

STRUCTURE EXPLANATION

Place Second floor seminar room, Philosophy Building (5 Washington Place)

Texts Some readings can be found by following the links embedded in the reading list; the remainder will be posted online at www.nyu.edu/classes/strevens/ExplnF11. A user name and password are required (to be announced in class).

Content In the first part of the class, we will study various approaches to explanation in the philosophy of science, in particular, expectability, unificationist, and causal approaches. Special attention will be given to the role of dependence, abstraction, and idealization in explanation. In the second part of the class, we turn to explanation in areas other than science: mathematics, metaphysics, ethics, and perhaps aesthetics, looking for differences and especially similarities to scientific explanation.

Evaluation Your grade is based on two papers (50% each).

- The first paper should be 10 to 12 pages long. The second paper may be another essay of the same length on a different topic, or a 20 to 24 page extension and rewrite of the first. If you pursue this latter option, then, you will submit a 12 page paper and then a 24 page paper that is based on (and may incorporate all of) the shorter paper.
- The first paper is due on November 1st. The second paper is due on the last day of term, which is December 16th.
- In the event of your taking an incomplete, all coursework must be submitted before the first day of classes of the spring semester, or you will receive a failing grade. No extensions: this is a fixed deadline.

Contact Office hours are Wednesdays 11:00 to 12:30 and by appointment.
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READINGS EXPLANATION

- Sep 6 Hempel's Deductive-Nomological Account
- ▷ Strevens, M., "Scientific explanation"
 - ▷ Hempel, C. G. and P. Oppenheim, "Studies in the logic of explanation" (NYU Proxy), Part I
 - ▷ Salmon, W. C., *Four Decades of Scientific Explanation*, 46–50
- Sep 13 Pattern Subsumption and Unification
- ▷ Strevens, M., *Depth*, §1.32
 - ▷ Friedman, M., "Explanation and scientific understanding" (NYU Proxy), 5–15
 - ▷ Kitcher, P., "Explanatory unification" (NYU Proxy)
- Sep 27 Causation and Dependence
- ▷ Strevens, M., *Depth*, §1.4
 - ▷ Salmon, W. C., "An at-at theory of causal influence" (NYU Proxy)
 - ▷ Woodward, J., *Making Things Happen* (NYU Proxy), §1.3
 - ▷ Strevens, M., *Depth*, §2.1
 - ▷ Salmon, W. C., "A new look at causality" (NYU Proxy)
- Oct 4 Difference-Making
- ▷ Strevens, M., "The causal and unification accounts of explanation unified – causally" (NYU Proxy). (The view is elaborated in chapters two and three of *Depth*.)
 - ▷ Strevens, M., *Depth*, §4.4
- Oct 11 Understanding and Explanation
- ▷ De Regt, H. W. and D. Dieks, "A contextual approach to scientific understanding" (NYU Proxy) (§4 is most important)
 - ▷ Strevens, M., "No understanding without explanation"
- The Pragmatic Account of Scientific Explanation
- ▷ van Fraassen, B. C., *The Scientific Image* (NYU Proxy), chap. 5, from §2.7 onward
- Oct 18 Explaining Laws
- ▷ Strevens, M., *Depth*, chap. 7 except §§7.34–7.36

Oct 25 Robustness

- ▷ Railton, P., "Probability, explanation, and information" (NYU Proxy)
- ▷ Jackson, F. and P. Pettit, "In defense of explanatory ecumenism" (NYU Proxy)
- ▷ Strevens, M., *Depth*, §11.2

Nov 7 Mathematical Explanation in Science

- ▷ Baker, A., "Are there genuine mathematical explanations of physical phenomena?" (NYU Proxy)
- ▷ Strevens, M., *Depth*, §§8.13, 8.4

Nov 8 Mathematical Explanation in Mathematics

- ▷ Steiner, M., "Mathematical explanation" (NYU Proxy)
- ▷ Lange, M., "Why proofs by mathematical induction are generally not explanatory" (NYU Proxy) (optional)

Nov 15 Explanation in History

- ▷ Hempel, C. G., "Explanation in science and in history"
- ▷ Mink, L. O., "The autonomy of historical understanding" (NYU Proxy)
- ▷ Velleman, J. D., "Narrative explanation" (NYU Proxy)

