural Realism: Mathematics-First Approaches to Physics and Metaphysics.” *Philosophical Perspectives* 36 (1): pp. 345–378. <https://doi.org/10.1111/phpe.12172>.

### Additional

- Ladyman, James. “Structural Realism.” In *The Stanford Encyclopedia of Philosophy* (Summer 2023 Edition), edited by Edward N. Zalta and Uri Nodelman. <https://plato.stanford.edu/archives/sum2023/entries/structural-realism/>.
- Ladyman, James and Ross, Don (2007). *Every Thing Must Go: Metaphysics Naturalized*. Oxford: OUP. <https://doi.org/10.1093/acprof:oso/9780199276196.003.0002> ch. 2
- Ketland, Jeffrey (2004). “Empirical Adequacy and Ramsification.” *The British Journal for the Philosophy of Science* 55 (2): pp. 287–300. <https://doi.org/10.1093/bjps/55.2.287>.

- Ketland, Jeffrey (2009). “Empirical Adequacy and Ramsification, II.” *Reduction, Abstraction, Analysis* 11: pp. 29–46. <https://doi.org/10.1515/9783110328875.29>.
- French, Steven and Saatsi, Juha (2006). “Realism about Structure: The Semantic View and Nonlinguistic Representations.” *Philosophy of Science* 73 (5): pp. 548–559. <https://doi.org/10.1086/518325>.

## Further

- McKenzie, Kerry (2024). “Structuralism as a Stance’, *Philosophy of Physics* 2 (1). <https://doi.org/10.31389/pop.77>.
- Nguyen, James and Frigg, Roman (2021). “Mathematics Is Not the Only Language in the Book of Nature.” *Synthese* 198 (suppl. 24): pp. 5941–5962. <https://doi.org/10.1007/s11229-017-1526-5>.
- Wallace, David (2024) “Learning to Represent: Mathematics-First Accounts of Representation and their Relation to Natural Language.” <https://philsci-archive.pitt.edu/id/eprint/23224>.
- Brading, Katherine and Skiles, Alexander (2012). “Underdetermination as a Path to Structural Realism.” In *Structural Realism: Structure, Object, and Causality*, edited by Elaine M. Landry and Dean P. Rickels. Dordrecht: Springer Netherlands. [https://doi.org/10.1007/978-94-007-2579-9\\_5](https://doi.org/10.1007/978-94-007-2579-9_5).
- Pooley, Oliver (2007). “Points, Particles, and Structural Realism.” In *The Structural Foundations of Quantum Gravity*, edited by Dean P. Rickels et al. Oxford: OUP. <https://doi.org/10.1093/acprof:oso/9780199269693.003.0004>  
*Prerequisites: a basic understanding of many-particle QM and GR*

## Objective probability

What is chance, and what is its relation to credence?

### Core

- Hájek, Alan. “Interpretations of Probability.” In *The Stanford Encyclopedia of Philosophy* (Winter 2023 Edition), edited by Edward N. Zalta & Uri Nodelman. <https://plato.stanford.edu/archives/win2023/entries/probability-interpret/>.
- Lewis, David (1987). “A Subjectivist’s Guide to Objective Chance,” with postscripts. In his *Philosophical Papers*, Volume 2. Oxford: OUP. <https://doi.org/10.1093/0195036468.003.0004>.
- Maudlin, Tim (2011). “Three Roads to Objective Probability.” In *Probabilities in Physics*, edited by Claus Beisbart and Stephan Hartmann. Oxford: OUP. <https://doi.org/10.1093/acprof:oso/9780199577439.003.0011>.
- Popper, Karl R. (1959). “The Propensity Interpretation of Probability.” *The British Journal for the Philosophy of Science* 10 (37): pp. 25-42. <https://doi.org/10.1093/bjps/x.37.25>.
- Hoefer, Carl (2007). “The Third Way on Objective Probability: A Sceptic’s Guide to Objective Chance.” *Mind* 116 (463): pp. 549-596. <https://doi.org/10.1093/mind/fzm549>.

### Additional

- Lewis, David (1994). “Humean Supervenience Debugged.” *Mind* 103 (412): pp. 473–490. <https://doi.org/10.1093/mind/103.412.473>.
- Ismael, Jenann T. (2008). “Raid! Dissolving the Big, Bad Bug.” *Noûs* 42 (2): pp. 292–307. <https://doi.org/10.1111/j.1468-0068.2008.00681.x>.
- Hájek, Alan (2009) ““Mises Redux”—Redux: Fifteen Arguments Against Finite Frequentism.” In *Philosophy of Probability: Contemporary Readings*, edited by Anthony Eagle. London: Routledge.
- Hájek, Alan (2009). “Fifteen Arguments against Hypothetical Frequentism.” *Erkenntnis* 70 (2): pp. 211-235. <https://doi.org/10.1007/s10670-009-9154-1>.
- Eagle, Anthony (2004). “Twenty-One Arguments against Propensity Analyses of Probability.” *Erkenntnis* 60 (3): pp. 371-416. <https://doi.org/10.1023/B:ERKE.0000023408.61887.6a>.

## Further

- Wallace, David (2012). *The Emergent Multiverse: Quantum Theory According to the Everett Interpretation*. Oxford: OUP. ch. 4
- Saunders, Simon (2005). “What is Probability?” In *Quo Vadis Quantum Mechanics?*, edited by Avshalom C. Elitzur et al. New York: Springer.
- Loewer, Barry (2004). “David Lewis’s Humean Theory of Objective Chance.” *Philosophy of Science* 71 (5): 1115-1125. <https://doi.org/10.1086/428015>. *Prerequisites: a basic understanding of QM*
- Ismael, Jenann T. (2021). “On Chance (or, Why I am Only a Half-Humean).” In *Current Controversies in Philosophy of Science*, edited by Brad Weslake et al. London: Routledge. <https://doi.org/10.4324/9781315713151-20>.
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## Laws of nature

What is a law of nature?

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What is a scientific explanation?

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## Inter-theoretic reduction

Under what conditions does one theory reduce another? Is successful inter-theoretic reduction a part of science, or merely a by-product of it?

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Must the scientist (*qua* scientist) make value judgements?

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## Feminist philosophy of science

What becomes of ‘scientific objectivity’ in light of standpoint theory?

OR:

What does feminist methodology of science look like? Is feminism compatible with different methodologies of science, or only some?

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