

R. Zuckert, *Kant on Beauty and Biology: An Interpretation of the Critique of Judgement* [Cambridge: Cambridge University Press, 2007]. The author refers to Toepfer to endorse his claim that teleology plays a role in specifying the subject matter of biology (G. Toepfer, "Teleology and Its Constitutive Role for Biology as the Science of Organized Systems," *Studies in History and Philosophy of Biological and Biomedical Sciences* 43 [2012]: 113–19). I could not agree more, except for the fact that Toepfer is referring to teleology as a constitutive character of living systems, not to the Kantian construal of teleology as a regulative principle. In my view, the shift from a regulative to a constitutive understanding of teleology was in fact the most important element for the emergence of biology at the beginning of the nineteenth century (at least in the German lands). This shift—which has taken place in the writings of Blumenbach, Kiehmeyer, and Treviranus, as well as in Schelling's *Naturphilosophie*—happened in firm opposition to, rather than in continuity with, Kant. Biology emerged in Germany as the general science dealing with the teleological laws that regulate the organization of living nature as a whole. I personally agree with Zammito that, in this scenario, Kant's views on teleology constituted more of a hindrance than an aid, and I think that van den Berg should agree as well. In fact, his analysis of Kant's conception of proper science provides valuable evidence that we should move on toward a new general account, rather than go back the old Lenoir thesis.

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Ina Goy and Eric Watkins, eds. *Kant's Theory of Biology*. Berlin: de Gruyter, 2014. Pp. x+321. \$140.00 (cloth).

This edited collection began as an international symposium on Kant and biology held at the University of Tübingen in 2010 and the now-published volume provides us new ways of thinking about Kant's theory of biology with respect to not only his own work but contemporary discussions regarding biological function and form. With a consistently high level of scholarship and a set of internationally renowned contributors, *Kant's Theory of Biology* offers us an important contribution to the field's rapidly growing interest in the history of the life sciences, and the book's discussions devoted to the *Critique of Judgment*, in particular, will no doubt shape the course of subsequent investigations in the years to come. The anthology contains 15 essays divided into

three parts, with a focus on the development of the philosophy of biology in Kant's early writings, the theory of organisms in Kant's *Critique of Judgment*, and current perspectives on the teleology of nature. The quality of the editing on this book is excellent, far superior to that of a typical anthology, and what is to be especially appreciated is the helpful cross-referencing being done by the majority of the papers insofar as this lends the collection an organic, as opposed to a merely aggregative, feel.

The editors open with a helpful introduction meant to briefly orient the reader in terms of Kant's own points of contact with the theories and theorists at work in the life sciences of his day, before turning to a review of the main points of focus and debate in the chapters to follow. The volume as a whole offers a timely contribution, for there has been an overwhelming rise in the attention being paid by Modern scholars to the importance of the life sciences for better understanding the various lenses through which everything from social contract theory, to history, to epistemology was being viewed during these years. Such refocusing of the historiographical gaze was already well begun by Justin E. H. Smith in his edited collection *The Problem of Animal Generation in Early Modern Philosophy* (Cambridge: Cambridge University Press, 2006). But apart from an earlier English-language collection of essays devoted to the question of purposiveness in Kant (also a fine edition, and one containing some of the same contributors found in Ina Goy and Eric Watkins's collection), the field has waited for a volume with the kind of focus provided by *Kant's Theory of Biology* (e.g., P. Huneman, ed., *Understanding Purpose: Kant and the Philosophy of Biology*, North American Kant Society Studies in Philosophy [Rochester, NY: University of Rochester Press, 2007]).

Kant studies has in fact been undergoing something of a makeover of late. For Immanuel Kant, long revered as an uncompromising moralist and a committed transcendental idealist, has been reintroduced during the last decade to a new generation of students as an anthropologist, as a physical geographer, and even as a theorist of race. This change has much to do with the recent addition of Kant's lectures on physical geography and anthropology to the edited collections of Kant's works. These textual additions to Kant's corpus and, in their wake, the recharacterization of Kant as something of an eighteenth-century naturalist, have raised all manner of questions for scholars seeking to connect the careful edifice that is the critical system with the wide-ranging discussions now known to have been taking place across the rest of Kant's work.

