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NATURALISM

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Introduction

Naturalism is a philosophical perspective that rejects the lofty aspirations of religion and traditional philosophy and employs a more empirical approach to questions about reality. While traditional philosophers have attempted to construct an a priori foundation for our scientific and moral beliefs, naturalists dismiss the idea that philosophy can play any such role. They hold that our ordinary, a posteriori methods of inquiry are the only reliable road to knowledge and that there is no distinctly philosophical notion of "reality" that is more fundamental than the world we encounter in our everyday inquiries. There is no supernatural realm, transcendental Absolute, or Platonic sphere of objective values. Man, mind, and morality are all part of the natural order and can be studied using the methods of science.

Naturalism has a rich and complicated history. In philosophy, the label became popular in the late 19th century. Traditionally, "naturalists" had been scholars who study plants and animals, but philosophers began to use the term to describe a more general, scientific perspective concerning man's place in the universe. This chapter discusses some highlights in the history of the tradition, including some of these 19th-century discussions about the philosophical implications of the theory of evolution, the rise and fall of the Columbia naturalists, and W. V. Quine's program to naturalize epistemology and metaphysics.

Origins

Though philosophical movements can seldom be traced to a single point of origin, several developments in the history of naturalism stem from an intellectual shift in the 1830s and 1840s, when several advances in the experimental sciences – most notably physiology, geology, and biology – paved the way for a materialist revolt against idealist and theistic cosmologies. In response to the religious and philosophical dogmas of their time, naturalists defended the view that we do not require deities, supernatural interventions, or immortal souls to explain the workings of the world. Much as Marx inverted Hegel's dialectic, scholars reversed the relation between science and philosophy. Rather than providing an

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external, a priori foundation for our knowledge about the natural world, philosophy had to become a scientific discipline itself.

The boldest and most radical opposition to religion and speculative philosophy came from scientific materialists such as Karl Vogt, Jacob Moleschott, and Ludwig Büchner. They dismissed the philosophers' speculations as anti-scientific and shocked the public by arguing that there is no God, that human beings are material entities, and that mind stands in the same relation to the brain as "urine to the kidneys" (Vogt 1845–1847: 206). Büchner, in particular, caused a major uproar in intellectual circles. He claimed that science had shown that force cannot exist without matter and used this to argue that there can be no divine, vitalist, or supernatural powers if they are supposed to act independently from any material substratum (Büchner 1855). His views were far from original – similar theses had been advanced by English and French materialists – but Büchner was not interested in putting forth a novel philosophy. His aim was to replace philosophical speculation with a scientifically supported, materialist theory about the nature of the universe (Gregory 1979).

Scientific materialists wrote their most important works in the 1840s and 1850s, before the publication of *On the Origin of Species*. Still, their perspective on science and philosophy facilitated the reception of Darwin's theory of evolution, which in turn reinforced the naturalist idea "that the bodies and minds of men are a part of nature" and that "their history is as natural as the history of the stars" (Thorndike 1962 [1909]: 46). After the publication of Darwin's book, scientists such as Ernst Haeckel took up the baton and promoted a naturalistic perspective on reality. Haeckel employed Darwin's work to advance a "monist" cosmology, thereby blurring the distinctions between mind and brain, between animate and inanimate, and between man and nature (Gliboff 2008: 19). Particularly after the publication of *Die Welträtsel* (1901 [1895]), Haeckel's perspective started to play an important role in public debates about science and religion. Some historians even estimate that monism was the dominant worldview among secular Germans well into the 20th century (Weir 2014: 3).

