

Genealogy and Critique in Kant's Organic History of Reason*

Genealogía y crítica en la historia orgánica de la razón de Kant

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Abstract

Although scholarly attention has been mostly paid to the many connections existing between Kant and the *exact* sciences, the landscape of Kant studies has begun to noticeably change during the last decade, with many new pieces devoted to a consideration of Kant's relation to the life sciences of his day. It is in this vein, for example, that investigators have begun to discuss the importance of Kant's essays on race for the development of Anthropology as an emerging field. The bulk of the contributions to this recent trend, however, have focused on Kant's remarks on organic life in the *Critique of Judgment*, such that Kant's "theory of biology" is now seen to be firmly located in that text. Amidst such consolidation, there are a few pieces that have begun to address Kant's appeal to organic vocabulary within the context of his theory of cognition, though these too remain dominated by the interpretive template set by the third *Critique*. My own strategy in this essay will be different. Kant did indeed borrow from the life sciences for his model of the mind, but in a manner that would reject a naturalized account. His preference for epigenesis as a theory of organic generation needs to be carefully distinguished, therefore, from the use he would make of it when discussing a metaphysical portrait of reason.

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Key words

Kant; Generation; Epigenesis; Generic Preformation; Reason; Natural History

Resumen

Aunque la atención académica se ha ocupado en mayor medida de las numerosas conexiones existentes entre Kant y las ciencias *exactas*, el horizonte de los estudios kantianos ha comenzado a cambiar notablemente durante la última década, de la mano de muchas nuevas contribuciones dedicadas a considerar la importancia de Kant para las ciencias de la vida de su tiempo. En esta línea, por ejemplo, algunos investigadores han comenzado a discutir la importancia de los ensayos de Kant sobre la raza para el desarrollo de la Antropología como un campo emergente. La mayoría de las contribuciones de esta tendencia reciente, sin embargo, se han centrado en las observaciones de Kant sobre la vida orgánica en la *Crítica del Juicio*, de modo que la “teoría de la biología” de Kant es localizada ahora claramente en aquel texto. En esta línea dominante, pocos trabajos han optado por plantear el uso que Kant realiza del vocabulario orgánico dentro del contexto de su teoría del conocimiento, al permanecer demasiado dominados por la plantilla interpretativa impuesta por la tercera *Crítica*. Mi estrategia en este ensayo será diferente. Kant efectivamente tomó en préstamo de las ciencias de la vida su modelo de la mente, pero rechazando su reducción naturalista. Su preferencia por la epigénesis como una teoría de la organización orgánica precisa distinguirse cuidadosamente del uso que hace de ella cuando está en discusión un retrato metafísico de la razón.

Palabras clave

Kant; generación; epigénesis; preformación genérica; razón; historia natural

While Kant has long been seen as an uncompromising moralist and a committed transcendental idealist, in the past two decades he has been introduced 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 re-characterization 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. Paul Menzer raised this question already in 1911 in *Kants Lehre von der Entwicklung in Natur und Geschichte*, answering then (and in essential anticipation of the view held by the

majority of subsequent Kant scholars) that it was necessary to view Kant's forays into natural history as a set of discussions requiring sharp delineation from his epistemology and ethics, for these were discussions running on "parallel tracks," as he would put it, and their impact on the critical system, if any, was merely metaphorical.¹

The first inroads against this policy would be made by researchers investigating the centrality of natural historical considerations in Kant's early social and political essays, essays such as *Idea for a Universal History of Mankind* (1784) wherein Kant's prominent application of teleology to history signaled the continued adoption of a methodological device first used by him in his account *Of the Different Races of Human Beings* in 1775. Similar connections were made between Kant's support for Basedow's attempts to reform educational practices in the mid 1770s and the increasing attention paid by Kant to *Bildung*, in all its various instantiations, as he sought throughout the 1780s and '90s to sort out just what was meant when referring to the formation of character and indeed to the vocation of humankind as a whole.² As an increasingly comprehensive view of Kant's position came to show, his well-regarded works on ethics and governance simply could not be meaningfully separated from his views on education and history. But these latter views had in turn come out of works in the 1770s, works that had been saturated by natural historical terms: were these now to be also taken into consideration when approaching Kant's position on moral and political life? For many researchers today, the answer is an unqualified yes.³

¹ Paul Menzer, *Kants Lehre von der Entwicklung in Natur und Geschichte* (Berlin: G. Reimer, 1911), 404–445. For a more recent version of this view see Günter Zöllner, who regards Kant's critical doctrines and his anthropological works to be in a "mutually supplementary relation," see "Kant's Political Anthropology," *Kant Jahrbuch* 3 (2011): 131–161.

² Kant used Basedow's *Methodenbuch* as a textbook when lecturing on pedagogy during the winter semester of 1776–1777. A good sense of Kant's commitment to Basedow's school during this period emerges from his letter exchanges regarding it, see esp. 10:191–195. There have been a number of commentators in recent years interested in connecting Kant's early views of education and his developing approach to character. On this see especially Felicitas Munzel, *Kant's Conception of Moral Character. The Critical Link of Morality, Anthropology, and Reflective Judgement* (Chicago: The University of Chicago Press, 1998), *Kant's Conception of Pedagogy* (Chicago: Northwestern University Press, 2012) and also Robert Loudén's "Not a Slow Reform, but a Swift Revolution: Kant and Basedow on the Need to Reform Education," in *Kant and Education*, edited by K. Roth and C. Suprenant (London: Routledge, 2012), and Loudén's *Kant's Human Being* (Oxford: Oxford University Press, 2011), esp. ch. 11.

