References

Aidley, D. J. (1998). *The Physiology of Excitable Cells*. Cambridge University Press.

Aizawa, K., & Gillett, C. (2019). Defending pluralism about compositional explanations. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 78.

Aizawa, K., & Headley, D. (forthcoming). Scientific Constitutive Abduction.

Aliseda, A. (2005). *Abductive Reasoning* (Vol. 330). Springer.

Anderson, D. R. (1986). The evolution of Peirce's concept of abduction. *Transactions of the Charles S. Peirce Society*, 22(2), 145–164.

Baker, A., Tang, Y., & Turner, M. (2003). Percentage decline in masters super-athlete track and field performance with aging. *Experimental Aging Research*, 29(1), 47–65.

Barlow, H. B. (1953). Summation and inhibition in the frog's retina. *The Journal of Physiology*, 119(1), 69.

Barnes, E. (1995). Inference to the loveliest explanation. *Synthese*, 103(2), 251–277.

Baumgartner, G. (1960). Indirekte Grössenbestimmung der rezeptiven Felder der Retina beim Menschen mittels der Hermannschen Gittertäuschung [Indirect determination of the size of the receptive fields of the human retina using the Hermann grating illusion]. *Pflüger's Archiv für die gesamte Physiologie des Menschen und der Tiere*, 272(1), 21–22.

Baumgartner, M., & Casini, L. (2017). An abductive theory of constitution. *Philosophy of Science*, 84(2), 214–233.

Baumgartner, M., & Gebharter, A. (2016). Constitutive relevance, mutual manipulability, and fat-handedness. *The British Journal for the Philosophy of Science*, 67(3), 731–756.

Bechtel, W. (2006). *Discovering Cell Mechanisms: The Creation of Modern Cell Biology*. Cambridge University Press.

(2008). *Mental Mechanisms: Philosophical Perspectives on Cognitive Neuroscience*. Lawrence Erlbaum.

Bechtel, W., & Abrahamsen, A. (2005). Explanation: A mechanist alternative. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 36(2), 421–441.

Bechtel, W., & Richardson, R. C. (2010). *Discovering Complexity: Decomposition and Localization as Strategies in Scientific Research*. MIT Press.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Beebe, J. R. (2009). The abductivist reply to skepticism. *Philosophy and Phenomenological Research*, 79(3), 605–636.
Bellucci, F., & Pietarinen, A.-V. (2022). Peirce's abduction. In L. Magnani (Ed.), *Handbook of Abductive Cognition* (pp. 1–14). Springer International Publishing. https://doi.org/10.1007/978-3-030-68436-5_7-1
Bennett, K. (2017). *Making Things Up*. Oxford University Press.
Betz, G. (2013). Revamping hypothetico-deductivism: A dialectic account of confirmation. *Erkenntnis*, 78(5), 991–1009.
Bickle, J. (2023). Hodgkin's and Huxley's own assessments of their "quantitative description" of nerve membrane current. *History and Philosophy of the Life Sciences*, 45.
Bird, A. (2005). Abductive knowledge and Holmesian inference. In T. S. Gendler & J. Hawthorne (Eds.), *Oxford Studies in Epistemology* (Vol. 1, pp. 1–31). Oxford University Press.
(2020). Scientific realism and three problems for inference to the best explanation. In W. Gonzalez (Ed.), *New Approaches to Scientific Realism* (pp. 48–67). De Gruyter.
(2022). *Knowing Science*. Oxford University Press.
Blodgett, H. C. (1929). The effect of the introduction of reward upon the maze performance of rats. *University of California Publications in Psychology*, 4(8), 113–134.
Bogen, J., & Woodward, J. F. (1988). Saving the phenomena. *The Philosophical Review*, 97(3), 303–352.
Bokulich, A. (2018). Representing and explaining: The eikonic conception of scientific explanation. *Philosophy of Science*, 85(5), 793–805.
Boyd, R. N. (1983). On the current status of the issue of scientific realism. In C. G. Hempel, H. Putnam, & W. K. Essler (Eds.), *Methodology, Epistemology, and Philosophy of Science: Essays in Honour of Wolfgang Stegmüller on the Occasion of His 60th Birthday, June 3rd, 1983* (pp. 45–90). Springer International Publishing. https://doi.org/10.1007/978-94-015-7676-5_3
Britten, K. H., Shadlen, M. N., Newsome, W. T., & Movshon, J. A. (1992). The analysis of visual motion: A comparison of neuronal and psychophysical performance. *Journal of Neuroscience*, 12(12), 4745–4765.
Bromberger, S. (1966). Why-questions. In R. Colodny (Ed.), *Mind and Cosmos* (pp. 86–111). University of Pittsburgh Press.
Brooks, D. S., DiFrisco, J., & Wimsatt, W. C. (2021). *Levels of Organization in the Biological Sciences*. MIT Press.
Brown, A. M. (2019). The classics updated, or an act of electrophysiological sacrilege? *The Journal of Physiology*, 597(11), 2821–2825.
(2020). *A Companion Guide to the Hodgkin-Huxley Papers*. The Physiological Society.
Cabrera, F. (2022). Inference to the best explanation: An overview. In L. Magnani (Ed.), *Handbook of Abductive Cognition* (pp. 1–34). Springer International Publishing. https://doi.org/10.1007/978-3-030-68436-5_77-1

