

REFERENCES

- [AA 2001] Aczel, Amir D.: Entanglement. The greatest mystery in physics. Four Walls Eight Windows
- [AD 2000] Albert, David Z.: Time and Chance. Harvard University Press
- [AM 2014] Al-Khalili, Jim; McFadden, Johnjoe: Life at the Edge. The coming of age of quantum biology. Transworld
- [BA 2011] Alan Berger (ed.): Saul Kripke. Cambridge University Press
- [BB 1997] Baars, Bernard J.: In the Theater of Consciousness. The workspace of the mind. Oxford University Press
- [BC 2019] Bernhardt, Chris: Quantum Computing for Everyone. MIT Press
- [BG 2011] Buzsáki, György: Rhythms of the Brain. Oxford University Press
- [BG 2025a] Buchwald, Diana K.; Gordin, Michael D.: Free Creations of the Human Mind. The worlds of Albert Einstein. Oxford University Press
- [BG 2025b] Burnett, D. Graham: Will the humanities survive artificial intelligence? The New Yorker, April 26
- [B] 1987] Bell, John S.: Speakable and Unspeakable in Quantum Mechanics. Cambridge University Press
- [B] 1999] Barbour, Julian: The End of Time. The next revolution in our understanding of the universe. Weidenfeld and Nicolson
- [BL 2021] Barrett, Lisa Feldman: Seven and a Half Lessons About the Brain. Picador
- [BM 1933] Born, Max; Sauter, Fritz: Moderne Physik. Sieben Vorträge über Materie und Strahlung. Springer
- [BM 2003] Born, Max: Atomic Physics. Dougall, John (trans.). 8th edition. Dover
- [BP 1984] Benacerraf, Paul; Putnam, Hilary (eds.): Philosophy of Mathematics. 2nd edition. Cambridge University Press
- [BP 1968] Bernays, Paul: Axiomatic Set Theory. 2nd edition. North-Holland
- [BP 2001] Boyer, Pascal: Religion Explained. The human instincts that fashion gods, spirits and ancestors. Heinemann

- [BR 2019] Brandom, Robert B.: *A Spirit of Trust. A reading of Hegel's Phenomenology*. Harvard University Press
- [BS 1999] Blackmore, Susan: *The Meme Machine*. Oxford University Press
- [BS 2003] Blackmore, Susan: *Consciousness. An introduction*. Hodder and Stoughton
- [CA 2010] Combs, Allan (ed.): *Essays marking the centenary of William James*. *Journal of Consciousness Studies* 17 (11–12)
- [CA 2023] Clark, Andy: *The Experience Machine. How our minds predict and shape reality*. Allen Lane
- [CC 2025] Cogitate Consortium: *Adversarial testing of global neuronal workspace and integrated information theories of consciousness*. *Nature* 642: 133–142
- [CD 1995] Chalmers, David J.: *The puzzle of conscious experience*. *Scientific American* 273: 80–86
- [CD 1996] Chalmers, David J.: *The Conscious Mind. In Search of a fundamental theory*. Oxford University Press
- [CD 2002] Chalmers, David J.: *Philosophy of Mind, Classical and contemporary readings*. Oxford University Press
- [CD 2010] Chalmers, David J.: *The Character of Consciousness*. Oxford University Press
- [CD 2012] Chalmers, David J.: *Constructing the World*. Oxford University Press
- [CD 2022] Chalmers, David J.: *Reality+. Virtual worlds and the problems of philosophy*. Norton
- [CE 2023] Cheng, Eugenia: *The Joy of Abstraction. An exploration of math, category theory, and life*. Cambridge University Press
- [CF 1994] Crick, Francis: *The Astonishing Hypothesis. The scientific search for the soul*. Simon and Schuster
- [CF 2012] Cox, Brian; Forshaw, Jeff: *The Quantum Universe. Everything that can happen does happen*. Penguin
- [CF 2022] Cox, Brian; Forshaw, Jeff: *Black Holes. The key to understanding the universe*. Collins
- [CG 1878] Cantor, Georg: *Ein Beitrag zur Mannigfaltigkeitslehre*. *Journal für die reine und angewandte Mathematik* 84: 242–258
- [CG 1955] Cantor, Georg: *Contributions to the Founding of the Theory of Transfinite Numbers*. Dover
- [CG 1987] Chaitin, Gregory John: *Algorithmic Information Theory*. Cambridge University Press
- [CG 1998] Chaitin, Gregory John: *The Limits of Mathematics*. Springer

- [CG 2005] Chaitin, Gregory John: *Meta Math! The search for omega*. Pantheon
- [CH 2001] Callender, Craig; Huggett, Nick (eds.): *Physics Meets Philosophy at the Planck Scale. Contemporary theories in quantum gravity*. Cambridge University Press
- [CH 2025] Casey, Haley, et al.: Exploring ultraweak photon emissions as optical markers of brain activity. *iScience* 28 (3): 112019
- [C] 2009] Cameron, James (dir.): *Avatar*. 20th Century Fox
- [CK 1990] Crick, Francis; Koch, Christof: Towards a neurobiological theory of consciousness. *Seminars in the Neurosciences* 2: 263–275
- [CR 1928] Carnap, Rudolf: *Der logische Aufbau der Welt*. Leipzig
- [CS 2010] Carroll, Sean: *From Eternity to Here. The quest for the ultimate theory of time*. Dutton
- [CS 2019] Carroll, Sean: *Something Deeply Hidden. Quantum worlds and the emergence of spacetime*. Oneworld
- [CS 2022] Carroll, Sean: *The Biggest Ideas in the Universe. Space, time and motion*. Oneworld
- [CS 2024] Carroll, Sean: *The Biggest Ideas in the Universe. Quanta and fields*. Oneworld
- [DA 2003] Damasio, Antonio: *Looking for Spinoza. Joy, sorrow, and the feeling brain*. Harcourt
- [DC 1859] Darwin, Charles: *On the Origin of Species by Means of Natural Selection. Or the preservation of favoured races in the struggle for life*. Murray
- [DD 1991] Dennett, Daniel C.: *Consciousness Explained*. Allen Lane
- [DD 1995] Dennett, Daniel C.: *Darwin's Dangerous Idea. Evolution and the meanings of life*. Simon and Schuster
- [DD 2001] Davidson, Donald: *Inquiries into Truth and Interpretation*. 2nd edition. Oxford University Press
- [DD 2003] Dennett, Daniel C.: *Freedom Evolves*. Viking
- [DD 2006] Dennett, Daniel C.: *Breaking the Spell. Religion as a natural phenomenon*. Allen Lane
- [DL 2023] Dipietro, Laura, et al.: The evolution of Big Data in neuroscience and neurology. *Journal of Big Data* 10: 116
- [DM 1973] Dummett, Michael A.E.: *Frege: Philosophy of Language*. Duckworth
- [DM 1977] Dummett, Michael A.E.: *Elements of Intuitionism*. Oxford University Press