Though Büchner's and Haeckel's books were bestsellers, their ideas were viewed with suspicion by professional philosophers, both in Germany and in the Anglophone world. As such, their work primarily played a negative role in academic philosophy. At the turn of the century, philosophers mostly used "naturalism" as a derogatory term for scientists who were ill-equipped to grasp the complexities of philosophical problems. Mary Whiton Calkins dismissed the views of "science writers" such as Büchner and Haeckel as "purely popular half-thought" (1907: 404); and James Edwin Creighton, one of the founders of the American Philosophical Association, wanted to protect philosophy against the crude theories of the naturalists. In a speech titled "The Purposes of a Philosophical Association", his presidential address at the first annual meeting of the organization, Creighton referred to Haeckel's aforementioned book in claiming that it was the APA's job to shield philosophy from popular science writers who are confidently proclaiming their "short and easy answers to the riddles of the universe" (1902: 232).

The academic opposition to naturalism diminished when philosophers developed more sophisticated versions of the position. While German thinkers kept treating naturalism as a sign of intellectual barbarism (Hook 1930: 145), several American philosophers began to identify as "naturalists" in the years before World War I. Especially George Santayana's five-volume *The Life of Reason* (1905–1906) – a comprehensive and eloquently written philosophy of morality, religion, art, science, and society – is often taken to have stimulated the development of a distinctively American school of thought (Cohen 1954: 311;

Nagel 1954a: 46). The Harvard philosopher considered himself a "dogmatic naturalist" but defended a more subtle, non-reductive metaphysics, thereby opening the door to "a more inclusive" position toward morality, religion, and art "than the materialism[s] of the nineteenth century" (Eldridge 2008). According to Santayana, the human mind is a natural phenomenon, but we cannot reduce men's values and ideals to material or physical substances. Inquiry must begin *in medias res*: there is no use in trying to find a philosophical foundation for our knowledge. Our belief in the natural world, Santayana argued, is a rational instinct – "animal faith" – and is the result of our biological makeup and intellectual heritage, which is itself based on the age-old interplay between organism and environment (1923: 309).

Columbia naturalism

After World War I, naturalism became the "house philosophy" of Columbia University, where F. J. E. Woodbridge and John Dewey built a closely-knit school of philosophy. Many of their students, including Irwin Edman, Horace L. Friess, Ernest Nagel, John Herman Randall Jr, and Herbert W. Schneider, identified as naturalists and became Columbia professors themselves. In 1954, the year the university celebrated its bicentennial, ten out of eleven tenured professors at Columbia's department of philosophy were homegrown naturalists who had been supervised by Dewey or Woodbridge, or were students of their students.[1]

Woodbridge was a Canadian-born philosopher who grew up in Michigan. He was best known for defending a realist metaphysics at a time when American philosophy was dominated by idealism. He was one of the driving figures behind the opposition to idealism and was a co-founder of *The Journal of Philosophy, Psychology, and Scientific Methods* (later *Journal of Philosophy*). This periodical aimed to be a rival to idealist-led journals – in particular Creighton's *Philosophical Review* – and served as the main platform for pragmatist and realist alternatives. Woodbridge advertised it as a "journal in the field of scientific philosophy", noting that there was as yet no American journal "covering the whole field of scientific philosophy, psychology, ethics, and logic" (Woodbridge and Cattell 1904: 27). In his own work, Woodbridge defined naturalism as the "incorporation of man into nature" (1932: 87, 91), dismissing any philosophy that appealed to transcendental or supernatural powers. Modern philosophy and theistic thinking had created a division between man and nature, but modern science challenged these dualist modes of thinking. Still, the Columbia professor believed that naturalism was not a *new* perspective, and he took much inspiration from the history of philosophy in developing his views. Aristotle, whom he interpreted as a "sober naturalist", could particularly help 20th-century philosophers transcend "the assumptions … of modern philosophy" (Randall 1957: 117, 128).