³ On this see especially Pauline Kleingeld, *Kant and Cosmopolitanism. The Philosophical Ideal of World Citizenship* (Cambridge: Cambridge University Press, 2013). Robert Bernasconi has done the most work to investigate Kant's published essays on the natural history of race in terms of their implications for the ethical program developed during the 1780s and '90s. See especially, R. Bernasconi, "Will the Real Kant Please Stand Up. The Challenge of Enlightenment Racism to the Study of the History of Philosophy," *Radical*

In *Kant's Organicism* I proceeded in very much the same vein so far as I investigated the connection between Kant's theory of cognition and his interest in debates regarding biological generation and development that were taking place at the time. Many of the earliest studies of Kant and the life sciences had emerged from the field of intellectual history, as historians of science sought to make sense of the biological vocabulary scattered among Kant's works. As interest in Kant and the life sciences grew in the field of philosophy, these investigations, like their forerunners, focused primarily on Kant's remarks on organic life in the *Critique of Judgment*, so that Kant's so-called "theory of biology" is now seen to be firmly located in that text. Amidst such consolidation, there were commentators who addressed Kant's appeal to biological vocabulary within the context of his theory of cognition, though the majority of these also remained dominated by the interpretive template set by Kant's discussions in the third *Critique*. My own strategy in *Kant's Organicism* was different. Kant did indeed borrow from the life sciences for his model of the mind, but in a manner that would reject a naturalized account. His preference for epigenesis as a theory for understanding biological generation had to be carefully distinguished, therefore, from the use he made of the theory when discussing a metaphysical portrait of reason. This meant, so far as my investigation was concerned, starting at the beginning of Kant's career and working up to the *Critique of Pure Reason*, as opposed to returning to it with the insights yielded by 1790.

The task of *Kant's Organicism* is thus to open up a new perspective on Kant, to broaden both the scope and the intellectual resources available for philosophers who are working on this period. The starting point for the book was the enormous transition occurring in the life sciences between the seventeenth and eighteenth centuries regarding the proper aim of natural history (ch. 1). And the pivotal figure here was Georges Buffon since it was he who finally managed to wrest natural history from the province of the taxonomists. Under Buffon's hand, natural history became devoted instead to a description of the history of nature, and it advanced a new method of inquiry altogether (ch. 2). Investigations should be filled with the content of experience, Buffon argued, but they must be led by a speculative gaze. This was all big news in the 1750s, and it certainly reached the ears of Kant. In a chapter called "Kant and the Problem of Origin" I describe the manner in which Kant was especially interested in questions of origin, in cosmological

Philosophy 117 (2003): 13-19, and "Kant as an Unfamiliar Source of Racism," in *Philosophers on Race*, edited by T. Lott and J. Ward (Oxford: Blackwell Publishing, 2002): 145-166.

origin—Buffon too opened his natural history with an account of this—but in theories of biological origin as well (ch. 3). Few scholars have noted that Kant owned an exceedingly rare German translation of Maupertuis’ *Versuch von der Bildung der Körper*, or that he mirrored his physical geography course on the first two volumes of Buffon’s *Allgemeine Historie der Natur* (1752, trans. A. G.Kästner). These turned out to be important facts actually, for they made sense of the seeming digressions one finds in the *Only Possible Proof* essay of 1763, and they certainly provided a different set of coordinates for understanding Kant’s approach to the topography of space in 1768 (in *Concerning the Ultimate Ground of the Differentiation of Directions in Space*). With the historical context in place, I began to make the case for Kant’s appeal to epigenesis as a model for cognition, emphasizing the epistemic context within which Kant became interested in epigenesis for thinking about the “original acquisition” of concepts (ch. 4), since only attention to this context could make sense of the continued appeal that epigenesis would have for Kant throughout the 1770s (ch. 5). Here I also outlined the difficulties Kant faced once Tetens published his account of cognition, an approach relying on the “*Evolution durch Epigenesis*” of the soul. For it was by reading Tetens that Kant became clear regarding his own anti-nativism. I closed the book with a rereading of the *Critique of Pure Reason* and of the Transcendental Deduction in particular. This account began with the Architectonic, taking it to be the “*Bauplan*” for the whole, and went on to show the interpretive possibilities opened up by attention to the organic vocabularies in play throughout the *Critique*.

Now that I’ve laid the project out as a rough whole, I want to focus on some of the details of my investigation in the hope that these remarks will bring us to the points raised by my respondents. We can begin with a reminder regarding the central task facing generation theorists during the 17th and 18th centuries, for it was one not unrelated to those philosophers interested in accounting for the uniformity of experience. In each case the conceptual, as much as the practical problem, was to understand the origin of form, a form that could be realized with fidelity across numberless generations of individuals in the biological realm, in much the same manner that concepts could be applied across all manner of experience.

For generation theorists, the specific problem was to explain the origin of a principle of order or of some other explanation of the means by which formal organization

occurred within the complex system of the embryo. For Maupertuis and Buffon, the problem of form required recourse to supernatural agency. Maupertuis argued that particles had been initially endowed with intelligence by God in order to accomplish the task, and Buffon similarly took the internal moulds of the organism to have been set by God at the creation. Even with crutches like these, however, the problem of form remained unresolved so far as their critics were concerned. Having a mould was one thing, they argued, explaining the precise manner by which the particles were organized by a supposed penetrating force in concert with this mould was something else altogether. On this point no critic was more vociferous than the Swiss physiologist, Albrecht von Haller. As Haller put it, "Mr. Buffon needs a force which has foresight, which can make a choice, which has a goal, which, against all the laws of blind combination, always and unfailingly brings about the same end."⁴ "In brief," he concluded, "what is the cause which arranges the human body in such a way that an eye is never attached to the knee, an ear is never connected to the hand, a toe never wanders to the neck, or a finger is never placed on the extremity of the foot"?⁵ Indeed it was on the basis of precisely such difficulties that Kant took the prospects for any genuine advance in the life sciences to be gloomy. Celestial mechanics, with all their mathematical complexity, still provided a perfectly knowable basis for understanding cosmological construction. Organic construction, by contrast, could not be grasped through mechanical laws, which made it a field of investigation that was simply closed off from examination so far as Kant was concerned.

