

Revisiting the metaphysics of transformism

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It is a commonplace of the history of science and the study of Darwinian thought that (a) Charles Darwin has no relevant precursors before Lamarck or his grandfather Erasmus Darwin in the early 1800s; (b) the very concept of a 'precursor' should be eliminated from careful scholarship, as argued influentially by Koyré, Canguilhem and Foucault among others. In this paper I revisit the forms of 'transformism' (i.e. evolutionary theories lacking the component of natural selection) in the Enlightenment, notably those of Buffon, Robinet and Bonnet as well as the anonymous manuscript *Tinnabulum naturae* and ask if it possible to rehabilitate the concept of 'precursor' on a different basis. Whether or not Enlightenment transformism was Darwinism *avant la lettre*, it might nevertheless deserve our consideration.

In the bad old days, people like Bentley Glass or Jean Rostand held that there were predecessors of Darwin, like Lamarck or even Buffon ; or, really pushing it, Diderot and La Mettrie, for whom (**some quote**). Obviously Erasmus, I mean Erasmus Darwin, belongs in that list. The better, newer view was that we should not speak of precursors in the history of science. Foucault got some mileage out of this point (itself going back to the emergence of history of science in the 1930s) in the *Order of Things*. And the best, most updated vision of the situation was that it was a basic mistake to speak of proto-Darwinism or evolutionism before Darwin, not so much because the idea of evolution was brand new (we all know it wasn't; tell story of Maillet) but because there was no account of mechanisms of selection, or indeed of random variation. Faced with this constant improvement of the human mind I would like to muddy the waters a bit and return to Enlightenment 'transformism' (**give a loose definition**). Rest assured that I shan't revive the bad old idealist claims; instead, I'll make two points: *the first*, chiefly based on the case of Diderot's reflections on 'evolution' or the change of species over time, is that there was a different, more philosophically interesting reason why Diderot or other vital materialists could not be Darwinists; *the second* is that there may be something to the idea of the precursor after all (but in a perverse, not a naïve sense).

- The standard view: *it is pointless to begin an analysis of theories of evolution before Darwin.*

“It is useless to begin [the account of evolutionary theories] before Darwin. Of course one can undoubtedly locate all sorts of pre-Darwinian evolutionary concepts, retrospectively. ... Nevertheless Darwin introduced such a [high degree of] systematicity in the representation of life that it is only with him that a genuine field of controversy on transformist theory emerges.”¹

This sounds like it builds on comments such as this one, from François Jacob’s celebrated history of biology: “transformism is a causal theory of the appearance of species, their variety and kinship. Now, these three [elements] never occur together in the 18th century.”²

Cruder version of the same view: before Darwin, Enlightenment ‘proto-evolutionary’ thought (science? natural philosophy? materialism?) *is not grounded in fact.*³ This is like the older, positivistic historiography which distinguishes between experimentally grounded fact and “speculations”; one biographer of Erasmus Darwin lumps together Diderot, de Maillet and Goethe as thinkers who believed in the variability of species, but were just speculators, like the ancient Greeks.⁴

In fact a world separates a Diderot from a Goethe, or even from a Voltaire.

Voltaire contra de Maillet on fossils: (a) these petrified fish are merely rare specimens tossed away by the ancient Romans because they were not fresh ; (b) “men were not fish, contrary to what Maillet says.”⁵

Similar judgment in the 1820s by Hegel for whom “These organic forms [i.e., fossils] are not to be thought of as having once actually lived and then died: on the contrary, they are stillborn.”⁶

It matters whether the ‘thinker of evolution’ *is a materialist or not.*

¹ Jean Gayon, art. “Évolutionnisme,” in *Dictionnaire d'histoire et de philosophie des sciences*, ed. D. Lecourt (Paris, 1999), p. 392.

² François Jacob, *La logique du vivant* (Paris, 1970), p. 150.

³ Winfried Schröder, discussion in roundtable on Skepticism and clandestine thought, 10th Enlightenment Congress, Dublin, 1999 (the papers have since been published).

⁴ Desmond King-Hele, *Erasmus Darwin* (New York, 1963), p. 66.

⁵ Voltaire, art. “Coquilles,” *Dictionnaire philosophique*; and *Œuvres*, XXVII, p. 141.

⁶ Hegel, *Encyclopedia*, vol. 2: *Philosophy of Nature*, § 340Z.

- *Materialism:*

according to Whitehead, “A thoroughgoing evolutionary philosophy is inconsistent with materialism. The aboriginal stuff, or material, from which a materialistic philosophy starts is incapable of evolution.” “Evolution, on the materialistic theory, is reduced to the role of being another word for the description of the changes of the external relations between portions of matter. There is nothing to evolve.”⁷

Similar: “if any philosopher is a philosopher of evolution, that philosopher is Hegel...”⁸

Something very different is going on in Boulainvilliers, Fréret, La Mettrie, etc. They are reductionists who believe that Nature and its chance occurrences exhaustively explain the nature of reality (such that the philosopher can only chime in, ‘get on the moving train’ as Althusser would have it); something that no Idealist could allow.