Nov 29 Metaphysical Explanation

- ▷ Rosen, G., "Metaphysical dependence: Grounding and reduction"; §13 is optional

Dec 6 Moral Explanation

- ▷ Leibowitz, U. D., "Scientific explanation and moral explanation" (NYU Proxy), §§1, 3, 4
- ▷ Lance, M. and M. Little, "Defeasibility and the normative grasp of context" (NYU Proxy)

Dec 13 Aesthetic Explanation

- ▷ Beardsley, M. C., "On the generality of critical reasons" (NYU Proxy)
- ▷ Sibley, F., "General criteria and reasons in aesthetics", up to p. 113
- ▷ Mathers, R. and G. Dickie, "The definition of 'regional quality'" (NYU Proxy) (read this two-pager for the definition of the term *regional quality*, used by Sibley without explanation)

Dec 20 TBD

No classes: Sep 20; Nov 22 (Thanksgiving week)

Papers are due on November 1st and December 16th.

REFERENCES EXPLANATION

- Baker, A. (2005). Are there genuine mathematical explanations of physical phenomena? *Mind* 114:223–238.
- Beardsley, M. C. (1962). On the generality of critical reasons. *Journal of Philosophy* 59:477–486.
- De Regt, H. W. and D. Dieks. (2005). A contextual approach to scientific understanding. *Synthese* 144:137–170.
- van Fraassen, B. C. (1980). *The Scientific Image*. Oxford University Press, Oxford.
- Friedman, M. (1974). Explanation and scientific understanding. *Journal of Philosophy* 71:5–19.
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- Hempel, C. G. and P. Oppenheim. (1948). Studies in the logic of explanation. *Philosophy of Science* 15:135–175.
- Jackson, F. and P. Pettit. (1992). In defense of explanatory ecumenism. *Economics and Philosophy* 8:1–21.
- Kitcher, P. (1981). Explanatory unification. *Philosophy of Science* 48:507–531.
- Lance, M. and M. Little. (2004). Defeasibility and the normative grasp of context. *Erkenntnis* 61:435–455.
- Lange, M. (2009). Why proofs by mathematical induction are generally not explanatory. *Analysis* 69:203–211.
- Leibowitz, U. D. (2011). Scientific explanation and moral explanation. *Noûs* 45:472–503.
- Mathers, R. and G. Dickie. (1963). The definition of 'regional quality'. *Journal of Philosophy* 60:465–467.
- Mink, L. O. (1966). The autonomy of historical understanding. *History and Theory* 5:24–47.
- Railton, P. (1981). Probability, explanation, and information. *Synthese* 48:233–256.

- Rosen, G. (2010). Metaphysical dependence: Grounding and reduction. In B. Hale and A. Hoffman (eds.), *Modality: Metaphysics, Logic, and Epistemology*. Oxford University Press, Oxford.
- Salmon, W. C. (1977). An at-at theory of causal influence. *Philosophy of Science* 44:215–224.
- . (1990). *Four Decades of Scientific Explanation*. University of Minnesota Press, Minneapolis.
- . (1998). A new look at causality. In *Causality and Explanation*. Oxford University Press, Oxford.
- Sibley, F. (1983). General criteria and reasons in aesthetics. In J. Fisher (ed.), *Essays on Aesthetics: Perspectives on the Work of Monroe C. Beardsley*. Temple University Press, Philadelphia, PA.
- Steiner, M. (1978). Mathematical explanation. *Philosophical Studies* 34:135–151.
- Strevens, M. (2004). The causal and unification accounts of explanation unified – causally. *Noûs* 38:154–176.
- . (2006). Scientific explanation. In D. M. Borchert (ed.), *Encyclopedia of Philosophy*, second edition. Macmillan Reference USA, Detroit.
- . (2008). *Depth: An Account of Scientific Explanation*. Harvard University Press, Cambridge, MA.
- . (Manuscript). No understanding without explanation. *Studies in History and Philosophy of Science*.
- Velleman, J. D. (2003). Narrative explanation. *Philosophical Review* 112:1–25.
- Woodward, J. (2003). *Making Things Happen: A Theory of Causal Explanation*. Oxford University Press, Oxford.