Woodbridge joined Columbia University in 1902 and was actively involved in getting Dewey to New York two years later. Dewey was a philosopher, psychologist, and social reformer who had been one of the driving forces behind the Chicago school of pragmatism. Unlike Woodbridge, Dewey had started out as an idealist but had gradually "drifted away from Hegelianism", replacing his speculative approach with a "biological" one in the 1890s (Dewey 1930: 155). In his seminal address "The Influence of Darwinism on Philosophy", Dewey explained how the evolutionary framework had transformed his perspective on "the logic of knowledge" (Dewey 1909: 4). Whereas traditional philosophy had rested on a "logic of the changeless, the final, and the transcendent", the Darwinian logic had led

him to forswear inquiry into wholesale essences and to replace it with questions of how particular changes serve concrete purposes (1909: 7, 12). Just as a species is not a fixed and final kind but a constantly adapting entity responding to environmental changes and contingent selective pressures, the philosopher is not in the business of answering divine, immutable questions but responding to specific queries raised by our evolving society and body of scientific knowledge.

In order to do justice to Dewey's and Woodbridge's perspective, it is important to emphasize that naturalism (to them) was more than a philosophical doctrine about man's place in the universe. Columbia naturalism was at once a philosophical stance, a worldview, and an emancipatory movement. The second generation of Columbia naturalists, trained by the two philosophers, typically classified it as an intellectual "temper" or a disposition to understand every branch of human behavior – scientific inquiry, moral deliberation, social interaction, artistic expression, and religious experience – as a natural phenomenon (Nagel 1931: ii; Edman 1935; Randall 1944: 355). Dewey's philosophical studies were deeply intertwined with his progressive political agenda and work on educational reform, and many of his students followed him in his footsteps. Randall was one of the signatories of the humanist manifesto (Kurtz 1973). Nagel regularly published in progressive journals and was convinced that the ideals realized through scientific inquiry "are also the ideals which are indispensable to the successful operation of any society of free men" (1954b: 306). And Friess and Schneider worked on the cross-section between naturalism and religion, pioneering the empirical study of religious movements (Friess and Schneider 1932) and presenting naturalism as an attitude that can "help citizens accommodate their spiritual and political beliefs to new scientific truths" (Jewett 2011: 95).

Still, the second generation of Columbia naturalists was less unified than the first. Analytically oriented naturalists such as Nagel believed that "the analysis and practice of scientific method is … essential to a thoroughgoing naturalism" (Nagel 1935/1956: 41), whereas historically oriented naturalists such as Randall viewed the analytic approach as narrow and scholastic. They were afraid that philosophy would lose its cultural value if it were to become an academic specialism and favored historical over logical analysis because philosophical problems are human problems that cannot be addressed in a strict analytic vacuum, divorced from any cultural-historical context. As a result, Columbia's department of philosophy became a deeply divided institute. Two factions were fighting for control when the university celebrated Dewey's centenary in 1959. The majority, led by Randall, accused Nagel and his allies of over-emphasizing "the philosophical fashions of the day: the philosophy of science and symbolic logic". The others felt that Randall and co. overemphasized "historical philosophy" and complained that the department felt like "a home for poets who have missed their vocation".[2] Though most Columbia philosophers were direct students of Dewey, they had become badly split, not even seven years after his death.

Quinean naturalism

As the Columbia school fell into disarray, naturalism took on a new meaning. It came to be associated with the philosophy of W. V. Quine, who started using the label in the late 1960s. Quine's position was primarily a response to a popular view *within* analytic philosophy, which by then had become the country's dominant school of thought. Analytic philosophers typically presupposed a strict distinction between science – an empirical enterprise concerned with fact – and philosophy – an a priori discipline concerned

with meaning – but Quine rejected the distinction, arguing that philosophy is "continuous with science" (1969b: 126). All knowledge, including logic, mathematics, and philosophy, Quine held, is ultimately a posteriori.

Quine was a philosopher and logician who spent his entire career at Harvard. He was a student of C. I. Lewis and A. N. Whitehead but always regarded Rudolf Carnap as his "greatest teacher" (1970/1976: 41). He first met the German philosopher on a tour through Europe in 1933, shortly after he had obtained his Ph.D., and was quickly swayed by the latter's approach to philosophy.[3] He was especially impressed by Carnap's *Logische Syntax der Sprache* because it answered to his satisfaction "the question of the epistemological status of mathematics and logic". The Harvard graduate primarily worked in logic at the time, but he had always been "perplexed" by questions about the nature of logical truth.[4] Carnap offered a convincing answer in arguing that logical truths can be built into the structure (more precisely, the transformation rules) of the language of science. Or, as Quine put it in a review of the book, Carnap demonstrated that logical truths acquire "apodictic validity through convention" (1935: 394). Logic and mathematics, in Carnap's view, are analytic and a priori.