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Campos, D. G. (2011). On the distinction between Peirce's abduction and Lipton's inference to the best explanation. *Synthese*, 180(3), 419–442.
Carey, S. (2009). *The Origin of Concepts*. Oxford University Press.
Carroll, J. W. (1997). Lipton on compatible contrasts. *Analysis*, 57(3), 170–178.
Carter, J. A., & Pritchard, D. (2017). Inference to the best explanation and epistemic circularity. In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 133–149). Oxford University Press.
Cartwright, N. (1982). When explanation leads to inference. *Philosophical Topics*, 13(1), 111–121.
Chomsky, N. (2014). *Aspects of the Theory of Syntax*. MIT Press.
Clark, M. J., & Liggins, D. (2012). Recent work on grounding. *Analysis*, 72(4), 812–823.
Correia, F., & Schnieder, B. (2012). Grounding: An opinionated introduction. In F. Correia & B. Schnieder (Eds.), *Metaphysical Grounding: Understanding the Structure of Reality* (pp. 1–36). Oxford University Press.
Craver, C. F. (2002). Interlevel experiments and multilevel mechanisms in the neuroscience of memory. *Philosophy of Science*, 69(S3), 83–97.
(2007). *Explaining the Brain*. Oxford University Press.
(2008). Physical law and mechanistic explanation in the Hodgkin and Huxley model of the action potential. *Philosophy of Science*, 75(5), 1022–1033.
(2014). The ontic account of scientific explanation. In M. I. Kaiser, O. R. Scholz, D. Plenge, & A. Hüttemann (Eds.), *Explanation in the Special Sciences* (pp. 27–52). Springer.
Craver, C. F., & Bechtel, W. (2007). Top-down causation without top-down causes. *Biology and Philosophy*, 22(4), 547–563.
Craver, C. F., & Darden, L. (2013). *In Search of Mechanisms: Discoveries Across the Life Sciences*. University of Chicago Press.
Craver, C. F., Glennan, S., & Povich, M. (2021). Constitutive relevance & mutual manipulability revisited. *Synthese*, 199(3–4), 8807–8828.
Craver, C. F., & Kaplan, D. M. (2020). Are more details better? On the norms of completeness for mechanistic explanations. *The British Journal for the Philosophy of Science*, 71(1), 287–319.
Cronin, J. (1987). *Mathematical Aspects of Hodgkin-Huxley Neural Theory*. Cambridge University Press.
Curtis, H. J., & Cole, K. S. (1940). Membrane action potentials from the squid giant axon. *Journal of Cellular and Comparative Physiology*, 15(2), 147–157.
(1942). Membrane resting and action potentials from the squid giant axon. *Journal of Cellular and Comparative Physiology*, 19(2), 135–144.
Darden, L. (1987). Viewing the history of science as compiled hindsight. *AI Magazine*, 8(2), 33.
(2017). Strategies for discovering mechanisms. In S. Glennan & P. M. Illari (Eds.), *The Routledge Handbook of Mechanisms and Mechanical Philosophy* (pp. 255–266). Routledge.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Darden, L., & Maull, N. (1977). Interfield theories. *Philosophy of Science*, 44(1), 43–64.
Davey, K. (2023). On inferring explanations and inference to the best explanation. *Episteme*, 1–18.
Day, T., & Kincaid, H. (1994). Putting inference to the best explanation in its place. *Synthese*, 98(2), 271–295.
De Lafuente, V., & Ruiz, O. (2004). The orientation dependence of the Hermann grid illusion. *Experimental Brain Research*, 154(2), 255–260.
De Palma, A., & Pareti, G. (2011). Bernstein's long path to membrane theory: Radical change and conservation in nineteenth-century German electrophysiology. *Journal of the History of the Neurosciences*, 20(4), 306–337.
De Regt, H. W. (2017). *Understanding Scientific Understanding*. Oxford University Press.
Doppelt, G. (2014). Best theory scientific realism. *European Journal for Philosophy of Science*, 4, 271–291.
Douven, I. (2017a). *Abduction*. https://plato.stanford.edu/archives/sum2017/entries/abduction/
(2017b). Inference to the best explanation: What is it? And why should we care? In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 4–22). Oxford University Press.