- [DM 1991] Dummett, Michael A.E.: Frege: Philosophy of Mathematics. Duckworth
- [DP 1958] Dirac, Paul A.M.: The Principles of Quantum Mechanics. 4th edition. Oxford University Press
- [DR 1976] Dawkins, Richard: The Selfish Gene. Oxford University Press
- [DR 1982] Dawkins, Richard: The Extended Phenotype. The long reach of the gene. Freeman
- [DR 2006] Dawkins, Richard: The God Delusion. Bantam
- [DS 1995] De Leo, Stefano: Quaternions and special relativity. arXiv:hep-th/9508011
- [EA 1916] Einstein, Albert: Über die spezielle und die allgemeine Relativitätstheorie. Springer
- [EA 1922] Einstein, Albert: Grundzüge der Relativitätstheorie. 5th edition. Vieweg
- [EC 1976] Eastwood, Clint (dir.): The Outlaw Josey Wales. Malpasso
- [ED 2005] Elitzur, Avshalom C.; Dolev, Shahar; Kolenda, Nancy (eds.): Quo Vadis Quantum Mechanics? Springer
- [EG 1992] Edelman, Gerald: Bright Air, Brilliant Fire. On the matter of the mind. Basic Books
- [EG 2004] Edelman, Gerald: Wider Than the Sky. The phenomenal gift of consciousness. Yale University Press
- [EP 1935] Einstein, Albert; Podolsky, Boris; Rosen, Nathan: Can quantum-mechanical description of reality be considered complete? Physical Review 47 (10): 777–780
- [ET 2000] Edelman, Gerald; Tononi, Giulio: A Universe of Consciousness. How matter becomes imagination. Basic Books
- [EW 2018] Eilenberger, Wolfram: Zeit der Zauberer. Das große Jahrzehnt der Philosophie. Klett-Cotta
- [FB 1973] Fraenkel, Abraham A.; Bar-Hillel, Yehoshua; Lévy, Azriel: Foundations of Set Theory. 2nd edition. North-Holland
- [FC 2014] Furey, Cohl: Generations: three prints, in colour. arXiv:1405.4601
- [FC 2025] Feehly, Conor: Your brain is glowing, and scientists can't figure out why. Scientific American, June 16
- [FF 2004] Feferman, Anita Burdman; Feferman, Solomon: Alfred Tarski. Life and logic. Cambridge University Press
- [FG 1879] Frege, Gottlob: Begriffsschrift: eine der arithmetischen nachgebildete Formelsprache des reinen Denkens. Halle

- [FG 1884] Frege, Gottlob: *Die Grundlagen der Arithmetik. Eine logisch mathematische Untersuchung über den Begriff der Zahl*. Breslau
- [FL 1986] Flood, Raymond; Lockwood, Michael (eds.): *The Nature of Time*. Blackwell
- [FO 2022] Freire, Olival, Jr., et al. (eds.): *The Oxford Handbook of the History of Quantum Interpretations*. Oxford University Press
- [FR 1963–1965] Feynman, Richard P.; Leighton, Robert B.; Sands, Matthew: *The Feynman Lectures on Physics*. 3 volumes. Addison-Wesley
- [FR 1985] Feynman, Richard P.: *QED. The strange theory of light and matter*. Princeton University Press
- [GA 2025] Goriely, Alain: Eighty-six billion and counting: do we know the number of neurons in the human brain? *Brain* 148 (3): 689–691
- [GB 1999] Greene, Brian: *The Elegant Universe. Superstrings, hidden dimensions, and the quest for the ultimate theory*. Norton
- [GB 2004] Greene, Brian: *The Fabric of the Cosmos. Space, time, and the texture of reality*. Knopf
- [GB 2011] Greene, Brian: *The Hidden Reality. Parallel universes and the deep laws of the cosmos*. Knopf
- [GK 1932] Gödel, Kurt: Zum intuitionistischen Aussagenkalkül. *Anzeiger Akademie der Wissenschaften Wien* 69: 65–66
- [GK 1950] Gödel, Kurt: Rotating universes in general relativity theory. *Proceedings of the International Congress of Mathematicians in Cambridge* 1: 175–181
- [GJ 1833] Goethe, Johann Wolfgang von: *Maximen und Reflexionen*. Eckermann, J.P.; Riemer, F.W. (Hrsg.). Cotta
- [GJ 2008] Gleick, James: *Chaos. Making a new science*. Penguin
- [GM 2015] Gabriel, Markus: *Warum es die Welt nicht gibt*. Ullstein
- [GR 2006] Goldstein, Rebecca Newberger: *Betraying Spinoza. The renegade Jew who gave us modernity*. Schocken
- [HA 2019] Harris, Annaka: *Conscious. A brief guide to the fundamental mystery of the mind*. Harper
- [HC 1996] Hughes, G.E.; Cresswell, M.J.: *A New Introduction to Modal Logic*. Routledge
- [HD 2000] Hume, David: *An Enquiry Concerning Human Understanding*. Edited by Beauchamp, Tom L. Oxford University Press
- [HD 1979] Hofstadter, Douglas R.: *Gödel, Escher, Bach: An Eternal Golden Braid. A metaphorical fugue on minds and machines in the spirit of Lewis Carroll*. Basic Books

