

Language,” *Nature* 418 [2002]: 869–72). It is highly conserved in most mammals, but in humans there are two unique mutations in the protein caused by nucleotide substitutions. However, in humans, Neanderthals, and Denisovans, FOXP2 appear to be identical. Given this and other circumstantial evidence, it is unlikely that spoken language appears only in our species (D. Dediu and S. C. Levinson, “On the Antiquity of Language: The Reinterpretation of Neanderthal Linguistic Capacities and Its Consequences,” *Frontiers in Psychology* 4 [2013]: 397). The empirical case that there is a descriptive human nature is weak.

Second, Kronfeldner’s account is subject to what I will call the “problem of diachronic polymorphism.” Humankind can be classified by its phylogenetic position as we have seen. Let us suppose over some time interval  $T_1$  there is a trait that is typical, and biologically inherited developmental resources explain its distribution, say lactose intolerance. However, over a distinct time interval  $T_2$  things change; for whatever reason, lactose tolerance is typical and biologically inherited. From this, it follows that our species has no nature (neither trait is typical over the combined intervals  $T_1 + T_2$ ), there is one arbitrary nature (we arbitrarily select  $T_1$  or  $T_2$  but not both), or there are two natures (we relativize to intervals). It amounts to a problem of “diachronic polymorphism.” If we should reject polymorphic traits as elements of our nature in the synchronic case as Kronfeldner suggests, should we not do so in the diachronic case? We should note that the same sort of argument can be run with regard to our explanatory nature as well. Kronfeldner acknowledges problems like these and offers a pragmatic approach to resolving them (139–45).

Overall, I think Kronfeldner has provided an extremely rich philosophical anthropology of what is left of our notions of human nature. Like her, I think we should get rid of the term ‘human nature’, although our reasons differ—my skepticism is that there is none. I strongly recommend this book to human nature enthusiasts and skeptics alike.

JAY ODENBAUGH, LEWIS AND CLARK COLLEGE

Roberto Gronda, *Dewey’s Philosophy of Science*. Synthese Library 421. Dordrecht: Springer (2020), 204 pp., €88.39 (cloth).

Pragmatist ideas are alive and well in contemporary philosophy of science: one can find them in the works of Philip Kitcher, Ian Hacking, Nancy Cartwright, Peter Godfrey-Smith, Ronald Giere, Paul Teller, Hasok Chang, Sandra Mitchell, to name but a few. While Peirce is an obvious reference for philosophers of science interested in pragmatism, Dewey’s ideas have also made their way among them: the centrality of intervention and experimentation in scientific inquiry, the

view of science as a practice, the necessary presence of value judgments in the course of inquiry, and so on. It is therefore a surprise that no monograph had been written until now on Dewey's philosophy of science, the most extensive contribution on the topic being Matthew Brown's excellent 49-page article on Dewey's "logic of science" ("John Dewey's Logic of Science," *HOPOS* 2 (2011): 258–306). This alone makes Roberto Gronda's book *Dewey's Philosophy of Science* a very welcome and necessary addition to pragmatist scholarship.

Gronda's book is a rich and systematic survey of the most important themes surrounding Dewey's philosophy of science, such as experience, inquiry, the distinction and continuity between common sense and science, and realism. Gronda's approach consists in presenting "Dewey in his own terms" (viii), which means that while occasional references are made to contemporary philosophy of science, the main goal is to explain Dewey's views in the context of his own philosophy. For this reason, the book will be most interesting and useful for readers who wish to deepen their knowledge of pragmatism and Dewey in particular.

The originality of Gronda's book lies not so much in the themes that are covered but in the way they are brought together under a unifying interpretation. Two lines of interpretation run through the whole book. First, Gronda proposes a semantic reading of Dewey's philosophy of science: "Scientific inquiry is the process through which an agent succeeds in developing highly refined conceptual tools that modify her modes of response and, in so doing, improve and enrich the quality of her transactions with the objects of her environment" (ix). On this semantic reading, Dewey's theory of inquiry combines a form of constructivism with what Gronda calls "articulative realism" (195). Second, Gronda emphasizes Dewey's metaphilosophical commitment to the primacy of activity (xi).

Some readers will perhaps be surprised to find that two chapters out of five are dedicated to experience and language, which are not usually central topics in philosophy of science. However, this choice is justified by the fact that both are central to Dewey's theory of inquiry and to his philosophy more generally. Yet, one can regret that a few topics were left out that are directly relevant to philosophy of science: Dewey's views on induction, scientific laws, measurement, or the status of special sciences such as mathematics, physics, and the social sciences. Some of these topics are addressed in a collection of essays: Thomas Burke, D. Micah Hester, and Robert B. Talisse, *Dewey's Logical Theory: New Studies and Interpretations* (Nashville: Vanderbilt University Press, 2002).

The main shortcoming of *Dewey's Philosophy of Science* is that the richness and depth of its content is somewhat tainted by its form. The book would have benefited from more careful editing with regard to typos, repetitions, and unclear formulations. The rest of this review will be dedicated to a brief exposition of the content of each chapter.