Despite this, Kant kept abreast of the embryological debates occurring in the life sciences in the 1760s. Remarking that "it would be absurd to regard the initial generation of a plant or an animal as a mechanical effect incidentally arising from the universal laws of nature," Kant took time in a 1763 piece to consider in turn the top two competing theories of generation. The first was preexistence theory, according to which each individual being was formed at the time of creation. Such a view, as Kant understood it,

⁴ Haller's prefaces are available in English translation. See "Reflections on the Theory of Generation of Mr. Buffon," trans. Phillip R. Sloan, in *From Natural History to the History of Nature*, p. 322.

⁵ *Ibid.*, p. 320. These were of course the identical grounds upon which Caspar Friedrich Wolff attacked Blumenbach's *Bildungstrieb*, since force, as Wolff saw it, was an entirely different biological entity than the intelligent guidance which Blumenbach had mapped on to it. An account of Wolff's continued critique of Blumenbach is in Shirley Roe's, *Matter, Life, and Generation: Eighteenth-Century Embryology and the Haller-Wolff Debate*. Cambridge: Cambridge University Press, 1981.

demanded that “each individual member of the plant and animal kingdoms is directly formed by God, and thus of supernatural origin, with only the reproduction (*Fortpflanzung*), that is, only the transition from time to time to the unfolding (*Auswicklung*) [of individuals] being entrusted to a natural law” (BDG, AA 02: 114). The second theory Kant considered appealed to God’s original agency when producing species lines—a type of generic preformation guaranteeing the reproduction of kinds—but argued for the subsequent generation of individuals according to natural means.⁶ Is it possible, Kant asked when introducing this option, that “some individual members of the plant and animal kingdoms, whose origin is indeed directly divine, nonetheless possess the capacity, which we cannot understand, to actually generate (*erzeugen*) their own kind in accordance with a regular law of nature, and not merely to unfold (*auszuwickeln*) them?” (BDG, AA 02: 114). In this account, form was again supernaturally conceived, but while this generically maintained the stability of the species lines, the subsequent work of generating individuals actively belonged to nature.

Kant went on to rehearse positions that would seem to be examples of this, all the while critical of the specific attempts made in each case to provide a *mechanical* description of the natural means by which individuals would be subsequently generated.⁷

«It is utterly unintelligible to us that a tree should be able, in virtue of an internal mechanical constitution, to form and process its sap in such a way that there should arise in the bud or the seed something containing a tree like itself in miniature, or something from which such a tree could develop. The internal forms proposed by *Buffon*, and the elements of organic matter which, in the opinion of *Maupertuis*, join together as their memories dictate and in accordance with the laws of desire

⁶ A helpful discussion of Kant’s attempt to synthesize preexistence theory and epigenesis in this section is in Mark Fisher, “Kant’s Explanatory Natural History: Generation and Classification of Organisms in Kant’s Natural Philosophy,” in *Understanding Purpose: Kant and the Philosophy of Biology*, ed. Philippe Huneman, North American Kant Society Studies in Philosophy, vol. 8 (Rochester, NY: University of Rochester Press, 2007), 101–121.

⁷ Paul Menzer takes Kant—wrongly, in my view—to have Caspar Wolff’s position in mind in the opening lines of this passage. See Menzer, *Kants Lehre von der Entwicklung in Natur und Geschichte* (Berlin: G. Reimer, 1911), 104. That said, in Herder’s notes from Kant’s lectures on metaphysics during the same period as the 1763 piece it is clear that, without naming them, Kant could have understood that the specific difficulty facing Haller and Wolff was the lack of any decisive evidence in favor of one position versus the other. As Herder recorded him, “*Die Physikalischenbeobachtungenzeigen, daß der Körperzuerstgebildetwurde, anderedaßsiebei der Schöpfunggebildetsei*” (V-Met/Herder, AA 28:889). In his notes Herder went on to report that the main conceptual difficulty facing the life sciences was twofold, at least so far as Kant understood their attempt to discern the processes of generation, namely, the conception of freedom on the one hand, and its generation in the world (*die Zeugung seines gleichen im Raum*) on the other.

and aversion, are either as incomprehensible as the thing itself, or they are entirely arbitrary inventions» (BDG, AA 02:115).

But while Kant rejected such accounts as “utterly unintelligible” and “entirely arbitrary inventions,” he was equally resistant to the first hypothesis and its recourse to a supernatural origin for every individual member of a species.

What Kant wanted was something different, a means of avoiding a supernatural solution even if all of the mechanical accounts of individual generation had so far failed. Indeed, as Kant wryly observed, an adequate mechanical explanation of fermenting yeast had yet to be found, but that had hardly led people to suggest supernatural grounds for its existence; the case of plants and animals should be no different. Unless one was willing to rely on God's constant creation, Kant concluded, “there must be granted to the initial divine organization of plants and animals a capacity, not merely to develop (*Auswicklung*) their kind thereafter in accordance with a natural law, but truly to generate (*erzeugen*) their kind” (BDG, AA 02: 115). This position followed the others in appealing to divine artifice in the initial creation of forms, but unlike Maupertuis or Buffon, Kant wanted to emphasize the need to conceive of an individual's subsequent capacity for self-organization: for *erzeugen* as opposed to mere *auswickeln*.⁸ The position that would later be cautiously endorsed by Kant in 1790—a position explicitly identified by him in the *Critique of Judgement* as one in line with Blumenbach's *Bildungstrieb*—proposed just such a non-mechanical generation of individuals. In this instance generation took place according to an internalized plan for their species as a whole, a plan that was therefore only “generic” for the species line but which nonetheless afforded to nature the power of all subsequent generation of individuals; it was on this basis that Kant was thus able to identify “generic preformation” with epigenesis (KU, AA 05: 424).⁹

⁸ In spite of this, Kant simply could not include organic generation as an example of natural laws at work for unlike the demonstrable laws guiding cosmological construction, the structure of plants and animals appeared to be unconstrained or contingent while still being oriented somehow toward particular ends. In Kant's words, “Große kunst und eine zufällige Vereinbarung durch freie Wahl gewissen Absichten gemäß ist daselbst augenscheinlich und wird zugleich der Grund eines besondern Naturgesetzes, welches zur künstlichen Naturordnung gehört. Der Bau der Pflanzen und Thiere zeigt eine solche Anstalt, wozu die allgemeine und nothwendige Naturegesetze unzulänglich sind” (BDG, AA 02:114).