(2022). *The Art of Abduction*. MIT Press.
Earman, J. (1992). *Bayes or Bust? A Critical Examination of Bayesian Confirmation Theory*. MIT Press.
Ennis, R. H. (1968). Enumerative induction and best explanation. *The Journal of Philosophy*, 65(18), 523–529.
Fann, K. T. (2012). *Peirce's Theory of Abduction*. Springer Science & Business Media.
Firestone, C., & Scholl, B. J. (2014). "Top-down" effects where none should be found: The El Greco fallacy in perception research. *Psychological Science*, 25(1), 38–46.
Fisher, A. J., Medaglia, J. D., & Jeronimus, B. F. (2018). Lack of group-to-individual generalizability is a threat to human subjects research. *Proceedings of the National Academy of Sciences of the United States of America*, 115(27), E6106–E6115.
Frankfurt, H. G. (1958). Peirce's notion of abduction. *The Journal of Philosophy*, 55(14), 593–597.
Fumerton, R. (1980). Induction and reasoning to the best explanation. *Philosophy of Science*, 47(4), 589–600.
(2017). Reasoning to the best explanation. In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 65–79). Oxford University Press.
Gabbay, D., & Woods, J. (2005). *The Reach of Abduction: Insight and Trial*. Elsevier.
Garfinkel, A. (1982). *Forms of Explanation: Rethinking the Questions in Social Theory*. Yale Univesity Press.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Gemes, K. (1993). Hypothetico-deductivism, content, and the natural axiomatization of theories. *Philosophy of Science*, 60(3), 477–487.
Gillett, C. (2016). *Reduction and Emergence in Science and Philosophy*. Cambridge University Press.
(2021). Using compositional explanations to understand compositional levels: An integrative account. In D. Brooks, J. DiFrisco, & W. Wimsatt (Eds.), *Levels of Organization in the Biological Sciences* (p. 233). MIT Press.
Glennan, S., & Illari, P. M. (2017). *The Routledge Handbook of Mechanisms and Mechanical Philosophy*. Routledge.
Glymour, C. (1980a). *Theory and Evidence*. Princeton University Press.
(1980b). Hypothetico-deductivism is hopeless. *Philosophy of Science*, 47(2), 322–325.
Greco, J. (2014). Episteme: Knowledge and understanding. In C. A. Boyd & K. Timpe (Eds.), *Virtues and Their Vices* (pp. 285–302). Oxford University Press.
Grimes, T. R. (1993). Explanatory understanding and contrastive facts. *Philosophica*, 51(1), 21–38.
Grimm, S. R. (2014). Understanding as knowledge of causes. In F. Fairweather (Ed.), *Virtue Epistemology Naturalized: Bridges between Virtue Epistemology and Philosophy of Science* (pp. 329–345). Springer.
Hammond, C. (2014). *Cellular and Molecular Neurophysiology*. Academic Press.
Hanson, N. R. (1960). Is there a logic of scientific discovery? *Australasian Journal of Philosophy*, 38(2), 91–106.
(1972). *Patterns of Discovery: An Inquiry into the Conceptual Foundations of Science*. Cambridge University Press.
Harinen, T. (2018). Mutual manipulability and causal inbetweenness. *Synthese*, 195(1), 35–54.
Harman, G. H. (1965). The inference to the best explanation. *The Philosophical Review*, 74(1), 88–95.
(1968). Enumerative induction as inference to the best explanation. *The Journal of Philosophy*, 65(18), 529–533.
Hartline, H. K. (1938). The response of single optic nerve fibers of the vertebrate eye to illumination of the retina. *American Journal of Physiology-Legacy Content*, 121(2), 400–415.
Haugen, T. A., Solberg, P. A., Foster, C., Morán-Navarro, R., Breitschädel, F., & Hopkins, W. G. (2018). Peak age and performance progression in world-class track-and-field athletes. *International Journal of Sports Physiology and Performance*, 13(9), 1122–1129.
Heil, J. (2012). *The Universe as We Find It*. Oxford University Press.
Hempel, C. G. (1965). *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science*. Free Press.
(1966). *Philosophy of Natural Science*. Prentice-Hall.
Hendry, R. F. (2006). Elements, compounds, and other chemical kinds. *Philosophy of Science*, 73(5), 864–875.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

