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## “Cabinet d’Histoire Naturelle,” or: The Interplay of Nature and Artifice in Diderot’s Naturalism

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*In selected texts by Diderot, including the Encyclopédie article “Cabinet d’histoire naturelle” (along with his comments in the article “Histoire naturelle”), the Pensées sur l’interprétation de la nature and the Salon de 1767, I examine the interplay between philosophical naturalism and the recognition of the irreducible nature of artifice, in order to arrive at a provisional definition of Diderot’s vision of Nature as “une femme qui aime à se travestir.” How can a metaphysics in which the concept of Nature has a normative status, also ultimately consider it to be something necessarily artificial? Historically, the answer to this question involves the project of natural history. A present-day reconstruction would have to make sense of this project and relate it to the vision of Nature expressed in Diderot’s phrase. In addition, it would hopefully pinpoint the difference between this brand of Enlightenment naturalism and contemporary naturalism, and by extension, allow us to understand a bit more about what naturalism is in general.*

Naturalism—the reduction or explanation of all phenomena to what philosophers used to call the “order of nature”—has enjoyed a rather vigorous existence as a philosophical current for forty-odd years, but it has come under some attack recently;<sup>1</sup> the heroic era of Quinean “naturalized epistemology” or the various projects, cognitive, semantic and other, to ‘naturalize’ the mental have given way to an onslaught of ‘holisms’ and anti-naturalisms, from Hilary Putnam to Robert Brandom. Similarly, on the Continent there has long been an emphasis on the ‘primacy of artifice’ and a concomitant denial of any access to something called ‘Nature’ other than

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1. See De Caro & Macarthur, eds. 2004.

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as a fiction, whether from the phenomenological camp (which asserts an explicit anti-naturalism, if one recalls Husserl's frequent comments that "we are fighting against naturalism"<sup>2</sup>) or from the post-Structuralist one, doubtless indebted to Nietzsche's virtuoso destruction of 'Nature' as a philosophical concept, in section 109 of the *Gay Science* (a text which I shall discuss in closing).<sup>3</sup> And when the critics of naturalism try and provide a definition, they either say that the notion is vague and uninteresting (which makes short shrift of the extremely novel kinds of naturalistic programs found, e.g., in Spinoza and Dewey), or that it is limiting and reductive. My suggestion in what follows is that these critics—that is, anti-naturalists of various sorts—might be interested, or concerned, if they took a look at the philosophy of nature articulated by the eighteenth-century French materialist Denis Diderot, for they would find there an extremely coherent *reductio* of all phenomena to natural phenomena, of all causes to natural causes, *along with* a statement of the irreducible 'artificiality' or 'fictionality' of our constructs of Nature . . .

Naturalism was clearly perceived as subversive in the Enlightenment, and usually associated with other fearsome "isms" such as "Spinosism," "atheism," "pantheism" and of course "materialism." But wouldn't the *apologistes*, the orthodox theologians crying out for the blood of the naturalists from Holland to Spain and England have been relieved to learn that the Nature of these "nouveaux philosophes," the "esprits forts," was in fact a fiction (albeit a powerful and subversive fiction)? One such *apologiste*, Laurent François, in his *Proofs of the Religion of Christ against the Spinozists and the Deists*, complains about how "these purported philosophers are always to be heard speaking of 'the Whole', 'the Great Whole', 'natural necessity', 'Nature' and 'the order of Nature'."<sup>4</sup>

What nature is this? Which order of nature? Presumably something like d'Holbach's insistence on an unbroken chain of causes, ultimately physical causes (since moral causes are only physical causes which we don't know the true nature of), such that even "our souls [or minds—CW] are subject to the same physical laws as material bodies" (d'Holbach 1999, I.xi, p. 287). This physicalist reductionism is, in fact, exactly what Diderot will criticize, declaring "I am a man, I need causes which are

2. Or "against the naturalization of consciousness" (Husserl 1981, pp. 302, 310). Husserl's target is sometimes the psychophysics of his time, sometimes eighteenth-century naturalism, sometimes even Descartes, who is said rather surprisingly to have "physicalized" the mind.

3. This recognition is present in Deleuze's suggestive statement that his final project with Guattari will be "une nouvelle philosophie de la nature, au moment où toute différence s'estompe entre la nature et l'artifice" (Deleuze 1988, p. 25).

4. François (1751, I, p. 84). Unless otherwise indicated, all translations are my own.

proper to man,” thus disavowing his earlier position, and d’Holbach’s, that “there is only one kind of causes, . . . physical causes.”<sup>5</sup> This does not prevent him, however, from maintaining a strong commitment to causality, the causal closure of the space-time world, and the determinism that ensues: “in science, as in Nature itself, everything holds together” (“dans la science, ainsi que dans la nature, tout tient”).<sup>6</sup>

Roughly, then, the anti-naturalist wishes to show that there are things in the world—freedom, the soul, emotions, intentionality, qualia—which are not reducible to (ontologically) or explainable in terms of (methodologically) what the science of our time tells us about the natural world. Now, contemporary naturalism is more of a *reconstructive program*, precisely one which runs up against the mind or intentionality, whereas Enlightenment naturalism is an *ontology*—certainly in Meslier, La Mettrie, d’Holbach and Diderot half the time, when he’s more of a Leibnizian ontologist than a Lockean methodologist—which focuses more on what we might call realism vs. instrumentalism, and asks, is our vision of nature a fiction?