⁹ Kant liked the theory in 1790 for much the same reasons he had liked its outlines in 1763: epigenesis reduced an appeal to supernatural agency to a bare minimum, since it relied on God for only the original construction of the forms that the species lines would take, and it balanced a mechanical account of nutrition and growth with a teleological explanation of the organism's purposive development. And Kant singled out

In Kant's consideration of Maupertuis and Buffon in the 1763 piece he did not use the term epigenesis. In 1769, however, Kant introduced an explicit discussion of biological epigenesis into his course on metaphysics. Kant always used A. G. Baumgarten's *Metaphysica* as the basis for this course, and the topics concerning the soul ranged from discussions of human understanding to mind-body interaction and the afterlife.¹⁰ In a section devoted to the origin of the soul, Baumgarten had rehearsed the reigning theories of organic generation: preexistence, spontaneous generation—Baumgarten's example here was infusoria—creation *ex nihilo*, and finally, “concreationism,” according to which the soul was produced through some sort of transfer accomplished by the parents, a position derived from Aristotle's treatment of the matter.

Blumenbach's notion of a *Bildungstrieb* for praise, precisely because it seemed to offer empirical evidence of the theory of generic preformation itself. Nonetheless, Kant's tone of caution regarding the life sciences was unchanged. However convincing our intuitions regarding nature's organic capacities might be, however promising the advances made by the life sciences might seem, the operating principles of the organism would simply never be revealed in an empirical investigation. Although much has been made of Kant's endorsement of Blumenbach and of questions regarding Blumenbach's influence on Kant in his discussion of epigenesis, one should not forget that, whatever influence might be claimed, Blumenbach in fact transgressed a clear boundary set by Kant between thinking about nature as purposive and claiming that nature was in fact purposive. Robert J. Richards emphasizes this difference between Kant and Blumenbach in “Kant and Blumenbach on the *Bildungstrieb*: A Historical Misunderstanding,” *Studies in History and Philosophy of Biology and Biomedical Science* 31 (2000): 11–32. See also Richards's *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2002), chap. 5., pp. 216–237. As Timothy Lenoir describes Blumenbach's position, “The *Bildungstrieb* was not a blind mechanical force of expansion which produced structure by being opposed in some way; it was not a chemical force of ‘fermentation,’ nor was it a soul superimposed on matter. Rather the *Bildungstrieb* was conceived as a teleological agent which had its antecedents ultimately in the inorganic realm but which was an emergent vital force.” See Lenoir's “Kant, Blumenbach, and Vital Materialism in German Biology,” *Isis* 71 (1980): 83. It was precisely this interpenetration of form and force—something Kant explicitly liked about Blumenbach's theory—that caused Caspar Wolff, the first author to describe vegetative growth and reproduction as a form of epigenesis, to complain about Blumenbach's position. For Wolff, force simply could not by definition also be responsible for form. See Wolff, “Von der eigenthümlichen und wesentlichen Kraft der vegetabilischen sowohl als auch der animalischen Substanz,” in *Zwo Abhandlungen über die Nutritionskraft welche von der Kayserlichen Akademie der Wissenschaft in St. Petersburg den Preis getheilt haben*. St. Petersburg: Kayserliche Akademie der Wissenschaften, 1789.

¹⁰ A reprint of Baumgarten's text is included in the academy volume devoted to the notes Kant made in his own copy of the text. See HN, AA 17:5–226. All of Kant's notes made within Baumgarten's text are identified in terms of their location and arranged according to their supposed chronology, such that, for example, Kant's various remarks on §§770–775, “Origo Animae Huminae,” can be traced throughout Kant's career. Since Kant taught this text every year, determining the chronological sequence of any notes made for a given section is necessarily imprecise in that it can rely only upon placement, ink color, and so on. The academy edition's two volumes devoted to Kant's notes on metaphysics (vols. 17 and 18)—including numerous pieces written on so-called loose sheets—follow Erich Adickes's dating system, a system explained by Adickes at the start of the volumes devoted to Kant's notes, marginalia, and assorted *Nachlaß* (HN, AA 14:lx–lxi). Adickes's system is almost always followed by the Cambridge edition of Kant's notes, though the editors often suggest longer possible time frames for a given text. Translations are here taken from the Cambridge edition wherever possible. See *Immanuel Kant: Notes and Fragments*, trans. Paul Guyer, Curtis Bowman, and Fred Rauscher (Cambridge: Cambridge University Press, 2005).

When preparing his own notes for this section, Kant wrote out the questions that would be addressed in his lecture: Was the soul a pure spirit before birth? Had it lived on the earth before? Did it live in two worlds—the pneumatic and the mechanical—at once? The questions were accompanied by a quick list of the various theories of generation, with Kant noting that the central division was between supernatural approaches to the question of origin and a naturalistic account, an account Kant described as an “*epigenesis psychologica*” (HN, AA 17: 416).¹¹ In later years, Kant would use this section of Baumgarten’s text to discuss the properties of the soul and would invariably dismiss the possibility of its epigenesis.¹² In 1769, however, Kant’s commentary focused on the physical aspect of generation, identifying epigenesis with a theory of blending that was in line with what he knew of Maupertuis’s and Buffon’s use of heredity as a basis for their arguments against preexistence theory.