Quine saw himself as Carnap's disciple for a number of years but eventually began to have doubts about some of his teacher's ideas. He became convinced that we require a more precise definition of analyticity in order to get clear on what it means to say that logical truths are analytic. He searched for a satisfying definition throughout the 1940s but eventually realized that we do not *need* analyticity to account for logical and mathematical knowledge (Verhaegh 2018: Chapter 6). In his seminal "Two Dogmas of Empiricism," Quine dismissed the presupposition that every statement individually admits of empirical confirmation and replaced it with the view that only the "totality of our so-called knowledge or beliefs" can be tested empirically (1951a: 42). Whenever we test a hypothesis, we implicitly presuppose the truth of a host of background theories such that the results of our test tell us something about our entire system of beliefs. When the experiment has an unexpected outcome, we can at best conclude that something in our total theory must be mistaken, including the logic used to derive the hypothesis from our theory of the world. The acceptability of a system of logic, therefore, is ultimately evaluated in terms of how successful it is in aligning our scientific theories with sensory experience. Logical and mathematical truths only *appear* a priori and necessary because we

> are disinclined to tamper with [them] when a failure of prediction shows that there is something wrong with our system of the world. We prefer to seek an adequate revision of some more secluded corner of science, where the change would not reverberate so widely through the system.
>
> *(Quine 1986/1998: 399–400)*

Quine's analysis did not only help him formulate a new philosophy of logic. It also gave him a new perspective on the nature of philosophy. Once we abandon the "dogma" that there is a "fundamental cleavage between truths which are *analytic*, or grounded in meanings … and truths which are *synthetic*, or grounded in fact" (1951a: 20, original emphases), we can no longer use it to draw a distinction between science and philosophy, as most major schools of analytic philosophy had done. Whereas Carnap relativized ontological questions to linguistic frameworks, for example, Quine opened the door to a naturalized metaphysics. Carnap held that the question of whether electrons exist is only meaningful relative

to a particular linguistic framework, but Quine embraced the view that "physical objects are real, right down to the most hypothetical of particles" (1981: 33). The key difference between the two views is their underlying disagreement about analyticity. Carnap distinguished between "the acceptance of a language structure and the acceptance of an assertion formulated in the language" (1951b: 71) – the former a practical question, the latter a theoretical one – but Quine blurred this distinction, arguing that both the decision to adopt a hypothesis and the decision to adopt a linguistic framework are informed by theoretical *and* practical considerations:

> It is only by assuming the cleavage between analytic and synthetic truths that [Carnap] is able … to declare the problem of universals to be a matter not of theory but of linguistic decision. Now I am as impressed as anyone with the vastness of what language contributes to science and to one's whole view of the world … But what impresses me more than it does Carnap is how well this whole attitude is suited also to the theoretical hypotheses of natural science itself, and how little basis there is for a distinction. The lore of our fathers is a fabric of sentences…. It is a pale grey lore, black with fact and white with convention. But I have found no substantial reasons for concluding that there are any quite black threads in it, or any white ones.
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> *(1960: 373–74)*

Quine, in sum, revived metaphysics without returning to a foundationalist philosophy. He believed that science is all we have to go on and rejected traditional attempts to disclose the nature of reality in a science-independent way. In explaining his stance, Quine frequently appealed to Otto Neurath's boat metaphor, which pictures our theory of the world as a boat which we must rebuild plank by plank while staying afloat on the open sea. It is impossible to dock the boat and examine or repair its foundations while firmly standing on shore.