The first chapter provides a systematic account of and novel insights on a much-discussed topic in Deweyan scholarship: experience. Because of the centrality of this notion to Dewey's philosophy, this chapter will benefit all readers interested in Dewey, and not only in his philosophy of science. The chapter goes through the different facets of this complex notion: experience as life behavior (sec. 1.3) and as a method (sec. 1.4) and the relation between experience and knowledge (sec. 1.5). Two contributions deserve to be noted. First, the exposition in section 1.2 of what Gronda calls Dewey's "Semantic Identity Thesis," according to which "there is no semantic break between objects and our concepts of those objects" (4). Object and concept share the same "meaning," which can be cashed out in terms of a "modal framework of provisions and expectations" regarding the object's behavior (6). The second is Gronda's clarification of three conceptual couples that are often conflated, sometimes by Dewey himself: primary/secondary experience, noncognitive/cognitive experience, and experience had/experience known.

The second chapter provides a welcome contribution to the scarce literature on Dewey's philosophy of language and sets the stage for Gronda's semantic interpretation of Dewey's theory of inquiry. While Gronda acknowledges that Dewey's theory of meaning is not as systematic as one would hope, he shows the value of Dewey's practice-centered conception of language, which finds distinct echoes in the late Wittgenstein, operationalism, verificationism, and inferentialism, all the while exhibiting original pragmatist insights. Gronda characterizes Dewey's view as a kind of "practical semantic externalism": "The meaning of a symbol depends on, and is grounded in, the activities that take place in the external world, which depend on elements of the environment used to achieve their specific goals" (66). Philosophers of science will be most interested in reading sections 2.5 and 2.6, where Gronda discusses Bridgman's operationalism, verificationist theories of meaning, the distinction between common-sense concepts like water and scientific concepts like H<sub>2</sub>O, and the semantic persistence from one to the other.

Dewey's theory of inquiry is presented in the following two chapters. Chapter 3 focuses on two aspects of inquiry: (1) its continuity with life behaviors on the biological plane (which can be understood as protocases of problem solving) and (2) its temporal and contextual nature. To address the second point, Gronda devotes two sections to the phases that surround inquiry: the indeterminate or problematic situation that triggers reflective activity (sec. 3.4) and the warranted judgment that ends inquiry (sec. 3.5). Skipping the phase of inquiry (addressed in chap. 4) might be confusing for some readers, since some considerations on truth and warranted assertibility can only be fully understood if one understands Dewey's account of what happens in the middle (e.g., the claim that propositions are not truth-bearers, which rests on Dewey's functional view of propositions). On the

whole, the chapter might be difficult for readers who are not already familiar with Dewey's philosophy—I am thinking in particular of the section on the “normativity of the situation” (sec. 3.4). This results from Gronda's choice to present Dewey “in his own terms” (viii). In this chapter in particular, the only views with which Dewey's theory is contrasted are those of his contemporaries: early twentieth-century idealism and traditional epistemology.

Chapter 4 is rich and intricate. Gronda presents Dewey's theory of inquiry as “a form of constructivism,” which he briefly distinguishes from the sociology of scientific knowledge (133–34). Gronda chose three points of entry into Dewey's theory of inquiry. First, he emphasizes the continuity of Dewey's logic with the Kantian project and asks “how are synthetic judgments possible?” (sec. 4.2). This section explores the functional distinction and interaction between evidence and hypothesis, perception and concept. The second one is the construction of evidence (sec. 4.3). Gronda gives a rather complicated account of evidence and of the process through which “immediate qualities” are transformed into “evidential traits,” with an unnecessary—in my view—detour through Dewey's metaphysics of qualities and powers. The third point of entry is Dewey's account of the a priori (sec. 4.4). In this very interesting section, Gronda connects Dewey's views with Reichenbach's axioms of coordination and axioms of connection (160–61), as well as with C. I. Lewis's pragmatic a priori (169–70). The final section (sec. 4.5) on objectivity presents Dewey's logical account of substance defined in terms of inferential stability and fruitfulness. This gives rise to a “pluralistic and multifaceted account of objectivity which is in agreement with current scientific practices,” where substantiality is relative to different contexts of activity—Gronda takes the example of “biofilm” (173–74)—all the while depending on “how the world is” (172–73).

In the last chapter, Gronda presents Dewey's unorthodox realism and contrasts it with instrumentalism (understood as the view that scientific theories are neither true nor false but convenient ways of organizing and making predictions about observable phenomena). Gronda's point of entry into the discussion is the Reichenbach-Dewey debate (179–87), which centers on the appearance/reality distinction. Dewey argues against Reichenbach's idea that scientific objects aim to correct or replace ordinary objects in the definition of what is real. As Gronda writes, “the very idea of substitution is grounded in the assumption that ordinary and scientific objects are substantially identical in their function and scope of application” (185). Gronda also explores at length Dewey's claim that scientific objects are relational. Building on Peter Godfrey-Smith (“Dewey on Naturalism, Realism and Science,” *Philosophy of Science* 69 [2002]: S25–S35), Gronda contrasts Dewey's views with both epistemic and ontic structural realism (sec. 5.3). Instead, Gronda defines Dewey's view as “articulative realism” (sec. 5.4), the view that “scientific objects are the *articulative* formulation of the existential connections

directly experienced in our primary transactions with the world” (198). While many readers will be reluctant to call this view “realism”—since the only existing “relata” are directly experienced objects—Gronda insists that the reality of scientific objects is for Dewey “structurally and functionally identical to the reality that we attribute to common-sense objects” (199), the difference lying in their inferential depth and scope. In the conclusion of the chapter, Gronda also presents Dewey’s view as a form of “practical realism,” reminding the reader that ontological commitment is “*practice-sensitive*” (204).

CÉLINE HENNE, UNIVERSITY OF CAMBRIDGE