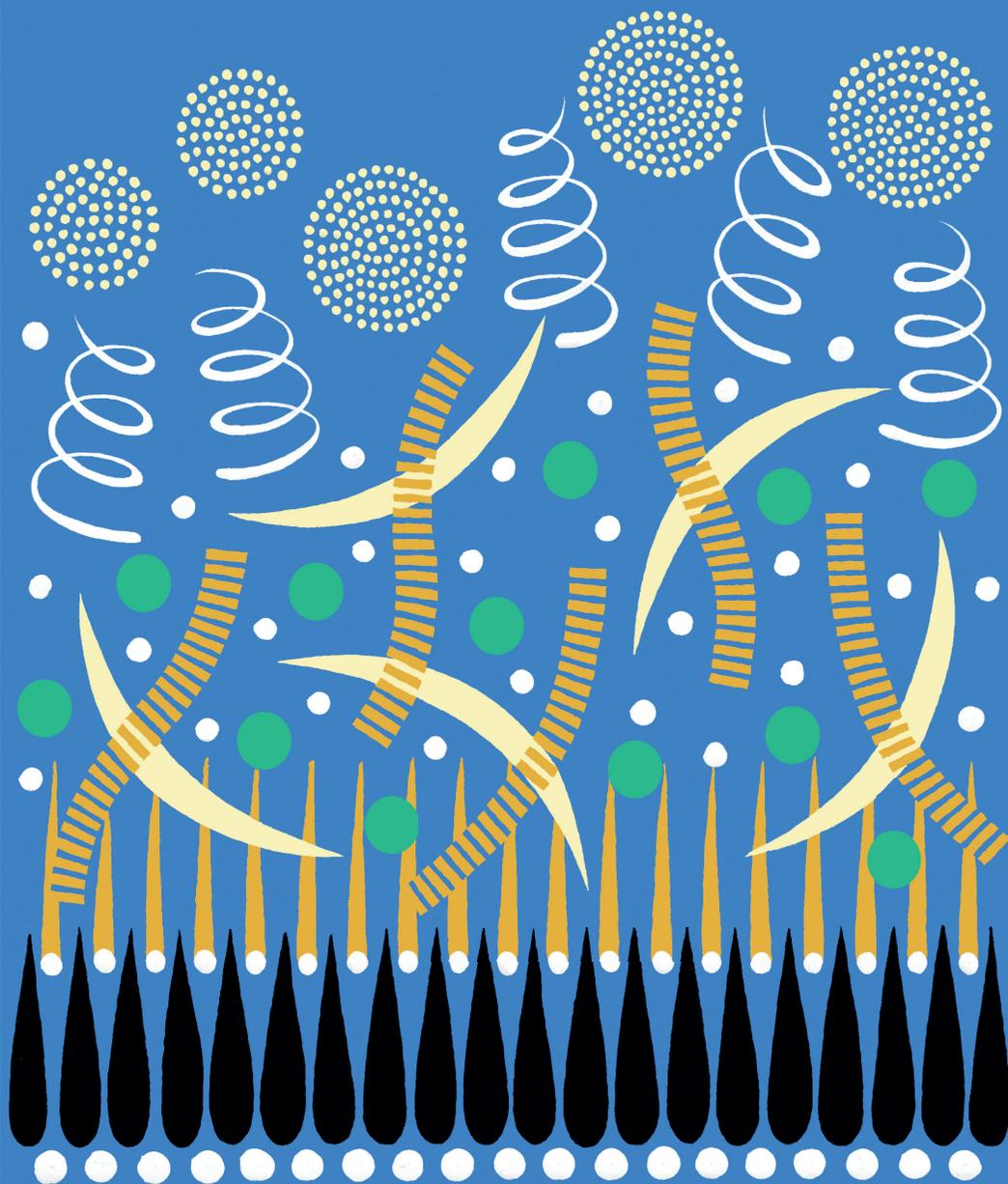


THE ATHEIST'S BIBLE

Diderot and the
Éléments de physiologie

Caroline Warman





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ISBN Paperback: 9781783748969

ISBN Hardback: 9781783748976

ISBN Digital (PDF): 9781783748983

ISBN Digital ebook (epub): 9781783748990

ISBN Digital ebook (mobi): 9781783749003

ISBN XML: 9781783749010

DOI: 10.11647/OBP.0199

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3. Material World and Embodied Mind

Denis Diderot's subjects of material world and embodied mind were not new when he came to write about them in the *Eléments de physiologie* in the 1770s, nor had they been new when he had written about them before, in his *Pensées philosophiques* (published 1746), *Lettre sur les aveugles* (published 1749), *Pensées sur l'interprétation de la nature* (published 1753), *Rêve de d'Alembert* (drafted 1769), *Principes philosophiques sur la matière et le mouvement* (written 1770), *Observations sur Hemsterhuis* and *Réfutation d'Helvétius* (both written 1773), or of course in the many articles he contributed to the *Encyclopédie* (published 1751–65). The sorts of concepts and frameworks he was using were already present in Aristotle's *Physics*, which discusses nature, change, time, continuity, and finalism, and also in the *Metaphysics*, which thinks about man, desire, knowledge, the senses (in particular, sight), animals, and memory, asserting that knowledge is based on perception, or, as Diderot put it in the *Réfutation d'Helvétius*, crediting Aristotle for being the first ever to say it: 'il n'y a [...] rien dans l'entendement qui n'[ait] été antérieurement dans la sensation' [there is nothing in our understanding which has not first passed through sensation], although Diderot's formulation is a direct French translation of the medieval theologian Thomas Aquinas's version, 'nihil est in intellectu quod non sit prius in sensu' [there is nothing in the mind which was not first in the senses].¹ As this double

1 Aquinas, Thomas, *Quaestiones disputatae de veritate*, 3 vols (Rome: Editori di San Tommaso, 1970–76) II, 3, 19, as Roland Desné and Gerhardt Stenger, point out, *Réfutation d'Helvétius*, ed. by Roland Desné, Didier Kahn, Annette Lorenceau and

quotation which is also a refutation amply demonstrates, Diderot is writing in a thriving and self-aware tradition, one which goes back to Ancient Greece, and in so doing, he is also taking sides in similarly long-lived arguments—about the operation of nature, about infinity, about the existence or otherwise of immaterial beings: his particular tradition is that of Epicureanism. Epicurus, forty years younger than Aristotle, taught that everything in nature is made from atoms and from the fortuitous ways in which they combine to create different beings: whether there is any role for divine powers in this is a moot point, but ethics are important (virtue and happiness being interchangeable). His writings are mostly lost but his teaching survives in the Roman poet Lucretius's masterpiece, *De rerum natura*, a poem which Diderot often quotes or alludes to, most prominently perhaps in his epigraph to the *Pensées sur l'interprétation de la nature*: 'Quae sunt in luce tuemur/ E tenebris' [From the darkness, we can see what is in the light].²

Diderot's moment in this tradition comes at a pivotal point after more than a hundred years of increasingly clamorous consensus that a true understanding of the world derives alone from the information or 'ideas' our senses give us.³ Perhaps I will want to argue that the *Éléments de physiologie* is the culmination or final statement in the particular (materialist) offshoot of the empiricism debate (René Descartes asserted that we are born with innate ideas; John Locke denied it) that focuses on what sensation and sensibility are, and who or what has it, whether it is in fact innate or latent in all matter, and whether, if so, that means that matter can think. The stakes were high: theological accounts of the soul and of the order of the universe, of divine reasons and aims, accounts which underpinned social structures and laws, both for this life and the hereafter, were at risk of being dislodged from their position as truth. As indeed they were dislodged, to be replaced by accounts of nature and its laws and behaviour. A quick way of explaining this in English is to say

Gerhardt Stenger, in *Œuvres complètes*, DPV (Paris: Hermann, 2004), vol. 24, pp. 215-478: 515, n. 90.

2 Denis Diderot, *Pensées sur l'interprétation de la nature*, ed. by Jean Varloot and Herbert Dieckmann, in *Œuvres complètes*, DPV (Paris: Hermann), vol. 9, pp. 1-111 : p. 337.

3 On Diderot's closely-argued position in relation to empiricism, see Kate E. Tunstall, *Blindness and Enlightenment: An Essay* (London: Bloomsbury, 2011). On empiricism more generally, see Marion Chottin, *Le Partage de l'empirisme: une histoire du problème de Molyneux aux XVIIe et XVIIIe siècles* (Paris: Champion, 2014).

that increasingly from the end of the eighteenth century onwards, the word 'knowledge' is replaced by 'science', its Latinate synonym. And 'science', in English, means empirical descriptions of nature. (In French, this shift is not so niftily condensable: broadly, though, the branches of knowledge covered by eighteenth-century 'natural philosophy' become the modern-day sciences.) Of course, religion as practice and law did not disappear, and it remains an important presence in contemporary society. However, the ability of the church authorities to use the articles of belief to influence the way natural philosophy was conducted or to condemn its findings as being against religion or morality, was curtailed, not immediately, not irrevocably, but as it became more and more accepted that the accounts of the world and universe given by natural philosophy were, if incomplete, nonetheless verifiable, whereas religious accounts of nature and creation were not subject to verification.

What we are cosily calling 'Diderot's moment in the tradition' takes place, of course, within specific social technologies, networks and structures. These make his intervention possible and also determine its form and content.⁴ One of those, already implicitly evoked, is the transmission of the written word, in letter, manuscript or print, to smaller or greater audiences, at a given moment or across the generations. Another, more immediate, is the discussion that took place in the female-led salons, which was no less impactful for lacking a written, posterity-providing form.⁵ More official (and of course, exclusively male) are the learned societies which were being set up from the end of the seventeenth century to facilitate the exchange of research amongst their learned members, and whose meetings were carefully recorded in the archives that researchers now mine. The size of all these groups, even including print readers, was limited: connections, qualifications, language, and literacy were all needed for doors to be opened. And, of course, official censorship existed to make sure that those doors stayed shut when the authorities deemed that what might come in or go out of them posed a threat to ecclesiastical or monarchical orthodoxy. This was

4 On the connection between Diderot's materialism and his style of thinking in writing, see Caroline Jacot-Grapa, *Dans le vif du sujet: Diderot, corps et âme* (Paris: Classiques Garnier, 2009).

5 Dena Goodman, *The Republic of Letters: A Cultural History of the French Enlightenment* (Ithaca: Cornell University Press, 1994); Carla Hesse, *The Other Enlightenment: How French Women Became Modern* (Princeton, NJ: Princeton University Press, 2001).

the context of Diderot's entire working life, but the pressure building for change, or perhaps we should say the consensus that these 'new' forms of knowledge needed wider dissemination, grew throughout it. So when I talk about his 'intervention', perhaps I ought to say increasingly busy iterations of the same points. Diderot was busy repeating himself and kindred writers as often and as well as he could (although not as often as Voltaire). This chapter will look at what those iterations were, and at whom he was iterating.

It will be for later chapters to look at what happened next, a lurchingly complicated story that could not have been foreseen at the moment of Diderot's death in 1784. Within the broad-brush context of the rise of science, the stage was set for the (by then) widely supported establishment or expansion of institutions to disseminate the new perspectives of natural philosophy. This narrative is broadly familiar to us from Michel Foucault's influential account of the institutionalisation of the different academic disciplines around the turn of the nineteenth century, along with their ensuing professionalisation within the universities. Of course, in France, this process is part of the Revolution, whose new political structures undid and remade the previous institutions of learning more than once. The *École normale*, emerging briefly in 1795, aimed to make contemporaneous learning available to those who would go and teach it across the new Republic, while the research institution replacing the various academies of the ex-'kingdom', the *Institut national des sciences et des arts*, also set up in 1795 and also subject to regime upheavals, redefined the various branches of knowledge, and established specific groups to provide a platform for France's world-leading research. In both these institutions, those who had known Diderot and whose ideas were aligned with his had important roles, and I will turn to them in due course.

Many writers had been writing about nature, matter, man, and mind, in the previous 100 years, and they had been broadly in agreement in approach (empiricism) and in the way they presented man as completely determined by his material embodiment (as dependent on and moulded by his senses).⁶ They had even often been in agreement

6 It is perhaps a bit tendentious to talk about general agreement in this context. Specialists tend to state instead that materialism 'ne constitue en rien une doctrine unifiée' [in no way constitutes a unified doctrine]: Adrien Paschoud and Barbara

about the ways in which they tried to prove their points, drawing on similar or even the same research, and on similar or even the same fictional hypotheses. Diderot is at the end of this tradition, to which he responds in detail, point by point, and which he closes off by presenting an unanswerable fusion of natural philosophy (drawing on physics, chemistry, what would come to be called 'biology', and medicine) and philosophy (theories of consciousness and identity related to memory), such that whether there is a soul can no longer be a serious question in the investigation of man's nature, and the medical sciences no longer have to deal with it.

So who and what was Diderot iterating, refining, or responding to in the *Éléments de physiologie*? In brief, Baruch Spinoza, Gottfried Wilhelm Leibniz, Jean Meslier, Bernard le Bovier de Fontenelle, Julien Offray de La Mettrie, Étienne Bonnot de Condillac, Georges-Louis Lerclerc de Buffon, Charles Bonnet, Jean-Jacques Rousseau, Claude Adrien Helvétius and François Hemsterhuis. Current editions of the *Éléments de physiologie* provide important scholarly apparatus about Diderot's medical sources, but give relatively little information about his philosophical ones, although Motoichi Terada has begun to add to our knowledge in this area.⁷ This is no doubt because the *Eléments de*

Selmeci Castioni, 'Le matérialisme au XVIIIe siècle en France: enjeux et perspectives', in *Matérialisme(s) en France au XVIIIe siècle. Entre littérature et philosophie*, ed. by Adrien Paschoud and Barbara Selmeci Castioni (Berlin: Frank and Timme, 2019), pp. 7–11 (p. 7). This is of course true, but whatever this non-unified non-doctrine is, it is nonetheless recognisable enough in its general positions for the same authors to say that 'it swarms through writings of remarkable diversity' (ibid., p. 8). My emphasis is on the common ground these swarming texts share rather than their differences. Yves Citton follows a somewhat similar approach in his *L'Envers de la liberté: l'invention d'un imaginaire Spinoziste dans la France des lumières* (Paris: Éditions Amsterdam, 2006), esp. pp. 28–33. See also Sophie Audidière, Jean-Claude Bourdin, and Francine Markovits, eds, *Matérialistes Français du XVIIIe siècle* (Paris: Presses Universitaires de France, 2006); Ann Thomson, *Bodies of Thought: Science, Religion, and the Soul in the Early Enlightenment* (Oxford: Oxford University Press, 2008); Franck Salaün, *L'Ordre des mœurs: essai sur la place du matérialisme dans la société française du XVIIIe siècle (1734-1784)* (Paris: Éditions Kimé, 1996), esp. pp. 41–78; and Colas Duflo, *Diderot philosophe* (Paris: Champion, 2003), pp. 65–267.

7 Terada's edition gives some source material and resonances from ancient authors Aristotle, Cicero, Epictetus, and Seneca, and early modern philosophers (and while the distinction between medical writers and philosophers is often a false one, La Mettrie being a case in point, this list follows the received view about who is a medical professional and who is a more generally philosophical writer): Francis Bacon, Pierre Bayle, Condillac, Marin Cureau de la Chambre, Daniel Heinsius, d'Holbach, La Mettrie, Leibniz, Montaigne, Pascal, and Spinoza. See also the

physiologie has not received much recognition as a serious philosophical text. This chapter cannot single-handedly change such a state of affairs, and indeed it has a relatively limited aim, which is simply to look at how the *Éléments de physiologie* picks up and responds to philosophical arguments about material man, to see which voices are present in the *Éléments*, to see how many voices there are, and to see how this text brings them together and makes it seem as if they are a sort of call and echo chorus.

It is of course true that a good number or perhaps all of these (natural) philosophers and writers, taken separately, would, if charged, have strenuously rejected any association with materialism, and one of the necessary limitations of this chapter is that it never does take any of them separately. Their works are not looked at on their own terms, as a whole, or in the specific context of their production, and the way in which various sentences are lifted from them and woven together distorts their work, examining it from the retrospective point of view, or rather through the lens, of the *Éléments de physiologie*.⁸

Another layer of severe restriction is applied to the number of voices we argue Diderot is engaging with here. Although a list that includes Spinoza, Leibniz, Meslier, Fontenelle, La Mettrie, Condillac, Buffon, Bonnet, Rousseau, Helvétius and Hemsterhuis, not to mention Pascal, is hardly short or unambitious, other voices whom we might expect to see here are absent: no Descartes, no Pierre Gassendi, no Locke or Thomas Hobbes, no David Hume, and no ancient philosophers at all. Montaigne peeps in with Lucretius via Meslier, but that's all. If the space limitations already invoked also apply here—what can one really cover in a single chapter?—the question of the lens also does; these are the writers whose

relevant pages of his introduction: 'Les *Éléments de physiologie* dans la philosophie du dernier Diderot', in *Éléments de physiologie*, ed. by Motoichi Terada (Paris: Éditions Matériologiques, 2019), pp. 14–26 [hereafter MT].

8 Readers wishing for a greater overview or more detail are encouraged to consult on materialism: as already cited in note 6 above, Audidière et al., *Matérialistes français*; Citton, *L'Envers de la liberté*; Salaün, *L'Ordre des mœurs*; Thomson, *Bodies of Thought*; and also Olivier Bloch, *Le Matérialisme* (Paris: Presses Universitaires de France, 1985); Jonathan Israel, *Radical Enlightenment: Philosophy and the Making of Modernity 1650-1750* (Oxford: Oxford University Press, 2001). For a specific focus on Diderot's place within all this, see: Duflo, *Diderot philosophe*; Jacot-Grapa, *Dans le vif du sujet*; Tunstall, *Blindness and Enlightenment*; and also Timo Kaitaro, *Diderot's Holism* (Frankfurt a.M.: Peter Lang, 1997).

presence I perceive most strongly in the *Éléments de physiologie*. That does not mean there are not other ones, while—very obviously—my own limitations are also operating to shape, frame, and constrain what and whom this chapter considers. It will be exciting when more work is done on philosophy in the *Éléments de physiologie*, more voices traced, its own contribution better understood.⁹ My hope is that what I argue here about how particular philosophical positions relating to the material universe on the one hand and empiricism on the other appear to be being consistently enounced, asserted, and repeated over the course of a hundred years, and about how the *Éléments de physiologie*, bringing these numerous strands together in an unprecedentedly open way, helps us see that this is the case, will be accepted as offering a productive approach.

How to Use This Chapter

The system of materialist and empiricist philosophy we are looking at here has been broken down into relatively small parts for ease of treatment, and is summarised in italics at the beginning of each section, followed by supporting passages presented chronologically in order to bring out the dialogic aspect of this repeating-relaying conversation. The headings below list the subsections in order, and together they provide a summary of the topics addressed by the *Éléments de physiologie*, in particular its first and third parts. Readers who would prefer a shorter version and who would rather be directed straight to the *Éléments* without preamble can simply hop from one subsection to the next, reading the italicised paragraph at the beginning, and seeing how the *Éléments de physiologie* intervenes at the end.

- a. Nature, Order, and Natural Patterns
- b. The Necessary Order of Nature
 - The Order of Nature: Unchanging or in Flux
 - i. The Gouty Man and the Fire
 - ii. From Recycled Cases to the Specific

⁹ As Motoichi Terada does, for example, when he examines the connections between, on the one hand, sensibility and vanity, and on the other, Diderot's political philosophy, in his 'Les *Éléments de physiologie* dans la philosophie du dernier Diderot', *Éléments de physiologie*, ed. Motoichi Terada, pp. 19–26.