Quine did not just naturalize metaphysics. He also applied his stance to traditional questions concerning truth, meaning, and justification. One of the best-known applications is his proposal to naturalize the theory of knowledge. In "Epistemology Naturalized" (1969a), Quine recommends that philosophers use science to study science. Whereas some traditional epistemologists have tried to derive scientific theories from sense data, Quine suggests that a proper theory of knowledge should start with our best scientific theories about perception and language learning and use these findings to answer the question of how we have been able to project our theory of the world on such a meager basis (1990: 1). Though traditional epistemologists would worry that such an enterprise is circular – one uses scientific knowledge to reconstruct how we came to this very knowledge – Quine submits that the objection dissolves once we give up on the idea that philosophy should provide an external foundation for science.

Pluralist challenges

Quine's views on the relation between science and philosophy have had a tremendous impact on the analytic tradition. Jaegwon Kim has suggested that it is contemporary philosophy's dominant "ideology" (2003: 83) and a recent survey shows that 50.2% of philosophers accept a naturalist position in metaphilosophy, thereby following Quine's suggestion that philosophy ought to be continuous with science (Bourget and Chalmers 2023: 7).[5] Despite Quine's influence, however, there have been quite a few proposals to expand or modify his

position. One common complaint is that his perspective does not do justice to the rich variety of practices we find in the sciences. Many naturalists talk about "science" or "scientific method" *simpliciter* without recognizing that there is little that all disciplines have in common. Quine's position, which relies on a holistic picture of theory testing, is particularly vulnerable to this critique. In response to his frequent use of Neurath's boat metaphor, for example, Hilary Putnam has suggested that it is better to view science as a "fleet of boats" instead of a single ship (1981: 204). Mario De Caro and David Macarthur have developed a position they call "liberal naturalism", which aims to do justice "to the range and diversity of the sciences, including the social and human sciences" as well as to "the plurality of forms of understanding, including the possibility of non-scientific, nonsupernatural forms of understanding" (2010: 9).

Penelope Maddy, a philosopher of mathematics, has developed one of the most sophisticated versions of this argument. Her book *Naturalism in Mathematics* focuses on the methodological norms regarding axiom choice in set theory and argues that Quine's holistic perspective is not satisfactory. Whereas Quine argues that set theorists ought to evaluate candidate axioms by submitting them to norms "that contribute to the molding of scientific theories generally" (1990: 95), Maddy's study of actual set-theoretic *practice* shows that mathematicians themselves appeal to very different norms: "crudely, the scientist posits only those entities without which she cannot account for our observations, while the set theorist posits as many entities as she can, short of inconsistency" (1997: 194). If Quine is right that we philosophers should not use an external, a priori standard to refute or vindicate our scientific theories, Maddy concludes, we should also not enforce an external standard on mathematics. Set theorists themselves will know best how to evaluate candidate axioms, after all:

> What I propose here is a mathematical naturalism that extends the same respect to mathematical practice that the Quinean naturalist extends to scientific practice … Where Quine holds that science is not answerable to any supra-scientific tribunal, and not in need of any justification beyond observation and the hypothetico-deductive method, the mathematical naturalist adds that mathematics is not answerable to any extra-mathematical tribunal and not in need of any justification beyond proof and the axiomatic method.
>
> *(Maddy 1997: 194)*

Maddy's naturalism, in short, is pluralistic in nature. Scientific theories should be evaluated using scientific norms, and set-theoretic theories are to be evaluated using set-theoretic norms. Naturally, similar arguments can be made for other fields of study such as biochemistry, sociology, or literature studies.

While Maddy argues that Quine's position is not pluralistic enough, her mathematical naturalism has been critiqued for being *too* pluralistic. Neil Tennant, for example, has argued that we only allow mathematicians to use their own norms as long as they deliver results that are useful for science. If an astrologer were to copy Maddy's move and suggest that we should only evaluate their findings using the astrologists' own criteria, we would be very reluctant to do so. A fundamentally pluralistic position implies that we should grant mathematicians absolute autonomy. Maddy, for example, suggests that we should follow set-theoretic practice, even if mathematicians were to "reject the old maxim against inconsistency so that both "2 + 2 = 4" and "2 + 2 = 5" could be accepted" (1997: 198).