- *Contrary view (Diderot):*

The history of Nature as the history of a kind of perpetual transformation of organic forms :

“If we went back to the birth of things . . . we would encounter a multitude of shapeless beings, and just a few well organized beings. . . . I assure you that the former had no viscerae, and the latter no stomach . . . ”⁹“this extravagant supposition is almost the real history of all animal species, surviving and to come”; “we cannot predict all their metamorphoses”¹⁰

All of this is very reminiscent of Empedocles, including in the (critical) portrayal of his views given by Aristotle. Empedocles is the ‘proto-evolutionist’ who speaks of “man-faced oxen,” in a chaotic cosmology of perpetually reconfigured parts, in which “heads can spring up without necks”; it is, of course, a universe of chance and ceaseless combination of organic parts, sometimes resulting in the individuals and

⁷ A.N. Whitehead, *Science and the Modern World* (New York, 1925), pp. 151, 109.

⁸ J.N. Findlay, *Hegel: A Re-examination* (New York, 1958), p. 272.

⁹ Diderot, *Lettre sur les aveugles, Œuvres complètes*, DPV, vol. IV, p. 50 (translation mine); reproducing some of Lucretius, *De rerum natura*, V, 828-831, 837-854.

¹⁰ Diderot, *Rêve de D’Alembert*, 1769, in *Œuvres*, ed. L. Versini, p. 629.

species we know, sometimes not. In Aristotle's view, this can never explain the regularity of Nature – what we would call 'design'.¹¹

More generally (in summary form) :

“change the whole, you also necessarily change me”

“man is a common effect, the monster a rare effect” (**some discussion of monsters**)

everything is natural and belongs to the “ordre général”

all beings “circulate” in and out of another, including species

“to be born, to live, to die is merely to change forms.”¹²

“an infinite number of beings emanated from a first being; there was one original act in Nature”¹³

“Nature brings in time everything that is possible”

(cf. Buffon: “Everything that can be, is”).¹⁴ This implies the idea of the Chain of Being.

- *Poor interpretation of this:*

“Diderot reaches a concept of evolutionism which is the most complete and brilliant speculative exposition of that doctrine in his time.”¹⁵

Or, in even more absolutist terms:

“the most significant basis for the historian's admiration of Diderot is that he . . . was the first transformist.”¹⁶

¹¹ Aristotle, *Physics* II 8, 198b17-33; *Gen. Anim.* I 18, 722b21. For an interesting commentary on Aristotle on Empedocles, see Johannes Fritsche, “The Riddle of the Sphinx: Aristotle, Penelope, and Empedocles,” in C.T. Wolfe, ed., *Monsters and Philosophy* (London, 2005).

¹² Diderot, *Rêve de D'Alembert*, *op. cit.*, p. 637.

¹³ Diderot, *Pensées sur l'interprétation de la nature*, 1753, *Œuvres*, DPV, IX, p. 80.

¹⁴ Diderot, *Rêve*, p. 651 ; Buffon, *Histoire naturelle*, 1749, “Discours sur la manière d'étudier et de traiter l'histoire naturelle,” in *Œuvres philosophiques* (Paris, 1954), p. 9.

¹⁵ Lester Crocker, “Diderot and Eighteenth-Century French Transformism,” in *Forerunners of Darwin, 1745-1859*, ed. B. Glass *et al.* (1959), p. 129.

¹⁶ Ferdinand Paitre, *Diderot biologiste* (Lyon, 1904; reprint, Geneva, 1971), p. 89.

Notice that the problems with this kind of interpretation are much the same as with the ‘negative’ judgment that Diderot and Goethe were speculators like the ancient Greeks.

- *Better*: materialism is intimately bound up with a metaphysics of transformism. But is this evolution?

One thing it is, is a kind of *monism*, from Diderot to Erasmus Darwin, to Lamarck and Haeckel (and Samuel Butler, e.g. in *Life and Habit*). For Darwin, in contrast, there is no claim about a fundamental coherence of life throughout the natural world, from atoms to the ‘living macrocosm’ of the universe. Further, as has been discussed a good deal in recent years, natural selection is *not* a theory of biological organization (the latter tends to be affiliated with a theory of living matter; someone like Haeckel tries to blur this distinction or bridge this gap).

One reason for Whitehead’s problem, which also sheds light on the nature of the difference between Lucretius and Diderot on the one hand, and Darwin on the other, is *the relation between active and passive matter* – the activity or passivity of matter.¹⁷ Whitehead thinks there is an activity to matter which the materialist fails to grasp; Darwin at the other extreme has no interest in this issue whatsoever (his “Oh you materialist!”¹⁸ in Notebook C has nothing to do with the metaphysics of matter whatsoever, so that Michael Ruse’s statement that Darwinism is “the apotheosis of of a materialistic theory” at best does not help us understand Darwin – or materialism – any better).¹⁹

It’s important to distinguish the materialist ‘metaphysics of transformism’ from what is sometimes called, in very idealistic terms, evolutionary metaphysics in Kant or Hegel.