My question is, what if naturalism were founded on such heuristic ‘constructs’ as a *cabinet d’histoire naturelle*? There is a kind of novelty here which is quite distinct from the emergentist insistence that ‘biological causes’ or even ‘psychological causes’ might be more complex than brute physical causes, and even self-affecting, in the sense of what eighteenth-century medical vitalists (whose influence on Diderot is well-documented) described as the “cercle d’action.” The latter idea is that in the “animal economy,” the constant “action and reaction” is too complex for mechanistic explanations, and the causal principle on which they rest, to be of much use. In the words of the vitalist physician Louis de La Caze (which may even have been written by his younger collaborator Bordeu, whose fictional analog plays a key role in *D’Alembert’s Dream*),

There is . . . a circle of action [*cercle d’action*] in which a vicissitude constantly generated by the chain of causes and effects, entails that within it at any moment, effects become causes and causes in turn become effects. . . . This chain is so impenetrable that one cannot determine its beginning or end. Consequently, it is most difficult to impose a plan on the animal economy, without running the risk of transgressing the laws of right method, with respect to this marvelous contrivance of action. (La Caze 1755, pp. 68–69.)

5. *Réfutation d’Helvétius*, in Diderot 1994, p. 796; letter to Landois of June 29<sup>th</sup>, 1756 in Diderot 1975, vol. IX, p. 258.

6. *Salon de 1767*, in Diderot 1975–, vol. XVI, p. 222 / Diderot 1996, p. 625.

Granted, if the kind of naturalism we are discussing here is also a *materialism*, it is noteworthy that it is not mechanistic and instead takes as its privileged explanatory target the realm of living entities—which is precisely what natural history does. This is an important topic that has only recently begun to receive the attention it deserves, both with studies of medical vitalism in the period and how it related to philosophical materialism.<sup>7</sup> However, my present interest is with the role of a kind of artificialism *within* this naturalist project. What kind of a naturalistic ontology survives the recognition that our finite intellects might never be able to access ‘Nature’ itself? Indeed, Diderot contrasts “the infinite multitude of natural phenomena” with “the limitations of our understanding and the weakness of our organs” (“la multitude infinie des phénomènes de la nature” . . . “les bornes de notre entendement et la faiblesse de nos organes”) (Diderot, *Interprétation de la nature*, § vi, in Diderot 1994, p. 562). This is the sort of question I aim to answer in what follows. But before I turn to the natural history program in its eighteenth-century, ‘radical Enlightenment’ variant, I should remove a possible source of confusion.

Naturalism—the project of treating philosophical explanations as part of a broader project of natural science, or redefining a feature of mental life, whether a process like perception or a definitory feature like intentionality, so that it is compatible with the broader set of definitions provided by the cluster of relevant sciences, whichever they may be (to naturalize an X according to population dynamics, neurophysiology or fundamental physics tends to mean three different things)—appears to us today as something very different from ‘natural history’, whether because the latter cluster of activities no longer exists as such, or because it is actually equivalent with the ‘life sciences’ as a whole, and a science is not the same thing as a philosophical project of reconstruction or redefinition in the name of a science.<sup>8</sup> This would seem to imply that I am running together two very different kinds of conceptual objects, in seeking to derive from Diderot’s natural history program an idiosyncratic ‘brand’ or ‘version’ of naturalism. However, from the standpoint of an eighteenth-century materialist like Diderot, the two are part and parcel of the same program. It is precisely because human beings can and should be treated

7. See Rey 2000, Williams 1994, 2003 and Wolfe 1999; an exception is the surprisingly inaccurate and out-of-date analysis of “materialism and vitalism” in Wellman 2003, an entry in a major reference work, the *Oxford Companion to the History of Modern Science*; see the criticisms in Kaitaro 2008 and Wolfe and Terada 2008b. For vitalism in relation to materialism see Thomson 2001.

8. I owe the latter point to a reviewer for *Perspectives on Science*.

as parts of 'natural history' that their mental faculties should be inscribed monistically within a single explanatory and ontological scheme. Thus Diderot declares in his notebooks on physiology that "the action of the soul on the body is the action of one part of the body on another," and, closer to the revisionist tone of naturalism, he comments in the margins of Hemsterhuis' *Lettre sur l'homme* that "wherever I read *soul* I replace it with *man* or *animal*."<sup>9</sup>

Cabinets of curiosities, *Wunderkammern* or 'natural history cabinets' are fascinating enough objects in and of themselves, however much they are studied (as in Falguières 2003). The aspect that I wish to emphasize here appears in Diderot's *Encyclopédie* article precisely entitled "Cabinet d'histoire naturelle" (as well as in "Histoire naturelle"—large chunks of Buffon reworked by Diderot along with smaller chunks by Daubenton—"Méthode" and various reflections in Diderot's *Pensées sur l'interprétation de la nature*):

The order of a *cabinet* cannot be that of nature; nature affects everywhere a sublime disorder. Whichever side we approach it from, we find masses [*masses*] which transport us with admiration, groups which call for our attention in the most surprising manner. But a *natural history cabinet* is made to teach us; there, we must find in detail and in order, that which the universe presents to us as one piece [*en bloc*]. (Diderot, art. "Cabinet d'Histoire Naturelle," in Diderot 1975–, vol. VI, p. 240.)