- [HD 1981] Hofstadter, Douglas R., Dennett, Daniel C. (eds.): The Mind's I. Fantasies and reflections on self and soul. Basic Books
- [HD 2007] Hofstadter, Douglas R.: I Am a Strange Loop. Basic Books
- [HD 2019] Hoffman, Donald D.: The Case Against Reality. How evolution hid the truth from our eyes. Penguin
- [HE 1929] Husserl, Edmund: Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie. Niemeyer
- [HG 1807] Hegel, G.W.F.: Phänomenologie des Geistes. Bamberg und Würzburg
- [HG 1812] Hegel, G.W.F.: Wissenschaft der Logik. Band 1. Nürnberg
- [HG 1821] Hegel, G.W.F.: Vorrede. Grundlinien der Philosophie des Rechts oder Naturrecht und Staatswissenschaft im Grundrisse. Berlin
- [HG 1977] Hegel, G.W.F.: Phenomenology of Spirit. Miller, A.V. (trans.). Oxford University Press
- [H] 1967] Heijenoort, Jean van (ed.): From Frege to Gödel. A source book in mathematical logic, 1879–1931. Harvard University Press
- [H] 2023] Horgan, John: A 25-year-old bet about consciousness has finally been settled. Scientific American, June 26
- [HM 1927] Heidegger, Martin: Sein und Zeit. Niemeyer
- [HS 1988] Hawking, Stephen: A Brief History of Time. From the Big Bang to black holes. Bantam
- [HS 2001] Hawking, Stephen: The Universe in a Nutshell. Bantam
- [HW 2001] Hodges, Wilfrid: Logic. An introduction to elementary logic. 2nd edition. Penguin
- [IW 2017] Isaacson, Walter: Einstein. His life and universe. Simon and Schuster
- [JJ 1976] Jayne, Julian: The Origin of Consciousness in the Breakdown of the Bicameral Mind. Houghton Mifflin
- [JT 2002] Jech, Thomas: Set Theory. 3rd edition. Springer
- [JW 1890] James, William: The Principles of Psychology. 2 volumes. Holt
- [JW 1902] James, William: The Varieties of Religious Experience. Longman
- [KC 2004] Koch, Christof: The Quest for Consciousness. A neurobiological approach. Roberts
- [KH 2010] Küstenmacher, M.; Haberer, T; Küstenmacher, W.T.: Gott 9.0. Wohin unsere Gesellschaft spirituell wachsen wird. Gütersloh
- [KI 1781] Kant, Immanuel: Kritik der reinen Vernunft. Riga
- [KI 1784] Kant, Immanuel: Idee zu einer allgemeinen Geschichte in weltbürgerlicher Absicht. Berlinische Monatsschrift

- [KL 2008] Kolakowski, Leszek: *Main Currents of Marxism. The founders, the golden age, the breakdown.* Norton
- [KR 2000] Kurzweil, Ray: *The Age of Spiritual Machines. When computers exceed human intelligence.* Penguin
- [KS 1959a] Kripke, Saul A.: A completeness theorem in modal logic. *Journal of Symbolic Logic* 24 (1): 1–14
- [KS 1959b] Kripke, Saul A.: Semantical analysis of modal logic. *Journal of Symbolic Logic* 24 (4): 323–324
- [KS 1965] Kripke, Saul A.: Semantical analysis of intuitionistic logic I. In: Crossley, J.N.; Dummett, M.A.E. (eds.): *Formal Systems and Recursive Functions. Proceedings, Oxford, 1963.* North-Holland
- [KS 1975] Kripke, Saul A.: Outline of a theory of truth. *Journal of Philosophy* 72: 690–716
- [KS 1982] Kripke, Saul A.: *Wittgenstein on Rules and Private Language. An elementary exposition.* Blackwell
- [KT 1971] Kuhn, Thomas: *The Structure of Scientific Revolutions.* 2nd edition. University of Chicago Press
- [LB 2004] Libet, Benjamin: *Mind Time. The temporal factor in consciousness.* Harvard University Press
- [LD 1973] Lewis, David: *Counterfactuals.* Harvard University Press
- [LD 2003] LeDoux, Joseph E.; Debiec, Jack; Moss, Henry (eds.): *The Self: From Soul to Brain.* *Annals of the New York Academy of Sciences* 1001
- [LE 1963] Lorenz, Edward Norton: Deterministic non-periodic flow. *Journal of the Atmospheric Sciences* 20 (2): 130–141
- [LE 1971] Lemmon, E.J.: *Beginning Logic.* CRC
- [LI 1976] Lakatos, Imre: *Proofs and Refutations. The logic of mathematical discovery.* Cambridge University Press
- [LL 1959] Lewis, C.I.; Langford, C.H.: *Symbolic Logic.* 2nd edition. Dover
- [LM 1989] Lockwood, Michael: *Mind, Brain and the Quantum. The compound I.* Blackwell
- [LR 1991] Landauer, Rolf: Information is physical. *Physics Today* 44 (5): 23–29
- [LR 2001] Llinás, Rodolfo R.: *I of the Vortex. From neurons to self.* MIT Press
- [LT 2024] Lewton, Thomas: Can we use quantum computers to test a radical consciousness theory? *New Scientist.* 30 December
- [MC 1999] McGinn, Colin (1999), *The Mysterious Flame. Conscious minds in a material world.* Basic Books

- [MC 2025] MICrONS Consortium: Functional connectomics spanning multiple areas of mouse visual cortex. *Nature* 640: 435–447
- [ME 2009] Mendelson, Elliott: *Introduction to Mathematical Logic*. 5th edition. CRC Press
- [MI 2009] McGilchrist, Iain: *The Master and his Emissary. The divided brain and the making of the modern world*. Yale University Press
- [MJ 2002a] McFadden, Johnjoe: Synchronous firing and its influence on the brain's electromagnetic field: evidence for an electromagnetic field theory of consciousness. *Journal of Consciousness Studies* 9 (4): 23–50
- [MJ 2002b] McFadden, Johnjoe: The conscious electromagnetic information (CEMI) field theory: the hard problem made easy? *Journal of Consciousness Studies* 9 (8): 45–60
- [MN 2014] Mermin, N. David: Physics: QBism puts the scientist back into science. *Nature* 507: 421–423
- [MP 1979] Martin-Löf, Per: Constructive mathematics and computer programming. In: Cohen. L.J. (ed.): *Logic, Methodology, and Philosophy of Science VI*, North-Holland 1982
- [MS 1998] Mac Lane, Saunders: *Categories for the Working Mathematician*. 2nd edition. Springer
- [MS 2013] Maldacena Juan; Susskind, Leonard: Cool horizons for entangled black holes. *arXiv:1306.0533*
- [MS 2025] Mallapaty, Smriti: Scientists identify a brain structure that filters consciousness. *Scientific American*, April 4/*Nature*, April 3
- [MT 2003] Metzinger, Thomas: *Being No One. The self-model theory of subjectivity*. MIT Press
- [MT 2009] Metzinger, Thomas: *The Ego Tunnel. The science of the mind and the myth of the self*. Basic Books
- [MT 2017] Misner, Charles W.; Thorne, Kip S.; Wheeler, John Archibald: *Gravitation*. Princeton University Press
- [NF 2025] Neukart, Florian: Does spacetime remember? *New Scientist*, 21 June
- [NJ 1928] Neumann, John von: Die Axiomatisierung der Mengenlehre, *Mathematische Zeitschrift* 27: 669–752
- [NN 2001] Nagel, Ernest; Newman, James R.: *Gödel's Proof*. Revised edition with foreword by Hofstadter, Douglas R. NYU Press
- [NT 1986] Nagel, Thomas: *The View from Nowhere*. Oxford University Press
- [OR 1999] Omnès, Roland: *Understanding Quantum Mechanics*. Princeton University Press