Tennant, however, claims this is an unacceptable consequence and concludes that we need Quine's "unrelenting, naturalizing holism" to do justice to the fact that many domains outside mathematics – science, engineering, medical diagnostics, financial markets, etc. – "have a permanent and legitimate concern in the nature of the norms governing [mathematical] practice". What mathematicians do is simply "too important" and must be subject "to outside constraints designed to protect everyone's interests" (Tennant 2000: 328). Putnam, too, seems to have recognized this need to balance pluralism and holism. Though he preferred to see science as a fleet of ships rather than a single Neurathian boat, he was no radical pluralist. He believed that the ships should always be within "signaling distance … passing supplies from one boat to another". There ought to be "both collectivity and individual responsibility", but there is no one who maintains oversight. "If we hanker for more", Putnam (1981: 204) wondered, "is that not our old and unsatisfiable yearning for Absolutes?"

Conclusion

Naturalism started out as a revolutionary perspective concerning man's place in the universe. Theists and traditional philosophers separate man and nature by appealing to the divine or the transcendent, but naturalists believe that we are no exception in the natural history of the world. In the face of our best scientific discoveries, Woodbridge argued, it is "intellectually impossible to believe that man is not a natural being in the same sense as animals, plants, and atoms" (1932: 86, 89). While idealists draw a strict distinction between the scientific study of nature and philosophical inquiry into the grounds of our moral, spiritual, and empirical beliefs, Dewey argued that philosophers have "no private store of knowledge or methods for attaining truth" and must therefore utilize "the best available knowledge of [their] time and place", such that their "road is the subject-matter of natural existence as science discovers and depicts it" (1925: 408).

Naturalism lost much of its revolutionary appeal in the decades after the war. Modern societies are built on scientific knowledge, and few present-day academics contest the view that the natural world is self-sufficient. As a result, philosophers began to focus on different sets of questions, and naturalism became a position regarding the relation between science and philosophy more narrowly conceived. While analytic philosophers presuppose a strict distinction between empirical questions of fact and the philosophical investigation of language, Quine challenged this dichotomy, arguing that philosophy ought to be continuous with science. Since naturalists reject the idea that philosophers ought to validate the results of science, Quine argued, they are at liberty to use these findings in their inquiries. Philosophers have particular interests and methods – like chemists, sociologists, and historians – but are participants in the scientific enterprise at large.

Notes

1 This section is based on Verhaegh (2025). See Randall (1957) and Jewett (2011) for additional information about the Columbia school.
2 "Report of the Committee on the Future Planning of the Philosophy Department", May 25, 1960; Nagel to Hook, December 3, 1934, Sidney Hook Papers, 22.08, both cited in Verhaegh (2025).
3 Though Carnap never identified as such, some commentators argue that he was a naturalist in all but name. Carnap believed that philosophy should become "a properly scientific field, where all work is done according to strict scientific methods and not by means of 'higher' or 'deeper'

insights" (1934/1987: 46). See Ebbs (2017: Chapter 1). Something similar applies to Otto Neurath. See Uebel (1992).

4 Quine, "General Report of my work as Sheldon Travelling Fellow 1932–1933", cited in Verhaegh (2023: 25).

5 Less than a third of the 1785 respondents (31%) described themselves as non-naturalists; 19% were agnostic, insufficiently familiar with the issue, or thought that the question was too unclear to answer.

References

Bourget, D., and Chalmers, D. J. (2023) "Philosophers on Philosophy: The 2020 PhilPapers Survey," *Philosophers' Imprint* 23 (1), https://doi.org/10.3998/phimp.2109.

Büchner, L. (1855) *Kraft und Stoff. Empirisch-Naturphilosophische Studien*, Frankfurt am Main: Verlag von Meidinger Sohn & Cie.

Calkins, M. W. (1907) *The Persistent Problems of Philosophy*, London: Macmillan.