A natural history cabinet is intended to be in the service of a naturalistic cause, yet from its inception it declares to us that its "order" is not the order of Nature. How could it be that a "cabinet d'histoire naturelle," precisely as a cousin of the wonder-filled, monster-filled "cabinet of curiosities" or *Wunderkammer*, could actually convey a reductionist explanatory project of inscribing human life within the causal realm of Nature?

For one thing, as the *Encyclopédie* entry on method in the study of Nature explains,<sup>10</sup> our understanding of Nature is dependent on the "method" with which we approach it, according to which we analyze it; since the objects studied by natural history are too great in number to be apprehended as such, the historian of nature—the biologist or materialist philosopher—must lay out "an order of relations [*rappports*] and analogies" (*Ibid.*, 459a). Of course, relying too much on method is the character-

9. Diderot, *Éléments de physiologie*, in Diderot 1975–, XVII, pp. 334–335; *Observations sur Hemsterhuis*, in Diderot 1994, p. 734.

10. "Méthode (division méthodique des différentes productions de la nature)," *Encyclopédie* X, 458b–459b (hereafter cited as *Enc.* followed by volume and page number).

istic trait of “methodists” like Linnaeus, so decried by Buffon and Diderot on Lockean-nominalistic grounds.<sup>11</sup> The article “Histoire Naturelle” further explains that it is impossible to visit each country, climb down into each mine, or up on every mountaintop, and sail on each sea: “Such obstacles would discourage the most enterprising ones among us, and would lead them to give up the study of natural history.” Luckily, “we have found a way to shorten and smooth the surface of the earth in favour of the naturalists; we have collected individuals of each species of animals and plants . . . in cabinets of natural history. We can see there a short version [*un abrégé*] of nature in its entirety” (*Enc.*, VIII, 229a). Such techniques facilitate learning and instill in us “a new ardor for the *History of Nature*” (*Ibid.*, 229b).

But, *artificialisme oblige*, none of this should be taken for the Life of Nature itself! Cabinets enable us to acquire the first rudiments of the science of natural history, but not to know the science itself, “because one cannot see there [*sc.* in the cabinets—CW] *living and acting Nature*” (*ibid.*, emphasis mine). “Animal corpses,” their “remains,” are but a “pallid representation of living animals.” A cabinet is merely a ‘draft’ (*une esquisse*) of nature. Notice the quasi-valuative emphasis placed here on “*living nature*”; on the one hand, this is reminiscent of Diderot’s criticism of the usage of anatomical models (skeletons, corpses, etc.) in painting, but on the other hand, it is also a window onto his unique, ‘animated’ brand of naturalism. Whether as a philosopher of nature or an aesthetic theorist, Diderot doesn’t say ‘Ain’t it grand, what we can do with our imaginations!’ (a position akin to Gothic/Baroque sensibility) but rather ‘Ain’t the power of living nature grand, and beyond the reach of our intellects (except in thought-experiments, as I have presented them in *Le Rêve de D’Alembert*)!’

Diderot’s naturalism is unlike the various species of naturalisms found in the past century (Dewey, Quine, Dennett), which in this sense are closer to Spinoza’s naturalism, in that it does not proceed in a deflationary or reconstructive manner, most of the time, except when seeking to explain a concept such as ‘soul’ (the hint at a ‘materialist theory of the self’ as derived from the central nervous system, in the *Rêve*, is perhaps an example of a reconstruction of a phenomenon such as intentionality on materialist grounds), but rather as an all-embracing metaphysics of living nature. The extent to which a materialism which emphasizes the uniqueness of organic beings (and thus the ‘laws’ specific to them; read ‘vitalism’) can also be a reductionist project (or not) has been the subject of some debate recently<sup>12</sup>;

11. In § xlvi of the *Pensées sur l’interprétation de la nature*, Diderot describes the emphasis on method in natural history as a kind of rationalism which is blind to experience (1994, p. 586).

12. Timo Kaitaro’s excellent 1997 book argues, as its title indicates, for a very non-

but notice that whether Diderot is a reductionist or a holist, he seems to insist on the qualitative difference between “living Nature” or “living animals” and “animal corpses” or “remains,” including those that are mounted in artificial settings, for gawkers or scientists.

However, I do not mean to diminish the status of artifice in this theory. It belongs right there in the middle of the relation between theory and experience, between “suppositions,” conjectures, and hypotheses on the one hand, and brute *empirie* on the other. Artifice, whether in the form of a stuffed freak animal or a thought-experiment (the latter including the notion of species as a “vue de l'esprit”), is required for the ‘pursuit of science by other means’, mainly because of Nature’s infinity, which implies that any intellectual “grasping” of its immensity would instantly be the death of any theoretical coherence. It is in this sense that Buffon can say that the “experimental part” of natural history grounds and confirms the “hypothetical part,” “all of which is tied to my overall system, and guided by a constant focus on the major objects of nature” (Buffon 1774, *Partie expérimentale*, p. 143). Diderot in turn stresses the role of artificial construction:

The observer is forced to move from one individual to another, but the historian of nature is obliged to embrace it in great masses [clusters, heaps]; he cuts these masses at points on the chain where the nuances strike him most strongly, and he is careful not to imagine that these divisions are the work of Nature. (Diderot, art. “Animal,” *Enc.* I, 471b.)