- [PA 1982] Pais, Abraham: “Subtle Is the Lord ...” The science and life of Albert Einstein. Oxford University Press
- [PA 1986] Pais, Abraham: Inward Bound. On matter and forces in the physical world. Oxford University Press
- [PH 1996] Price, Huw: Time’s Arrow and Archimedes’ Point. New directions for the physics of time. Oxford University Press
- [PK 1934] Popper, Karl R.: Logik der Forschung. Springer
- [PK 1963] Popper, Karl R.: Conjectures and Refutations. RKP
- [PM 2018] Pearl, Judea; Mackenzie, Dana: The Book of Why. The new science of cause and effect. Basic Books
- [PR 1989] Penrose, Roger: The Emperor’s New Mind. Concerning computers, minds, and the laws of physics. Oxford University Press
- [PR 1994] Penrose, Roger: Shadows of the Mind. A search for the missing science of consciousness. Oxford University Press
- [PR 2004] Penrose, Roger: The Road to Reality. A complete guide to the laws of the universe. Cape
- [PS 1994] Popkorn, Sally: First Steps in Modal Logic. Cambridge University Press
- [PS 1997] Pinker, Steven: How the Mind Works. Norton
- [PS 2020] Potier, Simon; Lieuvin, Margaux; Pfaff, Michael; Kelber, Almut: How fast can raptors see? Journal of Experimental Biology 223 (1)
- [PV 2017] Perlov, Delia; Vilenkin, Alex: Cosmology for the Curious. Springer
- [QW 1960] Quine, Willard van Orman: Word and Object. MIT Press
- [QW 1969] Quine, Willard van Orman: Set Theory and Its Logic. 2nd edition. Harvard University Press
- [QW 1976] Quine, Willard van Orman: The Ways of Paradox and Other Essays. Revised and enlarged edition. Harvard University Press
- [RA 1991] Ross, J. Andrew: The Global Hyperatlas. A development proposal. The Visual Computer 8: 1–7
- [RA 2009] Ross, J. Andrew: Mindworlds. A decade of consciousness studies. Imprint Academic
- [RA 2012] Ross, Andy: Lifeball. Birth of a new god. Rover
- [RA 2013] Ross, Andy: Coral. The next twist of fate. Rover
- [RB 1903] Russell, Bertrand A.W.: The Principles of Mathematics. Cambridge University Press
- [RC 2014] Rovelli, Carlo: Seven Brief Lessons on Physics. Penguin
- [RC 2016] Rovelli, Carlo: Reality Is Not What It Seems. The journey to quantum gravity. Allen Lane

- [RC 2023] Rovelli, Carlo: *White Holes*. Allen Lane
- [RC 2025] Rovelli, Carlo: What we get wrong about the origins of quantum theory. *New Scientist*. 15 April
- [RW 1910–1913] Russell, Bertrand A.W.; Whitehead, Alfred N.: *Principia Mathematica*. 3 volumes. Cambridge University Press
- [SA 2021] Seth, Anil: *Being You. A new science of consciousness*. Faber
- [SB 1957] Skinner, Burrhus Frederic: *Verbal Behavior*. Copley
- [SC 1948] Shannon, Claude Elwood: A mathematical theory of communication. *Bell System Technical Journal* 27 (3): 379–423
- [SC 2014] Sejnowski, Terrence J.; Churchland, Patricia S.; Movshon, J. Anthony: Putting big data to good use in neuroscience. *Nature Neuroscience* 17 (11)
- [SE 1935] Schrödinger, Erwin: Die gegenwärtige Situation in der Quantenmechanik. *Die Naturwissenschaften* 23
- [SF 1782] Schiller, Friedrich: *Die Freundschaft*. Friedrich Schiller Archiv > Gedichte > Anthologie auf das Jahr 1782
- [SG 2006a] Strawson, Galen: Realistic Materialism: Why Physicalism Entails Panpsychism. *Journal of Consciousness Studies* 13 (10–11): 3–31
- [SG 2006b] Strawson, Galen: Panpsychism? Replies to commentators and a celebration of Descartes. *Journal of Consciousness Studies* 13 (10–11): 184–208
- [SG 2024] Strawson, Galen: *Consciousness and Its Place in Nature. Does physicalism entail panpsychism?* 2nd edition. Freeman, Anthony (ed.). Imprint Academic
- [S] 1997] Searle, John R.: *The Mystery of Consciousness*. New York Review of Books
- [SL 2014] Susskind, Leonard; Friedman, Art: *Quantum Mechanics. The theoretical minimum*. Basic Books
- [SL 2017] Susskind, Leonard; Friedman, Art: *Special Relativity and Classical Field Theory. The theoretical minimum*. Basic Books
- [SL 2023] Susskind, Leonard; Cabannes, André: *General Relativity. The theoretical minimum*. Basic Books
- [SM 2014] Schwartz, Matthew D.: *Quantum Field Theory and the Standard Model*. Cambridge University Press
- [SM 2024] Strassler, Matt: *Waves in an Impossible Sea. How everyday life emerges from the cosmic ocean*. Basic Books
- [SP 1949] Shilpp, Paul Arthur (ed.): *Albert Einstein, Philosopher-Scientist*. Library of Living Philosophers 7. Open Court