- c. Matter in Flux
- d. The Natural Processes of Material Transformation
 - i. Reproduction
 - ii. The Beginning and End of Death
 - iii. The Beginning and End of Sensation
- e. Knowledge Derived from the Senses
 - i. Knowledge from the Senses: Anti-Abstraction
 - ii. Sensory-Deprivation Fictions
- f. Multi-Tasking and Levels of Awareness: Thinking and Walking
- g. Selfhood and Memory
- h. The Pursuit of Happiness

a. Nature, Order, and Natural Patterns

There is an order to nature and this order has no gaps, write Leibniz, Bonnet, and Diderot. This is expressed in Leibniz's formulation that there is no jump in nature (Leibniz, Bonnet). This natural order replicates itself in the body, and in mental processes of perception and idea, writes Spinoza (and Condillac and Diderot), and should be followed in productions of the mind such as books, writes Buffon.

We start with Leibniz's concept of there being no gaps or *jumps* in nature:

Rien ne se fait tout d'un coup, & c'est une de mes grandes maximes & des plus vérifiées, que la *nature ne fait jamais de sauts*. J'appellois cela la *loi de la continuité*, lorsque j'en parlois autre fois dans les nouvelles de la république des lettres; & l'usage de cette loi est très-considerable dans la Physique.¹⁰

Nothing is done in a single leap, and it is one of my great maxims and is amongst the most verified, that *nature never makes a leap*. I called that *the law of continuity* when I was talking about it before in the *Nouvelles de la République des Lettres*; & and the use of this law is very widespread in Physics.

He advertises his ownership of what he calls his 'maxims', calls it the 'law of continuity', and explains its history in his own work. This particular extract is from the *Nouveaux essais sur l'entendement humain*

¹⁰ Gottfried Wilhelm Leibniz, *Nouveaux essais sur l'entendement humain (avant-propos et livre premier)*, ed. by Émile Boutroux (Paris: Librairie Delagrave, 1927), p. 11.

written in 1707 or 1711 in response to Locke's *Essay concerning Human Understanding*, but not print-published until 1764 or 1765, although it is thought that parts of it were probably circulating in manuscript form, and were more or less well-known to the philosophical community.¹¹ We meet the formulation in almost identical form in Bonnet's *Corps organisés* of 1762:

La nature ne va point par sauts. Tout a sa raison suffisante, ou sa cause prochaine & immédiate. L'état actuel d'un Corps est la suite ou le produit de son état antécédent; ou pour parler plus juste, l'état actuel d'un Corps est déterminé par son état antécédent.¹²

Nature does not proceed in leaps. Everything has its sufficient reason or its near and immediate cause. The current state of a body is the consequence or product of its previous state, or to put it more accurately, the current state of a body is determined by its previous state.

In Bonnet, as with Leibniz, the formula refers directly to the continuous linked chain of cause and effect ('raison suffisante' is of course also a Leibnizian formula, known in parodic form through the absurd sayings of Pangloss, the idiot tutor in Voltaire's *Candide*); this chain maps the patterns of logic onto the behaviour of nature, working on the assumption that logic itself is part of nature.

Diderot picks it up at least three times, once in the text that we know of as his *Observations sur Hemsterhuis* (1773), once in the *Réfutation d'Helvétius* (composed the same year) and once more in the *Éléments de physiologie*. Hemsterhuis is reflecting on the fact that he is not in control of his own thoughts, stating (rather obviously perhaps) that given that this is the case, there must be a cause prompting his (otherwise uncontrollable) thoughts. He writes:

Puisque je ne suis pas maître de penser à ce que je veux, et qu'une longue expérience me l'a appris, il faut bien que j'y sois porté par une cause.¹³

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- 11 Adrien Paschoud, 'Matérialisme, ordre naturel et imaginaire cosmologique dans *L'Homme-plante* (1748) de La Mettrie', in *Penser l'ordre naturel, 1680–1810*, ed. by Adrien Paschoud and Nathalie Vuillemin (Oxford: Voltaire Foundation, 2012), pp. 51–66 (p. 52n).
 - 12 Charles Bonnet, *Considérations sur les corps organisés* [1762], in *Œuvres d'histoire naturelle et de philosophie*, 18 tomes in 10 vols (Neuchâtel: chez S. Fauche, 1779–83), vol. 3, t. 5, p. 87.
 - 13 François Hemsterhuis in *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, ed. by Gerhardt Stenger, in *Œuvres complètes*, DPV (Paris: Hermann,

Given that, as long experience has taught me, I am not in charge of what I think about, it must be that I am impelled to think about it by a cause.

Diderot writes in response to this passage that:

Toute cause est un effet me paraît un axiome.

Sans quoi la nature agirait à tout moment *per saltum*; ce qui n'est jamais vrai.¹⁴

That every cause is an effect seems to me to be an axiom.

Without it nature would be continuously acting *per saltum* [by leaps], which is never the case.

In this version the formula has taken on a Latin tinge: 'par saut' has moved into 'per saltum'. In the *Réfutation d'Helvétius*, written in the same year and manuscript-published in the *Correspondance littéraire* (1783–86),¹⁵ we are back in French, also in the context of *natural cause and effect thought*:

Rien ne se fait par saut dans la nature; et l'éclair subit et rapide qui passe dans l'esprit, tient à un phénomène antérieur avec lequel on en reconnaîtrait la liaison, si l'on n'était pas infiniment plus pressé de jouir de sa lueur que d'en rechercher la cause.¹⁶

Nothing is done in a single leap in nature; and the sudden flash of lightning that passes through the mind derives from a previous phenomenon, and we would recognise the link if we were not in much more of a hurry to enjoy the illumination it brings than to seek its cause.

In the *Éléments de physiologie* we hear it again, but it is explicitly rather than just implicitly applied to the patterns and organisation of nature in general:

2004), vol. 24, pp. 479-767; 309.

14 Ibid.

15 *Réfutation d'Helvétius*, ed. by Roland Desné, Didier Kahn, Antoinette Lorenceau, and Gerhardt Stenger, in *Œuvres complètes*, DPV (Paris: Hermann, 2004), vol. 24, p. 440.

16 *Réfutation d'Helvétius*, p. 626. The editors note the recapitulation and the Leibnizian origin, but omit the later reference in *Éléments de physiologie* Denis Diderot, *Éléments de physiologie*, ed. by Jean Mayer, *Œuvres complètes*, DPV (Paris: Hermann, 1987), vol. 17, pp. 261–574 (p.483); Diderot, *Éléments de physiologie*, ed. by Paolo Quintili (Paris: Champion, 2004), p. 314; Diderot, *Éléments de physiologie*, ed. by Motoichi Terada (Paris: Éditions Matériologiques, 2019), p. 298 [hereafter notated as DPV 483/PQ 314/MT 298].

Rien ne se fait par saut dans la nature; tout y est lié. L'animal, l'homme, tout être est soumis à cette loi générale.¹⁷

Nothing is done in a single leap in nature, everything is connected up. Animals, humans, everything is subject to this general law.

'Tout y est lié' is the explanation and commentary for 'rien ne se fait par saut dans la nature': sequential links of cause and effect bind the whole; there are no gaps.

For Spinoza, things, ideas, and body, are all connected in the same way, replicating and following the same natural patterns.¹⁸

The order and connection of ideas is the same as the order and connection of things (by IIP7), and vice versa, the order and connection of things is the same as the order and connection of ideas (by IIP6C and P7). So just as the order and connection of ideas happens in the mind according to the order and connection of affections of the body (by IIP18), so vice versa (by IIIP2), the order and connection of affections of the body happens as thoughts and ideas of things are ordered and connected in the mind, q.e.d.¹⁹

If there is a natural order to things and ideas and affections in the body, sometimes that natural order is lost, and needs to be found again, as he argues in his *Traité de la réforme de l'entendement*:

Le but est d'avoir des idées claires et distinctes, [...] Ensuite, pour ramener toutes ces idées à l'unité, nous nous efforcerons de les enchaîner et de les ordonner de telle façon que notre esprit, autant qu'il se peut faire, reproduise objectivement ce qui est formellement dans la nature, prise dans sa totalité aussi bien que dans ses parties.²⁰

The aim is to have clear and distinct ideas [...]. Thereafter, to unify all these ideas, we will attempt to link them up and order them in such a

17 DPV 483/PQ 314/MT 298.

18 This feature of 'concaténation' is neatly analysed by Citton in his *L'Envers de la liberté*, pp. 85–89. See also Arthur O. Lovejoy, *The Great Chain of Being* (Cambridge, MA: Harvard University Press, 1936; repr. 2001), esp. pp. 227–41.

19 Spinoza, *Ethics*, trans. by Edwin Curley with an introduction by Stuart Hampshire (London: Penguin, 1996), p. 163.

20 Spinoza, *Traité de la réforme de l'entendement et de la meilleure voie à suivre pour parvenir à la vraie connaissance des choses*, ed. and trans. by A. Koyré (Paris: Vrin, 1951), §91.

way that our mind, insofar as it is able to, reproduces objectively that which is formally in nature, nature being taken in its totality as well as in its parts.

Spinoza's aim is to have clear and distinct ideas which reproduce objectively what is in nature, that is to say, its forms, and also to show others how to do the same.

Condillac presents a similar notion that nature, ideas, and the exposition of truth are all, or should all, be linked in similar ways. His insistence on knowledge as purveyed by the senses has an obvious Lockean genealogy (but Spinoza said it first, as did many others, back to the acceptable Aristotle and the more worrying Epicurus).²¹ In his *Essai sur l'origine des connaissances humaines* of 1746, Condillac mentions this perfect match between nature, our knowledge of it, and our presentation of it:

La nature indique elle-même l'ordre qu'on doit tenir dans l'exposition de la vérité ; car si toutes nos connaissances viennent des sens, il est évident que c'est aux idées sensibles à préparer l'intelligence des notions abstraites.²²

Nature herself indicates the order we need to follow when setting out the truth, for if all our knowledge comes from the senses, it is obvious that it is the sensory ideas which pave the way for the understanding of abstract notions.

Buffon again references this idea of a perfect match between the works of nature and the works of the natural philosopher. The aim of the author, he explains in his *Discours sur le style*, given on his admission to the Académie française in 1753, is to imitate Nature as closely as he can: if he succeeds he will create 'immortal monuments':

si [l'esprit humain] imite la Nature dans sa marche et dans son travail, s'il s'élève par la contemplation aux vérités les plus sublimes, s'il les réunit,

21 Locke of course was less polemical to acknowledge as a source, see John Yolton, *Locke and French Materialism* (Oxford: Oxford University Press, 1991), <https://doi.org/10.1093/acprof:oso/9780198242741.001.0001>.

22 Condillac, *Essai sur l'origine des connaissances humaines* [1746], ed. by Jean-Claude Pariente and Martine Pécharman (Paris: Vrin, 2014), p. 326 (II.II §. 52).

s'il les enchaîne, s'il en forme un système par la réflexion, il établira sur des fondements inébranlables des monuments immortels.²³

If [the human mind] imitates nature in its approach and in its work, if by dint of contemplation it is able to raise itself up to the most sublime truths, if it can bring them together and link them, if by dint of reflection it can shape it into one system, it will establish immortal monuments on unshakeable foundations.

The key idea is for the author to imitate Nature in his *approach*, literally his *walk* or in his *steps*, his *proceeding* would be the closest translation perhaps, and in his work: the book must replicate nature in order and organisation: what this means is that the author must raise himself to the contemplation of the most sublime truths, bring them together, link them up, and form a complete system. In fact Buffon uses the notion of authorship of books to establish nature as the best and most perfect author, or even, in the second extract below, not just the author but the book itself, a perpetually living book. Buffon is conceptualising this sort of difficult-to-imagine collapsing reversing relationship between the thing doing the doing and the thing which is made that we also see in Spinoza's double definition of Nature as *natura naturans* (the power nature has to determine its own laws) and *natura naturata* (the concept of nature as completely determined), and will meet again when looking at Diderot's model of memory as the self-reading, self-writing book. Here, however, is Buffon on the perfect form of natural creation; he is playing with the term 'ouvrage' [work] as book:

Pourquoi les ouvrages de la Nature sont-ils si parfaits? C'est que chaque ouvrage est un tout [...]²⁴

Why are the works of Nature always so perfect? Because every work is a whole.

la Nature est elle-même un ouvrage perpétuellement vivant.²⁵

Nature itself is a work, a perpetually living one.

23 Buffon, 'Discours sur le style', in *Œuvres*, ed. by Stéphane Schmitt and Cédric Crémère (Paris: Gallimard Pléiade, 2007), p. 424, <https://doi.org/10.5962/bhl.title.53421>.

24 Buffon, 'Discours sur le style', pp. 423–24.

25 Buffon, *Histoire naturelle*, vol. XII [1764], in *Œuvres*, ed. by Stéphane Schmitt and Cédric Crémère (Paris: Gallimard Pléiade, 2007), pp. 424, 985.

For Buffon, nature and the book (should) match up perfectly in a mutually illuminating manner.

Diderot also sees nature and thought matching up: everything in nature is ordered and linked, and everything we write about nature necessarily follows the same pattern:

Le type de nos raisonnements les plus étendus, leur liaison, leur conséquence est nécessaire dans notre entendement, comme l'enchaînement, la liaison des effets, des causes [,] des objets, des qualités des objets l'est dans la nature.²⁶

The pattern of our most extensive chains of reasoning, their connections and sequencing, is a necessary one within our understanding, as the connection, linking of effects, causes, objects, and the qualities of the objects within nature also is.

We see how faithfully these philosophers can choose to relay each other when they are not disputing other differences when we see how they quote each other, or pick up each other's specific phrasings, and therefore that it is reasonable to present them as more together than apart, more similar than different, more deeply united in their concerted efforts to understand nature and human understanding than divided on particular points—although of course some of the time we are looking at continuities, and other times at refinements and new versions.

As this last extract from the *Éléments* indicates, this natural order or pattern is 'necessary', determined by a fundamental model of cause and effect.

b. The Necessary Order of Nature

The order of nature is itself determined, writes Spinoza. Humans themselves are determined, and free will does not exist, writes Meslier. But there is reason, writes Condillac. Fontenelle wonders what the role of the instinct is. Diderot suggests that if there is any difference between the rest of living nature and the human, it is merely a question of extent.

Spinoza had said this in his *Ethics*: 'the order of nature' is determined, and therefore 'things could have been produced in no other way and no

²⁶ DPV 463/PQ 289/MT 279.

other order'.²⁷ Humans are also determined by the laws of nature, and therefore free will does not exist.

Despite being determined by these same laws of nature, humans do not recognise that this is the case, says Spinoza:

It will be sufficient here if I take as a foundation what everyone must acknowledge: that all men are born ignorant of the causes of things, and that they all want to seek their own advantage, and are conscious of this appetite. From these (assumptions) it follows, *first*, that men think themselves free, because they are conscious of their volitions and their appetite, and do not think, even in their dreams, of the causes by which they are disposed to wanting and willing, because they are ignorant of (those causes).²⁸

Meslier, in his *Anti-Fénelon*, quotes and responds to Fénelon's trumpeted declaration '*Je suis libre**, et je n'en puis douter [...]'

 with the following abrupt refutation:

* Nous sommes libres dès que nous faisons ce que nous voulons sans contrainte; nous ne sommes point autrement libres.²⁹

* We are free from the moment we do what we want free of constraint, and we are not otherwise free in the slightest.

The stage is set here for a stand-off between reason and free will on the one hand (in this context, part of the demonstration of the existence of God), and Nature and instinct on the other, inevitably part of a demonstration that God is *not* part of the workings of Nature (unless God is defined *as* Nature).

It was generally agreed that instinct was common to all animals, but was not part of thought, a faculty which set humans apart from other animals, and was God-given. It was on this basis that Descartes could build his argument stating that animals had no soul. Fontenelle's fragment '*Sur l'instinct*', published in 1757–58, thought to be a response to Nicolas Malebranche, asked whether instinct is voluntary

²⁷ Spinoza, *Ethics*, p. 22 (§II.73).

²⁸ Spinoza, *Ethics*, p. 26 (§II.78).

²⁹ Jean Meslier, *Anti-Fénelon*, in *Œuvres complètes*, ed. by Roland Desné, Preface and Notes by Jean Deprun, Roland Desné et Albert Soboul, 3 vols (Paris: Éditions anthropos, 1970–72), vol. 3, pp. 262–63.

or involuntary.³⁰ Condillac, in his 1746 *Essai*, agrees with the view that instinct is beyond our control, and maintains the barriers between it and what he calls here the 'operations of the soul'.

L'instinct n'est qu'une imagination dont l'exercice n'est point du tout à nos ordres, mais qui, par sa vivacité, concourt parfaitement à la conservation de notre être. Il exclut la mémoire, la réflexion et les autres opérations de l'âme. [...] Enfin la raison résulte de toutes les opérations de l'âme bien conduite.³¹

Instinct is nothing other than a sort of imagination whose exercise can in no way be controlled by us, but which, with its lively responsiveness, perfectly contributes to the preservation of our being. It excludes memory, reflection, and the other operations of the soul. [...] In short, reason is the result of all operations of the well-regulated soul.

But if, in his *Essai*, Condillac will write that 'la raison' 'couronne l'entendement' [reason crowns the understanding], by the time he writes his *Traité sur la sensation*, he no longer separates instinct and reason quite so firmly.³²

Diderot, writing the *Éléments de physiologie*, will be prepared to tersely assert that 'Je veux, n'est qu'un mot' [I want, is nothing more than a phrase].³³ The will ('la volonté') is discussed purely as a function of nature's needs and appetites. Our nature determines us. And it determines what we think and what we do. As we saw with Hemsterhuis, one is not always the master of one's thoughts, and there is always a cause for this: Diderot agreed, and took the opportunity to reaffirm the law of sequential cause and effect. From Spinoza's point of view, there will be a reason for our 'volitions and appetites' but we

30 Bernard le Bovier de Fontenelle, *Fragments d'un traité de la raison humaine*, in *Œuvres complètes*, ed. by Alain Niderst, 10 vols (Paris: Fayard, 1996), vol. 7, p. 6.

31 Condillac, *Essai sur l'origine des connaissances humaines* [1746], ed. by Jean-Claude Pariente and Martine Pécharman (Paris: Vrin, 2014), p. 133 (I.II § 95).

32 Condillac, *Essai sur l'origine des connaissances humaines*, ed. by Pariente et Pécharman, p. 132 (I.II §92). In the *Traité des sensations*, 'raison' never features in a chapter title; the process of thought moves sequentially from sensation to impression, idea, memory thereof, comparison to another memory of a different sensation, which leads to abstraction, and so on. The whole process is one long chain. See for example Étienne Bonnot de Condillac, *Traité des sensations*, ed. by Christiane Frémont (Paris: Fayard, 1984), pp. 125–27 (part 1, ch. 8, § 'La statue devient capable de réflexion', etc.).

33 DPV 483/PQ 314/MT 298.

ourselves may not know what it is. Free will and reason occupy an ever smaller space in accounts of the mind. Instinct begins to take the place of reason. And indeed, in the third part of the *Éléments de physiologie*, with all its extended discussion of the brain and thought, there is no chapter on reason at all.³⁴ There is more to say on the topic of instinct and also modes of perception which are paradoxically not perceived by the perceiving subject, but its place is in a later section of this chapter, once nature and its laws have been discussed (and instinct has been discussed as part of human nature being determined just like the rest of nature), and we have moved on to look in more detail at the human understanding.

For the moment, we return to the discussion of the order of nature, and whether this order is eternal or subject to change.

c. The Order of Nature: Unchanging or in Flux?

That order, however, is not an unchanging one: the universe and species themselves are in flux, write Leibniz, Meslier and Bonnet. (Buffon disagrees: he thinks nature is fixed.) Human individuals are also more or less in flux, writes Meslier: they vary according to their constitution, age, and health, from one person to the next, and over the course of their own lifetime (Buffon agrees). Madmen and fools embody these differences, as do sudden bursts of strength overcoming debility in the face of fear or overwhelming need. The man immobilised by gout will suddenly run away from fire, Condillac and Buffon tell us, or lift burning wooden panels from a building (Diderot bizarrely claims that Buffon himself did this).