Carnap, R. (1934/1987) "The Task of the Logic of Science," trans. by H. Kaal, in B. McGuinness (ed.), *Unified Science*, Dordrecht: Reidel, pp. 44–66.

Cohen, M. R. (1954) *American Thought: A Critical Sketch*, Glencoe, Ill: The Free Press.

Creighton, J. E. (1902) "The Purposes of a Philosophical Association," *The Philosophical Review* 11 (3): 219–37.

De Caro, M., and Macarthur, D. (2010) "Introduction: Science, Naturalism, and the Problem of Normativity," in M. De Caro and D. Macarthur (eds.), *Naturalism and Normativity*, New York: Columbia University Press, pp. 1–19.

Dewey, J. (1909) "The Influence of Darwinism on Philosophy," in *The Influence of Darwinism on Philosophy and Other Essays in Contemporary Thought*, New York: Henry Holt and Co., pp. 1–19.

Dewey, J. (1925) *Experience and Nature*, London: George Allen & Unwin.

Dewey, J. (1930) "From Absolutism to Experimentalism," in G. P. Adams and W. P. Montague (eds.), *Contemporary American Philosophy: Personal Statements*, Volume II, London: George Allen & Unwin Ltd., pp. 13–30.

Ebbs, G. (2017) *Carnap, Quine, and Putnam on Methods of Inquiry*, Cambridge: Cambridge University Press.

Edman, I. (1935) "The Naturalistic Temper," in H. M. Kallen and S. Hook (eds.), *American Philosophy Today and Tomorrow*, New York: L. Furman, pp. 139–54.

Eldridge, M. (2008) "Introduction," in Larry Hickman (ed.), *The Correspondence of John Dewey*, Volume 2, Carbondale: Center for Dewey Studies, pp. 1919–1939. Electronic Edition. https://www.nlx.com/collections/988.

Friess, H. L., and Schneider, H. (1932) *Religion in Various Cultures*, New York: H. Holt and Company.

Gregory, F. (1979) *Scientific Materialism in Nineteenth Century Germany*, Dordrecht: Reidel.

Gliboff, S. (2008) *H. G. Bronn, Ernst Haeckel, and the Origins of German Darwinism*, Cambridge, MA: The MIT Press.

Haeckel, E. (1895/1901) *The Riddle of the Universe,* trans. by J. McCabe, New York: Harper.

Hook, S. (1930) "A Personal Impression of Contemporary German Philosophy," *The Journal of Philosophy* 27 (6): 141–60.

Jewett, A. (2011) "Canonizing Dewey: Naturalism, Logical Empiricism, and the Idea of American Philosophy," *Modern Intellectual History* 8 (1): 91–125.

Kim, J. (2003) "The American Origins of Philosophical Naturalism," *Journal of Philosophical Research* 28: 83–98.

Kurtz, P. (1973) *Humanist Manifestos, I and II*, Buffalo: Prometheus.

Maddy, P. (1997) *Naturalism in Mathematics*, Oxford: Oxford University Press.

Nagel, E. (1931) *On the Logic of Measurement*, Ph.D. dissertation, Columbia University.

Nagel, E. (1935/1956) "Notes Toward a Naturalistic Conception of Logic," in *Logic Without Metaphysics and Other Essays in the Philosophy of Science*, Glencoe, Ill: The Free Press, pp. 39–54.

Nagel, E. (1954a) "Some Gleanings from the Life of Reason," *Journal of Philosophy* 51 (2): 46–49.

Nagel, E. (1954b) "The Perspectives of Science and the Prospects of Men," in *Sovereign Reason,* Glencoe, Ill: The Free Press, pp. 296–308.