- [SP 2024] Schlegel, P., et al.: Whole-brain annotation and multi-connectome cell typing of *Drosophila*. *Nature* 634: 139–152
- [SR 1994] Safranski, Rüdiger: Ein Meister aus Deutschland. Heidegger und seine Zeit. Hanser
- [SR 2001] Scruton, Roger: Kant. A very short introduction. Oxford University Press
- [SW 2002] Singer, Wolf: Der Beobachter im Gehirn. Suhrkamp
- [TA 1935] Tarski, Alfred: Der Wahrheitsbegriff in den formalisierten Sprachen. *Studia Philosophica* 1: 261–405
- [TA 1937] Turing, Alan M.: On computable numbers, with an application to the Entscheidungsproblem. *Proceedings of the London Mathematical Society* 42 (1): 230–265
- [TA 1944] Tarski, Alfred: The semantic conception of truth and the foundations of semantics. *Philosophy and Phenomenological Research* 4: 341–375
- [TC 1975] Taylor, Charles: Hegel. Cambridge University Press
- [TG 2016] Tononi, Giulio; Boly, Melanie; Massimini, Marcello; Koch, Christof: Integrated information theory: from consciousness to its physical substrate. *Nature Reviews Neuroscience* 17: 450–461
- [TK 2014] Tononi, Giulio; Koch, Christof: Consciousness: Here, there but not everywhere. *arXiv:1405.7089*
- [TM 2014] Tegmark, Max: Our Mathematical Universe. My quest for the ultimate nature of reality. Vintage
- [VA 2006] Vilenkin, Alex: Many Worlds in One. The search for other universes. Hill and Wang
- [VC 2014] Vidal, Clément: The Beginning and the End. The meaning of life in a cosmological perspective. Springer
- [VM 2000] Velmans, Max: Understanding Consciousness. Routledge
- [WC 1980] Wright, Crispin: Wittgenstein on the Foundations of Mathematics. Harvard University Press
- [WD 2002] Wegner, Daniel M.: The Illusion of Conscious Will. MIT Press
- [WE 1962] Wigner, Eugene P.: Remarks on the mind–body question. In: Good, I. J. (ed.): *The Scientist Speculates. An anthology of partly-baked ideas*. Heinemann
- [WF 2005] Wilczek, Frank: On absolute units I: choices. *Physics Today* 58 (10): 12–13
- [WH 1974] Wang, Hao: From Mathematics to Philosophy. RKP
- [WJ 1968] Watson, James D.: The Double Helix. Atheneum

- [WJ 1999] Wheeler, John Archibald: *A Journey into Gravity and Spacetime*. Scientific American Library
- [WL 1953] Wittgenstein, Ludwig: *Philosophical Investigations*. Anscombe, Gertrude E.M. (trans.). Blackwell
- [WL 1983] Wittgenstein, Ludwig: *Remarks on the Foundations of Mathematics*. Von Wright, Georg Henrik; Rhees, Rush (eds.). Anscombe, Gertrude E.M. (trans.). 2nd edition. MIT Press
- [WL 1998] Wittgenstein, Ludwig: *Logisch-philosophische Abhandlung. Tractatus logico-philosophicus*. McGuinness, B.; Schulte, J. (eds.). Suhrkamp
- [WN 2018] Wolchover, Natalie: The peculiar math that could underlie the laws of nature. *Quanta*, July 20
- [WS 2002] Wolfram, Stephen: *A New Kind of Science*. Wolfram Media
- [WT 1999] Wachowskis, the: *The Matrix*. Warner
- [YP 2005] Yourgrau, Palle: *A World Without Time. The forgotten legacy of Gödel and Einstein*. Basic Books
- [ZA 2023a] Zee, Anthony: *Quantum Field Theory, as Simply as Possible*. Princeton University Press
- [ZA 2023b] Zeilinger, Anton: *Dance of the Photons. Einstein, entanglement and quantum teleportation*. Penguin
- [ZB 2004] Zwiebach, Barton: *A First Course in String Theory*. Cambridge University Press
- [ZD 1990] Zohar, Danah; Marshall, Ian: *The Quantum Self*. Bloomsbury
- [ZE 1908] Zermelo, Ernst F.F.: *Untersuchungen über die Grundlagen der Mengenlehre I*. *Mathematische Annalen* 65: 261–281
- [ZH 1970] Zeh, Heinz-Dieter: *On the interpretation of measurement in quantum theory*. *Foundations of Physics* 1 (1)
- [ZH 2001] Zeh, Heinz-Dieter: *The Physical Basis of the Direction of Time*. 4th edition. Springer

INDEX

- Abrahamic monotheists, 150, 175
- Aczel, Amir D., 163, 164
- Adam (biblical), 145
- Albert, David Z., 162
- Al-Khalili, Jim, 115, 170
- analytic philosophy, 25
- Apollo
- Moon project, 39
 - temple of, 121
- Aristotle, 47–49, 125
- artificial neural network, 31
- Aspect, Alain, 70
- Association for the Scientific Study of Consciousness (ASSC), 87, 173
- augmented reality (AR), 131
- Avatar (movie), 138, 173
- Axial Age, 175
- Baars, Bernard J., 87, 103, 168
- Bach, Johann Sebastian, 140
- Barbour, Julian, 162
- Barrett, Lisa Feldman, 169
- being and existence, 18
- belief and faith, 38, 152
- Bell, John S., 164
- Bell test, 69–70
 - theorem, 69–70
- Benacerraf, Paul, 163
- Benjamin, Walter, 159
- Berger, Alan, 171
- Berlin, 9, 61, 173
- Bernays, Paul, 30, 160
- Bernhardt, Chris, 174
- Big Bang, 18, 36
- big self (ego), 141
- big self, little self, 139, 141
- biophotons, 170
- bipolar perspective (self), 123
- black holes, 36
- information paradox, 82–83
 - signs of life, 174
- Blackmore, Susan, 169
- block universe, 36, 58
- Bohr, Niels, 61, 66
- complementarity, 71
- Boltzmann, Ludwig, 42
- definition of entropy, 66
 - macro- and microstates, 43, 74
- Born, Max, 62, 164
- Bose–Einstein condensate (BEC), 115
- Bose–Einstein statistics, 65
- bosons, 65
- Boyer, Pascal, 175
- Brandom, Robert, 159, 169
- Bremen, 87
- Broglie, Louis de, 61, 140
- Brouwer, L.E.J., 77–80, 165
- Buchwald, Diana K., 176
- Buddhists, 97
- Burnett, D. Graham, 174
- Bush, George H.W., 88
- Buszáki, György, 166
- buzz in the brain, 103
- Callender, Craig, 165
- Cambridge, 31
- Cameron, James, 138, 173
- Cantor, Georg, 23, 54, 160, 163