As we have already quoted, Spinoza had stated that ‘the order of nature’ is determined, and therefore ‘things could have been produced in no other way and no other order’.³⁵ Hemsterhuis echoes this view very closely:

34 Although in part one, ‘Des êtres’, in the third chapter, entitled ‘Homme’ the first sub-heading is ‘Raison’. However, from the first sentence, it is displaced in favour of ‘instinct’: ‘La raison ou l’instinct de l’homme est déterminé par son organisation [...]’ [The reason or instinct of a man is determined by his organisation] (DPV 328/PQ 144/MT 149).

35 Spinoza, *Ethics*, p. 33 (22 II/73).

Ce qui existe par soi-même, et dont l'essence est d'exister, existe nécessairement, et nécessairement d'une façon déterminée. Existant nécessairement, il serait contradictoire qu'il n'existât pas, ou qu'il existât d'une façon autrement déterminée.³⁶

That which exists by itself, and whose essence is to exist, exists necessarily, and necessarily in a determined way. Existing necessarily, it would be contradictory for it not to exist, or for it to exist in a way that was determined differently.

Diderot agrees and then diverges. The divergence rides on the nature, or essence, of matter: is it *homogenous* or *heterogeneous*, that is, are the basic building blocks of matter all identical ('homogenous') or are they different ('heterogeneous')? The answer to this question, as we now know, is that they are different: this is what the periodic table tells us: the elements are essentially different, and from their combinations all things in nature are made. But natural philosophy was not ready to pronounce on the question at this stage. (Antoine Lavoisier's groundbreaking *Traité élémentaire de chimie*, with its first list of elements, would be published in 1789).³⁷ Diderot was already convinced that nature was heterogeneous, and as he explains, what is at stake is whether nature in its current form is unchanging or, to give it its divine resonance, 'eternal', or not: in his view its essential reactivity, or continuing change in reaction to everything around it, its 'vicissitude', means that while it is determined by natural laws (including the laws of cause and effect), and while it will eternally be so, it will also be subject to perpetual change. So, when Spinoza and Hemsterhuis state that nature's current forms are determined and will be unchanging, Diderot, responding directly to Hemsterhuis, disagrees:

* Je ne crois pas cela.

Je crois que la forme actuelle sous laquelle la matière existe est nécessaire et déterminée; ainsi que toutes les formes diverses qu'elle prendra successivement à toute éternité.

36 Hemsterhuis in Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, ed. by Gerhardt Stenger, in *Œuvres complètes*, DPV (Paris: Hermann, 2004), vol. 24, p. 284.

37 Even the term 'element' is not a given here: what Lavoisier meant by 'element' is not the same as an element in the periodic table as understood by Dmitri Mendeleev or as redefined in the twentieth century according to atomic number. With thanks to François Pépin for this point.

Mais cette vicissitude, ce développement qui est en flux perpétuel est nécessaire. C'est une suite de son essence et de son hétérogénéité.

Et je ne vois nulle contradiction à cette supposition.

Si elle est essentiellement hétérogène; elle est essentiellement en vicissitude.³⁸

* I do not believe that.

I believe that the current form in which matter exists is necessary and determined as are all the different forms it will take successively and for all eternity.

But this vicissitude, this development which is in perpetual flux is necessary. It is the consequence of its essence and its heterogeneity.

And I see no contradiction in this supposition.

If it is essentially heterogeneous then it is essentially subject to vicissitude.

Not all authors are willing to say this, and of course the extent to which Diderot writing these notes in Hemsterhuis's book and then handing them back to him with the strict injunction to keep them completely secret actually counts as saying it at all is debatable. But Diderot did plant his views in a number of different textual flowerbeds, including this one: in his 1753 print-published *Pensées sur l'interprétation de la nature* he suggested that Nature's productions are infinitely varied;³⁹ in the *Rêve de d'Alembert*, his character d'Alembert muses on the 'flux perpétuel', and this theme is further developed in the *Eléments de physiologie*.⁴⁰

Meslier had depicted a broad-brush canvas of perpetual motion and perpetual variation in his *Mémoire des pensées et sentiments* (written probably in the 1720s just prior to his death in 1729 and better known as his *Testament* after Voltaire's famous abridgement which appeared in 1761). In its structure and iterative style, Meslier's *Mémoire* is a written instantiation of infinite variation. One such evocation runs as follows:

En un mot toute action suit naturellement et necessairement la nature du mouvement de l'être qui se meut. Tout cela est clair et certain, et comme d'ailleurs tous les divers mouvemens dont je viens de parler, se peuvent encore modifier en infinies sortes et manieres, et que tous les êtres qui sont en mouvement et qui sont les plus petites parties de la matière se

38 Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, p. 284.

39 Diderot, *Pensées sur l'interprétation de la nature*, DPV, vol. 9, p. 291 ('pensée' 12).

40 Diderot, *Le Rêve de d'Alembert*, DPV, p. 138; *Éléments de physiologie*, DPV 312/PQ 127/MT 135; DPV 322/PQ 137/MT 144; DPV 444/PQ 265/MT 261, as quoted above.

peuvent mesler, se combiner, se joindre, se lier, s'accrocher, et s'unir ensemble, ou se heurter les unes contre les autres, se repousser les unes les autres, se separer, s'écarter, et se disperser les unes des autres, en infinies sortes et manieres.⁴¹

In a word all action naturally and necessarily follows the nature of the movement of the moving being. All this is clear and certain, and moreover all these diverse movements that I have just been speaking about can further modify themselves in infinite ways and manners, and all the beings which are moving and which are the smallest parts of matter can mix, combine, join, link, hold on, and unite together, or alternatively crash into one another, repel, separate, diverge and disperse in infinite ways and manners.

The naturalist Charles Bonnet bravely evokes species change in the natural world and in living beings in his *Palingénésie philosophique* (1769), published the same year that the *Rêve de d'Alembert* was first drafted. Bonnet had already invoked 'l'évolution, loi de la nature' in his *Corps organisés*.⁴² In the *Palingénésie philosophique*, he evokes '[des] idées sur l'état passé & sur l'état futur des Etres vivans' [ideas on the past state and on the future state of living beings], and seeks to disarm disapproval, official or otherwise, by insisting (in Pluchian mode)⁴³ on the beauty of the spectacle, 'cette ravissante Scene de métamorphoses' [this ravishing scene of metamorphoses].⁴⁴ The result of all this change would be that 'Nous contemplerions un monde tout nouveau, un Ensemble de Choses dont nous ne saurions nous faire actuellement aucune idée' [we would

41 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Cœuvres complètes*, ed. by Roland Desné, préface et notes par Jean Deprun, Roland Desné et Albert Soboul, vol. 2, p. 443.

42 Charles Bonnet, *Considérations sur les corps organisés* [1762], in *Cœuvres d'histoire naturelle et de philosophie*, vol. 3, t. 5, p. 303.

43 Noël-Antoine Pluche (1688–1761) was the author of the *Spectacle de la nature* (1732–42), famous for its argument that God's existence could be proved by reference to the beauty of nature, an argument which Diderot contested in Saunderson's (invented) death-bed speech (*Lettre sur les aveugles* [1749], in Denis Diderot, *Lettre sur les aveugles: à l'usage de ceux qui voient; Lettre sur les sourds et muets: à l'usage de ceux qui entendent et qui parlent*, ed. by Marian Hobson and Simon Harvey (Paris: GF Flammarion, 2000)).

44 In the *Palingénésie philosophique* [1769], Bonnet evokes (in the title) 'idées sur l'état passé & sur l'état futur des Etres vivans' (Bonnet, *Cœuvres d'histoire naturelle et de philosophie*, vol. 7, t. 15, p. 171).

be contemplating a completely new world, an ensemble of things about which we currently have absolutely no idea at all].⁴⁵

There are, as already suggested, material variations which are more familiar and less obviously paradigmatically challenging. There are malformed bodies: in eighteenth-century terms, 'monsters'. Emita Hill, Andrew Curran and Charles Wolfe have all written fine and complementary studies of the monster as concept, as thought experiment and as fiction in Diderot.⁴⁶ As we know, Diderot was interested in understanding the range and also random nature of 'monstrous' forms, and in using them to show the material variability of nature and its laws.⁴⁷ Bonnet had said in his *Corps organisés* (1762) that

On nomme Monstre toute production organisée, dans laquelle la conformation, l'arrangement, ou le nombre de quelques-unes des parties ne suivent pas les règles ordinaires.⁴⁸

We term a Monster any organised production in which the structure, arrangement or number of any of its parts do not conform to ordinary rules.

Buffon discusses natural monstrosity, but is not ready to suggest species modification and transformation over time, instead piously confirming that the 'ordonnance [de la nature] est fixe pour le nombre, le maintien et l'équilibre des espèces' [order of nature is fixed in relation to the amount, the preservation, and the balance of species].⁴⁹ He states, as is generally accepted in all of these works of natural philosophy, that individuals themselves vary one from the next, and over the course of their own lives: change is a *modus vivendi* and the 'habitude [de la nature] vari[e] autant qu'il est possible dans toutes les formes individuelles' [nature

45 Bonnet, *Palingénésie philosophique*, in *Œuvres d'histoire naturelle et de philosophie*, vol. 7, t. 15, p. 392.

46 See Emita Hill, Andrew Curran, and Charles Wolfe on monsters in Diderot's thought; see also Wes Williams for earlier deployments of the concept. Andrew Curran, *Sublime Disorder: Physical Monstrosity in Diderot's Universe* (Oxford: Voltaire Foundation, 2001); Emita Hill, *The Role of 'le monstre' in Diderot's Thought* (Banbury: Voltaire Foundation, 1972); Charles Wolfe, *Monsters and Philosophy* (London: College Publications, 2005); Wes Williams, *Monsters and Their Meanings in Early Modern Culture* (Oxford: Oxford University Press, 2011), <https://doi.org/10.1093/acprof:oso/9780199577026.001.0001>.

47 We touched on the question of monsters and monstrosity in the previous chapter.

48 Bonnet, *Corps organisés*, p. 102.

49 Buffon, *De la nature. Seconde vue in Histoire naturelle*, vol. 13 [1765], *Œuvres*, p. 999.

habitually varies as much as possible across all individual forms].⁵⁰ Bodies are in flux, had said Leibniz in his *Monadologie*, comparing bodies to rivers:

Car tous les corps sont dans un flux perpétuel comme des rivières ; et des parties y entrent et en sortent continuellement.⁵¹

For all bodies are in perpetual flux like rivers, and parts are continually coming in and going out of them.

While the allusion to rivers in flux nods to Heraclitus's alleged remark about never stepping into the same river twice, it was not a truism, philosophical, medical or otherwise, to state that bodies were also in flux. Meslier also said that bodies are in flux, quoting Montaigne's *Apologie de Raimond Sebond* to do so, and thereby inserting Montaigne's Lucretian commentary that our thoughts, judgements, and soul suffer and are affected by these continual alterations. Montaigne's own relation to Epicureanism is an interesting one that is not part of the story we are telling here, but it is perhaps useful to note that he deeply admired Lucretius's poem, and cited it very frequently.⁵² Montaigne's role in the transmission of *De rerum natura* is important, as these particular pages from Meslier's *Testament* demonstrate: there is extensive quotation from Lucretius, and it is all lifted from Montaigne's *Apologie de Raymond Sebond*.⁵³

50 Ibid.

51 Gottfried Wilhelm Leibniz, 'Monadologie', in *Principes de la nature et de la grace fondés en raison et principes de la philosophie ou monadologie*, ed. by André Robinet (Paris: Presses Universitaires de France, 1954), p. 113 (§71); *Monadology: An Edition for Students*, ed. and trans. by Nicholas Rescher (London: Routledge, 2002), p. 234 (translation lightly amended).

52 See Michael Screech, *Montaigne's Annotated Copy of Lucretius: A Transcription and Study of the Manuscript, Notes and Pen-Marks* (Geneva: Droz, 1998) and Wes Williams, "'Well Said/Well Thought': How Montaigne Read His Lucretius", in *Lucretius and the Early Modern*, ed. by David Norbrook, Stephen Harrison, and Philip Hardie (Oxford: Oxford University Press, 2015), pp. 136–61, <https://doi.org/10.1093/acp/rof:oso/9780198713845.003.0007>.

53 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 3, p. 48 n. 2.

*Il est certain, dit le judicieux Montaigne, que nos pensées, que nos jugemens, et que les facultés de notre âme souffrent selon les mouvemens, et les alterations du corps; lesquelles alterations sont continuëles.*⁵⁴

It is certain, says the judicious Montaigne, that our thoughts, our judgements, and the faculties of our soul suffer according to the movements and alterations of the body, these alterations being unceasing.

There are two strands to draw out of this particular tradition of conceptualising individual bodies in flux: firstly, the expanding-diminishing model of a body that will grow, flourish, and then decline and die, and secondly, the idea that illness and other changes can affect and alter its abilities and character at any given moment. I will take these strands one after the other. The first is a typically lofty example of the ineluctable forces of nature from the pen of Buffon:

*Tout change dans la Nature, tout s'altère, tout périt ; le corps de l'homme n'est pas plutôt arrivé à son point de perfection, qu'il commence à déchoir.*⁵⁵

Everything changes in Nature, everything alters, everything perishes; no sooner has the body of man reached its peak of perfection than it starts to decline.

In 1753, Diderot will pick up this notion of the flourishing and death of an individual to push back to the bigger question: might not a species follow the same pattern?

[...] dans les règnes animal et végétal, un individu commence, pour ainsi dire, s'accroît, dure, dépérit et passe; n'en serait-il pas de même des espèces entières?⁵⁶

In the animal and vegetable realms, an individual starts, so to say, grows, lasts, declines and passes; might it not also be the same for whole species?

Although as we have already seen, Buffon will refuse to countenance such a notion.⁵⁷

54 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 3, p. 53 (from Montaigne's *Apologie de Raimond Sebond*).

55 Buffon, *De l'homme in Histoire naturelle*, vol. 2 [1749], *Œuvres*, p. 262.

56 Diderot, *Pensées sur l'interprétation de la nature*, DPV, vol. 9, p. 331.

57 Barbara de Negroni comments on Buffon's opposition to 'les thèses transformistes', in Diderot, *Pensées sur l'interprétation de la nature*, in *Œuvres*, p. 1206, n. 143.

The principal of continual change in bodies is asserted again in the section on 'Mort' [Death] in the *Éléments de physiologie*: 'Nul état fixe dans le corps animal: il décroît quand il ne croît plus' [There is no fixed state in the animal body: it starts shrinking once it stops growing].⁵⁸

The second strand is the notion of illness, which we have already seen in Montaigne via Meslier, and also in the previous chapter, in relation to Pascal.⁵⁹ Bonnet will restate it in eighteenth-century physiological vocabulary:

Une maladie peut déranger toute l'Economie du Cerveau & anéantir l'Imagination, la Mémoire, le Raisonnement; elle n'annéantit pas l'Ame, & néanmoins elle est réduite à l'état de l'Ame de la Brute.⁶⁰

An illness can upset the whole economy of the brain and annihilate imagination, memory, and reason; it does not annihilate the soul, which is nonetheless reduced to the state of the soul of a beast.

In the *Éléments de physiologie*, this view is the underlying assumption for the whole work and references to it are ubiquitous. Here is one, from part 1, 'Des Êtres', chapter III, 'Homme', sub-section 'Raison':

Les facultés de l'homme se perdent sans retour, comme elles se perdent momentanément, c'est la même cause, dont l'effet dure ou cesse. Exemples pris de la lassitude, de la maladie, de la convalescence, de la passion, de l'ivresse, du sommeil, c'est ainsi que l'homme est successivement ingénieux ou stupide, patient ou colère, jamais le même; le plus constant est celui qui change le moins.⁶¹

Human faculties can be irrevocably lost just as they can be momentarily lost, the cause is the same, whether the effect endures or not. Examples can be found in tiredness, illness, convalescence, passion, drunkenness, sleep, and thus is man successively ingenious or stupid, patient or angry, never the same; the most constant is he who changes the least.

58 DPV 312/PQ 127/MT 135.

59 See above.

60 Bonnet, *Analyse abrégée de l'Essai analytique sur les Facultés de l'Ame* [?1764], in *Œuvres d'histoire naturelle et de philosophie*, vol. 8, t. 15, p. 38.

61 DPV 329/PQ 145/MT 150.

i. The Gouty Man and the Fire

Thus far, these relaying maxims and patterns remain rather generalised. There are also specific examples which get picked up and reused. One such is the inverse example of the gouty man, enfeebled by his illness yet given remarkable strength by experiencing extreme emotion.

Here is Condillac's version:

Un homme, tourmenté par la goutte et qui ne peut se soutenir, revoit au moment qu'il s'y attendait le moins, un fils qu'il croyait perdu : plus de douleur. Un instant après le feu se met à sa maison : plus de faiblesse. Il est déjà hors du danger quand on songe à le secourir. Son imagination subitement et vivement frappée, réagit sur toutes les parties de son corps, et y produit la révolution qui le sauve.⁶²

A man, tormented by gout and unable to support his own weight, sees at the moment he least expected it a son whom he'd thought lost: no more pain. An instant later his house catches fire: no more weakness. By the time anyone thinks of giving him any assistance, he has already got out of danger. The effect of imagination having been suddenly and deeply struck reaches every part of his body and produces the revolution which saves him.

This sentimental fiction of Condillac's staggers under the weight of its implausibly compacted drama of the gouty father, the return of a son believed dead, and a sudden dangerous blaze, and fails to make any convincing physiological point. The version we meet in the *Eléments de physiologie* is this (the gouty man has disappeared to be replaced by three separate characters):

* Mr de Buffon voit la flamme s'échapper avec de la fumée à travers les fentes d'un lambris; il arrache le lambris; il prend entre ses bras les planches à demi brûlées et les porte dans sa cour et il se trouve qu'un cheval n'ébranlerait pas le fardeau qu'il a porté. Une femme délicate est attaquée de vapeurs hystériques, de fureur utérine et trois hommes ne peuvent contenir celle qu'un seul d'entre eux aurait renversée, liée dans son état de santé. Le feu prend à la maison d'un avare, il prend son

62 Condillac, *Essai sur l'origine des connaissances humaines*, ed. by Pariente and Pécharman, p. 129 (I.II, §88).

coffre-fort et le porte dans son jardin, d'où il ne l'aurait pas remué pour dix fois la somme qu'il contenait.⁶³

* Mr de Buffon sees flames and smoke escaping through the slits of a piece of wooden panneling; he tears it off; he carries the half-burnt planks in his arms out into the courtyard and it emerges that a horse would not have been able to shift the load he carried. A delicate woman is attacked by hysterical vapours and uterine fury and three men are unable to restrain a person whom one of them could have knocked over and tied up unaided had she been in a state of health. The house of a miser catches light, he picks up his strong box and carries it into his garden, and then wouldn't have been able to move it for ten times the sum it contained.

Diderot's three cases have fewer elements within them, taken separately, and although each one presents an extreme instance that certainly does contain melodramatic qualities, the physiological point about the body being capable of surprising strength in certain crisis circumstances (here, anxiety about treasured possessions—or just treasure—and hysteria)⁶⁴ is clear. It is curious nonetheless that Buffon is referenced (we have not been able to find the source for this anecdote),⁶⁵ and even more curious that Buffon features not as a natural philosopher organising and presenting anecdotal evidence, but as a player himself. Is there something at stake here, even if it's just a joke about the ponderous Buffon skipping about with huge weights? An implicit parallel with the miser, mocking Buffon for his pride in his wood panelling? Condillac is not named or alluded to, but his version tells us that these sorts of

63 DPV 327/PQ 143n/MT 149.

64 See Sabine Arnaud, *On Hysteria: The Invention of a Medical Category between 1670 & 1820* (Chicago: Chicago University Press, 2015), <https://doi.org/10.7208/chicago/9780226275680.001.0001>.