The next time Kant came to add notes to this section in 1772, epigenesis was again considered in terms of its biological claims, with Kant now explicitly linking the theory to the desired account of species generation he had first sketched in 1763. In his words,

«The question is whether nature is formed organically (epigenesis), or only mechanically and chemically. It seems that nature does have spirit, given that in the generation of each individual there is a unity and connection of parts. And is there not also such a spirit, an animating essence, in animals and plants. In this vein one would have to assume an animating Spirit, operating within an original chaos, in order to explain differences between animals which can now only reproduce themselves» (HN, AA 17: 591).

¹¹ Kant’s elaboration of the epigenesist alternative can be compared to the relatively brief remarks—at least so far as Herder recorded them—when discussing this section of *Metaphysica* in 1762–1763, see V-Met/Herder, AA 28:889.

¹² Discussing the same passage in Baumgarten thirty-three years later, for example, Kant continued to use the term “epigenesis” in contrast to the preexistence theory of origin, but in place of his concern with the physical process of blending—in fact, in place of any consideration of biological generation at all—Kant focused on the Aristotelian-derived account of “concreationism” in Baumgarten’s text, rejecting this option on principle, given the soul’s nature as simple substance. In language deliberately borrowed from chemical analyses, Kant here characterized the soul as either an “educt”—a thing that preexisted its new form—or as a “product,” something newly produced via epigenesis. The latter theory was completely impossible, according to Kant, because a non composite substance like the soul could not be expected to transfer a part of itself to its offspring (V Met/Dohna, AA 28:684—these comments are taken from student lecture notes, “Metaphysics Dohna,” from Kant’s metaphysics course in 1792–1793). Kant made additional notes for this passage, rejecting the soul’s epigenesis because of its immateriality (HN, AA 18:190) and its immortality (HN, AA 17:672, HN, AA 18:429). Kant also considered the epigenesis of the soul separately in terms of a potential transfer of good or bad character (VARGV, AA 23:106–107).

This two-step model is the same as that proposed in Kant's 1763 piece, so far as an initially divine organization—out of an “original chaos”—is then followed by the organic capacity for reproduction within the divinely delineated species lines. What these two sets of comments demonstrate for our purposes however, (comments dated by Erich Adickes as having been written in 1769 and 1772, respectively), is that during a period of crucial formation with respect to the development of Kant's system of transcendental idealism, Kant was actively aware of the epigenesis alternative to preexistence theories of generation.

Now before going any further, I want to first just briefly rehearse three interrelated characterizations of epigenesis that are especially important for understanding the use Kant would make of the theory for his own purposes. The *first* characterization comes from the seventeenth century English physician William Harvey. Harvey was interested in distinguishing the radical transformations taking place during ‘metamorphosis’ from the more gradual series of transformations that occurred during ‘epigenesis’. In the latter case, Harvey tracked the manner by which a chick embryo developed, describing the process as the embryo's sequential transition from an initially homogeneous state to one that was increasingly heterogeneous with respect to its parts. The *second*, though related, characterization of epigenesis concentrated on the capacity of organic structures to be self-organizing during their development, growth, and repair. Although this capacity was oftentimes linked to theories of spontaneous generation and vitalism, there was in fact no consensus position regarding the nature of either the origin or the self-organisation of organisms. In the early decades of the eighteenth century the vitalist Peter Stahl, for example, attributed formation to an anima but distinguished his mechanistic conception from Leibniz's entelechy. In the 1760s, Casper Wolff understood epigenetic growth in terms of an organism's transition from liquid secretions to solidified parts, a vegetative process that was driven in some manner by a life force or *visessentialis*. And by the 1780s, as we have just seen, epigenesis had come to be identified with Blumenbach's *Bildungstrieb*. It was this characterization of epigenesis that appeared in the *Critique of Judgement*, and it understood epigenesis as a theory regarding the generic preformation of form or species types in nature.

These separate though related characterizations of epigenesis were applied differently by Kant depending upon whether he was thinking about cognition or biological organisms. But although Kant's comments in 1790 demonstrate an underlying continuity in his thoughts regarding biological organisms since the 1760s, they do not in fact add anything to our understanding of what he meant by the epigenesis of reason. To really understand the distinctive role played by epigenesis for Kant's theory of cognition, therefore, we need to detach "generic preformation" from the first two characterizations of epigenesis that were in play for Kant.

In order to discover the internal grounds for this detachment we need to consider the specific epistemic context within which Kant's work on cognition began: his overriding desire to reorient, and thereby protect, metaphysics from the Humean challenge. By 1765, Kant understood that any significant rehabilitation and defense of metaphysics would require its complete reformulation. Though initially conceived in terms of overcoming the problem of 'subreptive axioms,' Kant soon realized that the real task was instead to provide an account of cognition that could avoid scepticism without recourse to innatism. This is the epistemic context within which Kant began to formalise his theoretical programme in the 1760s, and it was against the backdrop provided by his first real attempt at such a theory, his *Inaugural Dissertation* of 1770, that Kant became ready to identify his own position with epigenesis as a position against the preformation system he took to be endorsed by Leibniz.¹³ Thus it was at precisely this point that epigenesis provided 'a theory by which to work' for Kant. This was not epigenesis as generic preformation; *that* theory relied on supernatural forms to keep the species lines intact and was thus akin, for Kant, to both the 'mysticism' of Plato and the 'preformationism' of Leibniz. In 1770, Kant wasn't entirely sure what to use as a replacement with respect to accounting for the problem of form, but he was sure about one thing: innatism had to be rejected as much as did his previous reliance on the model of cognition that had been provided by Locke (e.g., HN, AA 17: 352). In their stead, Kant proposed the original generation of intellectual concepts, referring to them in the *Inaugural Dissertation* as produced by an "original acquisition" by attention to the workings of the mind (MSI, AA 02: 395).