(2024). Mechanisms in chemistry. In J. L. Cordovil, G. Santos, & D. Vecchi (Eds.), *New Mechanism: Explanation, Emergence and Reduction* (pp. 139–160). Springer International Publishing Cham. https://doi.org/10.1007/978-3-031-46917-6_7

Hermann, L. (1870). Eine Erscheinung simultanen Contrastes [A phenomenon of simultaneous contrast]. *Archiv für die gesamte Physiologie des Menschen und der Tiere*, 3(1), 13–15.

Hodgkin, A. (1994). *Chance and Design: Reminiscences of Science in Peace and War*. Cambridge University Press.

Hodgkin, A. L. (1938). The subthreshold potentials in a crustacean nerve fibre. *Proceedings of the Royal Society of London. Series B-Biological Sciences*, 126(842), 87–121.

(1951). The ionic basis of electrical activity in nerve and muscle. *Biological Reviews*, 26(4), 339–409.

(1976). Chance and design in electrophysiology: An informal account of certain experiments on nerve carried out between 1934 and 1952. *The Journal of Physiology*, 263(1), 1.

Hodgkin, A. L., & Huxley, A. F. (1939). Action potentials recorded from inside a nerve fibre. *Nature*, 144(3651), 710–711.

(1945). Resting and action potentials in single nerve fibres. *The Journal of Physiology*, 104(2), 176.

(1946). Potassium leakage from an active nerve fibre. *Nature*, 158(4011), 376–377.

(1947). Potassium leakage from an active nerve fibre. *The Journal of Physiology*, 106(3), 341–367.

(1952a). Currents carried by sodium and potassium ions through the membrane of the giant axon of Loligo. *The Journal of Physiology*, 116(4), 449–472.

(1952b). The components of membrane conductance in the giant axon of Loligo. *The Journal of Physiology*, 116(4), 473–496.

(1952c). The dual effect of membrane potential on sodium conductance in the giant axon of Loligo. *The Journal of Physiology*, 116(4), 497–506.

(1952d). A quantitative description of membrane current and its application to conduction and excitation in nerve. *The Journal of Physiology*, 117(4), 500–544.

Hodgkin, A. L., Huxley, A. F., & Katz, B. (1949). Ionic currents underlying activity in the giant axon of the squid. *Archives des sciences physiologiques*, 3, 129–150.

(1952). Measurement of current-voltage relations in the membrane of the giant axon of Loligo. *The Journal of Physiology*, 116(4), 424–448.

Hodgkin, A. L., & Katz, B. (1949a). The effect of sodium ions on the electrical activity of the giant axon of the squid. *The Journal of Physiology*, 108(1), 37–77.

(1949b). The effect of temperature on the electrical activity of the giant axon of the squid. *The Journal of Physiology*, 109(1–2), 240.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Hodgkin, A. L., & Keynes, R. D. (1955). Active transport of cations in giant axons from Sepia and Loligo. *The Journal of Physiology*, 128(1), 28.

Hodgkin, A. L., & Rushton, W. A. H. (1946). The electrical constants of a crustacean nerve fibre. *Proceedings of the Royal Society of London. Series B-Biological Sciences*, 133(873), 444–479.

Hoffmann, M. (1999). Problems with Peirce's concept of abduction. *Foundations of Science*, 4(3), 271–305.

Hollings, S. C., Hopkins, W. G., & Hume, P. A. (2014). Age at peak performance of successful track & field athletes. *International Journal of Sports Science & Coaching*, 9(4), 651–661.

Hopper, A. J., Beswick-Jones, H., & Brown, A. M. (2022). A color-coded graphical guide to the Hodgkin and Huxley papers. *Advances in Physiology Education*, 46(4), 580–592.

Howson, C., & Urbach, P. (2006). *Scientific Reasoning: The Bayesian Approach*. Open Court Publishing.

Huxley, A. F. (2004). Andrew F. Huxley. In L. R. Squire (Ed.), *The History of Neuroscience in Autobiography* (Vol. 4, pp. 282–319). Society for Neuroscience.

Illari, P. M., & Williamson, J. (2012). What is a mechanism? Thinking about mechanisms across the sciences. *European Journal for Philosophy of Science*, 2(1), 119–135.

Ioannidis, S., & Psillos, S. (2022). *Mechanisms in Science*. Cambridge University Press.

Japyassú, H. F., & Laland, K. N. (2017). Extended spider cognition. *Animal Cognition*, 20(3), 375–395.

Jenkins, C. S. (2008). Romeo, René, and the reasons why: What explanation is. In *Proceedings of the Aristotelian Society* (Vol. 108, pp. 61–84). Wiley Online Library.

Kahneman, D. (2011). *Thinking, Fast and Slow*. Macmillan.

Kaiser, M. I. (2017). The components and boundaries of mechanisms. In S. Glennan & P. M. Illari (Eds.), *The Routledge Handbook of Mechanisms and Mechanical Philosophy* (pp. 116–130). Routledge.

Kandel, E. R., Schwartz, J. H., & Jessell, T. M. (2000). *Principles of Neural Science*. McGraw-Hill.

Kaplan, D. M. (2012). How to demarcate the boundaries of cognition. *Biology & Philosophy*, 27(4), 545–570.

Katz, B. (1947). The effect of electrolyte deficiency on the rate of conduction in a single nerve fibre. *The Journal of Physiology*, 106(4), 411.