65 DPV and Terada have no references for this anecdote; PQ references the source in Buffon, *Histoire naturelle*, t.II, p. 429, 'Histoire naturelle de l'homme. De la nature de l'homme', but it does not seem to be there. Substantial hunting in Pietro Corsi et al.'s online edition of Buffon's work also failed to turn up the anecdote (<http://www.cn2sv.cnrs.fr/article142.html>). Buffon scholar Stéphane Schmitt supplies two references in Buffon to extraordinary strength in extraordinary straits, both in the *Supplément*, vol. 4, p. 372 ('Addition à l'article de l'accouchement' on labour pains) and p. 387 ('Addition à l'article de la puberté' on a young man in an 'état de délire convulsif' [a state of convulsive delirium]), but neither of these refer to Buffon himself. With thanks to Pietro Corsi and Stéphane Schmitt for helping to look.

examples, particularly involving fire, pre-existed Buffon's alleged experience, and were popping up in separate but overlapping texts.

ii. From Recycled Cases to the Specific

Memory is a recurring topic of interest to all these authors thinking about how the brain works (as we have already seen and will see again): stupidity, genius, and madness are used throughout these texts as conditions that illuminate the phenomena of memory, and vice versa. La Mettrie's *Traité de l'âme* (1745) states that 'les sots raisonnent mal, ils ont si peu de mémoire' [idiots reason poorly, they have so little memory], and makes a link with the mad, whose ideas (he says) are disconnected, and in this sense 'idiots' are mad too, their ideas also being disconnected.⁶⁶ Condillac's *Essai sur l'origine des connaissances humaines* (1746) makes the same analogy: the man without memory (and therefore also without imagination), being completely unable to link his ideas, would be incapable of thought at all, and would be an imbecile; the man who had too much memory and too much imagination would similarly be unable to think, also failing to have properly linked consecutive thoughts, and would be mad.⁶⁷ Diderot's version is less boxily categorising, and also less assertive: inexperience as well as failure or loss of memory will all have an effect on a man's ability to link his ideas, and all lead to the same phenomenon, that is, that the man will *seem* mad.

Si faute d'expérience les phénomènes ne s'enchaînent pas, si faute de mémoire ils ne peuvent s'enchaîner, si par la perte de la mémoire ils se décousent, l'homme paraît fou.⁶⁸

If for lack of experience phenomena don't link up, if for lack of memory they cannot be linked, if for loss of memory they become disconnected, a man will seem mad.

In all these circumstances, memory, sanity, and health exist in a sensitive and easily-disturbed relationship to each other, and Diderot

66 Julien Offray de La Mettrie, *Traité de l'âme*, in *Œuvres philosophiques*, ed. by Francine Markovits, 2 vols (Paris: Fayard, 1987), vol. 1, p. 216.

67 Condillac, *Essai sur l'origine des connaissances humaines*, ed. by Pariente and Pécharman, pp. 98–99 (I.II, §34).

68 DPV 464/PQ 289/MT 279. See also 'Il y a des phénomènes de mémoire qui ont conduit à la stupidité, à la folie' (DPV 473/PQ 301/MT 289).

gives a number of examples involving that relationship being lost,⁶⁹ or even never established, as in the case of the boy who lived with bears until the age of ten, who had no language other than bear grunts when brought into 'civilization', and who, once he had learnt language, could not remember his pre-language years with the bears. Diderot does not give all these details, tersely stating that 'Les signes servent beaucoup à la mémoire. Un enfant de dix ans, élevé par les ours, resta sans mémoire' [signs assist memory a great deal. A child of ten, brought up by bears, remained without memory].⁷⁰ The background can be found in the anecdote's previous appearances: in La Mettrie's *Traité de l'âme*, in La Mettrie's possible source, Jean-Pierre Crousaz's *Logique* (1720), although here the boy is a man, and in Condillac's *Essai* and again in his *Traité*: it comes (and Condillac gives the note accurately in his *Essai*) from Bernard Connor's *Evangelium medicum, seu medicina mystica*, published in London in 1697, and emerges again in Rousseau's *Discours sur l'origine de l'inégalité*, note III.⁷¹

The point here is that these writers all use this same example. There are other such cases, the blind boy operated on by Cheselden or the deaf man from Chartres being two more.⁷² Diderot does not use these

69 DPV 469–70/PQ 297–98/MT 285–86; DPV 472–73/PQ 300–01/MT 288–89. He also talks about the volatility of the mind during fever or delirium, when the clever man and the fool can swap places owing to bodily illness. He considers that this is as important a deciding aspect of a person's intelligence as the perfection or otherwise of their senses (Helvétius's general view), see *Réfutation d'Helvétius*, DPV, vol. 24, p. 515.

70 DPV 470/PQ 298/MT 286.

71 La Mettrie, *Traité de l'âme*, p.236; Jean-Pierre Crousaz', *La Logique, ou Système de réflexions qui peuvent contribuer à la netteté et l'étendue de nos connaissances*, 2nd edn (Amsterdam: L'Honoré et Châtelain, 1720), vol. 1, p. 32; Condillac's *Essai*, §23, and *Traité*, p. 254–55; Bernard Connor, *Evangelium medicum, seu medicina mystica*, London in 1697, pp. 133–34; Rousseau's *Discours sur l'origine de l'inégalité*, note III in the *Œuvres complètes*, ed. by Bernard Gagnebin and Marcel Raymond (Paris: Gallimard Pléiade, 1964), vol. 3, p. 196, and p. 1361, n. 5.

72 'Aveugle-né' [man born blind]: Voltaire's account seems to kick-start this particular series: Voltaire, *Éléments de la philosophie de Newton*, ed. by Robert L. Walters and W.H. Barber, *Œuvres complètes de Voltaire* (Oxford: Voltaire Foundation, 1992), vol. 15, ch. 7. See Crousaz, *Logique*, vol. 1, pp. 33–34; La Mettrie, *Traité de l'âme*, pp. 227–28; Condillac, *Essai sur l'origine des connaissances humaines*, p. 186 (I.VI §15); Diderot's *Lettre sur les aveugles* (1749); Buffon, *Histoire naturelle*, vol. 3 (1749), p. 314; Condillac, *Traité des sensations* (1753), III.V, p. 195. See Tunstall, *Blindness and Enlightenment*, pp. 133–36. 'Sourd de Chartres' [the man from Chartres born deaf]: Crousaz, *Logique*, vol. 1, p. 34; La Mettrie, *Traité de l'âme*, pp. 225–26; Condillac, *Essai*, pp. 156–57 (I.II.IV, §13), pp. 156–57; Buffon, *Histoire naturelle* (1749), p. 348.

particular examples in the *Éléments de physiologie*, although they had appeared elsewhere in his œuvre. But they feature consistently across this corpus of texts that we are looking at, all of which provide material for the *Éléments de physiologie*. In the *Lettre sur les sourds et muets*, Diderot alludes to ‘nos muets de convention’ [our typical dumb people] and to the ‘questions dont on leur demanderait la réponse’ [the questions we would ask them to answer] as if those questions were always the same, and the deaf and dumb cases also the same.⁷³ This common corpus tells us that, as Diderot hints, the same examples and questions bear down on all these thinkers. One of the features that typifies the *Éléments de physiologie* is that while he often does work with familiar positions or examples, he does so in concentrated form, often adding newer, more personal, or stranger examples.

We can observe this shift from the general position (that humans differ from each other and over the course of any one life time according to physiology and state of health) to the striking and specific exemplification, in the change from the exasperated *Réfutation d’Helvétius* to the *Éléments de physiologie*. In the former, Diderot lambasts Helvétius for stating that humans are essentially the same everywhere, without regard for the sort of society they live in, and equally without regard to their physiological condition generally or at any given moment. He orders his reader to open the books of anatomists, doctors and physiologists, and to think about how a slight fever can make us quicker or slower. He asks us whether we have ever had a headache, implicitly challenging us to consider the effect it has on our thought processes. And meanwhile the ‘vous’, the collective you he is addressing, shades into a direct challenge to Helvétius himself (by then dead), chastising him for not having said a word about ‘les fous’ [mad people].⁷⁴

In the *Éléments de physiologie*, this fieriness has cooled into detached description: the mental drama he records is all the more vivid for it. The notion that our state of mind at any given moment depends on our precise physiological condition gains a curious scenario: Diderot turns himself into a narrative of the husband and father whose familial anxiety is caused by a slightly fast pulse:

73 Diderot, *Lettre sur les sourds et muets*, ed. by Hobson and Harvey, pp. 95, 96.

74 Diderot, *Réfutation d’Helvétius*, DPV, vol. 24, p. 620.

L'action des nerfs porte au cerveau des désirs singuliers, les fantaisies les plus bizarres, des affections, des frayeurs: Il me semble que j'entends crier ma femme: on attaque ma fille, elle m'appelle à son secours; je vois les murs s'ébranler autour de moi: le plafond est prêt à tomber sur ma tête; je me sens pusillanime, je me tâte le pouls, j'y découvre un petit mouvement fébrile: la cause de ma frayeur connue, elle cesse.⁷⁵

The action of the nerves transmits strange desires to the brain, the most bizarre fantasies, affections, and fears: I seem to hear my wife crying out: my daughter is being attacked, she is calling me for help; I see the walls shake around me: the ceiling is about to fall on my head; I feel fearful, I check my pulse, I find it is beating slightly feverishly: as soon as I know what the cause for my fright is, it ceases.

So, nature is in flux, and man is in flux.

d. Matter in Flux

Matter can move from one form to another, not in the sense that stones and other materials might suddenly get up and start arranging themselves into a building (a lumbering joke Meslier makes) but in the course of natural material processes, write Meslier, Buffon and Bonnet. These processes include absorption by nutrition, says Bonnet, while any given being at any given moment is a composite of different substances or bodies, write Spinoza and Buffon. This can be exemplified by the differences between different sorts of matter such as stone and flesh, and transformations between them. Rousseau challenges any philosopher to come and tell him how a lump of rock can become a living creature. And what is the likelihood that nature in all its extraordinary functions and variety could have come about without a guiding hand, just by chance? Diderot's answer can be found in the first part of the 'Rêve de d'Alembert'.

Meslier is quick to reject cartoonish versions of materialist thinking which simplify to the point of nonsense the notion of the circulation of matter. It is not, he says, that the materials of a house jump up and start building themselves:

Pareillement il seroit ridicule de dire ou de penser que les pierres et les bois qui composent une maison se seroient façonnés, assemblés, rangés,

75 DPV 359/PQ 179/MT 179.

et attachés d'eux mêmes ensemble pour bastir une maison, puisque tous ces materiaux là n'ont en eux mêmes aucun mouvement.⁷⁶

Similarly it would be absurd to say or to think that the stones and pieces of wood that make up a house could have carved themselves, got assembled, arranged and bound all by themselves to build a house, because none of those materials in themselves have any movement.

He explains how matter moves from one form to another in humans or animals through the simple processes of drinking and eating, and he also strikes a blow against abstraction (which these writers repeatedly do) by pointing out that it is not some general sort of unspecified matter which thinks, it's matter in human or animal form (provocatively presenting them as interchangeable, and without comment here on the anti-Cartesian notion of the thinking animal):

Ce n'est pas précisément la matière qui pense, mais c'est l'homme ou l'animal composé de matière, qui pense, qui boit, qui mange, qui marche, qui dort; et comme les parties d'une pierre ou d'un morceau de fer ou de quelque autre chose que ce soit peuvent par leurs différentes modifications devenir chair et os et composer un corps organique et vivant, elles peuvent par conséquent faire un homme ou quelque autre animal capable de sentiment et de connaissance, et pour cela il ne faut point d'autre arrangement ni d'autres mouvements que ceux qui se trouvent ordinairement dans les hommes ou dans les autres animaux.⁷⁷

It's not exactly matter which thinks, but the human or the animal made of matter which thinks, drinks, eats, walks, and sleeps; and just as the parts of a stone or a piece of iron or whatever else it might be can, by going through different modifications, become flesh and bone and compose an organic living body, they can also therefore make a human or some other animal capable of feeling and knowledge, and for that nothing is needed apart from the arrangement or movements that are ordinarily found in humans or other animals.

76 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 2, p. 460.

77 Meslier, *Anti-Fénelon*, ed. by Jean Deprun, in Meslier, *Œuvres complètes*, ed. by Desné, vol. 3, p. 244, n. 22. Deprun quotes Vernière as saying (in his *Spinoza et la pensée française avant la Révolution*, 1954, t. 2, p. 368, n. 3) that Meslier 'décrit, cinquante ans avant Diderot, le processus d'"animalisation" du *Rêve de d'Alembert*' [describes, fifty years before Diderot, the process of "animalisation" from the *D'Alembert's Dream*].

This view of the individual (whether animal or human) as composite and as depending on its particular organisation for any specific character or capacities was also shared by Spinoza and Buffon. Spinoza simply states:

The human body is composed of a great many individuals of different natures, each of which is highly composite.⁷⁸

Buffon's amplifying style presents the same point differently and more repetitively, but is substantively identical:

[...] un individu n'est qu'un tout uniformément organisé dans toutes ses parties intérieures, un composé d'une infinité de figures semblables et de parties similaires, un assemblage de germes ou de petits individus de la même espèce, lesquels peuvent tous se développer de la même façon, suivant les circonstances, et former de nouveaux tous composés comme le premier.⁷⁹

An individual is nothing more than a whole uniformly organised in all its internal parts, a compound of infinite shapes and similar parts, an assemblage of seeds or of mini individuals of the same species which are all capable of developing in the same way, circumstances permitting, and forming new ones all put together just like the first.

Buffon always takes great care to avoid provocation and also to avoid seeming materialist (the two being synonymous), so he will not touch directly on anything which casts doubt on the divine, and rather than talking about how inert matter might acquire or already possess in latent form the ability to think, he looks at it the other way round, describing how living matter becomes dead matter. This is a clever move, as it implicitly retains the notion of the movement between different forms of matter:

[...] il me paroît que la division générale qu'on devoit faire de la matière, est *matière vivante* et *matière morte*, au lieu de dire matière organisée et matière brute ; le brut n'est que le mort, je pourrois le prouver par cette quantité énorme de coquilles et d'autres dépouilles des animaux vivans qui font la principale substance des pierres, des marbres, des craies et des marnes, des terres, des tourbes, et de plusieurs autres matières que

78 Spinoza, *Ethics*, p. 44: II/102, postulate 1. See above, on Bordeu and the composite animals.

79 Buffon, *Histoire des animaux* in *Histoire naturelle*, vol. 2 [1749], *Œuvres*, p. 144.

nous appellons brutes, et qui ne sont que les débris et les parties mortes d'animaux ou de végétaux [...].⁸⁰

It seems to me that the general division that one should make in matter is that of *living matter* and *dead matter*, instead of talking about organised matter and base matter; base matter is nothing other than dead matter, and I would be able to prove it with the vast quantity of shells and other animal remains which make up the principle substance of all sorts of stone, marble, chalk, clay, earth, peat, and many other sorts of matter which we call base, and which are nothing other than the debris and dead parts of animals or plants.

Bonnet, who is also averse to making any pronouncements that may seem to undermine religion, and who in fact goes to great lengths to demonstrate his piety with fervent prayers and thanks to God,⁸¹ avoids generalising statement insofar as he can, instead talking in detail about the different forms of embodied matter and about the similarities and divergences between plant and animal life:

Comme la Plante, [l'Animal] végete: comme elle, il reçoit du dehors l'aliment qui le fait croître: comme elle, il multiplie. Mais à ces différentes actions, se joint chez lui le sentiment ou la perception de ce qui se passe dans son intérieur.⁸²

Like the plant, the animal vegetates: like it, the animal receives nourishment from outside that makes it grow: like it, the animal multiplies. But to these different actions can also be added feeling or the perception of what takes place inside it.

Bonnet as we see is looking hard at the processes—here nutrition and reproduction—that are shared by both kinds of life form, and what differentiates the animal from the vegetable is qualitative in the sense that it is completely different but also quantitative in that it is an addition to a shared common root. He also looks a great deal at nutrition and at changing shape and size over time, as influenced by nutrition;⁸³ we see Diderot picking this point up in the *Observations sur Hemsterhuis*, where he reflects with interest that thanks to the food he has ingested,

80 Buffon, *Histoire des animaux* in *Histoire naturelle*, vol. 2 [1749], *Œuvres*, p. 157.

81 See for example Bonnet, *Contemplation de la nature* [1764] in *Œuvres d'histoire naturelle et de philosophie*, vol. 4, t. 7, pp. 185, 187.

82 Bonnet, *Contemplation de la nature* [1764], pp. 177–78.

83 Bonnet, *Corps organisés*, p. 100.

and having as a baby 'experienced sensation over the length of a foot and a half', he now 'experiences sensation along the length of five feet and a bit'.⁸⁴ Diderot finds these transformative processes fascinating and also moving; he becomes exasperated with Hemsterhuis's plodding exposition of this materialist doxa:

Et ce passage d'un règne à un autre, et ces êtres intermédiaires qui semblent appartenir à la plante et à l'animal, ne vous touchent-ils point?⁸⁵

And this journey from one kingdom to another, and these intermediary beings which seem to belong to both plant and animal life, do they not move you?

Diderot's point is that it is touching and awe-inspiring to contemplate, and indeed it is a particular feature of his materialism that he finds it so exciting and dynamic, where others simply see the petrifying gaping absence of the divine. Perhaps this is part of what Élisabeth de Fontenay is alluding to in the captivating title of her study on Diderot, *Le Matérialisme enchanté*.⁸⁶

One of Diderot's principal and gloomiest interlocutors, Jean-Jacques Rousseau, who makes sure that his later works reject materialism, morosely engages with the question of the transformability of matter in an important footnote to the 'Profession de foi du vicaire savoyard' in *Émile* (1762). As we see, rocks are still playing a key role in the debate, and Meslier had failed to do away with them:

Il me semble que loin de dire que les rochers pensent, la philosophie moderne a découvert au contraire que les hommes ne pensent point [...] Mais s'il est vrai que toute matière sente, où concevrai-je l'unité sensitive ou le moi individuel ? sera-ce dans chaque molécule de matière ou dans des corps agrégatifs ? Placerai-je également cette unité dans les fluides et dans les solides, dans les mixtes et dans les éléments ? il n'y a, dit-on, que

84 And he continues: 'Comment suis-je parvenu avec l'âge à sentir sur une longueur de cinq pieds et quelques pouces. J'ai mangé. J'ai digéré. J'ai animalisé' [How, with age, did I manage to feel along the length of five feet and a few inches. I ate. I digested. I animalised]. Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, DPV, vol. 24, p. 304 (§136). The editors comment that he probably found the word 'animaliser' in Bonnet who uses it a lot or alternatively in Buffon.

85 Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, DPV, vol. 24, p. 291.

86 Elisabeth Fontenay, *Le Matérialisme enchanté* (Paris: B. Grasset, 1981).

des individus dans la nature! Mais quels sont ces individus? Cette pierre est-elle un individu ou une agrégation d'individus?⁸⁷

It seems to me that far from saying that rocks think, modern philosophy has discovered, on the contrary, that men do not think. [...] But if it is true that all matter can feel, then where shall I conceive the sensitive unity or the individual *I* to be? Will it be in each molecule of matter or in the aggregate bodies? Shall I put this unity equally in fluids and solids, in compounds and elements? There are, it is said, only individuals in nature. But what are these individuals? Is this stone an individual or an aggregate of individuals?