But it's not as if all we knew was what we constructed, as in maker's knowledge, so we could forget about Nature itself; Diderot actually suggests a more nuanced view in the “Prospectus” of the *Encyclopédie*, between

- orderly, rule-bound and uniform Nature—the Nature of bodies, whether celestial or animal;
- “disturbed” Nature, such as anatomical ‘monsters’;
- Nature which is “constrained and forced to serve various uses, as is the case with the arts.”

Both a stuffed freak animal in a ‘cabinet’ and a living anatomical anomaly extend the boundaries of our intellects; “if we were asked what point there is in *the history of monstrous nature*, we would reply: it enables us to move from prodigies and the ‘leaps’ in Nature, to the wonders of *art*; to disturb

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reductionist Diderot. I hope to show differently; see my review of Kaitaro (Wolfe 2002) and my forthcoming paper on the possibility of reading a “materialist biology” in Diderot (Wolfe 2008a).

Nature even further, or to put it back on its rightful path” (Diderot 1975—vol. V, p. 106). Quite a far cry from the distinction between the natural and the artificial in *valuative terms*.<sup>13</sup>

My claim is that the genre of ‘natural history’ enabled reductionist materialist thought to integrate the notion of artifice without dissolving Nature into a mere fiction. For this to take place, the notion of natural history itself has to undergo a materialist *inflexissement*. What did ‘natural history’ mean in the early modern era? In the carefully nominalist terms of current historiography of science, it was “a set of divergent traditions sharing a general subject matter (the living world) and a set of catholic (with a small ‘c’) naturalists” (Farber 1982, p. 398). But my concern is not with the sociology of its research traditions. In the *Encyclopédie*’s classification of the sciences, the “système figuré des connaissances humaines,” natural history belongs to “particular physics,” whereas “general physics” is identified (by D’Alembert) with the “metaphysics of bodies” (“Discours préliminaire,” *Enc.* I, p. xvii). The curious thing about the notion of natural history from the start—it doesn’t require the adjustments of a Buffon or a Diderot—is the way it blends the descriptive and the prescriptive; as the *Encyclopedia Britannica* puts it in its first edition (1771), it is “that science which not only gives complete descriptions of natural productions in general, but also teaches the method of arranging them” (vol. III, p. 362).

The problem with this definition is that it’s still too bland and consensual; it completely neglects the radical *conceptual shift* which takes place with this expression, as can be seen also in its philosophical reappropriation, which we might divide into an initial, broad ‘naturalization’ and a later, more specifically materialist redefinition of natural history as a program.

First, figures like Hume, La Mettrie and d’Holbach naturalize domains such as religion, the soul, or the “human heart” (d’Holbach 1999, I, xi, p. 292); already Locke described the project of his *Essay* as a “History of the first beginnings of human knowledge” (Locke 1975, II.xi.15), and the “historical, plain method” announced at the beginning of the *Essay* (p. 44) is a way of naturalizing a theological *topos*, a theme we find again in D’Alembert’s “Discours Préliminaire,” where he speaks of the need for a “genealogy” of our knowledge, something we can undertake by “moving back to the origin and generation of our ideas” (p. i).

Second, there is the later creation of a conceptual ‘bridge’ between materialist philosophy and the life sciences, especially natural history, which is both a kind of proto-biology and at the same time quite distinct from

13. As found, e.g. in the aesthetic theories criticized by Diderot, those of Batteux, or Dubos.



it,<sup>14</sup> especially since it contains a polemical element which will be eliminated once it becomes 'biology': *something non-mathematizable*, at least in the eyes of these materialists (which of course is a historical feature of their materialism and by extension their idea of the reducing theory in a reductionist model, which we have trouble reconciling with twentieth and twenty-first century philosophy and science). This insistence on the autonomy of the new 'continent' of life science—including medicine, physiology, elements of chemistry and the study of generation—as distinct from the mathematical and mechanistic trends of the Scientific Revolution, begins with Buffon's assertion that "mathematical truths are merely mental abstractions, which lack anything real" ("les vérités mathématiques ne sont que des abstractions de l'esprit qui n'ont rien de réel"),<sup>15</sup> and is stated more fully in section 4 of Diderot's key methodological work *Pensées sur l'interprétation de la nature* (1753/1754):

We are on the verge of a great revolution in the sciences. Given the taste people seem to have for morals, *belles-lettres*, the history of nature and experimental physics, I dare say that before a hundred years, there will not be more than three great geometers remaining in Europe. The science will stop short where the Bernoullis, the Eulers, the Maupertuis, the Clairaut, the Fontaines and the D'Alemberts will have left it. . . . We will not go beyond.<sup>16</sup>

One hears the same emphasis in the *Encyclopédie*: "People's minds are drawn in a general movement towards natural history, anatomy, chemistry,

14. See the important work by Salomon-Bayet 1978, e.g. p. 145. Closely related semantic/conceptual shifts occur with the terms *organisation* and *économie animale*. See Motoichi Terada's unpublished 2003 paper, Wolfe and Terada 2008, § 3 and Balan 1975.