Kauffman, S. A. (1970). Articulation of parts explanation in biology and the rational search for them. *Proceedings of the Biennial Meeting of the Philosophy of Science Association*, 1970, 257–272.

Keynes, R. D. (1948). The leakage of radioactive potassium from stimulated nerve. *The Journal of Physiology*, 107, 35P–36P.

(1949). The movements of radioactive ions in resting and stimulated nerve. *Archives des sciences physiologiques*, 3(2), 165–175.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Keynes, R. D., & Lewis, P. R. (1951a). The resting exchange of radioactive potassium in crab nerve. *The Journal of Physiology*, 113(1), 73–98.
(1951b). The sodium and potassium content of cephalopod nerve fibres. *The Journal of Physiology*, 114(1–2), 151–182.
Khalifa, K., Millson, J., & Risjord, M. (2017). Inference to the best explanation: Fundamentalism's failures. In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 80–96). Oxford University Press.
Kim, J. (1994). Explanatory knowledge and metaphysical dependence. *Philosophical Issues*, 5, 51–69.
Kirchhoff, M. (2013). Extended cognition & the causal-constitutive fallacy: In search for a diachronic and dynamical conception of constitution. *Philosophy and Phenomenological Research*, 90(2), 320–360.
Krickel, B. (2018a). *The Mechanical World: The Metaphysical Commitments of the New Mechanistic Approach*. Springer.
(2018b). Saving the mutual manipulability account of constitutive relevance. *Studies in History and Philosophy of Science Part A*, 68, 58–67.
(2020). Extended cognition, the new mechanists' mutual manipulability criterion, and the challenge of trivial extendedness. *Mind & Language*, 35(4), 539–561.
(2024). Different types of mechanistic explanation and their ontological implications. In J. L. Cordovil, G. Santos, & D. Vecchi (Eds.), *New Mechanism: Explanation, Emergence and Reduction* (pp. 9–28). Springer International Publishing. https://doi.org/10.1007/978-3-031-46917-6_2
Kuffler, S. W. (1953). Discharge patterns and functional organization of mammalian retina. *Journal of Neurophysiology*, 16(1), 37–68.
Kuhn, T. S. (1977). *The Essential Tension*. University of Chicago Press.
Ladyman, J., Douven, I., Horsten, L., & Van Fraassen, B. (1997). A defence of van Fraassen's critique of abductive inference: Reply to Psillos. *The Philosophical Quarterly*, 47(188), 305–321.
Lange, M. (2022). Putting explanation back into "inference to the best explanation." *Noûs*, 56(1), 84–109.
Lenoir, T. (1986). Models and instruments in the development of electrophysiology, 1845–1912. *Historical Studies in the Physical and Biological Sciences*, 17(1), 1–54.
Levy, A. (2014). What was Hodgkin and Huxley's achievement? *The British Journal for the Philosophy of Science*, 65(3), 469–492.
Lewis, D. (2004). Causation as influence. In J. Collins, N. Hall, & L. A. Paul (Eds.), *Causation and Counterfactuals* (pp. 75–106). MIT Press.
Lipton, P. (1987). A real contrast. *Analysis*, 47(4), 207–208.
(1990). Contrastive explanation. *Royal Institute of Philosophy Supplements*, 27, 247–266.
(1991). Contrastive explanation and causal triangulation. *Philosophy of Science*, 58(4), 687–697.
(1998). The best explanation of a scientific paper. *Philosophy of Science*, 65(3), 406–410.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