There is no room to unpack Rousseau's multiple referents, which surely include Diderot, here.⁸⁸ What is important for our purposes is to see that Rousseau cogently presents some of the problems with this aspect of materialist theory: they are problems which Diderot will pay close attention to, and reply to, in both the *Rêve de d'Alembert* and the *Éléments de physiologie*.⁸⁹

e. The Natural Processes of Material Transformation

These natural processes of the material transformation of any living body include not only nutrition but reproduction and also death and decomposition. Reproduction involves the metamorphoses of forms and moreover their identical reproduction from one generation to another, writes Buffon with amazement. However, the moment when an actual living being can be said to have died is very difficult to determine: for example, at what point is a drowned man really dead, asks Leibniz? It is also difficult to identify the beginning and the end of

87 Rousseau, *Émile*, in *CŒuvres complètes*, vol. 4, p. 584 (authorial footnote); Jean-Jacques Rousseau, *Emile*, trans. by Allan Bloom (London: Penguin, 1979), p. 279 (slightly amended).

88 See the editorial footnote, Rousseau, *CŒuvres complètes*, vol. 4, pp. 1540–41 for an overview of the philosophical interlocutors. François Pépin also reads the 'Profession de foi du vicaire savoyard' as containing anti-Diderot anti-materialist polemic, in his *La Philosophie expérimentale de Diderot et la chimie: philosophie, sciences et arts* (Paris: Classiques Garnier, 2012), pp. 480–83.

89 See the first part of the *Rêve de d'Alembert*, the 'Suite d'un entretien entre M. d'Alembert et M. Diderot' which is all about this question; see also d'Alembert's dream-speech ('Laissez là vos individus' etc, *Le Rêve de d'Alembert*, DPV, vol. 17, p. 138 (and in *Le Rêve de d'Alembert*, ed. by Duflo, p. 104) and in the *Éléments de physiologie*, see 'L'homme peut donc être regardé comme un assemblage d'animaux', DPV 501/PQ 338/MT 314 (and quoted above).

sensation, write Buffon and Bonnet. La Mettrie and Condillac take this to an extreme, and wonder whether an atom can think: they are genuinely asking the sort of question that we just saw Rousseau deriding.

i. Reproduction

Diderot is moved when he contemplates the steps between one life form and another: Buffon asks us to feel admiration and wonder as we look at how a species renews itself and at how long that species can last (by extension therefore, he suggests that it does not necessarily last forever—this is something Diderot thinks about quite explicitly, both in the *Rêve de d'Alembert* and the *Éléments de physiologie*):

Cependant, quelqu'admirable que cet ouvrage [le corps d'un animal] nous paroisse, ce n'est pas dans l'individu qu'est la plus grande merveille, c'est dans la succession, dans le renouvellement et dans la durée des espèces que la Nature paroît tout-à-fait inconcevable.⁹⁰

Yet, however admirable this work [the body of an animal] may appear to us, it is not even a single individual which is the greatest marvel, it's in the succession, the renewal and the continuation of species that nature appears utterly inconceivable.

There are long chapters in the *Éléments de physiologie* about human reproduction, its mechanisms, its organs, its mysteries and its mistakes: this is matter visibly moving through transformative processes, and Diderot's curiosity about how it works and how it affects human experience—the two parts going hand in hand—is inexhaustible.

ii. The Beginning and End of Death

Buffon's reclassification of matter into *matière vivante* and *matière morte* does not of course preclude its movement from one state to the other, and indeed his definition assumes transformation over time, in that what is dead must have once lived, because otherwise it cannot have died. This seems unproblematic. However, the difficulty is in assessing when death has occurred. What we now call a coma is the test case which is often referred to; in Diderot this discussion will be refracted through

⁹⁰ Buffon, *Histoire des animaux in Histoire naturelle*, vol. 2 [1749], *Œuvres*, pp. 134–35.

the tale of a man thought to be drowned who then comes back to life.⁹¹ Leibniz was debating the issue in his *Monadology*, written in French in 1714, the year after Diderot's birth (perhaps, by 1714, he had reached a foot and a half in length).⁹² As usual, Leibniz was in the middle of a polemic with the Cartesians:

Ils ont confondu avec le vulgaire un long étourdissement avec une mort à la rigueur.⁹³

They, like the uneducated, mistook an extended lack of consciousness for actual death.

Buffon casts this sort of question in more diplomatic terms, preferring instead to talk about 'l'incertitude des signes de la mort', writing that:

[...] entre la mort et la vie il n'y a souvent qu'une nuance si foible, qu'on ne peut l'apercevoir même avec toutes les lumières de l'art de la Médecine et de l'observation la plus attentive [...] ⁹⁴

the difference between death and life is often so faint that it is imperceptible even to those equipped with all the knowledge of the art of Medicine and with the keenest powers of observation.

The issue turns on sensation and perception: if the person does not respond to stimulus and appears to feel nothing, and if the observing doctor cannot perceive any movement, pulse or breathing, then the person may still not be dead, but they cannot be reached by the normal processes of empirical investigation, that is by sensation or perception. So there is a methodological problem. In the *Éléments de physiologie*, in a sub-section on the soul, or rather, the meaninglessness of the notion, Diderot asks about life and sensibility in the seeming absence

91 *Éléments de physiologie*, DPV 333/PQ 151/MT 154 and also in Cabanis, see below.

92 In fact, Diderot was the first translator into French of the Latin version of the *Monadology*, in his *Encyclopédie* article 'Leibnitzianisme' in *Encyclopédie ou dictionnaire raisonné des sciences, des arts et des métiers*, par une société de gens de lettres, ed. by Denis Diderot and Jean le Rond d'Alembert, 28 vols (Paris: Briasson, David, Le Breton, Durand, 1751–72), vol. 9 (1765), pp. 369b–379b. With thanks to François Pépin for this information.

93 Leibniz, *Monadologie*, p. 14.

94 Buffon, *Histoire naturelle de l'homme* in *Histoire naturelle*, vol. 2 [1749], in *Œuvres*, p. 279.

of both.⁹⁵ He specifically considers melancholic lethargy, catalepsy and drowning:

Où est-elle [l'âme] dans le noyé, qu'on rappelle à la vie de l'état de mort, ou d'un état qui lui ressemble tellement, que si le noyé n'avait point été secouru, il aurait persévéré dans cet état sans éprouver d'autre changement qu'une torpeur plus profonde.⁹⁶

Where is it [the soul] in the drowned man, who can be recalled to life from the state of death, or from a state which resembles it so closely, that if the drowned man had not been treated, he would have continued in that same state without experiencing any change other than a deeper torpor.

The question turns on when sensation begins or ends in a living person, whether animals or even plants have feeling, and what sensation with limited brain power might mean in terms of experience. Buffon states quite clearly that the 'espèce de sentiment' [sort of feeling] that is mechanical sensation is very widely shared, and that it is by no means easy to differentiate the animal from the plant kingdoms according to that criterion: 'Cette différence entre les animaux et les végétaux non seulement n'est pas générale, mais même n'est pas bien décidée' [this difference between animals and plants is not only not a general one, it is not even clear or agreed upon].⁹⁷

iii. The Beginning and End of Sensation

Bonnet asks at which level of organised bodies feeling is first manifested, and he does not appear to have an answer:

Mais quel est précisément l'échellon où le sentiment commence à se manifester?

Du Polype ou de la Moule à une Plante, la distance paroît bien petite.⁹⁸

But what exactly is the stage at which feeling starts to be manifested?

95 DPV 333–34/PQ 150–51/MT 154.

96 DPV 333/PQ 151/MT 154.

97 Buffon, *Histoire des animaux* in *Histoire naturelle*, vol. 2 [1749], in *Œuvres*, p. 137.

98 Bonnet, *Contemplation de la nature*, in *Œuvres d'histoire naturelle et de philosophie*, vol. 4, t. 7, p. 179.

From the polyp or from the mussel to a plant, the difference seems extremely slight.

La Mettrie inverts the model, not asking how low down the ladder feeling begins, instead showing us a human, from the top of the ladder, pushed right down to the bottom and reduced to the state of a thinking atom:

un homme qui perdrait toute mémoire, seroit un atome pensant.⁹⁹

someone who lost all their memory would be a thinking atom.

Of course, the idea of a thinking atom is a contradiction in terms for those who plot nature along a line from simple to complex, and in any case what La Mettrie probably means is a *feeling* atom rather than a *thinking* one, thought requiring memory. Rousseau's critique of this sort of thinking is more coherent than La Mettrie's, but it still collapses over its own logic:

J'ai fait tous mes efforts pour concevoir une molécule vivante, sans pouvoir en venir à bout. L'idée de la matière sentant sans avoir des sens me paraît inintelligible et contradictoire. Pour adopter ou rejeter cette idée, il faudrait commencer par la comprendre, et j'avoue que je n'ai pas ce bonheur-là.¹⁰⁰

I have made every effort to conceive of a living molecule but I have not succeeded. The idea of matter sensing without having senses appears unintelligible and contradictory to me. To accept or to reject this idea, one would have to begin by understanding it, and I admit that I have not been so fortunate.

Rousseau strips the model back one stage further, to the idea of a *living molecule*. In his view, living is synonymous with *feeling*, and so he assumes the model is one with a molecule that feels, although as he then adds, it does not have any senses, so it cannot. Diderot's version is most consistent, and although it does claim that the molecule can feel, it does not confuse the issue by also giving it sensory organs:

⁹⁹ La Mettrie, *Traité de l'âme*, p. 172.

¹⁰⁰ Rousseau, *Émile*, in *Œuvres complètes*, vol. 4, p. 575 (authorial footnote); *Emile*, trans. by Allan Bloom, p. 273 (slightly amended).

L'homme, réduit à un sens, serait fou: il ne reste que la sensibilité, qualité aveugle, à la molécule vivante; rien de si folle qu'elle [...] ¹⁰¹

A human being reduced to one sense would be mad: the only thing left in the living molecule would be sensibility, a blind quality; there's nothing so mad as that [...]

Here we see him thinking in his habitually condensed way about the different levels of sensation as well as the different levels of complexity in organised bodies; we see him comparing the most developed (man) with the least developed (the living molecule), and we see it assessed in relation to medical and/or moral criteria: the man with only one sense would be mad; sensation is all that the living molecule has, and there is nothing madder than it. Here what neither the one-sensed man nor the simply sensory molecule possess is control or self-awareness: they, unlike the writer Diderot in this passage, cannot conduct any comparisons.

f. Knowledge Derived from the Senses

The only possible way to know anything is through the senses, write Spinoza and Condillac. La Mettrie, Buffon, Condillac, and Bonnet all set up and follow through the fiction of an initially sensorily-deprived person to work through the implications of this model. Abstract points or examples that are not based in nature, must be avoided, write Spinoza, Fontenelle, Buffon, Bonnet. Condillac's examples tend to be hypothetical fictions, and impossible in nature. Geometers (or mathematicians, as we might call them) can become figures of fun, as we will see, and geometry is often presented as the opposite of knowledge (by Meslier, La Mettrie, and Buffon: even Spinoza calls his own geometrical method 'cumbersome'—twice). Precise research must be drawn on, and in fact there is a corpus of recycled examples. (Condillac, La Mettrie, and Buffon had all written about the man born deaf, from Chartres, and the child brought up by bears in Russia). ¹⁰²

101 DPV 486/PQ 318/MT 301.

102 As mentioned before.

i. Knowledge from the Senses: Anti-Abstraction

The only possible way to know anything is through the senses, write Spinoza, Meslier, and Condillac. Spinoza's *Traité de la réforme de l'entendement*, written in 1661, affirms the importance of empirical method and does so well before Locke's *Essay concerning Human Understanding* (1689): to point out this chronology is not to dislodge Locke from his eminent perch or give Spinoza more prominence but simply to indicate that Locke was not the first to make these arguments, as we said earlier in the chapter. The really important point is that this position with respect to knowledge, that is to say, that it is derived from the external world via the senses, was reiterated in very similar terms over and over again throughout this period and that the reiterations seem to have been part of this century-long effort to get this view accepted, not just by some, and not as a particular philosophical stance, but as the truth. This is what defines this particular group of writers—that they keep repeating themselves and each other—and also what defines Diderot's contribution, which is that after the magisterial synthesis which the *Eléments de physiologie* constitutes, it was no longer necessary to repeat the same things, and natural philosophy could move on; we will see whether the second part of this book bears out such a view.

The reason these writers or philosophers of the mid-seventeenth to the late-eighteenth centuries endlessly repeat the same things, without necessarily or even very often mentioning their other interlocutors or predecessors, is because the validity of their views about nature and the human mind were indeed questioned. In this context therefore it is not right to veer between judgements about originality and plagiarism, or even to cast aspersions about their relative boldness or by contrast the veiled diplomacy of their writings: in a hostile atmosphere of active censorship and the aggressive protection of orthodoxy, it is not really possible for non-orthodox writers and thinkers to exist in a relationship of progress and development from one to the next. Their relationship to one another may well have been fraught with polemic, rivalry, and disagreement, and demonstrably often was, but their relationship to the philosophical positions they were trying to get accepted meant that they simply needed to keep repeating them in various iterations until after more than a hundred years they were accepted.

This, therefore, is what Spinoza writes:

[...] avant tout il nous est nécessaire de tirer toujours toutes nos idées de choses physiques.¹⁰³

before anything else we need always to draw all our ideas from physical things.

[il faut] savoir nous servir de nos sens et faire, d'après des règles et dans un ordre arrêté, des expériences suffisantes pour déterminer la chose que l'on étudie.¹⁰⁴

[it is necessary] to know how to use our senses and conduct, according to rules and in an established order, experiments which are sufficient to define the thing being studied.

Spinoza frames his statements as injunctions: we *must* draw our ideas from physical things; we *must* learn how to use our senses and work out how to conduct reasoned and ordered experiments so that we can understand the thing we are studying. Meslier does not express this as an injunction which exhorts us to work and effort, instead presenting our sensory understanding of the world as an innate and effortless ability which he admires:

J'admire à la vérité cette faculté, et cette puissance que nous avons naturellement de penser, de voir, de sentir, ou de connoître tout ce que nous faisons, tout ce qui se présente à nous, à nos sens, et à notre entendement.¹⁰⁵

I truly admire that faculty and power which we naturally have to think, to see, to feel, or to know everything we are doing, everything that appears to us, to our senses, and to our understanding.

Condillac in the following passage from the *Traité des sensations* of 1754 does not exhort or admire, he states. He sees all our mental operations and emotions as deriving at root from the same thing—sensation. Here the reader may notice a certain analogy with the way in which matter was described in the earlier part of this chapter: the model of the base

103 Spinoza, *Traité de la réforme de l'entendement*, §99.

104 Spinoza, *Traité de la réforme de l'entendement*, §103.

105 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 2, p. 399.

material from which everything is made but which undergoes infinite transformations is the same:

Le jugement, la réflexion, les desirs, les passions, etc., ne sont que la sensation même qui se transforme différemment.¹⁰⁶

Judgement, reflection, desires, passions, etc., are nothing other than sensation itself, differently transformed.

Diderot's own *Pensées sur l'interprétation de la nature*, published the same year as Condillac's *Traité*, and in which he draws on the Pascalian tradition of the 'pensée' to produce neatly-shaped maxims, pronounces on this subject as follows:

Nous avons trois moyens principaux; l'observation de la Nature, la réflexion et l'expérience. L'observation recueille les faits, la réflexion les combine, l'expérience vérifie le résultat de la combinaison.¹⁰⁷

We have three principal means; the observation of nature, reflection and experience. Observation gathers facts, reflection combines them, experience verifies the result of their combination.

Logically, therefore, these empiricist thinkers—including here Spinoza, Fontenelle, Buffon and Bonnet—wish to avoid any abstract points or examples that are not based in nature. Spinoza sees abstraction as being liable to induce error:

Il faut ajouter que cette sorte d'erreur provient de ce que l'on conçoit les choses d'une façon trop abstraite.¹⁰⁸

We should add that this sort of mistake arises from conceptualising things in too abstract a manner.

Fontenelle explains why mathematical thinking does not work when thinking about nature. He does not criticise mathematical thinking in itself; it is simply a mismatch, in that the information available about the physical world is incomplete and therefore liable to error. He writes in his 'Loi de la pensée' [Law of thought]:

106 Condillac, *Traité des sensations*, p. 11.

107 Diderot, *Pensées sur l'interprétation de la nature*, DPV, vol. 9, p. 293 ('Pensée' 15).

108 Spinoza, *Traité de la réforme de l'entendement*, §75.

Comme je vois l'être mathématique entier, nulle idée ne lui peut être contraire; car je le vois par-tout de la même manière, toujours par une idée simple.

Mais comme je ne vois pas entier l'être physique de l'homme, je puis appliquer à la partie inconnue de cet être physique une idée prise ailleurs, et qui lui sera contraire. [...]

Ainsi je ne puis concevoir les choses autrement qu'elles ne sont, que lorsqu'une partie de leur être m'est inconnue. Si je connoissois le tout, j'y verrais nécessité absolue d'être ainsi.....¹⁰⁹

A complete mathematical being, as I see it, can have no idea contrary to it, for I see it in the same way from all points, always via a simple idea.

But as I cannot see the physical being of a human in their entirety, I might apply to the unknown part of this physical being an idea taken from elsewhere, and which will be contrary to it. [...]

Thus I am only able to conceive of things as other than they are when a part of their being is unknown to me. If I knew them in their entirety, I would see the absolute necessity of their being as they are.

Meslier wages war on abstraction, and makes a conceptually important point when he rejects the idea of talking about matter in an unembodied form:

De même manière que quoique la santé, et la maladie ne soient que des modifications de la matière, ce ne seroit cependant point proprement la matiere qui se porteroit bien, ni qui seroit malade.¹¹⁰

Similarly, although health and illness are nothing other than modifications of matter, it would still not be at all right to say that it was the matter that was well or ill.

It is not matter that is healthy or ill; it is an animal or a human that is.¹¹¹

Nor is Meslier's attack on abstraction itself abstract; it is specifically targeted at Cartesians and/or geometers. To what extent these two terms are interchangeable is not clear, but usage suggests that the earlier

109 Fontenelle, 'Loi de la pensée', in 'Fragments d'un traité de la raison humaine', in *Œuvres complètes*, ed. by Alain Niderst (Paris: Fayard, 1996), vol. 7, pp. 475–98, p. 494.

110 Meslier, *Mémoire des pensées et sentiments de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 3, p. 90.

111 This is a similar sort of idea to what we saw Meslier expressing in the *Anti-Fénelon* about it not being *matter* that thinks, but a person, etc. (see above).

texts tend to talk about Cartesians when making this anti-abstraction argument, whereas the later ones attack geometers instead. Meslier is in the earlier camp, and his philippic is typically vitriolic. The difficulty is in deciding which particular iteration of his abuse is most pertinent, and in working out where to cut it:

Donc il est ridicule à nos cartésiens de pretendre que nos pensées, que nos raisonnemens, que nos connoissances, que nos desirs, que nos volontés, et que les sentimens que nous avons de plaisir, ou de douleur, d'amour ou de haine, de joye et de tristesse... etc., ne soient pas des modifications de la matiere sous pretexte que ces sortes de modifications de notre âme ne sont point étendües en longueur, en largeur, et en profondeur, et sous prétexte qu'elles ne sont ni rondes, ni carrées, et qu'elles ne peuvent (être) divisées ou coupées en pieces et en morceaux.¹¹²

It is therefore ridiculous of our Cartesians to claim that our thoughts, arguments, knowledge, desires, will, or the feelings that we have of pleasure, pain, love or hatred, of joy or sadness... etc., cannot be modifications of matter, on the pretext that these sorts of modifications of our soul do not stretch out lengthways, widthways, or have any depth, and on the pretext that they are not round or square and that they cannot be cut up into little bits and pieces.