15. "De la manière d'étudier l'Histoire Naturelle," in Buffon 1749, p. 53. To be sure, Buffon was also the author of works on mathematics, and a translator of Newton as well as Stephen Hale's *Vegetable Staticks*. But he remained convinced that the newly emerging cluster of disciplines called 'natural history' would go nowhere if it was treated in strictly post-Galilean, Accademia dell Cimmento-style mechanistic fashion. After all, Buffon was also the theorist of 'organic molecules', which were a kind of vital *minima*, non-reducible to inorganic entities. (One could complicate matters similarly by pointing out that Diderot named an essay he had written on mathematical probability as his favourite amongst his writings, along with *D'Alembert's Dream*.)

16. "Nous touchons au moment d'une grande révolution dans les sciences. Au penchant que les esprits me paraissent avoir à la morale, aux belles-lettres, à l'histoire de la nature, et à la physique expérimentale, j'oserais presque assurer qu'avant qu'il soit cent ans, on ne comptera pas trois grands géomètres en Europe. Cette science s'arrêtera tout court où l'auront laissée les Bernoulli, les Euler, les Maupertuis, les Clairaut, les Fontaine et les d'Alembert. . . . On n'ira point au-delà" (Diderot, *Pensées sur l'interprétation de la nature*, § 4, in Diderot 1994, p. 561).

and experimental physics.”<sup>17</sup> It is noteworthy in this regard that there is no article on Galileo in the original edition of the *Encyclopédie* (whereas Galileo features prominently, e.g. in Brucker’s *Historia critica philosophiae*, which is a major source of the *Encyclopédie*).<sup>18</sup> But to return to Buffon and Diderot’s shared claim, let us distinguish between two distinct points within it:

- the negative claim that mathematical entities are just abstractions and have nothing to do with physical truth<sup>19</sup> (which is an inversion of the relation between mathematics and natural history that was characteristic of the seventeenth century), and
- the positive, or at least programmatic claim that the experimental world of natural history, anatomy, chemistry, etc. is where the future lies—not just for ‘science’ but for philosophy, precisely understood in naturalistic terms.

Georges Gusdorf’s comment, in his enormous study of the emergence of the human sciences, that “materialist philosophy may be considered as an attempt to deepen the project and the data of natural history” (Gusdorf 1972, p. 320), falls under the second of these two senses. Natural history in the latter sense is a reconstructive, deflationary program: I take a phenomenon called ‘soul’ and seek to integrate it into what natural history tells me about animals, plants, generation, states of coma, etc., and what is left after this integration is a concept of soul I can work with. Similarly, the little-known work by Maupertuis’ brother, Moreau de Saint-Elier, entitled *Traité de la communication des maladies et des passions, avec un essai pour servir à l’histoire naturelle de l’homme* (1738), explicitly links the project of “natural history” with the materialist project of explaining the workings of the soul in purely natural, and *a fortiori*, physiological terms.

Indeed, there is some historical evidence for considering *cabinets d’histoire naturelle* and the overall project of natural history as being synonymous with materialist philosophy. They were attacked by the enemies of

17. Art. “Encyclopédie,” in Diderot 1994, p. 372 / 1975–, vol. VII, p. 185. Similar passages can be found in his letter to Voltaire of February 19<sup>th</sup>, 1758, and in Grimm’s *Correspondance littéraire*, June 1<sup>st</sup> 1765, vol. IV, 1, p. 649. Diderot’s defense of Buffon against the bishop of Auxerre in the *Suite de l’apologie de l’abbé de Prades* similarly opposes the study of Nature to mathematical abstractions (see Diderot 1994, p. 529f.). His oppositional construction, between sciences one might call ‘vital’ and ‘hard’ sciences, reads like a hyper-emphatic version of Kuhn’s distinction between “mathematical traditions” and “experimental traditions” in the history of science (Kuhn 1976).

18. As noted by Salomon-Bayet 1978, p. 384.

19. These are almost Buffon’s words, but see the helpful commentary in Sloan 1995, p. 129.

the *philosophes*, such as Nicolas Linguet, author of the pamphlet *Le Fanatisme des Philosophes* (1764), who in a later text regretted that “a taste for natural history has become quite common. Rich countries are filled with cabinets. . . . Look at this spectacle of Nature dead and dissected . . .”<sup>20</sup>

Natural history occupies the conceptual space which will be that of biology, and it must be understood that this was a *wholly polemical project* in the mid-eighteenth century. Consider Diderot's two strategically located statements of epigenesis; the first, in his ‘experimental novel’ *D’Alembert’s Dream*, with the “voyez-vous cet œuf?” passage which serves as the epigraph to François Jacob’s *La logique du vivant*:

Do you see this egg? It is with this [egg] that we overturn all schools of theology and all the temples of the world. What is this egg? An unsensing mass prior to the introduction of the seed [germe]; and after the seed has been introduced, what is it then? An unsensing mass, for the seed itself is merely an inert, crude fluid. How will this mass move to another [level of] organization, to sensitivity and life? By means of heat. What will heat produce therein? Movement. (*Rêve de D’Alembert*, in Diderot 1994, p. 618; cf. pp. 706–707.)

or the definition of “modern Spinosists” in the *Encyclopédie* which, idiosyncratically enough, makes them theorists of the then-brand new doctrine of biological epigenesis:

SPINOSIST: follower of the philosophy of Spinoza. One must not confuse the ancient Spinosists with the modern Spinosists. The general principle of the latter is that matter is sensitive; they demonstrate this by the development of the egg, an inert body which by the sole means [*instrument*] of graduated heat moves to the state of a sensing, living being, and by the growth of any animal which in its inception [*principe*] is merely a point, and through the nutritive assimilation of plants and—in one word—of all substances that serve the purpose of nutrition, becomes a great sensing and living body in a greater [expansion of] space. From this they conclude that only matter exists, and that it is sufficient to explain everything. For the rest, they follow ancient Spinosism in all of its consequences.<sup>21</sup>

20. Linguet, *Annales politiques, civiles, et littéraires du XVIII<sup>e</sup> siècle* 1777, quoted in Metzger 1987, p. 247, n. 4.