(2003). *Inference to the Best Explanation*. Routledge.
(2014). Inference to the best explanation. In S. Psillos & M. Curd (Eds.), *The Routledge Companion to Philosophy of Science* (2nd ed., pp. 225–234). Routledge.
Machamer, P., Darden, L., & Craver, C. (2000). Thinking about mechanisms. *Philosophy of Science*, 67(1), 1–25.
Mackonis, A. (2013). Inference to the best explanation, coherence and other explanatory virtues. *Synthese*, 190(6), 975–995.
Magnani, L. (2001). *Abduction, Reason and Science: Processes of Discovery and Explanation*. Springer Science & Business Media.
(2009). *Abductive Cognition: The Epistemological and Eco-Cognitive Dimensions of Hypothetical Reasoning* (Vol. 3). Springer.
(2017). *Abductive Structure of Scientific Creativity*. Springer.
(2023). *Handbook of Abductive Cognition*. Springer Nature.
Marmont, G. (1949). Studies on the axon membrane. *Journal of Cellular and Comparative Physiology*, 34(3), 351–382.
Maudlin, T. (2007). *The Metaphysics Within Physics*. Oxford University Press.
McAuliffe, W. H. (2015). How did abduction get confused with inference to the best explanation? *Transactions of the Charles S. Peirce Society: A Quarterly Journal in American Philosophy*, 51(3), 300–319.
McCain, K. (2014). *Evidentialism and Epistemic Justification*. Routledge.
(2015). Explanation and the nature of scientific knowledge. *Science & Education*, 24(7), 827–854.
(2019). How do explanations lead to scientific knowledge? In K. McCain & K. Kampourakis (Eds.), *What Is Scientific Knowledge?* (pp. 52–65). Routledge.
(2022). *Understanding How Science Explains the World*. Cambridge University Press.
McCain, K., & Poston, T. (2017a). *Best Explanations: New Essays on Inference to the Best Explanation*. Oxford University Press.
(2017b). Best explanations: An introduction. In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 1–3). Oxford University Press.
McKaughan, D. J. (2008). From ugly duckling to swan: C. S. Peirce, abduction, and the pursuit of scientific theories. *Transactions of the Charles S. Peirce Society: A Quarterly Journal in American Philosophy*, 44(3), 446–468.
McMullin, E. (2013). The inference that makes science. *Zygon®*, 48(1), 143–191.
Medawar, P. B. (1963). Is the scientific paper a fraud? *The Listener*, 70(12), 377–378.
Mill, J. S. (1843). *A System of Logic*. John W. Parker.
Miller, G. A. (1956). Human memory and the storage of information. *IRE Transactions on Information Theory*, 2(3), 129–137.
Misak, C. (2017). Peirce and Ramsey: Truth, pragmatism, and inference to the best explanation. In K. McCain & T. Poston (Eds.), *Best Explanations: New*

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Essays on Inference to the Best Explanation (pp. 25–38). Oxford University Press.
Mizrahi, M. (2012). Why the ultimate argument for scientific realism ultimately fails. *Studies in History and Philosophy of Science Part A*, 43(1), 132–138.
Mohammadian, M. (2021). Abduction – the context of discovery + underdetermination = inference to the best explanation. *Synthese*, 198(5), 4205–4228.
Moore, D. H. (1975). A study of age group track and field records to relate age and running speed. *Nature*, 253(5489), 264–265.
Needham, P. (2000). What is water? *Analysis*, 60(1), 13–21.
(2008). Is water a mixure? Bridging the distinction between physical and chemical properties. *Studies in History and Philosophy of Science Part A*, 39(1), 66–77.
Nernst, W. (1889). Die elektromotorische wirksamkeit der jonen. *Zeitschrift für Physikalische Chemie*, 4(1), 129–181.
Newsome, W. T., & Paré, E. B. (1988). A selective impairment of motion perception following lesions of the middle temporal visual area (MT). *Journal of Neuroscience*, 8(6), 2201–2211.
Niiniluoto, I. (1999). Defending abduction. *Philosophy of Science*, 66(S3), S436–S451.
(2018). *Truth-Seeking by Abduction* (Vol. 400). Springer.
Norton, J. D. (2021). *The Material Theory of Induction*. University of Calgary Press.
Nubiola, J. (2005). Abduction or the logic of surprise. *Semiotica*, 2005(153), 117–130.
Nyrup, R. (2015). How explanatory reasoning justifies pursuit: A Peircean view of IBE. *Philosophy of Science*, 82(5), 749–760.
Okasha, S. (2000). Van Fraassen's critique of inference to the best explanation. *Studies in History and Philosophy of Science Part A*, 31(4), 691–710.
(2002). *Philosophy of Science: A Very Short Introduction* (Vol. 67). Oxford Paperbacks.
Oleksowicz, M. (2023). A new grammar of science. *Metascience*, 32, 15–18.
Ostwald, W. (1890). Elektrische eigenschaften halbdurchlässiger scheidewände [Electrical properties of semipermeable membranes]. *Zeitschrift für Physikalische Chemie*, 6(1), 71–82.
Overton, E. (1902). Beiträge zur allgemeinen Muskel-und Nervenphysiologie [Contributions to general muscle and nerve physiology]. *Archiv für die gesamte Physiologie des Menschen und der Tiere*, 92(3), 115–280.
Park, S. (2022). The contextual theory of explanation and inference to the best explanation. *Axiomathes*, 32(Suppl. 2), 311–326.
Pearl, J. (2009). *Causality: Models, Reasoning and Inference*. Cambridge University Press.
Pearson, K. (1911). *The Grammar of Science: Physical* (3rd ed.). Adam and Charles Black.
Peirce, C. S. (1878). Deduction, induction, and hypothesis. *Popular Science Monthly*, 13, 470–482.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

(1992). *The Essential Peirce: Selected Philosophical Writings (1893–1913)* (Vol. 2). Indiana University Press.

Piccinini, G. (2020). *Neurocognitive Mechanisms: Explaining Biological Cognition*. Oxford University Press.

Pitt, J. C. (2001). The dilemma of case studies: Toward a Heraclitian philosophy of science. *Perspectives on Science*, 9(4), 373–382.