His particular angle (although perhaps that geometrical metaphor is not one he would have chosen himself) is that Cartesians only conceive of material embodiment in bluntly physical, measurable terms, and that their view that our soul—which Meslier here equates with our thoughts, our reasoning, our knowledge, our desire, our impulses, and feelings of pleasure, pain, love, hatred, joy and sadness—cannot be material because none of these thoughts or feelings is physically locatable, is ridiculously reductive of what matter is. (Interestingly, as a critique of those who are supposed to wish to account for emotion and experience in measurable and even algebraic terms, it is almost identical to what Henri Bergson will later argue in his *Données immédiates de la conscience* of 1889.)

La Mettrie is a spiritual son of Meslier, in his energetic tirades at least: in his *Traité de l'âme* (1745) he lambasts geometers and their inability

112 Meslier, *Mémoire des pensées et sentimens de Jean Meslier*, in *Œuvres complètes*, ed. by Desné, vol. 3, p. 33. Spinoza refers to fictions such as having an 'âme carrée' [a square soul] (*Traité sur la réforme de l'entendement*, p. 58).

to work outside their 'petite sphère', giving a fairly comprehensive list of the things he considers them incapable of: physics, astronomy, metaphysics, ethics, physiology, and literature.¹¹³

Buffon, whose style is normally so different from both Meslier and La Mettrie, is as opposed to the notion of geometry and abstraction in the study of nature as they are, and nearly as hyperbolic:

Toutes ces abstractions sont des échafaudages pour soutenir notre jugement, et combien n'avons-nous pas brodé sur ce petit nombre de définitions qu'emploie la Géométrie ! nous avons appelé simple tout ce qui se réduit à ces définitions, et nous appellons composé tout ce qui ne peut s'y réduire aisément, [...] toutes ces figures géométriques n'existent que dans notre imagination, [...] Dans la Nature au contraire, l'abstrait n'existe point, rien n'est simple et tout est composé [...]¹¹⁴

All these abstractions are scaffolding we use to support our judgement. How many times have we embroidered on the very few definitions that Geometry uses! We called simple everything that could be reduced to these definitions, and composed everything which cannot easily be reduced to them, [...] all those geometric figures exist only in our imagination, [...] In nature on the contrary, there is no abstract, nothing is simple and everything is composed.

Buffon's critique posits that the conceptual model geometry gives us of 'simple' and 'complex', that is a few 'simple' definitions built up into complex structures ('échafaudages') is purely abstract, and a sort of fiction that exists in our imagination, while in nature, there is no abstract, and there is no simple: everything is complex.

Diderot has his own pithy ways of expressing his opposition to abstraction. We meet them throughout his œuvre. In the early *Pensées philosophiques* (1746) we find:

Toutes les billevesées de la métaphysique ne valent pas un argument *ad hominem*.¹¹⁵

113 La Mettrie, *Traité de l'âme*, p. 199.

114 Buffon, *Histoire des animaux in Histoire naturelle*, vol. 2 [1749], in *Œuvres*, p. 145.

115 Diderot, *Pensées philosophiques*, ed. by Michel Delon, in *Œuvres philosophiques*, ed. by Michel Delon and Barbara de Negroni (Paris: Gallimard, 2010), p. 8 ('Pensée' 17), and also Denis Diderot, *Pensées philosophiques, Additions aux pensées*, ed. by Jean-Claude Bourdin (Paris: GF Flammarion, 2007), p. 8 ('Pensée' 17).

All the nonsense of metaphysics is not worth a single *ad hominem* argument.

We meet it again in less condensed form in the *Pensées sur l'interprétation de la nature* (1753):

On en a conclu que c'était à la philosophie expérimentale à rectifier les calculs de la géométrie, et cette conséquence a été avouée même par les géomètres. Mais à quoi bon corriger le calcul géométrique par l'expérience? N'est-il pas plus court de s'en tenir au résultat de celle-ci?¹¹⁶

It was concluded that it was the job of experimental philosophy to correct the calculations of geometry, and this consequence has been accepted by the geometers themselves. But what is the point of correcting geometric calculation by experience and experiment? Isn't it quicker just to use the results of the latter?

He rejects any equation (le mot juste) of geometry and 'experimental philosophy', that is, the study of nature, asserting that there is no need to correct mathematical calculation with an experiment: he recommends instead simply leaving the calculations aside, and sticking with the results of the experiment. This would constitute knowledge and information about the works of nature, that is to say, the truth, where a calculation cannot, because it's an abstraction.

In the *Principes philosophiques sur la matière et du mouvement* of 1770 he returns to the same theme, interestingly (for the editor of the *Encyclopédie*) rejecting the sort of thinking which seems to want to be rigorous by relying on uniform definitions. Diderot rejects the uniformity:

Il ne faut jamais dire, quand on est physicien, *le corps comme corps*; car ce n'est plus faire de la physique, c'est faire des abstractions qui ne mènent à rien.¹¹⁷

As a natural philosopher, one should never say *the body as body*, because that means stopping doing natural philosophy, and instead creating abstractions which lead nowhere.

116 Diderot, *Pensées sur l'interprétation de la nature*, DPV, vol. 9, p. 286 ('Pensée' 2).

117 Diderot, *Principes philosophiques sur la matière et le mouvement*, ed. by Barbara de Negroni in *Œuvres philosophiques*, ed. by Michel Delon and Barbara de Negroni (Paris: Gallimard, 2010), p. 449.

As we have seen, all these writers have reservations about the usefulness of geometrical abstraction, and some of them reject it outright. They want empirical evidence and specific case studies, and interestingly, there is a corpus of examples which they recycle. Condillac and La Mettrie write about the English boy born blind, whose cataracts were removed by William Cheselden, the man born deaf from Chartres, and the child brought up by bears in Lithuania; Buffon also writes about the bear child. Diderot of course also engages with this material particularly fully in his *Lettre sur les aveugles* (1749) and *Lettre sur les sourds et muets* (1751), while the anecdote about the child growing up with bears features in the *Éléments de physiologie*.¹¹⁸

ii. Sensory-Deprivation Fictions

Surprisingly perhaps, given that empiricism has an avowed status approaching a dogma amongst these writers, they often resort to fictions, specifically imaginary stories of sensory deprivation. Perhaps, however, we ought not to be surprised: insofar as there is a rather limited number of known cases, all of which are multiply recycled, it is likely that these Lockean writers will wish to find other ways of testing or investigating or simply communicating their hypotheses. A 'fiction' was indeed often the only way to test out the sort of hypothesis we would now blithely call 'scientific' in an era when other forms of testing were simply not possible for lack of technical capability, if for no other reason. By 'fiction', therefore, we mean following through a given idea in the imagination rather than in reality.¹¹⁹ La Mettrie, freely adapting the early Christian apologist Arnobius's 'belle conjecture' [beautiful conjecture]—one of the 'plus beaux morceaux de l'Antiquité' [the most exquisite pieces of Antiquity], he says—imagines a baby kept underground in complete sensory deprivation and without human contact until adulthood in the

118 See above, for the references to these recycled cases. See also Caroline Warman, 'Comment écrire le vécu? Diderot et le problème matérialiste de l'abstraction', in *Matérialisme(s) en France au XVIIIe siècle. Entre littérature et philosophie*, ed. by Adrien Paschoud and Barbara Selmecci Castioni (Berlin: Frank and Timme, 2019), pp. 103–13.

119 See Richard Scholar and Alexis Tadié, eds, *Fiction and the Frontiers of Knowledge in Europe, 1500–1800* (Farnham: Ashgate, 2010), <https://doi.org/10.4324/9781315582276>.

Traité de l'âme (La Mettrie's fictions and examples are often cruel).¹²⁰ Buffon imagines a fully-grown man emerging into consciousness, asking

Si cet homme vouloit nous faire l'histoire de ses premières pensées, qu'auroit-il à nous dire ? quelle seroit cette histoire ? Je ne puis me dispenser de le faire parler lui-même, afin d'en rendre les faits plus sensibles : ce récit philosophique qui sera court, ne sera pas une digression inutile.¹²¹

If this man were to want to tell us the story of his first thoughts, what would he say? What would this story be? I cannot allow myself not to make him speak for himself, so that the facts make a greater impression: this philosophical tale will not take long, and will not be a pointless digression.

What follows is Buffon's fictional first-person narrative of this suddenly-awoken man's experience: 'je ne savais ce que j'étais, où j'étais, d'où je venais' [I did not know what I was, where I was, or where I came from], he says (might the famous opening of Diderot's *Jacques le fataliste* be echoing these words?).¹²² Buffon's man gushes his amazement over several pages ('je tombais de surprise en surprise' [I tumbled from one surprise to the next])¹²³ as he coherently and implausibly recounts his sensations and experiences in sequence. Condillac's *Traité des sensations* (1753) famously follows through the fiction of a marble statue first being endowed with sight, then all the other senses in turn (interestingly, he was accused of plagiarising Buffon, while Condillac

120 La Mettrie, *Traité de l'âme*, pp. 241–42; See *L'Homme-machine*, in *Œuvres philosophiques*, vol. 1, pp. 99–100 where La Mettrie lists examples of organs continuing to work after death, mixing instructions about how to conduct the experiments with anecdotes about a drunken soldier beheading a rooster and suggestions about dissecting executed criminals, or p. 113, where he describes the flexible state of an amniotic sac immediately before birth, adding that this was a phenomenon 'que j'ai eu le plaisir d'observer dans une femme, morte un moment avant l'Accouchement' [that I had the pleasure of observing in a woman who had died a moment before giving birth], or in the *Traité de l'âme*, p. 240, where La Mettrie boastfully recalls the honour the Maréchal de Saxe did him in providing details about a girl who ate her sister.

121 Buffon, 'Des sens en général', in *Histoire naturelle*, vol. 3 [1749], in *Œuvres*, pp. 302–06 (p. 302).

122 Buffon, 'Des sens en général', p. 302.

123 Buffon, 'Des sens en général', p. 304.

himself rebuts accusations of having plagiarised Diderot's *Lettre sur les sourds et muets*).¹²⁴

In his *Essai analytique sur les facultés de l'âme*, which he did not publish until 1760, Bonnet claims to have been working on a very similar fiction when Condillac's *Traité* was published, and hence felt unable to publish his own version, despite his reservations at Condillac's approach. As we see, his starting point is relatively close both to Buffon (the adult using his senses for the first time) and to Condillac (because he is also using a statue that comes to life):

Recourons donc à une fiction: elle ne sera pas la Nature; mais elle aura son fondement dans la Nature. [...] Imaginons un Homme dont tous les Sens sont en bon état, mais qui n'a point encore commencé à en faire usage.¹²⁵

Let's have recourse to a fiction: it won't be nature, but it will have its basis in nature. [...] Let's imagine a man whose senses are all in good shape, but who has never yet started to use them.

Let's imagine a man whose senses are all in good working order, but who hasn't yet started to use them. Let's! These fictions are all variously implausible, and also surprisingly unempirical and unphysiological, given that the various case studies of the lifting of sensory deprivation which these writers all allude to show that people have to *learn* to use their senses.¹²⁶

The contrast between the recommended empirical approach and actual practice seems to be most extreme in the case of Condillac and his

124 Buffon, *Œuvres*, p. 1465, n. 15; Condillac, 'Réponse à un reproche qui m'a été fait sur le projet exécuté dans le *Traité des sensations*', *Traité des sensations*, pp. 277–81.

125 Condillac, 'Avis important au lecteur', *Traité des sensations*, p. 9.

126 Rousseau rather entertainingly parodies this particular trope when he has the Savoyard vicar turn the argument back against materialist thinkers: 'Supposons un sourd qui nie l'existence des sons, parce qu'ils n'ont jamais frappé son oreille. [...] Plus je réfléchis sur la pensée et sur la nature de l'esprit humain, plus je trouve que le raisonnement des matérialistes ressemble à celui de ce sourd' [Let us suppose a deaf man who denies the existence of sounds because they have never struck his ear. [...] The more I reflect on thought and on the nature of the human mind, the more I find that the reasoning of materialists resembles that of this deaf man] (*Émile*, in *Œuvres complètes*, vol. 4, p. 585; *Emile*, trans. by Bloom, p. 279–80). Although Rousseau's analogy wittily turns materialists into deaf people, it perhaps gives the materialist standpoint more room for manoeuvre than may first appear, in that the cognitive model of sensory perception is still the referent: faith is like an extra sense, it's not extra-sensory.

statue. His discussion of the human mind is not rooted in any remotely physiologically plausible terms:

J'avertis donc qu'il est très-important de se mettre exactement à la place de la statue que nous allons observer. Il faut commencer d'exister avec elle, n'avoir qu'un seul sens, quand elle n'en a qu'un [...]: en un mot, il faut n'être que ce qu'elle est.¹²⁷

I point out therefore that it is very important to put yourself in the exact position of the statue that we are going to be observing. We must start existing with her, have only one sense when she only has one [...]: in a word, we must be nothing other than what she is.

He orders us as readers to put ourselves exactly in the position of the thing we are observing, and to experience its staged and incremental perception with it, while remaining ourselves; we have finally to be *nothing but* it, while simultaneously being the aware readers he wants to persuade. Then there is the fact that this newly-sensorily aware being is made of marble ('l'extérieur tout de marbre' [exterior all of marble]):¹²⁸ which not even the most diehard materialist (which Condillac himself is very far from being) would ever attempt to argue possessed the ability to feel.

Diderot will unpick these sorts of inconsistencies in various ways. The first part of *Le Rêve de d'Alembert* (written 1769), stages a discussion between two philosophers: Diderot himself, and his *Encyclopédie* co-editor, the mathematician d'Alembert. Diderot talks d'Alembert through the steps by which a marble statue can become human and acquire sensation: first it must be ground into powder, then added to earth in which food is grown, then become absorbed into the growing plant, and then eaten by the man, finally being absorbed into his flesh and acquiring the ability to feel. This is a hypothesis which is plausible within nature, unlike Condillac's version. In his *Réfutation suivie de l'ouvrage d'Helvétius intitulé 'De L'homme'*, written in 1773–74, that is after the *Rêve de d'Alembert*, and, along with the *Observations sur Hemsterhuis*, an important staging post between the *Rêve* and the *Éléments de physiologie*, we see Diderot being sharper with the woolly thinking that underpins this frequently-recycled trope. The

127 Condillac, *Traité des sensations*, p. 9.

128 Condillac, *Traité des sensations*, p. 11.

supposition Diderot is responding to sets forth a statue-man. This is what Helvétius had written:

Supposons un homme absolument insensible. Mais il serait, dira-t-on, sans idées, par conséquence une pure statue. Soit. Admettons cependant qu'il pût exister et même penser [...].¹²⁹

Let us suppose a completely unfeeling man. But he would be, it is said, without ideas, and by consequence a pure statue. Fine. But let us accept nonetheless that he could exist and even think.

Diderot reacts as follows, and we see him reply not only to Helvétius but also to Condillac, although his name is not mentioned.

'Vous supposez un *homme impassible*.' Mais un homme impassible à votre manière est un bloc de marbre... Vous demandez que ce bloc de marbre pense et ne sente pas ; ce sont deux absurdités : un bloc de marbre ne saurait penser, et il ne saurait non plus penser sans sentir, que sentir sans penser.¹³⁰

'You suppose a *man without sensation*.' But your sort of man without sensation is a block of marble... You want the block of marble to think and not feel; that is absurd twice over: a block of marble is unable to think, and it would be as unable to think without feeling as it would be to feel without thinking.

For Diderot, this sort of fiction is an absurdity. Of course, as we know, in his own overtly fictional work, that is to say in novels like *La Religieuse* or *Jacques le fataliste*, he always draws attention to the ways in which fiction tests or stretches the truth. In the *Éléments de physiologie*, he never deploys a fictional hypothesis of the statue sort, always using instead a case study or anecdote rooted (or supposedly rooted) in nature and/or lived experience to make or interrogate a particular point. The eagle-eyed reader will have noted the qualification here: his cases are rooted or at least *supposedly* rooted in nature or experience.

Part of what makes Diderot into such an extraordinary writer is that he can always work on (at least) two levels: firstly, working through the implications and ramifications of a given case or model with forensic consistency, while also dialoguing with or even parodying all

¹²⁹ Helvétius, in Diderot, *Réfutation d'Helvétius*, DPV, vol. 24, p. 533.

¹³⁰ Diderot, *Réfutation d'Helvétius*, DPV, vol. 24, p. 533.

those who have written on similar areas or cases before.¹³¹ We will see an interesting example of this in the next section. In this part we have been looking initially at how the philosophers of this extended period repeatedly claimed that knowledge derives exclusively from sensory perception, then at the case studies they used and recycled, and at the philosophical fictions they also used and recycled, while continuing to seek acceptance for their views. We have also seen how Diderot pointed out and rejected the artificiality of these fictions, insisting on using empirical information, however initially inexplicable.

In the next section, we will move on to look at how these writers understood what happened next in the cognitive sequence: we have five senses, give or take one or two, and they give us ideas. How does that work? Can we *think* of more than one thing at a time? Can we *do* more than one thing at a time?

g. Multi-Tasking and Levels of Awareness: Thinking and Walking

It is possible to focus on only one idea at any given time, wrote Pascal and La Mettrie. Ideas flow one from another in a natural sequence: they are born from one another, write Crousaz and La Mettrie. However, our brains may operate on two levels at once, a conscious and an unconscious one, writes Fontenelle. The particular fiction deployed here is of a person walking without realising what he is doing (this person is never a woman). In Spinoza's version and in Fontenelle's, he is sleepwalking; in Leibniz's, he is not paying attention; in Condillac's, he walks right across Paris. In Diderot, he gains a philosophical identity, walks, thinks, forgets, and never trips over.

Pascal formulates the notion that we can only think about one thing at a time with typical forthright certainty and brevity (and we looked at this in the previous chapter):

131 For a brilliant investigation of this doubleness, see Tunstall's study of the *Lettre sur les aveugles*, in *Blindness and Enlightenment*.

Une seule pensée nous occupe. Nous ne pouvons penser à deux choses à la fois.¹³²

A single thought occupies us. We cannot think of two things at the same time.

La Mettrie says the same thing in his *Traité de l'âme*, and his use of the word 'âme', looking slightly dissonant in this context, shows us that he (provocatively) means it to be understood as *mind*.

L'Âme ne peut avoir qu'une seule idée distincte à la fois.¹³³

The soul can only have one distinct idea at once.

We encounter this view again—closest to its Pascalian formulation—in the *Éléments*:

Nous ne pouvons être qu'à une seule chose à la fois.¹³⁴

We can only be focused on one thing at a time.

But if we can only think of one thing at a time, one thought gives rise to another, in a sort of naturally logical sequence: as La Mettrie puts it, quoting Crousaz almost verbatim:

*Toutes les pensées, comme l'observe judicieusement Crousaz, naissent les unes des autres; la pensée, (ou plutôt l'Âme dont la pensée n'est qu'un accident,) se varie et passe par différens états; et suivant la variété de ses états et de ses manières d'être, ou de penser, elle parvient à la connoissance, tantôt d'une chose, tantôt d'une autre. Elle se sent elle-même, elle est à elle-même son objet immédiat; et en se sentant ainsi, elle se représente des choses différentes de soi.*¹³⁵

All thoughts, as Crousaz judiciously observes, are born from one another; thought (or rather the soul, of which thought is a mere accident) varies and passes through different states; and according to the variety of its states and ways of being or thinking, it arrives at knowledge, sometimes of one thing and sometimes of another. It can feel itself, it is its own immediate object; and being

132 Blaise Pascal, *Les Provinciales, Pensées, et Opuscules divers*, ed. by Gérard Ferreyrolles and Philippe Sellier (Paris: Livre de Poche 'La Pochothèque', 2004), p. 1081 (S§453).

Blaise Pascal, *Pensées*, trans. by Roger Ariew (Indianapolis, IN: Hackett, 2005), p. 142. Quoted above.