- Cantor's paradise, 28, 57
- cardinality of the continuum, 55
- continuum hypothesis, 55
- diagonal argument, 51, 136
- orders of infinity, 26
- cardinality (sets), 127
- Carnap, Rudolf, 174
- Carroll, Lewis, 140
- Carroll, Sean, 160, 162, 164, 165, 166
- Cartesian theater, 104
- Cassirer, Ernst, 159
- category theory, 127
- central nervous system (CNS), 111
- Chaitin, Gregory John, 163, 165, 174
- Chaitin–Kolmogorov randomness, 174
- Chalmers, David J., 17, 103, 160, 166, 167, 169, 172, 174
 - bet with Koch, 87
 - diagonal argument, 28, 101
 - extended mind, 110–11
 - on persons, 99–101
 - VR worlds, 129–32
- chaotic systems, 43
- Cheng, Eugenia, 171
- Christians, 150
- Clark, Andy, 169
 - extended mind, 110–11
 - prediction machine, 107–8
- classical information theory, 73
- classical reality, 68
- Clauser, John F., 70
- cognitive mirror, 113
- Cohen, Paul, 55, 163
- complex spaces, 133–36
- connectome
 - fruit fly, 93
 - human, 93
 - mouse visual cortex, 93
- consciousness, 17
 - 3P/1P contrast, 99–101
 - conscious electromagnetic information (CEMI) field, 115
 - electrical traffic, 93
 - epiphenomenon, 97
 - explained, 98
 - extended mind, 110–11
 - hard problem, 17, 87
 - hyperconsciousness, 146
 - inscrutability, 99
 - is temporal, 41, 119
 - neural correlates, 107
 - orchestrated objective reduction (OOR), 135
 - Phi (in IIT), 105, 173
 - quantum computers, 144, 174
 - still mysterious, 119
 - superconsciousness, 146
- Copenhagen interpretation, 66, 71
- corpus callosum, 100
- cosmology, 18
 - expanding universe, 36
 - standard model, 19
- Cox, Brian, 164, 165
- Cresswell, M.J., 171
- Crick, Francis, 87, 160, 167
- Damasio, Antonio, 176
- Darwin, Charles, 19, 160
- Davidson, Donald, 163
- Dawkins, Richard, 111, 169, 175
- De Leo, Stefano, 173
- Decade of the Brain, 88
- decoherence, 67, 70
- dekahertz brain waves, 94, 114
- dekahertz photon fields, 135

- Dennett, Daniel C., 98–99, 160, 167, 168, 173, 175
 - on GWT, 104–5
- Descartes, René, 113, 169, 174
 - cogito ergo sum, 145
- deterministic automata, 142
- diagonal argument, 26–28
 - consciousness, 101
- dialectic, 21, 25, 53
- Dipietro, Laura, 166
- Dirac, Paul A.M., 63, 164
- DNA, 19, 87, 146
- doctrine of love, 151
- Dolev, Shahar, 166
- Dummett, Michael A.E., 160, 165
- Eastwood, Clint, 170
- Edelman, Gerald M., 95, 167, 168
- Edinburgh, 137
- effective models, 45, 108
- Eilenberger, Wolfram, 159
- Einstein, Albert, 35, 61, 161, 164, 176
 - and mathematics, 47
 - and quantum theory, 58
 - curved spacetime, 65
 - EPR paper, 68–69
 - field equation, 35
 - on quantum theory, 66
 - personality cult, 152
 - relativistic time, 38
 - relativity, 39
 - synchronizing clocks, 42
 - time for photon, 41, 118, 134
- Einstein–Rosen bridge, 83
- electroencephalography (EEG), 90
- Elitzur, Avshalom C., 166
- entanglement, 68–72
- entanglement entropy, 84, 129
- entropy
 - entanglement, 74, 84, 129
 - information theory, 73
 - thermodynamic, 42–43, 73
 - time’s arrow, 43, 74–75
- epistemology, 44, 45, 53, 54
- EPR paradox, 68–69
- ER = EPR, 83
- Escher, Maurits C., 140
- Euclid, 38
- existentialism, 14
- experience
 - takes place in time, 52
- fame in the brain, 104
- Faraday, Michael, 64
- Feferman, Anita Burdman and Solomon, 163
- Fermi–Dirac statistics, 65
- fermions, 64
- Feynman diagrams, 64, 133
- Feynman, Richard P., 39, 160, 162, 164
 - path of least action, 81–82
 - probability wave, 63
 - QED, 63
 - unwordliness, 22
- flicker fusion frequency, 118, 170
- Flood, Raymond, 162
- Forshaw, Jeff, 164, 165
- Fraenkel, Abraham A., 29, 161
- free will, 141–44
- Frege, Gottlob, 25, 78, 160, 163
 - predicate logic, 47–49
 - set theory, 26, 49
- Freire, Olival, 165
- functional magnetic resonance imaging (fMRI), 91
- Furey, Cohl, 173
- Gabriel, Markus, 160