Plutynski, A. (2011). Four problems of abduction: A brief history. *HOPOS: The Journal of the International Society for the History of Philosophy of Science*, 1(2), 227–248.

Prychitko, E. (2021). The causal situationist account of constitutive relevance. *Synthese*, 198(2), 1829–1843.

Psillos, S. (1996). On Van Fraassen's critique of abductive reasoning. *The Philosophical Quarterly*, 46(182), 31–47.

(2005). *Scientific Realism: How Science Tracks Truth*. Routledge.

(2007). The fine structure of inference to the best explanation. *Philosophy and Phenomenological Research*, 74(2), 441–448.

Raman, I. M., & Ferster, D. L. (2022). *The Annotated Hodgkin and Huxley: A Reader's Guide*. Princeton University Press.

Rappaport, S. (1996). Inference to the best explanation: Is it really different from Mill's methods? *Philosophy of Science*, 63(1), 65–80.

Romo, R., Hernández, A., Zainos, A., & Salinas, E. (1998). Somatosensory discrimination based on cortical microstimulation. *Nature*, 392(6674), 387–390.

Roski, S. (2021). In defence of explanatory realism. *Synthese*, 199(5–6), 14121–14141.

Rothenberg, M. A. (1950). Studies on permeability in relation to nerve function II. Ionic movements across axonal membranes. *Biochimica et Biophysica Acta*, 4, 96–114.

Ruben, D.-H. (1987). Explaining contrastive facts. *Analysis*, 47(1), 35–37.

Salmon, W. C. (1984a). *Scientific Explanation and the Causal Structure of the World*. Princeton University Press.

(1984b). Scientific explanation: Three basic conceptions. In A. Fine, M. Forbes, & L. Wessels (Eds.), *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* (Vol. 198, pp. 293–305). Cambridge University Press.

(2001). Explanation and confirmation: A Bayesian critique of inference to the best explanation. In G. Hon & S. S. Rakover (Eds.), *Explanation: Theoretical Approaches and Applications* (pp. 61–91). Springer.

Salzman, C. D., Britten, K. H., & Newsome, W. T. (1990). Cortical microstimulation influences perceptual judgements of motion direction. *Nature*, 346(6280), 174–177.

Schepelmann, F., Aschayeri, H., & Baumgartner, G. (1967). Die Reaktionen der "simple field" Neurone in Area 17 der Katze beim Hermann-Gitter-Kontrast [The responses of simple field neurons in area 17 of the cat to the Hermann