133 La Mettrie, *Traité de l'âme*, p. 186.

134 DPV 468/PQ 294/MT 283.

135 La Mettrie, *Traité de l'âme*, p. 217; Crousaz, *La Logique* (1718), vol. 2, p. 416.

able to feel itself in this way, it is able to represent things to itself that are not the same as itself.

Crousaz's formulation seems to have been a successful one: Diderot not only uses it in the *Éléments*, but also approves it explicitly:

Toutes les pensées naissent les unes des autres; cela me semble évident.¹³⁶

All thoughts are born from one other; this seems obvious to me.

However, if one thought is considered as following on from the previous one in a temporal sequence, there can be multiple levels of simultaneous perception, not all of which are actually clearly perceived by us. These perceptions can be followed by decision and action which again are not always conscious. These thinkers are trying to work out how instinct relates to reason and to come up with models that account for different levels of consciousness. Spinoza sets out the problems: they relate in part to our faulty knowledge of bodily functions, in part to questions of divergent behaviour when conscious or unconscious and to related issues of transgression, and in part to the abilities and independence of the body as separate from the mind. Here he evokes the issue of the sleepwalker:

For no one has yet come to know the structure of the body so accurately that he could explain all its functions—not to mention that many things are observed in the lower animals which far surpass human ingenuity, and that sleepwalkers do a great many things in their sleep which they would not dare to do awake. This shows well enough that the body itself, simply from the laws of its own nature, can do many things which its mind wonders at.¹³⁷

Leibniz is fully engaged with these questions. In his *Nouveaux essais sur l'entendement humain* he describes the 'infinity of perceptions within us' that we do not notice but which all together have an effect, and of which we are aware, at least in a nebulous way:

136 DPV 335/PQ 153/MT 156. François Pépin analyses the Leibnizian context to this sentence in his article: 'Diderot et Leibniz Face à la chimie du vivant', in *Leibniz et Diderot: rencontres et transformations*, ed. by Christian Leduc, François Pépin, Anne-Lise Rey, and Mitia Rioux-Beaulne (Paris: Vrin, 2015), pp. 211–35 (p. 222), <https://doi.org/10.4000/books.pum.2153>.

137 Spinoza, *Ethics*, p. 72.

[...] il y a mille marques, qui font juger qu'il y a à tout moment une infinité de perceptions en nous, mais sans Apperception et sans Reflexion, c'est à dire des changements dans l'Ame même, dont nous ne nous appercevons pas, parce que ces impressions sont où trop petites & en trop grand nombre, ou trop unies, en sorte qu'elles n'ont rien d'assez distinguant à part, mais jointes à d'autres, elles ne laissent pas de faire leur effet, & de se faire sentir dans l'assemblage, au moins confusément.¹³⁸

There are a thousand signs that lead us to judge that at any moment there are an infinity of perceptions within us taking place without apperception or reflection, that is to say changes in the soul itself which we do not perceive because these impressions are either too tiny or too numerous or too clumped together, such that there is nothing to distinguish them separately. However, once joined up to others, they do not fail to have their effect and make themselves felt in the assemblage, at least in some confused way.

These *petites perceptions* are what create our tastes and understanding of the world, link us to the world around us.

Ces petites perceptions sont donc de plus grande efficace qu'on ne pense. Ce sont elles, qui forment ce je ne say quoy, ces goûts, ces images des qualités des sens, claires dans l'assemblage, mais confuses dans les parties; ces impressions que les corps, qui nous environnent, font sur nous & qui enveloppent l'infini; cette liaison que chaque être a avec tout le reste de l'univers.¹³⁹

These tiny perceptions are much more effective that one might think. It is they who form that je-ne-sais-quoi, those tastes, and those images produced by the qualities of the senses, which are clear when they are put together but confused in their constituent parts; those impressions which the bodies which surround us make on us and which envelop the infinite; that link which every being has with all the rest of the universe.

138 Leibniz, *Essais sur l'entendement humain*, pp. 8–9.

139 Leibniz, *Essais sur l'entendement humain*, p. 10. See Richard Scholar, *The Je-Ne-Sais-Quoi in Early Modern Europe: Encounters with a Certain Something* (Oxford: Oxford University Press, 2005), <https://doi.org/10.1093/acprof:oso/9780199274406.001.0001> for a helpful discussion of this particular passage, pp. 169–71. With thanks to Richard Scholar for supplying this reference when Covid-19 restrictions prevented me from consulting his book myself. I have also (mostly) used his translation of this passage, which I am happy to record was better than my own!

And they are at work all the time, affecting us in determining our seemingly random decisions in the most concrete form. For Leibniz, they are not random in the slightest:

(...) ce sont ces petites perceptions qui nous déterminent en bien de rencontres sans qu'on y pense, & qui trompent le vulgaire par l'apparence d'une *indifférence d'équilibre*, comme si nous étions indifférens de tourner par exemple à droite ou à gauche.¹⁴⁰

It is these tiny perceptions which determine our actions in many encounters without us thinking about it, and which deceive the uneducated by making it seem as if we were paying no attention or were *indifferent* to our balance, as if, for example, we were indifferent as to whether we turned right or left.

Along with the reference to the sleepwalker which Spinoza uses, Leibniz's particular scenario of someone walking along without seeming to use his rational mind to direct him will appear repeatedly in interesting variations: Diderot uses it at least three times, as we will see. Fontenelle's 'Fragment on the instinct', possibly circulating before its first publication in 1757–58, has moved the scenario away from pure sleepwalking: in his version, a man is walking along in a reverie:

Je suppose un homme qui rêve en marchant, et rencontre en son chemin un pieu dont l'image se peint dans son oeil, mais dont il ne se détourne point, parce qu'il n'y fait point attention.¹⁴¹

Suppose a man who is day-dreaming as he walks along and who encounters a post on his path, the image of which is depicted in his eye, but which does not cause him to swerve because he's not paying it any attention.

Fontenelle discusses at length whether the man does or does not see the post, and whether his ability to see it or not is dependent on whether he is thinking about the post or not. Fontenelle does not resolve his story, and we never find out whether the man did or did not step round the post, although it is established that he could have done. Fontenelle concludes that 'Le cerveau de cet homme supposé est en même temps

140 Leibniz, *Essais sur l'entendement humain*, pp. 10–11.

141 Fontenelle, 'Sur l'instinct', in 'Fragments d'un traité de la raison humaine', in *Œuvres complètes*, ed. by Alain Niderst (Paris: Fayard, 1996), vol. 7, pp. 475–98 (p. 470).

dans deux états' [the brain of the man we are imagining is in two states at once].¹⁴² Condillac uses the same example in much extended form in the *Essai*, and he is clearly working with Leibniz's model of the unperceived perceptions, and for him, there is no debate about whether the walking man will avoid the post—now he is in a named place, Paris: not only will the post not trip him up, but he will seamlessly avoid all obstacles:

L'imagination produit même souvent en nous des effets qui paraîtraient devoir appartenir à la réflexion la plus présente. Quoique fort occupés d'une idée, les objets qui nous environnent continuent d'agir sur nos sens : les perceptions qu'ils occasionnent en réveillent d'autres auxquelles elles sont liées, et celles-ci déterminent certains mouvements dans notre corps. Si toutes ces choses nous affectent moins vivement que l'idée qui nous occupe, elles ne peuvent nous en distraire, et par là il arrive que, sans réfléchir sur ce que nous faisons, nous agissons de la même manière que si notre conduite était raisonnée : il n'y a personne qui ne l'ait éprouvé. Un homme traverse Paris et évite tous les embarras avec les mêmes précautions que s'il ne pensait qu'à ce qu'il fait : cependant il est assuré qu'il était occupé de toute autre chose. Bien plus, il arrive même souvent que, quoique notre esprit ne soit point à ce qu'on nous demande, nous y répondons exactement; c'est que les mots qui expriment la question sont liés à ceux qui forment la réponse, et que les derniers déterminent les mouvements propres à les articuler. La liaison des idées est le principe de tous ces phénomènes.¹⁴³

Imagination surprisingly often produces effects in us which would seem to necessarily result from the most immediate reflection. Even when we are completely occupied with an idea we're having, the objects which surround us continue to act on our senses: the perceptions which they occasion trigger other connected ones, which in turn determine certain movements in our body. If all these things affect us less vigorously than the idea occupying us, they do not distract us from it, and so it can happen that, without thinking about what we're doing, we continue doing it as if our conduct were rationally decided upon: there's no one who hasn't experienced this. A man walks across Paris and avoids every obstacle with as much care as if he were thinking about it, and yet it is certain that he was thinking about something completely different. Moreover, it surprisingly often happens that, although our mind is not focused on

142 Fontenelle, 'Sur l'instinct', p. 472.

143 Condillac, *Essai sur l'origine des connaissances humaines*, ed. by Pariente and Pécharman, p. 103 (I.II. §. 42). He goes on to account for this phenomenon with instinct, which he discredits elsewhere, as we know.

what we are being asked, we answer correctly; the reason being that the words used to formulate the question are connected to those that provide the reply, and that the latter trigger the right movements to articulate it. The way ideas are linked up is the principle underpinning all these phenomena.

This clearly-explained extract is worth giving in full for the link it provides between Leibniz's discussion of unperceived but determining perceptions, Fontenelle's example of the man who successfully walks along while thinking about something else, and Diderot's subsequent elaborations of these themes. Links themselves also become the focus in Condillac's conclusion when he declares that the 'liaison' or linking of ideas is behind all these phenomena. Here the notion of the natural logical sequencing of ideas that we were looking at earlier reappears. For Condillac, however, the phenomena he is describing here are part of instinct, and instinct is still subordinate to reason. Diderot will be continuously interested in instinct throughout his works for the direct access it gives to the laws of nature. In this 'pensée' he explicitly subverts the hierarchy of reason over nature:

L'instinct va sans cesse regardant, goûtant, touchant, écoutant; et il y aurait peut-être plus de physique expérimentale à apprendre en étudiant les animaux qu'en suivant les cours d'un professeur.¹⁴⁴

Instinct moves along constantly watching, tasting, feeling, listening, and there may be more experimental natural philosophy to be learnt from studying animals than from attending the lessons of a professor.

In fact, Diderot rarely uses the term 'reason' (there is no chapter on reason in the *Éléments*, as we mentioned earlier): he prefers to talk about the will ('la volonté') whose conscious exercise he also considers to be much exaggerated. In the *Rêve*, Diderot re-uses the scenario of the man acting without consciously willing his actions to turn it into a full portrait of d'Alembert himself, as drawn rather aggressively by his interlocutor, the fictionalised Montpellier vitalist Bordeu, who rounds on d'Alembert when he asks whether Bordeu really does believe that free will is nothing more than the life-long cumulative result of continual small movements of desire and aversion:

144 Diderot, *Pensées sur l'interprétation de la nature*, DPV, vol. 9, p. 290 ('Pensée' 10).

Et c'est vous qui me faites cette question! Vous qui livré à des spéculations profondes, avez passé les deux tiers de votre vie à rêver les yeux ouverts et à agir sans vouloir [...].¹⁴⁵

Fancy that question coming from you! You who, buried in your abstruse speculations, have spent two-thirds of your life dreaming with your eyes open and acting quite without volition [...]

We meet this scenario again in the *Observations sur Hemsterhuis* of 1774. This time the role of the philosopher (and therefore supreme rationalist) is played by Hemsterhuis, and the narrative is a little more elaborate:

Il ne me serait pas difficile de démontrer que Mr Hemsterhuis a passé les trois quarts de sa vie sans vouloir.

Il sort de chez lui la tête occupée d'optique ou de métaphysique; sans vouloir sortir, il est poussé hors de sa porte par un souvenir; chemin faisant, il évite des obstacles, sans y penser; il se rappelle un oubli qui le ramène chez lui, il y revient; et il exécute la chose qu'il avait oublié de faire, toujours à sa pensée. C'est alors qu'il est bien évidemment un automate chassé, détourné, ramené par des causes qui disposent de lui aussi impérieusement, qu'un choc dispose d'un corps choqué.

Sa rêverie philosophique cesse, et il ne sait rien ni de ce qu'il a dit, ni de ce qu'il a fait.¹⁴⁶

It would not be difficult for me to show that Mr Hemsterhuis has spent three quarters of his life without exercising his will.

He goes out of his house with his head full of optics or metaphysics; without choosing to go out, he is impelled out of his door by a memory; as he walks along, he avoids any obstacles without thinking about them; he remembers something he had forgotten and so goes back home, where he carries out the thing he'd forgotten to do, still preoccupied with his thoughts. And in this case he is absolutely obviously an automaton, driven out of doors, guided around obstacles, and brought back by causes that propel him as imperiously as a collision propels a body that has been collided into.

Once his philosophical reverie ceases, he has absolutely no idea of what he has been saying or doing.

145 Diderot, *Le Rêve de d'Alembert*, DPV, vol. 17, p. 185; Denis Diderot, *Rameau's Nephew and D'Alembert's Dream*, trans. by Leonard Tancock (London: Penguin, 1966), pp. 216–17.

146 Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, DPV, vol. 24, p. 308.

We have the single Fontenellian post multiplied into the Condillacian multiple obstacles as Hemsterhuis walks out of his house and unconsciously makes his way somewhere. The narrative has two novel elements—firstly, there is a rather complicated to and fro between remembering and forgetting: Hemsterhuis leaves home because he has remembered something, and then he comes back again because he has forgotten something else. He is doing his remembering and forgetting without conscious awareness, ‘*toujours à sa pensée*’—still immersed in his thought about optics or metaphysics: in Diderot’s words, he is an automaton, a body simply moving as pushed. Secondly—and still on the theme of memory—once he emerges from his ‘*rêverie philosophique*’ he has no memory of what he has said or done. This, for Diderot, appears to be tantamount to not having been consciously aware of making any decisions: what will be remembered, is what was being consciously thought because that is where the attention and the will were.

This scenario appears again in the *Éléments*, not once but twice, in the chapters on the will (III.vi, ‘*Volonté*’) and on the organs (III.viii, ‘*Des organes*’). Diderot separates out the two strands of conscious decision-making and instinct, and develops both into fuller narrative elaborations.

Histoire expérimentale de [l’homme réel, agissant, occupé et mû]. Je le suis et l’examine; c’était un géomètre. [...] La rue, où demeure cet ami, est embarrassée de pierres, notre géomètre serpente entre ces pierres, il s’arrête tout court. Il se rappelle que ses lettres sont restées sur sa table, ouvertes, non cachetées [...] il revient sur ses pas, il allume sa bougie, il cache ses lettres, il les porte lui-même à la poste; de la poste il regagne la maison où il se propose de dîner; il y entre, il s’y trouve au milieu d’une société de philosophes ses amis. On parle de la liberté et il soutient à cor et à cri que l’homme est libre: je le laisse dire, mais à la chute du jour, je le tire en un coin et je lui demande compte de ses actions. Il ne sait rien, mais rien de tout ce qu’il a fait; et je vois que machine pure, simple, et passive de différents motifs qui l’ont mû, loin d’avoir été libre, il n’a pas même produit un seul acte exprès de sa volonté [...].¹⁴⁷

Experimental story [of a man who is real, acting, occupied, and propelled]. I follow him and watch him closely: this man is a mathematician. [...] The road where this friend lives is cluttered with stones, our mathematician

147 DPV 485/PQ 315–16/MT 300.

weaves between them and then stops short. He remembers that his letters are still on his table, open, and unsealed [...] he goes back home, lights his candle, seals his letters, takes them to the post-office himself, and from there goes to the house where he means to dine; in he goes and finds himself in the midst of a group of philosophers who are his friends. Freedom is the topic of discussion, and he makes a great fuss about maintaining that man is free. I let him get on with it, but in the evening, I pull him aside and ask him to give me an account of what he's been doing. He has absolutely no idea of his actions, and I see that he is a pure and simple machine, the passive recipient of the different motives which have driven him, and that far from being free, he has not produced one single action specifically of his own volition [...].

The narrative illustrates the underlying philosophical question much more clearly than the others while still retaining certain familiar features—the road with the stones, the deep reverie, the forgetting, and then—new features, these—the philosophical discussion about free will amongst like-minded friends, and the presence of the watching friend throughout, who calls him to account. This narrative has been taken to be a return to Bordeu's portrait of d'Alembert, with Diderot as the wise observer, and the baron d'Holbach as the friend at whose house he was debating philosophy and eating dinner. It is highly plausible that Diderot was indeed thinking directly about these particular friends, not least because in the Saint-Petersburg manuscript of the *Éléments de physiologie* he specifies the actual road on which d'Holbach lived, rue Royale-Saint-Roch.¹⁴⁸ However, this is not the only reading: as we have seen, one philosopher can be replaced by another, and the narrative has a very real existence in prior tellings that do not describe an outing by d'Alembert one fine day. And of course, Diderot uses it again—this time without d'Alembert—just a few pages later:

Comment se fait-il que nous traversions Paris, à travers toutes sortes d'obstacles, profondément occupés d'une idée, par conséquent parfaitement distraits sur tout ce qui se rencontre, se passe, nous touche, s'oppose à nous, nous environne, sans accidents, sans nous tuer, sans blesser les autres? Comment se fait-il que dans les choses de pure habitude et de pure sensation nous les fassions d'autant mieux que nous y pensons moins? Nous montons parfaitement bien notre escalier,

148 DPV p. 485, n. 369.

pendant la nuit, si nous n’y pensons pas. Nous commençons à tatonner quand nous y pensons. Le jour, l’esprit occupé, nous le montons, nous le descendons comme s’il faisait nuit. Il y a plus: il fait nuit en plein midi, dans les rues, pour celui qui pense profondément et nuit profonde. L’œil nous mène; nous sommes l’aveugle. L’œil est le chien qui nous conduit [...].¹⁴⁹

How does it happen that we can walk right across Paris and around all sorts of obstacles when we’re profoundly preoccupied by an idea, and hence perfectly unaware of everything on our route, everything taking place, affecting us, blocking us, surrounding us, and do all this without mishap, without getting killed or hurting anyone? How does it happen that in the case of things related to pure habit or pure sensation, the less we think about them, the better we do them? We can get up our stairs perfectly at night-time, as long as we aren’t thinking about what we’re doing. The instant we start thinking about it, we start groping our way. By day, when our mind is preoccupied, we go up and down them as if it were night-time. There’s more: at mid-day it’s night-time and darkest night too for someone in the streets who’s deep in thought. Our eyes lead us; we are blind. Our eyes are the dog which guides us [...].

This is the same scenario, but ‘we’ (the author and his readers, in companionable complicity) are now the actors, walking across Paris oblivious to everything while never falling over and never knocking anyone else over either. For all our conscious awareness of our surroundings, it might as well be pitch black. And indeed, we are blind: our eye (just the one) leads us; it is a guide dog for the blind. Diderot continues to develop this idea: our organs (our senses, our inner organs, and even our limbs all count as organs for Diderot) have their own animal life and independence (and we will look further at this idea in the next chapter). Thus: ‘l’œil est un animal dans un animal, exerçant très bien ses fonctions tout seul’ [the eye is an animal within an animal, carrying out its functions very well all by itself]:¹⁵⁰ over the course of the rest of the chapter, Diderot calmly works through the idea of the independence of organs, how they have their own tastes and dislikes, illnesses and varying states of health. The logical conclusion is inevitably that:

149 DPV 499–500/PQ 336–37/MT 313. Terada signals a further passage which also addresses the question of involuntary movement, from Marat’s *De l’homme*, see *Éléments*, ed. by Terada, p. 496, Source X.

150 DPV 500/PQ 337/MT 314.

L'homme peut donc être regardé comme un assemblage d'animaux [...].¹⁵¹

Man can therefore be regarded as an assemblage of animals [...].