21. Diderot, s.v. “Spinosistes,” *Encyclopédie* XV, 474 / Diderot 1994, p. 484. This brief article is the basis for Paul Vernière’s giant—and fanciful—category of ‘neo-Spinozism’, which he applied to eighteenth-century radical thought approximately half a century be-

These passages have very different tones, as befits their different contexts: in the first, Diderot can boldly state that a biological ‘fact’ will overturn all faculties of theology, because the novel was not intended for publication, and indeed only entered the public realm in the nineteenth century; in the second, which occurs in the *Encyclopédie*, he has to be somewhat more discreet. Regardless, in both cases he is making an unusual claim that certain facts about generation (what we would call developmental biology) radically modify the philosophical landscape. In the second quotation, he is saying that to be a Spinozist in the mid-eighteenth century is essentially to hold a particular biological theory to be true! Notice the redefinition of matter as something either essentially or at least potentially sensitive (Diderot wavers on this point), but definitely not inert<sup>22</sup>: another nail in the coffin of mechanism, which would have surprised Spinoza, who was no anti-mechanist.

Now, all of this is part and parcel of natural history understood as a materialist program. Diderot’s late, unfinished work *Éléments de physiologie*, which would have been the culminating statement of his biologically grounded materialism, simply bears the title of Albrecht von Haller’s monumental work *Elementa Physiologiae*; according to his friend and biographer Nageon, the work, if completed, would have been entitled *Histoire naturelle et expérimentale de l’homme* (Dieckmann 1951, p. 186). But what this implies for our overall discussion is that the brand of naturalism that emerges here is both ontologically materialist *and* focused on the necessary construction of artificial entities *in the name of its naturalistic project*.

Notably, the ontology of Nature here is anything but monolithic; a contemporary naturalist would say its ontology is always provisional; in a rather Gallic twist on the scientific ebullience of the Enlightenment, Diderot says that Nature is “une femme qui aime à se travestir”<sup>23</sup>; not a transvestite, but a woman concealed underneath an infinite number of ‘travesties’. Natural forms are nothing but “masks” (*Éléments de physiologie*, in Diderot 1994, p. 1261). As defined canonically in *D’Alembert’s Dream*, Nature is (a) fundamentally heterogeneous (that is, the atoms which compose the natural world exist in a state of heterogeneity and agitation) and (b) never entirely “specific” (*précis*) (*Rêve de D’Alembert*, in Diderot 1994, p. 636). It is in this rather sober sense that Diderot denies the founda-

for Israel 2001. For one of the few useful analyses of Diderot’s biologically motivated ‘reinvention’ of Spinozism, see Métraux 1994.

22. On the decline of the mechanistic paradigm and the rejection of the inertness of matter, see Fox 1987.

23. *Interprétation de la nature*, § xii, in Diderot 1994, p. 565. This is a modern twist on Heraclitus’ *physis kruptesthai philei* or “Nature likes to hide” (fr. 208).

tional distinction between Nature and artifice. After all, how could one make an essentialist claim to have identified 'Nature' if she is hidden beneath so many *travestissements*? The latter should be taken both in the sense of 'travesties', of masks, and of the perpetual "vicissitudes" which befall natural forms. The heuristic constructs by which we seek to grasp nature similarly are 'travesties', but this does not prevent the materialist philosopher from maintaining a strong commitment to causality, along with the scientific project which follows from it. However,

The universe only presents to us particular beings, infinite in number, with hardly any fixed or determinate division. None can be termed the first or the last; everything is linked therein, and follows what came before by imperceptible nuances. In this immense uniformity of objects, if some appear which, like the tips of rocks, seem to pierce through the surface and dominate it, they only owe this prerogative to particular systems, vague conventions, and foreign events—and not to the physical arrangement of beings and the intention of Nature.<sup>24</sup>

There is no place for the human observer in this desolate landscape. As observed a few paragraphs later in the same text, the only thing that makes the existence of the spectacle of Nature interesting is the human presence itself.

One consideration above all must not be lost sight of, and that is that if man or the thinking, contemplating being is banished from the surface of the earth, this moving and sublime spectacle of nature becomes nothing but a sad and mute scene. . . . Everything changes into a vast solitude where unobserved phenomena occur in a manner dark and mute.<sup>25</sup>

Instead of losing himself in reveries about the poetics of ruins and our transitory existence on the face of the earth, however, Diderot instantly asserts the pragmatic, 'constructivist' and artificialist conclusion: since "It is the presence of man that makes the existence of beings interesting," "Why not make man the center of our work?" ("Pourquoi n'introduisons-nous pas l'homme dans notre ouvrage?"), in other terms, why not create *cabinets d'histoire naturelle*? Naturalism here opens onto pragmatism and instrumentalism: a *cabinet* is an explicit case of the methodology Diderot de-

24. Diderot, art. "Encyclopédie," *Enc.* V, 641b / Diderot 1975–, vol. VII, pp. 210–211, with a referral back to the "Prospectus." A similar comment is in his article "Bois," *Enc.* II, 297a.