- Galileo Galilei, 19, 47, 153
 relativity, 39
- Gandhi, Mohandas K., 176
- Gauss, Carl Friedrich, 38
- Gleick, James, 162
- global workspace theory
 (GWT), 103–5
- Global, 153, 176
- Gödel, Kurt, 30, 35, 161, 162, 163, 171
 blow to Hilbert, 78
 completeness theorem, 51
 constructible universe L, 55
 continuum hypothesis, 55
 incompleteness theorems, 35, 44, 51–52, 140, 143
 intuitionist logic, 125
 solution to Einstein's field equation, 36
- Goethe, Johann Wolfgang von, 149, 175
- Goldstein, Rebecca Newberger, 176
- Google Quantum AI lab, 174
- Gordin, Michael D., 176
- Greene, Brian, 160, 162, 165, 172
- Hameroff, Stuart, 135, 172
- Hamilton, William Rowan, 136
- Harris, Annaka, 97, 167
- Harris, Sam, 175
- Hawking radiation, 82–83
- Hawking, Stephen, 134, 160
- Hegel, Georg W.F., 13, 21, 53, 159, 160, 169, 171
 all is one in the Absolute, 144
 freedom, 144
- Heidegger, Martin, 14, 16, 41, 159
- Heijenoort, Jean van, 165
- Heisenberg, Werner, 62, 164
 classical/quantum cut, 70
 coherent states, 71
 uncertainty principle, 62, 118
- Helmholtz, Hermann von, 89
- Heraclitean river, 100, 124
- Higgs field, 65
- Hilbert, David, 78
- historical anachronism, 75–76
- Hitchens, Christopher, 175
- Hodges, Wilfrid, 163
- Hoffman, Donald D., 169
- Hofstadter, Douglas R., 140, 161, 166, 171, 173
- homunculi, 104
- Huggett, Nick, 165
- Hughes, G.E., 171
- human beings, 16
- human brains
 40 Hz waves, 94–95
 anatomy, 88–90
 hemispherical specialization, 175
 prediction machines, 107–8
 recording waves, 90–92
 thalamo-cortical loops, 95–96
 vibescape, 94
- Hume, David, 106, 168
- Husserl, Edmund, 106, 168
- hydrogen atom, 61
- information is physical, 128
- integrated information theory
 (IIT), 87, 105–7, 143
- intentional states, 110
- intentionality, 138
- Interstellar (movie), 83
- intuitionism, 77–79
- Isaacson, Walter, 176
- Jah (biblical), 145, 150–51

- James, William, 19, 121, 160, 171
 - worlds of consciousness, 121, 137
- Japan, 9, 161
- Jaynes, Julian, 175
- Jech, Thomas, 163
- Jerusalem, 154
- Joyce, James, 141
- Kant, Immanuel, 13, 145, 159, 168
 - Euclidean geometry, 39
 - manifold of sensation, 46
 - on arithmetic, 25, 58
 - writings, 36
- Klein bottle, 140
- Koch, Christof, 87, 103, 105, 166, 167, 168, 173
- Kolakowski, Leszek, 159
- Kripke, Saul A., 162, 163, 169, 171
 - intuitionist logic, 125–26
 - modal logic, 125
 - truth theory, 50–51
- Kuhn, Thomas, 162
- Kurzweil, Ray, 99
- Lakatos, Imre, 162
- Landauer, Rolf, 128, 172
- Langford, C.H., 171
- lasers, 116
- LeDoux, Joseph E., 168, 170
- Lemmon, E.J., 163
- Lewis, C.I., 125, 171
- Lewis, David, 171
- Libet, Benjamin, 114, 170
- Lifeball, 146, 154
- little self (avatar), 141
- Llinás, Rodolfo R., 95, 167
- Lockwood, Michael, 162, 172
- logic, 20–21, 47–51
 - and set theory, 57
 - and time, 46
- Boolean, 47, 57
- classical, 47, 58, 80
- constructive, 79, 126
- dialectical, 51
- first-order, 49
- formal, 53
- intuitionist, 77–79
- law of excluded middle, 78
- of becoming, 59
- of persons, 100
- of time, 81, 126
- of worlds, 124–27
- predicate, 47–49
- second-order, 49
- syllogistic, 47–49
- London, 162
- Lorentz, Hendrick, 39
 - equations, 39
 - Lorentz symmetry, 63
- Lorenz, Edward N., 43, 162
- Mac Lane, Saunders, 171
- magnetoencephalography (MEG), 91
- Maldacena, Juan, 83, 165
- Marshall, Ian, 115, 170
- Martin-Löf, Per, 165
- Marx, Karl, 13, 159
- mathematics, 19
- matrix theory, 62–63
- Max Planck Institutes, 153
- Maxwell, James Clerk, 39, 153, 162
 - Maxwell's equations, 64
- McFadden, Johnjoe, 115, 170
- McGilchrist, Iain, 175
- McInnes, Colin, 97, 167
- memes, 112
- Mendelson, Elliott, 163
- Mermin, David, 165
- metaphysics, 20–21

- meteorology, 43
- Metzinger, Thomas, 114, 138, 170, 173
- MICrONS Consortium, 167
- microtubules, 135
- minds, 16–17
 - bounded in spacetime, 41
- mindworld movie, 138, 139
- mindworlds, 112
 - as macrostates, 132
 - physics, 112–19
 - subject to time, 128
 - worlds of consciousness, 121
- Minkowski, Hermann, 40
- Misner, Charles W., 162
- Möbius band, 140, 146
- modal logic, 125
- monotheism, 149
- moral issues, 16
- multiverse, 133
- Murphy, Nancey, 117, 170
- music of the hemispheres, 90
- mysterians, 97
- Nagel, Ernest, 163
- Nagel, Thomas, 99, 101, 109, 168
- Neukart, Florian, 172
- Neumann, John von, 24, 29, 160
 - architecture, 90, 103, 142
 - classical/quantum cut, 71
 - entanglement entropy, 74
 - ordinals defined, 24
 - rank function, 29
- neuroscience
 - conventional, 102
 - human brain, 88–90
 - recording waves, 90–92
 - thalamo-cortical loops, 88–90
 - ultimate, 102
- Neven, Hartmut, 174
- New York, 87, 103, 117
- Newman, James R., 163
- Newton, Isaac, 19, 153
 - divine clockwork, 42
 - gravitational constant, 84
 - mechanics, 37, 39, 136
- nonlocality, 69
- null infinity, 41
- numbers
 - cardinal, 24, 55
 - inaccessible, 55
 - natural, 24, 26
 - omega, 174
 - ordinal, 24, 55
 - rational, 27
 - real, 27, 136
 - transfinite, 55
- observers, 15
- octonions, 136, 173
- Omnès, Roland, 165
- omphalos, 121, 123, 138, 139, 145, 149–51
- ontogenesis, 76, 81, 124, 141, 145, 146
- ontology, 44, 45, 53, 54
- ouroboros, 32–33, 46, 57, 59, 76, 128, 140, 145, 149–51
- Oxford, 9, 159
- Pais, Abraham, 163, 164, 176
- panprotopsychism, 97
- panpsychism, 96
- Pearl, Judea, 106, 126, 169
- Penrose, Roger, 134–35, 167, 172, 173
 - magic of complex numbers, 134
 - orchestrated objective reduction (OOR), 135
 - twistor theory, 134
- people, 16