¹³ I lay out the case for this in *Kant's Organicism. Epigenesis and the Development of Critical Philosophy* (Chicago: University of Chicago Press, 2013), chapter 4.

So far I've described Kant's use of epigenesis when discussing Baumgarten, but more significant for our purposes now is the set of notes Kant composed shortly after finishing his *Dissertation*. For in these notes, Kant explicitly connected theories of generation to systems of reason and to claims regarding the origin of ideas in particular. Distinguishing empiricists from rationalists, Kant identified his own position with the most radical possibility of all. As he sketched it, "Crusius explains the real principle of reason on the basis of the *systemate praeformationis* (from subjective *principiis*); *Locke* on the basis of *influx physico* like *Aristotele*; *Plato* and *Malebranche*, from *intuit intellectuali*; we, on the basis of *epigenesis* from the use of the natural laws of reason" (HN, AA 17: 492). It was epigenesis, therefore, that Kant identified with the theory of "original acquisition" for explaining the generation of sensitive and intellectual concepts from the mind's own laws in the *Dissertation*. While it cannot be said for certain that Kant took epigenesis as his model when first drawing up his account of the origin of knowledge in 1770—though the evidence from 1769 certainly suggests this—it is certain that in the months following the *Dissertation's* completion the connection had been made. The primary textual resources for proving this stem primarily from the 1770s—the so-called 'silent decade'—and they are gathered from Kant's letters, his lectures, his notes, and the marginal notations he made alongside the textbooks he used for his classes (e.g., HN, AA 17: 492, cf. HN, AA 17: 554, 18: 8, 18: 12, 18: 273–75). Many scholars have relied on these materials for making sense of Kant's theoretical programme during these years, but rereading this material with an eye to Kant's frequent appeal to biological vocabulary when describing cognition is what finally reveals the importance of epigenesis for the developing system.

Let us pause now and consider the status of the biological model for Kant. There have been a number of writers over the years to worry about what this particular model might have meant given that Kant urged epistemic caution regarding the various speculative hypotheses coming out of the life sciences at that time. The immediate problem is to ask then how it is that Kant—who was ready to dismiss the claims being made by generation theorists in the 1760s as not only uncertain, but unlikely—could nonetheless have been ready to repeatedly identify his own developing theory of cognition with epigenesis during the 1770s? It is certainly not the case that Kant took himself to be investigating an empirical claim about our physical brains (hence Kant's well-known

dismissal of the nativism to be found in Tetens' psychological account, e.g., HN, AA 18: 23). So what was Kant up to when he identified his own position as epigenetic?

Here it is critically important to remember the epistemic context within which Kant's investigation was operating, and the significance, therefore, of the fact that he typically juxtaposed his own epigenetic theory with the 'preformation' system proposed by Leibniz and Crusius, on the one hand, and the 'physical influx' position advanced by sensationalists like Locke, on the other. For once we remember that this is indeed the context within which epigenesis became an interesting third option between innatism and empiricism for Kant, we can begin to make sense of what Kant meant by the "epigenesis of Reason" (KrV, B167). Kant left the 1760s determined to reorient metaphysics by way of attention to a new theory of mind. Central to this was Kant's sense that scepticism could only be avoided so long as the theories under attack by Hume—those held by the innatists and the empiricists in their various stripes—were also avoided. This story regarding Kant's intellectual development—Kant's negotiation between rationalism and empiricism—is of course standard fare in any undergraduate course on the history of Modern philosophy, and it is so because in outline, at least, it fits: it makes sense of Kant's work in the 1760s and 70s to formulate an epistemological programme, and it makes both the goals and the achievement of transcendental idealism all the more clear. Reading Kant's notes during the 1770s, it thus makes sense to see that even despite the seeming intrusion of biological vocabulary amidst the worries over logical subordination or the tasks allocated to the various faculties, Kant is consistent whenever it comes to the cast of characters he is up against: Plato, Leibniz, and sometimes Malebranche, grouped together by Kant as mystics, preformationists, supporters of involution, and believers in intellectual intuition; Aristotle, Locke, and Crusius on the other side, supporting 'physical influx' or *generatio aequivoca*; and Kant's own position in the middle, as an epigenesist. The 'real principle of reason', as Kant put it during this period, rests "on the basis of epigenesis from the use of the natural laws of reason" (HN, AA 17: 492).

In the *Dissertation*, Kant relied on the mental laws for logical subordination as the basis for this generative work, while also leaving the origin of these laws unspecified. In the *Critique of Pure Reason*, Kant relied on these laws again, with the Metaphysical Deduction serving as the updated version of the older account's description of the 'real

use' or means by which concepts could be generated. In the first *Critique* Kant explained therefore that the logical table of judgment served as the metaphysical 'clue' for understanding the origin of the intellectual concepts because the latter were in fact those same judgments, only applied now to sensible intuitions. Having already announced the isomorphic connection between the forms of judgment and the categories of experience, by 1781 Kant was also ready to be specific regarding the question of origin here as well. Like all the heterogeneous faculties which together made-up the so-called "transcendental apparatus," logic too had its origin in Reason. Experience relied on the concepts and thereby the table of judgments to provide that constancy of form required for coherency in the field of appearances, but the constancy of the form-giving concepts themselves was itself dependent upon Reason. Kant was clear when it came to the hierarchy of the faculties. He was clear that the understanding, for all its spectacular success when it comes to the construction of a coherent field of appearances, was nonetheless dependent upon Reason. To be specific, that the understanding was 'dependent' upon Reason in two significant ways: Reason provided the principles which can alone unify and guide empirical investigations, but Reason was also taken by Kant to encompass the understanding and to thus serve as its seat.¹⁴ Indeed, Kant's account of transcendental affinity was the key to understanding the precise manner by which an epigenetic Reason was ultimately necessary for the success of the Transcendental Deduction.¹⁵ And as for