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

grid contrast]. *Pflügers Archiv für die gesamte Physiologie des Menschen und der Tiere*, 294(3), R57.
Schickore, J. (2011). More thoughts on HPS: Another 20 years later. *Perspectives on Science*, 19(4), 453–481.
(2018). Scientific discovery. https://plato.stanford.edu/archives/sum2018/entries/scientific-discovery/
(2019). The structure and function of experimental control in the life sciences. *Philosophy of Science*, 86(2), 203–218.
Schiller, P. H., & Carvey, C. E. (2005). The Hermann grid illusion revisited. *Perception*, 34(11), 1375–1397.
Schindler, S. (2013). Mechanistic explanation: Asymmetry lost. In V. Karakostas & D. Dieks (Eds.), *EPSA11 Perspectives and Foundational Problems in Philosophy of Science* (pp. 81–91). Springer.
Scholl, R. (2013). Causal inference, mechanisms, and the Semmelweis case. *Studies in History and Philosophy of Science Part A*, 44(1), 66–76.
(2015). Inference to the best explanation in the catch-22: How much autonomy for Mill's method of difference? *European Journal for Philosophy of Science*, 5(1), 89–110.
Schulz, R., & Curnow, C. (1988). Peak performance and age among superathletes: Track and field, swimming, baseball, tennis, and golf. *Journal of Gerontology*, 43(5), P113–P120.
Schupbach, J. N. (2017). Inference to the best explanation, cleaned up and made respectable. In K. McCain & T. Poston (Eds.), *Best Explanations: New Essays on Inference to the Best Explanation* (pp. 39–61). Oxford University Press.
Schurz, G. (2008). Patterns of abduction. *Synthese*, 164(2), 201–234.
Semmelweis, I. (1983). *The Etiology, Concept, and Prophylaxis of Childbed Fever* (K. C. Carter, Trans.). University of Wisconsin Press.
Şerban, M. (2017). What can polysemy tell us about theories of explanation? *European Journal for Philosophy of Science*, 7(1), 41–56.
Seyfarth, E.-A. (2006). Julius Bernstein (1839–1917): Pioneer neurobiologist and biophysicist. *Biological Cybernetics*, 94(1), 2–8.
Shan, Y. (2019). Contrastivism and non-contrastivism in scientific explanation. *Philosophy Compass*, 14(8), e12613.
(2020). *Doing Integrated History and Philosophy of Science: A Case Study of the Origin of Genetics* (Vol. 320). Springer Nature.
Shepherd, G. M. (1988). *Neurobiology*. Oxford University Press.
Sherrington, C. S. (1906). Observations on the scratch-reflex in the spinal dog. *The Journal of Physiology*, 34(1–2), 1.
Shors, T. J., & Matzel, L. D. (1997). Long-term potentiation: What's learning got to do with it? *Behavioral and Brain Sciences*, 20(4), 597–614.
Skinner, B. F. (1957). *Verbal Behavior*. Appleton-Century-Crofts.
Spence, K. W., & Lippitt, R. (1946). An experimental test of the sign-gestalt theory of trial and error learning. *Journal of Experimental Psychology*, 36(6), 491.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Spillmann, L. (1971). Foveal perceptive fields in the human visual system measured with simultaneous contrast in grids and bars. *Pflügers Archiv für die gesamte Physiologie des Menschen und der Tiere*, 326(4), 281–299.
(1994). The Hermann grid illusion: A tool for studying human perceptive field organization. *Perception*, 23(6), 691–708.
(2014). Receptive fields of visual neurons: The early years. *Perception*, 43(11), 1145–1176.
Spirtes, P., Glymour, C., & Scheines, R. (2000). *Causation, Prediction, and Search*. MIT Press.
Sprenger, J. (2011). Hypothetico-deductive confirmation. *Philosophy Compass*, 6(7), 497–508.
Strevens, M. (2008). *Depth: An Account of Scientific Explanation*. Harvard University Press.
(2012). Précis of *Depth*. *Philosophy and Phenomenological Research*, 84(2), 447–460.
Suppe, F. (1998a). The structure of a scientific paper. *Philosophy of Science*, 65(3), 381–405.
(1998b). Reply to commentators. *Philosophy of Science*, 65(3), 417–424.
Talbot, W. H., Darian-Smith, I., Kornhuber, H. H., & Mountcastle, V. B. (1968). The sense of flutter-vibration: Comparison of the human capacity with response patterns of mechanoreceptive afferents from the monkey hand. *Journal of Neurophysiology*, 31(2), 301–334.
Taylor, E. (2018). Against explanatory realism. *Philosophical Studies*, 175(1), 197–219.
Teller, P. (2010). "Saving the phenomena" today. *Philosophy of Science*, 77(5), 815–826.
Temple, D. (1988). The contrast theory of why-questions. *Philosophy of Science*, 55(1), 141–151.
Thagard, P. R. (1978). The best explanation: Criteria for theory choice. *The Journal of Philosophy*, 75(2), 76–92.
Thompson, N. (2022). *Ontological Dependence*. https://doi.org/10.1093/obo/9780195396577-0203
Tolman, E. C. (1948). Cognitive maps in rats and men. *The Psychological Review*, 55(4), 189–208.
Tolman, E. C., & Honzik, C. H. (1930). Introduction and removal of reward, and maze performance in rats. *University of California Publications in Psychology*, 4, 257–275.
Van Fraassen, B. (1978). The pragmatics of explanation. *American Philosophical Quarterly*, 14(2), 143–150.
Van Fraassen, B. C. (1980). *The Scientific Image*. Oxford University Press.
Weber, M. (2004). *Philosophy of Experimental Biology*. Cambridge University Press.
(2008). Causes without mechanisms: Experimental regularities, physical laws, and neuroscientific explanation. *Philosophy of Science*, 75(5), 995–1007.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press

Williamson, T. (2016). Abductive philosophy. *The Philosophical Forum*, 47(3–4), 263–280.
Wilson, J. M. (2014). No work for a theory of grounding. *Inquiry*, 57(5–6), 535–579.
Wimsatt, W. C. (1994). The ontology of complex systems: Levels of organization, perspectives, and causal thickets. *Canadian Journal of Philosophy Supplementary Volume*, 20, 207–274.
(2018). Forward. In S. Glennan & P. M. Illari (Eds.), *The Routledge Handbook of Mechanisms and Mechanical Philosophy* (pp. xiv–xvi). Routledge.
Wolfe, J. M. (1984). Global factors in the Hermann grid illusion. *Perception*, 13(1), 33–40.
Woodward, J. F. (1989). Data and phenomena. *Synthese*, 79(3), 393–472.
Wright, C. D., & Van Eck, D. (2018). Ontic explanation is either ontic or explanatory, but not both. *Ergo: An Open Access Journal of Philosophy*, 5(38), 997–1029.
Young, J. Z. (1936). The structure of nerve fibres in cephalopods and crustacea. *Proceedings of the Royal Society of London. Series B-Biological Sciences*, 121(823), 319–337.

https://doi.org/10.1017/9781009435710.013 Published online by Cambridge University Press