Putnam, H. (1981) "Philosophers and Human Understanding," in *Realism and Reason: Philosophical Papers, Volume 3*, Cambridge: Cambridge University Press, pp. 184–204.
Quine, W. V. O. (1935) "Review of *Logische Syntax der Sprache* by Rudolf Carnap," *Philosophical Review* 44 (4): 394–97.
Quine, W. V. O. (1951a) "Two Dogmas of Empiricism," *Philosophical Review* 60 (1): 20–43.
Quine, W. V. O. (1951b) "On Carnap's Views on Ontology," *Philosophical Studies* 2 (5): 65–72.
Quine, W. V. O. (1960) "Carnap and Logical Truth," *Synthese* 12 (4): 350–74.
Quine, W. V. O. (1969a) "Epistemology Naturalized," in Quine *Ontological Relativity and Other Essays*, New York: Columbia University Press, pp. 69–90.
Quine, W. V. O. (1969b) "Natural Kinds," in *Ontological Relativity and Other Essays*, New York: Columbia University Press, pp. 114–38.
Quine, W. V. O. (1970/1976) "Homage to Rudolf Carnap," in *Ways of Paradox and Other Essays*, revised edition, Cambridge, MA: Harvard University Press, pp. 40–43.
Quine, W. V. O. (1981) "The Pragmatists' Place in Empiricism," in R. Mulvaney and P. Zeltner (eds.), *Pragmatism: Its Sources and Prospects*, Columbia: University of South Carolina Press, pp. 21–39.
Quine, W. V. O. (1986/1998) "Reply to Charles Parsons," in L. Hahn and P. Schilpp (eds.), *The Philosophy of W. V. Quine*, Expanded edition (1998). La Salle, IL: Open Court, pp. 396–403.
Quine, W. V. O. (1990) *Pursuit of Truth*, Cambridge, MA: Harvard University Press.
Randall Jr., J. H. (1944) "Epilogue: The Nature of Naturalism," in Y. H. Krikorian (ed.), *Naturalism and the Human Spirit*, New York: Columbia University Press, pp. 354–82.
Randall Jr., J. H. (1957) "The Department of Philosophy," in *A History of the Faculty of Philosophy: Columbia University*, New York: Columbia University Press, pp. 102–45.
Santayana, G. (1905–1906) *The Life of Reason: Or, The Phases of Human Progress*, Five Volumes, New York: Scribner's.
Santayana, G. (1923) *Scepticism and Animal Faith: Introduction to a System of Philosophy*, New York: Charles Scribner's Sons.
Tennant, N. (2000) "What is Naturalism in Mathematics, Really?" *Philosophia Mathematica* 8 (3): 316–38.
Thorndike, E. L. (1909/1962) "Darwin's Contribution to Psychology," in *Psychology and the Science of Education*, Richmond: William Byrd, pp. 37–47.
Uebel, Th. (1992) *Overcoming Logical Positivism from Within: The Emergence of Neurath's Naturalism in the Vienna Circle's Protocol Sentences Debate*, Amsterdam: Rodopi.
Verhaegh, S. (2018) *Working from Within: The Nature and Development of Quine's Naturalism*, New York: Oxford University Press.
Verhaegh, S. (2023) "Carnap and Quine: First Encounters (1933–1936)," in S. Morris (ed.), *The Philosophical Project of Carnap and Quine*, Cambridge: Cambridge University Press, pp. 11–31.
Verhaegh, S. (2025) "Columbia Naturalism and the Analytic Turn: Eclipse or Synthesis?" in S. Verhaegh (ed.), *American Philosophy and the Intellectual Migration: Pragmatism, Logical Empiricism, Phenomenology, Critical Theory*, Berlin: De Gruyter, pp. 77–99.
Vogt, K. (1845–1847) *Physiologische Briefe für Gebildete aller Stände*, Giessen: J. Ricker'sche.
Weir, T. H. (2014) *Secularism and Religion in Nineteenth-Century Germany*, New York: Cambridge University Press.
Woodbridge, F. J. E. (1932) "The Nature of Man," *American Scholar* 1 (1): 81–96.
Woodbridge, F. J. E., and Cattell, J. M. (1904) "Notes and News," *The Journal of Philosophy, Psychology and Scientific Methods* 1 (1): 27–8.