¹⁴ Kant would subsequently point to reason as the birthplace of the moral law as well. Thus in the *Groundwork*, for example, Kant would explain that "it is here that she has to show her purity as the authoress of her own laws—not as the mouthpiece of laws whispered to her by some implanted sense," but also not as having received them from experience, which "would foist into the place of morality some misbegotten mongrel patched up from the limbs of a varied ancestry and looking like anything you please, only not like virtue" (GMS, AA 04:425–426). Morality would instead have to be born from out of pure reason itself, for only that kind of pedigree could ensure its sovereignty over the will on the basis of birthright alone. This account of reason's role in giving birth to individual morality ran parallel to its work to achieve the moral advancement of the species as a whole. Perfect moral advancement would culminate in the creation of a "kingdom of ends," according to Kant, and bring with it the completion of the history of reason. This was an idea of moral perfection born out of reason itself, an idea that lay invisibly within humanity as something whose conception was "self-developing" (*sich entwickelnden*) and whose existence needed to be understood as a "self-fertilizing germ" (*besamenden Keim*) of goodness in the species as a whole (MS, AA 06:122). It was just this aspect of Kant's philosophy that would earn harsh criticisms from Hegel, however, since he took Kant's notion of pure reason to be impotent, something capable of supplying only an empty notion of unity, that is, one that had never been lifted out of intellect by the intellectual intuition of itself. On the basis of such sterility, as Hegel saw it, Kant could never explain how practical reason "is nonetheless supposed to become constitutive again, to give birth out of itself and give itself content." See Hegel's *Faith and Knowledge*, trans. Walter Cerf and H. S. Harris (Albany: SUNY Press, 1977), p. 80.

¹⁵ I defend this claim at length in *Kant's Organicism*, op. cit., chapter 7.

Reason? Reason, as Kant identified it in both the Transcendental Deduction (KrV, B167) and the Architectonic (KrV, A765/B793), was itself epigenetic or 'self-born.'

This might sound radical, but before we get distracted by that, let's focus on the main point. Kant had a specific epistemic goal, the avoidance of skepticism and the achievement, thereby, of some kind of experiential certainty in the physical (if not the biological) sciences. Transcendental idealism, with empirical realism as its special yield, accomplished precisely that. But it did so on the basis of a story that was being told about the formative control enjoyed by the mind in the case of experience. The transcendental conditions for the possibility of experience relied on the central faculties—reason, understanding, judgement—and their accomplishment of particular tasks. Now Kantians, on the whole, are not prepared to entertain questions regarding the ontological status of these mental faculties. Most will, moreover, emphatically reject a nativist reading of the faculties, even if they feel less confident in rejecting a supernatural origin altogether, given the kinds of passing remarks one finds in the *Religion*. The safest interpretive route, most feel therefore, is to just stick with Kant's agnosticism on the point. In my own view, it is important to identify Kant here as a metaphysician in order to explicitly distance him from the consequences of identifying him as a nativist. And it is in light of this that we must understand the epigenesis of reason to be *metaphysically real* in order to make it clear that Kant was not providing a biological account of the brain. But there is more to this assessment than a simple contrast. Kant takes the mind to be whole. As in Harvey's model, however, this original unity becomes increasingly heterogeneous, as logically distinct faculties emerge or become realized in the face of the various cognitive tasks required of it. As for Reason itself, the word Kant uses for describing it is in a class of its own within his works: spontaneity. There is neither textual conflict nor indeed controversy regarding spontaneity as a basic definition of Reason, for Kant was clear in the *Critique of Practical Reason* regarding the ontological identity between reason in either its theoretical or practical guise.¹⁶ Reason, as Kant saw it, both generates and determines

¹⁶ Kant was clear regarding their identity: "practical reason has the same cognitive faculty for its foundation as the speculative, so far as they are both pure reason" (KpV, AA 05:90; cf. MS, AA 06:382). But he was also delighted by the manner in which their investigation had proceeded in identical ways. As he summarized his findings in the analytic of practical reason, "Here I wish to call attention, if I may, to one thing, namely, that every step which one takes with pure reason, even in the practical field where one does not take subtle speculation into account, so neatly and naturally dovetails with all parts of the *Critique of Pure* (theoretical) *Reason* that it is as if each step had been carefully thought out merely to establish this

itself, and it is only as such that it could ground both the certainty of cognition within the sensible realm and our duties and character in the moral realm.

Kant was fully prepared to emphasize this aspect of Reason, by employing vocabulary borrowed from the language of organic growth and development when discussing it, and by describing reason's development from infancy to adulthood as an organic course of formation as a case of the "sheer self-development of reason." Rehearsing this, Kant explained,

«Systems seem to be formed in the manner of lowly organisms, through a *generatio aequivoca* from the mere confluence of assembled concepts, at first imperfect, and only gradually attaining to completeness, although they have one and all had their schema, as the original germ, in the sheer self-development of reason. Hence, not only is each system articulated in accordance with an idea, but they are one and all organically united in a system of human knowledge, as members of one whole, and so as admitting of an architectonic of all human knowledge» (KrV, A835/B863).