25. *Ibid.*, 641c / p. 212; trans. Philip Stewart (modified), in *Encyclopedia of Diderot and D'Alembert*, collaborative translation project (<http://www.hti.umich.edu/d/did/>).

scribes as “joining the combinations of art to those of nature” (*Interprétation de la nature*, § lviii, in Diderot 1994, p. 596).

Diderot’s naturalism is not only unique because it loads the concept of Nature with many animate properties, sensitivity above all, or because of its pragmatic, instrumentalist dimension; it also is unusually ‘vaccinated’ against positivism of the sort Nietzsche warned against rather trenchantly, and which I shall quote in full:

Let us be on our guard. Let us be on our guard against thinking that the world is a living being. Where could it extend itself? What could it nourish itself with? How could it grow and increase? We know tolerably well what the organic is; and we are to reinterpret the emphatically derivative, tardy, rare and accidental, which we only perceive on the crust of the earth, into the essential, universal and eternal, as those do who call the universe an organism? That disgusts me. Let us now be on our guard against believing that the universe is a machine; it is assuredly not constructed with a view to one end; we invest it with far too high an honor with the word “machine.” Let us be on our guard against supposing that anything so methodical as the cyclic motions of our neighboring stars obtains generally and throughout the universe; indeed a glance at the Milky Way induces doubt as to whether there are not many cruder and more contradictory motions there, and even stars with continuous, rectilinearly gravitating orbits, and the like. The astral arrangement in which we live is an exception; this arrangement, and the relatively long durability which is determined by it, has again made possible the exception of exceptions, the formation of organic life. The general character of the world, on the other hand, is to all eternity chaos; not by the absence of necessity, but in the sense of the absence of order, structure, form, beauty, wisdom, and whatever else our aesthetic humanities are called. Judged by our reason, the unlucky casts are far oftenest the rule, the exceptions are not the secret purpose; and the whole musical box repeats eternally its air, which can never be called a melody—and finally the very expression, “unlucky cast” is already an anthropomorphizing which involves blame. But how could we presume to blame or praise the universe? Let us be on our guard against ascribing to it heartlessness and unreason, or their opposites; it is neither perfect, nor beautiful, nor noble; nor does it seek to be anything of the kind, it does not at all attempt to imitate man! It is altogether unaffected by our aesthetic and moral judgments! Neither has it any self-preservative instinct, nor instinct at all; it also knows no law.

Let us be on our guard against saying that there are laws in nature. There are only necessities: there is no one who commands, no one who obeys, no one who transgresses. When you know that there is no design, you know also that there is no chance: for it is only where there is a world of design that the word "chance" has a meaning. . . . When will all these shadows of God cease to obscure us? When shall we have nature entirely undeified? When shall we be permitted to naturalize ourselves by means of the pure, newly discovered, newly redeemed nature?<sup>26</sup>

Diderot is vaccinated against the hope that we'll truly come to 'know' Nature, from his early warnings against physico-theology or the argument from design, put forth by the blind mathematician Saunderson in the *Letter on the Blind*, to his critique of anthropomorphism in the *Salon de 1767*:

We are in nature. Sometimes we feel right there [good, happy, comfortable], sometimes not. And do believe that those who praise nature in the spring for having carpeted the earth in green, a friendly color to our eyes, are just presumptuous wise-asses who forget that this nature whose goodness they wish to find everywhere, in everything, in winter lays across our countrysides a great white blanket which wounds our eyes, makes us dizzy and threatens us with dying, frozen. Nature is good and beautiful when it favours us. It is ugly and evil when it afflicts us. It often owes a part of its charms to our own efforts. (Diderot, *Salon de 1767*, in Diderot 1975–, vol. XVI, 187 / Diderot 1996, p. 602.)

Interestingly enough, in historical terms, it seems, as Gerhardt Stenger has pointed out, that this caution on Diderot's part is partially due to his encounters with Abbé Galiani, as the following passage from Galiani shows:

And we, who are we? Insects, atoms, nothing. Let's compare ourselves [to nature]. To be sure, nature faithfully returns to the laws its author gave it, in order to last an indefinite time. To be sure, it restores all things to a balance, but we don't have time to await this return or this balance. We are too small; time, space and motion are nothing to it; we cannot wait. Let us not, then, make a pact [alliance] with nature; it would be too disproportionate. Our task down here is to fight it. Look around. See the cultivated fields, the foreign plants introduced into our climes, the ships, the cars, the tamed an-

26. Nietzsche 1974, § 109. The Spinozist overtones here of the critique of anthropomorphism, are deliberate.

imals, houses, streets, ports, dikes and pavements. Here are the entrenchments in which we fight; all the pleasures of our lives, indeed, nearly existence itself, are the price of victory. With our few skills and the wit that God gave us, we are battling nature and we often manage to conquer and master it, by using its strength against itself. A singular combat, which shows man the image of his creator.<sup>27</sup>