This is the background against which *Kant's Theory of Biology* must in fact be seen. It is part of a larger transition taking place in the field of Kant studies itself: a research program newly attentive not just to the need for good historiography but to the genuine advantages gained by philosophy once it opens

itself up to the insights yielded by its natural collaborators in intellectual history, French and German studies, and the history of science, in particular. Thus while the sign Gilbert Harmon once put on his door at Princeton—“History of Philosophy: Just Say No!”—used to define the antihistorical bias found among professional philosophers, for a new generation of scholars it is increasingly true that the relevance and importance of history for philosophy can be neither underestimated nor ignored.

Kant's Theory of Biology thus begins appropriately enough with two discussions describing the extent to which Kant kept abreast of the life sciences during his formative or “Precritical” years. Mark Fisher’s essay locates Kant’s approach to preexistence and epigenesis (as the reigning, rival theories of generation) in 1763’s *Beweisgrund* essay as one taken in tandem with Kant’s metaphysical considerations of occasionalism and preestablishment. Here Fisher’s point is important regarding the consistency with which Kant will continually advocate for rational grounds of explanation in the absence of empirical data. Indeed the need to account for form (empirically or otherwise) when addressing the problem of generation was the crucible facing any account, and this was especially true for Wolff’s own epigenetic theory—a theory that, as detailed by Ina Goy, required an especially nuanced account of the part-whole relation during embryogenesis. The last essay included in part 1 is by Rachel Zuckert, who identifies Kant’s 1785 review of Herder as a transitional piece insofar as Kant’s attitude toward organisms was not yet fully developed to the extent that we find it in the *Critique of Judgment*. Kant rejected Herder’s sense of nature as something undergirded by an unconditioned and unitary “organic force,” not, as Zuckert puts it, because of “Kant’s metaphysical commitments to lifeless matter or human freedom, but his epistemological commitments to scientific observation and explanation in terms of laws” (73)—an attitude in line with the stance taken in the earlier *Critique of Pure Reason*.

The bulk of the remaining commentators contribute to a sustained focus on the second half of Kant’s third *Critique*, the “Critique of Teleological Judgment.” Here the essays work through the text systematically when analyzing Kant’s approach to organic life. Luca Illetterati and Predrag Šustar each begin their pieces with a look at sections 63–66 and Kant’s well-known discussion of the autopoietic character of a tree in order to highlight the special tension facing accounts of organic life, for the organism, as Kant characterizes it, seems always to resist explanation, refusing to coherently accommodate appeals to hylozoism as much it does animism, displaying thereby “a causality unknown to us” (95). Šustar goes on to identify points of contact between Kant’s theory of biological causation and a contemporary molecular approach to photosynthesis. Eric Watkins next spends time on section 67,

describing the manner by which the idea of an organism leads us to an idea of nature as a whole when it comes to internal and external purposiveness and concluding with an account of Reason as the ground for this (125). Angela Breitenbach continues this thread by investigating the analogy between Reason and a self-organizing organism, suggesting finally that the same interpretive strategy at work in the symbolic representation of the good by the beautiful be called on in this case as well (141). Peter McLaughlin nicely complements the two prior pieces by shifting the focus from teleology to the role of mechanical explanation for Kant, emphasizing the tension in his insistence that mechanism be both necessary and regulative for understanding part-whole determination (161). This sets up a smooth transition to the next piece of the discussion insofar as Marcel Quarfood lays out the antinomy of teleological judgment before having it problematized by both Philippe Huneman and Ina Goy in essays considering the special problems of contingency and the argument from design, respectively. Paul Guyer takes us to the end of Kant's third *Critique* with a helpful examination of Kant's moral teleology (secs. 83–84, 86–87), and Ernst-Otto Onnasch reminds us that important traces of Kant's reflections on nature and biology can be found in the *Opus postumum*.

The volume concludes with the two essays making up part 3, “Kant’s Theory of Biology in the Present Time.” Here Hannah Ginsborg outlines the difficulties for understanding function without intention—“to say that the function of the heart is to circulate the blood rather than make a thumping noise is like saying that the function of the fan in the computer is to keep it cool rather than to produce white noise” (259)—before proposing that we take a normative stance toward function (266). And Siegfried Roth closes the volume with an intriguing essay comparing Kant and Polyani in order to show the deep compatibility between this research into organic life and contemporary molecular biology since the latter “has molecularized the idea of a natural end and thus provides a deep understanding of why organisms are unique among all physical objects in our world” (290).

Readers of *Kant’s Theory of Biology* will certainly gain new appreciation for the problems but also for the excitement and curiosity generated by the life sciences during the eighteenth century. It was an excitement shared by Kant and one that continues to this day.

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