What this history of reason demonstrated for Kant was that all attempts at metaphysics had been "organically united," that they were connected by virtue of their common origin in the germ of reason, and that they had been differentiated only as part of reason's own path of self-development. The history of reason thus provided its investigators with a genuine natural history, for each of its varieties could be traced in their entirety to their point of origin, a common descent that had been easy to overlook given the enormous modifications taking place in the history of the species as a whole. As varieties of reason, the systems of metaphysics functioned organically, like "members of one whole," so Kant could be precise when describing the manner by which reason had grown into a unified system. As he defined this organic growth, "The whole is thus an organized unity (*articulation*), and not an aggregate (*coacervatio*). It may grow from within (*per intussusceptionem*), but not by external addition (*per appositionem*). It is thus like an animal body, the growth of which is not by the addition of a new member, but by the rendering of each member, without change of proportion, stronger and more effective for its purposes" (KrV, A833/B862).¹⁷ Kant believed that the connection between the parts of

connection" (KpV, AA 05:106). It was precisely because of this that Kant felt confident in pursuing the strategy he had followed in the first *Critique* with respect to identifying the table of judgments as the genealogical basis of both the categories and the ideas of reason; in this case, with respect to the genetic grounds upon which he could identify causality and freedom (KpV, AA 05:55–57, 5:65–67, 5:68–70).

¹⁷Medieval philosophers described the work that Aristotle had attributed to the "nutritive soul" as a process of absorption, which they termed "intussusception." This term was later taken up by René Réaumur in 1709

the system could be likened to the organic interworking of the organs in an animal body because the unity of the system, like the unity of an organism, determined not only the exact number and placement of its members but the end toward which they aimed. In each of these cases this was an end that had been reflexively defined from the start; in the case of reason it had been contained within the system as an idea of its completion from the very first moment of its self-conception. The end of the history of reason, that is, its idea of itself as a fully developed whole, was originally present within reason—present as an “original germ in the sheer self-development of reason”—a germ or idea that both set the goal for reason's completion and somehow also grounded the possibility of its actual achievement.¹⁸

to describe the processes of shell formation in “De la formation et de l'accroissement des coquilles des animaux tant terrestres qu'aquatiques, soit de mer soit de rivière,” *Mémoires de la Académie Royale des Sciences*, 1709: 364–400, esp. 366, 370. Bourguet took the term from Réaumur but insisted on the interiority of intussusception (71) in contrast to the kind of external, mechanical accretion occurring in crystals or shell formation. Buffon used the term “intus-susception” in line with Bourguet's account of an internal absorption or assimilation (e.g., *History of Animals*, chap. 3, “Of Nutrition and Growth”), as did Kant when arguing in the above citation that systems may “grow from within (*per intussusceptionem*), but not by external addition (*per appositionem*)” (KrV, A833/B861). The appearance of “intussusception” after Kant shows its meaning to have changed again, in this case via Schelling, who used it in his philosophy of nature to identify the universal tendency of attraction in nature. See *First Outline of a System of the Philosophy of Nature* (1799), trans. K. Peterson (Albany: SUNY Press, 2004), 7. A brief review of Bourguet's position is in J. Roger, *The Life Sciences in Eighteenth-Century French Thought*, trans. Robert Ellrich (Stanford, CA: Stanford University Press, 1997), 300–303. For a fuller treatment see François Duchesneau, “Louis Bourguet et le modèle des corps organiques,” in *Antonio Vallisneri: L'edizione del testo scientifico d'età moderna*, ed. M. T. Monti (Florence: Leo Olschki, 2003), 3–31. Thomas Hankins describes Buffon's “popularization” of Bourguet's main tenets in *Science and the Enlightenment* (Cambridge: Cambridge University Press, 2005), 128–129.

¹⁸ Kant made the same point in the *Metaphysics of Morals*: “Since, considered objectively, there can be only one human reason, there cannot be many philosophies; in other words, there can be only one true system of philosophy from principles, in however many different and even conflicting ways one has philosophized about one and the same proposition”; only by paying attention to that fact, according to Kant, would it be possible to demonstrate the “unity of the true principle which unifies the whole of philosophy into one system” (MS, AA 06:207). In *Religion Within the Bounds of Reason Alone* Kant also described the historical self-development of religion in a manner that was indebted to his description of reason. For example, “we must have a principle of unity if we are to count as modifications of one and the same church the succession of different forms of faith which replace one another . . . for this purpose, therefore, we can deal only with the history of the church which from the beginning bore with it the germ and the principles of the objective unity of the true and *universal* religious faith to which it is gradually being brought nearer” (MS, AA 06:125). This point would be mirrored in the social and political sphere once Kant took up the history of civil constitutions in his essay *Perpetual Peace*, a history whose epochal determinations were unified throughout, as Kant saw it, by the unfolding of reason's concept of right (ZeF, AA 08:350)—a point that Kant repeated in terms of the “evolution of a constitution” in both the *Conflict of the Faculties* (SF, AA 07:87, see also 07:91) and the *Metaphysics of Morals* (MS, AA 06:340). In his *Philosophy of Art* Schelling mirrored, therefore, Kant's account of philosophy's organic development across history, in Schelling's words: “There is only *one* philosophy and *one* science of philosophy. What one calls different philosophical sciences are mere presentations of the *one*, undivided whole of philosophy under different ideal determinations. . . . The relationship between the individual parts in the closed and organic whole of philosophy resembles that

It is in light of all this that I am hesitant to say that epigenesis functioned merely as an analogy or had only metaphorical value for Kant. For after reviewing all the evidence surrounding Kant's use of epigenesis in cognition, he seems, in the end, to have thought of Reason as something that was in fact spontaneous and free, a self-born activity that was both cause and effect of itself. Despite the radicality of Kant's claim, it is easy to see that only such a claim could guarantee both morals and certainty against the threat of skepticism so far as Kant understood the stakes of Hume's challenge.



between the various figures in a perfectly constructed poetic work, where every figure, by being a part of the whole, as a perfect reflex of that whole is actually absolute and independent in its own turn.” See Schelling's, *The Philosophy of Art*, trans. D. Stott (Minneapolis: University of Minnesota Press, 1989), 281–282.