For Galiani, the Lockean imperative to cultivate Nature leads to agriculture; for Diderot, it leads to philosophy, the production of encyclopedias . . . or cabinets of natural history. We might recognize a Baconian trend here, but the ‘fictional’ dimension of cabinets seems fairly far removed from inductivism. Nor would Bacon have approved of the anti-mathematical impulse in Diderot and Buffon.<sup>28</sup>

\* \* \*

Instead of insisting on multiplicity or the cult of ruins, Diderot’s response to this challenge of the unknowability of Nature is to some extent a pragmatic instrumentalist one: Nature cannot be known as such, in its magnitude; we construct encyclopedias as provisional systems of human knowledge, and amusing, kitschy fictional structures with and through which we can know Nature, in a sort of *verum ipsum factum*; the limit of all this complexity is in fact utility: “*l’utile circonscrit tout.*”<sup>29</sup> Our relation to nature is an interplay between such constructs or thought-experiments on the one hand, and the constant reminder of living nature’s magnitude on the other hand. The sense that we live in a universe of relations of infinite complexity, to be grasped by our *perception des rapports* and to be ‘reconstructed’ both pragmatically—the ‘cabinet’—and epistemologically—the programmatic dimensions of the article “Encyclopédie”—is inseparably a materialist sense, we might say of Spinozist provenance, and an aesthetic sense, derived from the ‘practice’ of the *Salons*.<sup>30</sup> And Nature itself behaves no differently than the technologist: “the bird of prey extends or shortens

27. Ferdinando Galiani, *Dialogues sur le commerce des blés* Milan, 1959, pp. 221–222, quoted in Stenger 1994, p. 167. Stenger is probably the first to point to Galiani’s effect on Diderot in terms of the properly metaphysical level of reflection on Nature. See also the passage he quotes (p. 283) from the *Histoire des Deux-Indes*, on our duty to render the earth fertile.

28. See Bacon, *De Augmentis Scientiarum*, III, 6, in Bacon 1857, p. 578; Vartanian 1992, p. 130.

29. *Interprétation de la nature*, § vi, in Diderot 1994, p. 563, emphasis mine.

30. This last aspect has been stressed by Jacques Proust in many writings, and more recently by Stenger 1994.



its gaze, like the astronomer extends or shortens her telescope's focus." (*Éléments de physiologie*, in Diderot 1994, p. 1276). The vitalist elements here do not in the end prevail in any strong sense, since Diderot admits that, just as the physico-mathematical sciences gave way to the 'life sciences', some day, "in several centuries, utility will limit what we do in experimental physics" (*Interprétation de la nature*, § vi, in Diderot 1994, p. 563). As such, the "naturalisme de cabinet" (literally, a 'closet naturalism') we've seen here needs to be distinguished from a few classic positions or critiques in intellectual history:

- (i) It has nothing to do with any project of naturalizing the social world. Neither agency, nor the human capacity to make representations and live in a symbolic realm, are denied, on the contrary. This is Diderot's critique of Helvétius.
- (ii) The "cabinets" do not function, in any relevant way, as a rationalization of nature, over and against the full-blown, raw, unimpeded "étrangeté animale" of the Renaissance.<sup>31</sup> In my view, the notion of "cabinet" and of *histoire naturelle* as a whole, at least in the materialist version examined here, is if anything *anti-mathematical*, opposing the world of Nature and experience to the world of mathematical abstractions, whereas for Foucault it is a new form of *mathesis universalis*, with the *cabinets* presenting different surfaces, structures, planes, solids . . . (*Ibid.*, p. 149). Similarly, inasmuch as the emphasis on living, biological nature gives this naturalism its anti-mathematical flavour, it is much less susceptible to the charges of rationalism associated with the 'dialectic of Enlightenment' theme, which Foucault merely updates from the Frankfurt School, and which can be found in modified versions throughout influential Anglophone studies of the Enlightenment (e.g. Peter Gay's or Lester Crocker's).
- (iii) Despite the fact that Diderot clearly holds that we are parts of Nature and nothing more, the artificialist dimension in his thought, which is apparent in the theme of the "cabinet of natural history," and in his distinction between the observer of nature and the interpreter of nature, means his position cannot be reduced to strict Baconian experimental empiricism either.<sup>32</sup>

In the end I have not shed much light on the nature of naturalism itself (the question of whether it's more of an epistemology or an ontology is

31. As argued by Foucault 1966, p. 143.

32. As observed by Kaitaro 1997, pp. 76–77. To compare the programs for natural history in Bacon, Buffon and Diderot would require a separate study.

significant; perhaps it could also be considered as an *attitude* towards the practice of philosophy), but have instead focused on what I've claimed to be unique or at least unusual in Diderot's "naturalisme de cabinet." Due perhaps to his recognition of an irreducible complexity in Nature which does not allow it to be rationalized as some philosophers of science might like, and his ensuing emphasis on utility and instrumentalism as the guidelines in reflecting on Nature, and regardless of his occasional forays into aesthetic anti-naturalism, Diderot does in the end declare that "Nature speaks louder than philosophy."<sup>33</sup>

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33. "La nature parle plus haut que la philosophie" (in Raynal 1780, XI, 24).

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