- Perlov, Delia, 160
- Phi (in IIT), 105, 173
- photon (defined), 61
- pineal gland, 113
- Pinker, Steven, 167
- Planck, Max, 61, 153
 - Planck's constant, 61, 82
 - scale (units), 83–84, 136
 - sunlight, 116
- Plato, 16, 44, 117
- Podolsky, Boris, 68, 164
- Popkorn, Sally, 171
- Popper, Karl R., 36, 162, 173
- positron emission tomography (PET), 92
- Price, Huw, 162
- Princess Leia, 117
- Princeton, 24, 35, 55, 58, 161
- Principia Mathematica, 29, 78
- probability, 73
 - Bayesian, 74
- psychophysics, 7, 14
 - 1st law, 122
 - 2nd law, 122–24
 - 3rd law, 124
 - 4th law, 129
 - 5th law, 129–36
 - 6th law, 136–37
 - 7th law, 137–38
 - 8th law, 138–40
 - 9th law, 140–45
 - list of laws, 147
- Putnam, Hilary, 163
- Pythagorean theorem, 40
- QBists, 74
- qualia, 98, 105, 106, 110
- quantum chaos, 71
- quantum chromodynamics (QCD), 64
- quantum computers, 72, 144, 174
- quantum electrodynamics (QED), 63
- quantum field theories, 64
- quantum foam, 84, 137
- quantum gravity, 15, 77, 81–84
- quantum information, 84
- quantum spin, 65
- quaternions, 136, 173
- qubits, 21, 23, 72
- Quine, Willard van Orman, 160, 161, 163
 - linguistic ascent, 50
 - set theory, 22
 - truth as disquotatation, 45
 - ZF and NBG, 30
- real space, 136
- religious worldviews, 149
- Riemann, Bernhard, 39
- rocks do math, 146
- Rosen, Nathan, 68, 164
- Rosenfeld, Israel, 167
- Rovelli, Carlo, 163, 164, 165
- runoff (logical), 59, 76–77
- Russell, Bertrand A.W., 26, 31, 78, 161
- Safranski, Rüdiger, 159
- Schiller, Friedrich, 159
- Schlegel, P., 166
- Schrödinger, Erwin, 62, 164
 - cat experiment, 66
 - coherent states, 71
 - equation, 136
- Schwartz, Matthew D., 164
- Scruton, Roger, 159
- Searle, John, 167
- Sejnowski, Terrence J., 166
- set theory
 - classical logic, 127
 - cumulative hierarchy, 28, 54
 - empty set, 30
 - glass bead game, 30

- logical frame, 22
- membership relation, 23
- NBG set theory, 30, 55
- power set, 26, 49
- proper classes, 30
- psychophysics, 123
- reflection principles, 54–56
- stress-tested, 23
- theory of everything, 22
- ZF set theory, 29, 30
- Seth, Anil, 107, 169
- Shannon, Claude E., 73, 128, 165
- Singer, Wolf, 95, 167
- Skinner, B.F., 22, 160
- Skolem, Thoralf, 161
- Socrates, 48
- solipsism, 138
- souls, 15, 117, 119
- spacetime wormhole, 83
- Spinoza, Baruch, 153, 176
- spiritual machines, 99
- standard model of particle physics, 19, 65, 136
- strange loop, 140, 144, 145
- Strassler, Max, 161
- Strawson, Galen, 167
- string theory, 83
- subjectivity is polymorphous, 123
- superconducting quantum interference device (SQUID), 91
- Susskind, Leonard, 83, 161, 162, 164, 165
- Tarski, Alfred, 44, 163
 - truth theorem, 44–45
- Taylor, Charles, 159
- Tegmark, Max, 160, 172
- thalamo-cortical loops, 95–96, 116
- The Matrix (movie), 130, 172
- The Outlaw Josie Wales (movie), 170
- The Self: From Soul to Brain (conference), 117
- The Wachowskis, 172
- thermodynamics
 - phenomenological, 42–43
- Thorne, Kip S., 162
- time's arrow, 43, 74–75
- Tononi, Giulio, 87, 105, 167, 168, 173
- Tractatus Logico-Philosophicus, 137, 173
- truth theories, 44
- Turing machine, 143
- Turing, Alan, 51, 143, 174
- uncertainty principle, 62, 68, 118
- Velmans, Max, 168
- Vidal, Clément, 174
- Vilenkin, Alex, 160, 172
- virtual reality (VR), 73, 129–32
- V-set, 50, 54, 56, 102, 109, 113
- Wang, Hao, 161
- Watson, James D., 160
- wave theory, 62–63
- wave–particle duality, 61, 139–40
- Wegener, Daniel M., 173
- Wheeler, John A., 84, 162
- Whitehead, A.N., 29, 78
- Wigner, Eugene P., 67, 164
- Wilczek, Frank, 166
- Wittgenstein, Ludwig, 31, 159, 161, 162, 169, 173
 - language games, 111
 - on language, 37
 - on mathematics, 32
- Tractatus Logico-Philosophicus, 137, 173

- Wolchover, Natalie, 173
Wolfram, Stephen, 173, 174
worlds
 counterfactual, 126
 epistemic, 126
 logic of, 124–27
 mathematical, 128
 of consciousness, 121
 physically possible, 126
 physics of, 127–29
 virtual, 129–32
wormholes, 83, 84
Wright, Crispin, 161
Yourgrau, Palle, 161
Zee, Anthony, 164
Zeh, H. Dieter, 67, 164
Zeilinger, Anton, 70, 164
Zen advice for athletes, 108
Zermelo, Ernst, 29, 161
ZF set theory, 29, 30
 accessible cardinals, 56
 consistency, 56, 81
 continuum hypothesis, 55
 foundation of math, 56
 reflection principle, 55
Zohar, Danah, 115, 170
zombies, 17
Zwiebach, Barton, 165

R**VER**