Nietzsche is interesting here because he explicitly breaks with the German tradition of denying that Nature itself could be the source of dynamism. That is, Kant, Hegel and Schelling concur in denying that change, evolution, internal transformation could be properties of natural entities; rather, they are exclusively human properties.²⁰

Even Schopenhauer, who insists in *On the Will in Nature* on the presence of a kind of

¹⁷ Thanks to Richard Burian for this point (and for pointing to the perpetuation of this distinction between active and passive matter, now in the form of organic vs. inorganic matter, in 19th century organic chemistry).

¹⁸ Notebook C, in Darwin, *On Evolution*, eds. Glick and Kohn (Hackett, 1996), p. 71.

¹⁹ Michael Ruse, *Can a Darwinian be a Christian?* (Cambridge, 2000), p. 77.

²⁰ See Daniel Dahlstrom, “Hegel’s Appropriation of Kant’s Account of Teleology in Nature,” in S. Houlgate, ed., *Hegel and the Philosophy of Nature* (Albany, 1998).

primordial 'Will' in Nature, and praises Lamarck for recognizing this, then judges Lamarck's idea of a transformation of species in time to be a kind of genial error, since (for Schopenhauer) the Will cannot be *in time*. Nietzsche's suggestive, but somewhat cryptic comment "Without Hegel, no Darwin"²¹ may be a reference to the presence of an 'evolutionary metaphysics' in the former.

So who then is a precursor of Darwin? And, of course, should we speak of 'precursors' at all?

- *The problem of the precursor*

Canguilhem: Buffon and Lamarck "are not running on the same track" and "the precursor is the person about whom we know that he ran before all his contemporaries but also before the one we consider to be the winner of the race."²²

Foucault, chiming in: Diderot, Bonnet and others "are not precursors of evolutionism."²³

- *If materialist 'transformism' isn't a precursor of anything, what is it?*

One element which makes the relation between the 'radical Lucretian change' moment and the 'Darwinian change' moment very discontinuous, despite a kind of anti-essentialist, mechanism-friendly common ground, is that in all this theory of forms, of the development of the organism, an account of mechanisms of transmission is missing of course, but what is also missing is an account of the *stability* of forms: "there is no room, then, for mechanisms or laws which explicate the production of new species from existing species, since the potential for transformation is strictly tied to the material forces and dispositions existing throughout the plurality of biological individuals."²⁴ In a world of pure, Heraclitean flux it seems difficult to arrive at any understanding of natural laws²⁵ (consider Darwin's comment that Lamarck was the first to show that changes, in the organic

²¹ Nietzsche, *The Gay Science*, § 357.

²² Canguilhem, *Idéologie et rationalité dans l'histoire des sciences de la vie* (Paris, 1977), p. 109; "Objet de l'histoire des sciences ?" in *Études d'histoire et de philosophie des sciences*, p. 22.

²³ Foucault, *Les mots et les choses* (Paris, 1966), p. 164.

²⁴ François Duchesneau, *Philosophie de la biologie* (Paris, 1997), p. 6.

²⁵ Jacques Roger, *Les sciences de la vie dans la pensée française au XVIIIe siècle* (Paris, 3d edition 1993), pp. 666-667.

world but also the inorganic world, are the result of *laws* rather than *miracles*). In the 16th century, Cardano had already argued against radical chance as the source of the complexity of organic forms, with only the elimination of non-viable beings as an additional process, because then we should have beings such as “wolves with horns.”²⁶

- *Finally:*

The notion of ‘precursor’ initially emerges in an internalist, idealistic tradition of the history of science – it is after all defined by a set of *theses* that the historian locates in an author. But what of the philosophy of science, which can seek to define and contrast models of species or individuals, or theories of teleology or mechanism in Aristotle, Newton, Kant and Darwin? What happens if we turns to ‘Enlightenment transformism’ in this context? Another point would be that the relation between, say, Malthus and Darwin is very different; there is less controversy in seeking to study the two together.²⁷ However, the mistake is to locate, say, Lucretius and Diderot, or Diderot and Goethe, within a unified logical space which also includes Lamarck and Darwin. And here a dose of contextualism is appropriate.

Ultimately, as J. Roger put it so well, “to be a precursor of Darwin it is not enough to be a disciple of Lucretius” (“Il ne suffit pas d’être un disciple de Lucrèce pour être un précurseur de Darwin”²⁸).

Why ? And why does the materialism not play (or at least play less of) a role in the formation of evolution?

One reason is that the ‘hyper-change’ condition doesn’t properly deal with things like homology, why organs and species are ‘stable’.

²⁶ Cardan, *De subtilitate* (Basel, 1560), bk. XXI, as quoted by F. Bourdier, “Trois siècles d’hypothèses sur l’origine et la transformation des êtres vivants (1550-1859),” *Revue d’histoire des sciences* 13:1 (1960).

²⁷ See the classic papers by Sam Schweber on this topic.

²⁸ Roger, *Les sciences de la vie*, p. 471, n. 66.