This provides the new starting point for Diderot's consideration of bodily and emotional states, along with logical consequences for differing ethical positions. It is very thorough-going determinism, and it leaves selfhood and identity in a somewhat precarious position.

h. Selfhood and Memory

If we are only ephemeral body, and not eternal soul or reason, then what are we? The body has a self, and that self is coterminous with memory, write Condillac and Bonnet. What then is memory? Memory must be some kind of imprint, agree Spinoza, Leibniz, La Mettrie, Condillac, Bonnet, and Diderot: or is it? asks Bonnet; there are interesting phenomena related to the memory of different languages, and to memorising verse, explain Spinoza, La Mettrie and Diderot. Diderot considers brain and memory as a self-reading self-writing book.

When Condillac considers the question of the statue's self, this is what he decides:

Son *moi* n'est que la collection des sensations qu'elle [la statue] éprouve, et de celles que la mémoire lui rappelle.¹⁵²

Her *self* is nothing other than the collection of sensations which she [the statue] feels, and which come to her memory.

Condillac leaves no room for manoeuvre: the self is *nothing but* the combined feelings of the statue, along with those sensations retained by the memory. It is a hardline reductive definition, particularly for those of us whose memory is faulty. Not all philosophers are willing to be so brutal. Bonnet for example cannot quite bring himself to say it, when writing about *his* statue's 'personality':

¹⁵¹ DPV 501/PQ 338/MT 314.

¹⁵² Condillac, *Traité des sensations*, p. 56 (I.vi): there's an obvious translation problem here in gendering or not gendering the statue. Condillac uses the feminine form automatically, because statue is a feminine noun, and the female characterisation he develops is also supported by the fact that the statue is also of a woman. We therefore also follow the feminine.

Sa personnalité est devenue plus composée; parce que le Moi s'est approprié par la Réminiscence un plus grand nombre de sensations. Son Essence personnelle a reçu successivement de nouvelles déterminations. Je sens que cette proposition exige que je la développe un peu plus.¹⁵³

Her personality became more complex because the self acquired a greater number of sensations through its memory. Her personal essence was successively determined in new ways by this means. I feel that this proposition requires further development.

Bonnet does say that 'personality' becomes more complex the more sensations its memory has banked up; he also says that someone's 'personal essence' acquires new aspects over time with sensations; finally he admits that he needs to go into it a bit further. These various statements transmit a certain sense of unease, and the following paragraphs, in which he supposedly 'develops this proposition a bit more' (as he puts it), do not so much add anything, as say it again a few times while using the word 'âme' [soul]. Rousseau's *Émile* says the same thing more directly, and, in being more personal, avoids the dogmatic reductiveness that characterises Condillac:

Je sens mon âme; je la connois par le sentiment et par la pensée [...]
Ce que je sais bien c'est que l'identité du *moi* ne se prolonge que par la mémoire, et que pour être le même en effet, il faut que je me souvienne d'avoir été.¹⁵⁴

I sense my soul. I know it through feeling and thought. [...] What I know for sure is that the identity of the *self* is prolonged only by memory, and that in order to be actually the same I must remember having been.

Rousseau not only brings in the term of identity, he notices the thorny issue of continuity, and imposes continuous memory on himself: in order to be the same person he *must* remember what he was before. Diderot will consistently identify the self with memory, while also probing the various implications of continuity and interruption. In the *Rêve de d'Alembert*, d'Alembert asks Bordeu how he has managed to stay himself despite continuous change:

153 Bonnet, *Essai analytique sur les facultés de l'âme* [1760], in *Œuvres d'histoire naturelle et de philosophie*, vol. 8, t. 14, p. 212 (§702).

154 Rousseau, *Émile*, in *Œuvres complètes*, vol. 4, p. 590; *Emile*, trans. by Bloom, p. 283 (slightly amended).

D'ALEMBERT: A travers toutes les vicissitudes [...] comment suis-je resté moi pour les autres et pour moi?¹⁵⁵

Taking into account all the changes [...], how have I kept my own personality for myself as well as for others?

Bordeu replies, with reference to an animal's sense of self (the conversation has been moving surreally):

BORDEU: Que c'était par la mémoire qu'il était lui pour les autres et pour lui: et j'ajouterais par la lenteur des vicissitudes.¹⁵⁶

That it remained itself both for others and for itself thanks to memory. And I would add because of the gradualness of the change.

That because of the slow rate of change he has remained recognisable to himself and to others is perhaps not a particularly reassuring doctrine. In the *Observations sur Hemsterhuis*, Diderot testily scratches out Hemsterhuis's association of self with soul:

* Le *moi* est le résultat de la mémoire qui attache à un individu, la suite de [ses] sensations. Si je suis un individu, c'est *moi*. Si c'est un autre individu, c'est *lui*. Le *lui* et le *moi* naissent du même principe.¹⁵⁷

* The *self* is the result of memory attaching a sequence of sensations to an individual. If I am an individual, that's *me*. If it's another individual, then it's *him*. The *him* and the *me* are born from the same principle.

So selfhood is the *result* of memory attached to an individual. And the difference between *me* and *him* is nothing more mysterious than that *I* have one set of sensations strung together into memories, and *he* has a different set. The *Éléments de physiologie* contains a very rich and fascinating chapter on memory, full of curious anecdotes, set piece recollections, and bizarre imagery, all of which test and stretch our notions of what memory might be and how it works. But it does

155 Denis Diderot, *Rêve de d'Alembert*, DPV, vol. 17, p. 164; *Rameau's Nephew and D'Alembert's Dream*, trans. by Leonard Tancock (London: Penguin, 1966), p. 201.

156 Diderot, *Rêve de d'Alembert*, DPV, vol. 17, p. 164; *Rameau's Nephew and D'Alembert's Dream*, trans. by Tancock, p. 201.

157 Diderot, *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, ed. by Stenger, in *Œuvres complètes*, DPV, vol. 24, p. 329 (Diderot's note number 191, responding to Hemsterhuis's 'notre âme, notre moi').

not move from its fundamental position that, as it tersely puts it: 'La mémoire constitue le soi' [memory constitutes the self].¹⁵⁸

What then is memory? Is it an imprint? The notion that memory is an imprint in the waxy substance of the brain is age-old. It goes back to Pindar, Plato and Aristotle. Bacon, Descartes and Leibniz use it. Locke in fact uses the idea of white paper with writing, but Swift, paraphrasing him, reintroduces the wax motif with his *tabula rasa*.¹⁵⁹ It seems to be the only model for memory ever used. Spinoza wrote in the *Traité de la réforme de l'entendement*:

Que sera donc la mémoire ? Rien d'autre que la sensation des empreintes qui sont dans le cerveau, jointe à une pensée relative à une durée déterminée de cette sensation, comme le montre la réminiscence.¹⁶⁰

What will memory be then? Nothing other than the sensation of the imprints which are in the brain, in connection with a thought relating to the specific duration of this sensation, as we see in the case of reminiscence.

La Mettrie has a general notion of all forms being created from matter *as wax takes the shape of a seal*:

Ces modifications [de forme] reçoivent leur être, ou leur existence, de la matière même, comme l'empreinte d'un cachet la reçoit de la cire qu'elle modifie.¹⁶¹

These modifications [in form] receive their being, or their existence, from matter itself, just as the imprint of a seal receives its shape from the wax which it modifies.

Memory is simply an extension of this metaphor:

158 DPV 471/PQ 298/MT 286.

159 See Brad Pasanek's wonderful resource, hosted by the University of Virginia 'The Mind as a Metaphor' (<http://metaphors.lib.virginia.edu/about>). The works referred to are, respectively, Pindar, *Olympian 10*; Plato, *Theaetetus*; Aristotle, *De memoria* (On Memory); Bacon, *Temporis Partus Masculus* (The Masculine Birth of Time); Descartes, *Rules for the direction of the mind*; Leibniz, *New Essays on Human Understanding*; Locke, *An Essay concerning Human Understanding*; Swift, *Critical Essay upon the Faculties of the Mind*.

160 Spinoza, *Traité de la réforme de l'entendement*, §83.

161 La Mettrie, *Traité de l'âme*, p. 131.

La cause de la mémoire est tout-à-fait mécanique, comme elle-même; elle paroît dépendre de ce que les impressions corporelles du cerveau, qui sont les traces d'idées qui se suivent, sont voisines [...]¹⁶²

The cause of memory, like memory itself, is entirely mechanical; it seems to depend on the proximity to each other of the corporeal impressions in the brain, which are the traces of the sequences of ideas [...]

Memories are sensations which have been impressed on the mind, leaving traces of ideas. Condillac also applies the analogy very literally when considering what will remain in the memory and what will not:

Si la succession en renferme un grand nombre, l'impression des dernières, comme la plus nouvelle, sera la plus forte; celle des premières s'affaiblira par des degrés insensibles, s'éteindra tout-à-fait, et elles seront comme non avenues.¹⁶³

If the sequence contains a great number, the impression made by the most recent ones, like the newest, will be the strongest; the impression made by the first ones will become fainter by imperceptible degrees, disappear completely, and it will be as if they had never happened.

This explains how a sensation can become a memory, that is, by leaving a lasting impression (we see how ubiquitous this model also is in English when we use a metaphorically identical but very common phrase like 'leaving a lasting impression'). But it does not explain how a memory is later recalled. The impression model really struggles to deal with this aspect. Here is Condillac's attempt:

Quand une idée se retrace à la statue, ce n'est donc pas qu'elle se soit conservée dans le corps ou dans l'âme: c'est que le mouvement, qui en est la cause physique et occasionnelle, se reproduit dans le cerveau.*¹⁶⁴

When an idea is retraced in the statue, it's not as if it had been kept in the body or soul, it's that the movement (which is the physical and occasional cause of the idea) is reproduced in the brain.

So, in sum, it is not that the memory is an object which is kept in a store until needed; it's that the same movement re-occurs in the brain... Condillac's assertive style does not hide the fact that this particular

162 La Mettrie, *Traité de l'âme*, p. 172.

163 Condillac, *Traité des sensations*, p. 23 (I.ii).

164 Condillac, *Traité des sensations*, pp. 33–34 (I.ii).

explanation departs from his earlier model, and in so doing, stops making sense. In fact, as is obvious, his account has gone beyond what the wax imprint model can explain, and, having no precise knowledge of how a returning memory works, he is obliged to resort to a different mechanical model to do with movement.

Bonnet is simply more open about his lack of knowledge and his perplexity in this area. He turns Condillac's model into a question, asking whether memories endure because of the mechanical energy with which they are first felt. But then he answers it sceptically, and with reference to the physiological composition of the brain:

Mais, ces mouvements que l'objet imprime à l'Organe ne se conserveroient-ils point dans le Cerveau par l'énergie de sa mécanique? [...]

[...] on a de la peine à concevoir la conservation du mouvement dans une Partie aussi molle que paroît l'être le Cerveau.¹⁶⁵

But are these movements which the object impresses on the organ not preserved in the brain according to the energy of its mechanical operation?

It is tricky to conceive of movement being preserved in a part as soft as the brain appears to be.

Elsewhere he goes even further, chastising himself for his earlier feebleness in simply re-using this old wax-imprint model. In fact his model was one of fibres (related to the idea of nerve fibres)¹⁶⁶ but we see in the following passage how the vocabulary of *traces*, *pressure*, and *movement* remain.

Je n'ai rien dit de ces traces, de ces ébauches qu'on suppose si gratuitement dans le cerveau, toutes les fois qu'on parle de l'Imagination & de la Mémoire: j'avoue, que n'ayant pu m'en former aucune idée, j'ai jugé plus philosophique d'admettre que les mêmes organes qui, ébranlés par les Objets, nous donnent tant de perceptions diverses, sont faits de manière que leurs parties constituantes reçoivent de l'action des objets certaines déterminations d'où résulte une tendance à se mouvoir dans un sens plutôt que dans un autre.¹⁶⁷

165 Bonnet, *Essai analytique sur les facultés de l'âme* [1760], pp. 40, 42 (§55).

166 See Tobias Cheung's article on fibres: 'Omnis Fibra Ex Fibra: Fibre OEconomies in Bonnet's and Diderot's Models of Organic Order', *Early Science and Medicine*, vol. 15, no. 1–2, 2010, pp. 66–104.

167 Bonnet, *Analyse abrégée de l'Essai analytique sur les Facultés de l'âme*, pp. 27–28.

I have said nothing of these traces, these sketches in the brain which we so freely mention every time we talk of imagination and memory: I admit that, having been unable to form any idea of them myself, I judged that it would be more philosophical to suppose that these same organs which, shaken by objects, give us so many different perceptions, are made such that their constituent parts receive from the action of these objects certain determinations from which arises a tendency to move in one way or another.

Diderot takes all of these aspects and sends them into a spin.

Pour expliquer le mécanisme de la mémoire il faut regarder la substance molle du cerveau comme une masse d'une cire sensible et vivante, mais susceptible de toutes sortes de formes, n'en perdant aucune de celles qu'elle a reçues et en recevant, sans cesse, de nouvelles qu'elle garde. Voilà le livre. Mais où est le lecteur? Le lecteur c'est le livre même. Car ce livre est sentant, vivant, parlant ou communiquant par des sons, par des traits,¹⁶⁸ l'ordre de ses sensations; et comment se lit-il lui-même? En sentant ce qu'il est et en le manifestant par des sons.

Ou la chose se trouve écrite, ou elle ne se trouve pas écrite. Si elle ne se trouve point écrite, on l'ignore. Au moment où elle s'écrit, on l'apprend. Selon la manière dont elle était écrite, on la savait nouvellement ou depuis longtemps.

Si l'écriture s'affaiblit, on l'oublie, si l'écriture s'efface, elle est oubliée, si l'écriture se revivifie, on se la rappelle.¹⁶⁹

To explain the mechanism of the memory it is necessary to view the soft parts of the brain as a mass of sensitive and living wax, but one which can take on all sorts of forms, losing none of those it has had, and ceaselessly taking on new ones which it will always retain. That is the book. But where is the reader? The reader is the book itself. For this book feels, lives, speaks or communicates its sensations in order, with sounds, with lines; and how does it read itself? By feeling what it is and by manifesting that through sounds.

Either the thing happens to be written, or it doesn't. If it doesn't happen to be written, we don't know it. The instant it is written, we learn it.

Depending on the manner in which it was written, we learnt it anew or had known it for a long time.

168 *Trait* is hard to translate in that it means *lines* or *strokes* (of hand-writing), but also *features* (as in expressions). Diderot probably means all these things.

169 DPV 470/PQ 297/MT 285–86.

If the writing weakens, we forget it, if the writing is rubbed out, it is forgotten, if the writing comes back to life, we remember it.

Diderot takes the image of the malleable wax and makes the brain into a living, moving, reacting, self-sculpting mass that permanently contains its own past forms. This, he says, without signalling the change of image, is the book. What book? Diderot is picking up the other strand of this model: having investigated the notion of waxy forms, he returns to the notion that it is a *book* written on wax tablets (as Pindar, Plato, etc. had said). But if it is a book, it needs a reader, or so we are given to understand by virtue of his question asking where the reader is. Because of course the brain is not passive (unlike the wax in this age-old topos), and if we are going to remember something, we have to actively do something. So the brain reads itself, not by mechanical movement, as Condillac had stated and Bonnet had wondered, but in feeling its own existence. Thus far we have three self-performing actions, or rather, operations which are both active and passive at once:¹⁷⁰ sculpting, reading, and feeling. 'La chose'—the thing (not yet a *memory*)—is the sensation which is either written or not written—or rather *happens or not* to be written (there is no agency behind it being written or not) in the waxy book, and if it does *not* happen to be written, we are unaware of it, and at the moment of it being written—or writing itself—we learn it. Still this is not memory, it is sensation that we feel and therefore learn, or do not feel and therefore do not know. *La manière* of its writing—the manner or perhaps we could go so far as to say the *style* of the writing is what determines whether this thing is something we are learning anew or which we had known for a long while. And this thing, in the sentence we have just been looking at, is presumably a sensation which is familiar, and therefore one which we have had before and *remember*, or it is a new one, for which there is no existing trace. In the last sentence, forgetting explicitly ties us to questions of writing, given that this model tells us that if the writing fades we forget the thing, and once the writing has gone, it is completely forgotten, unless the writing comes back to life, in which case the thing will then be remembered.

170 Citton analyses the same passage and the binary relationship between active and passive in his *L'Envers de la liberté*, pp. 479–80.

The density of this image, its helter-skelter shifts, and its sheer implausibility make the passage very striking. Its bizarreness obliges us to linger on it, and it is perhaps therefore an illustration of what is written here about the *manner* of how something is presented making all the difference between it being entirely familiar and altogether fresh and novel (or memorable, of course). Thinking about his extended metaphor in the context of the earlier commentators, we can see that Diderot tests out and strains the various features of this well-known, even well-worn image. He pushes it as far as it will go, and farther. In so doing, he shows us where the weaknesses lie, and how a metaphor can carry meaning and implications that have their own shaping force. Its very peculiarity draws attention to the conceptual and imaginative oddities and the implausibility of what it is that this model of the mind and memory is expected to do, and what features it appears to be required to accommodate and perform. And of course, memory does actually perform all the functions Diderot describes the self-reading, self-writing, self-performing book as doing. The philosopher of mind and specialist on memory, Krista Lawlor, writing more than two centuries later, identifies the features characterising memory as being autobiography, self-consciousness, memory traces, connectionism, trace and cue, re-presentation, reflexive thinking, and metarepresentational thought. She concludes that what is comprehensively lacking is 'a specific model of how working memory might function to preserve content, while acknowledging that memory involves reconstruction'.¹⁷¹ Diderot's straining multi-model simultaneously provides a commentary on the inadequacies of the ubiquitous imagery, a precise description of what the brain and memory actually does, and also performs memorable writing that does indeed do that thing of leaving a lasting impression.

If all the self consists of is cumulative sensation over time, with memory also being a sensation felt in the present, then we depend entirely on our sensations for the quality of our selfhood. As Diderot put it to Hemsterhuis, just after having stated that '*Le moi est le résultat*

171 Krista Lawlor, 'Memory', in *The Oxford Handbook of Philosophy of Mind*, ed. by Ansgar Beckermann, Brian P. McLaughlin, and Sven Walter (Oxford: Clarendon Press, 2009), p. 674, <https://doi.org/10.1093/oxfordhb/9780199262618.003.0039>.

de la mémoire [...]’ [the *self* is the result of the memory], ‘Ce *moi* veut être heureux’ [this *self* wants to be happy].¹⁷²

i. The Pursuit of Happiness

It is a virtue and therefore a duty to seek our self-preservation, nourishment, and happiness, write Spinoza, La Mettrie and Diderot.

Spinoza argues that if the multiple nourishment needs of the multiple body are met, then both it and the mind will be able to function well. He puts it more poetically than that:

[...] the human body is composed of a great many parts of different natures, which require continuous and varied food so that the whole body may be equally capable of doing everything which can follow from its nature, and consequently, so that the mind may also be equally capable of conceiving many things.¹⁷³

He goes on to argue that anything that boosts human happiness is good, specifically because it will boost the power of the human body and mind:

Since those things are good which assist the parts of the body to perform their function, and joy consists in the fact that man’s power, insofar as he consists of mind and body, is aided or increased, all things which bring joy are good.¹⁷⁴

To boost one’s ability to function properly in terms of body and mind is, concludes Spinoza, virtuous, and indeed ‘the foundation of virtue’:

[...] the foundation of virtue is this very striving to preserve one’s own being, and [...] happiness consists in a man’s being able to preserve his being.¹⁷⁵

As La Mettrie less carefully puts it in *L’Homme-machine*:

172 Diderot, *Observations sur La ‘Lettre sur l’homme et ses rapports’ de Hemsterhuis*, DPV, vol. 24, p. 330 (Diderot’s note 192).

173 Spinoza, *Ethics*, p. 159 (§ XXVII).

174 Spinoza, *Ethics*, p. 159 (§ XXX).

175 Spinoza, *Ethics*, p. 125 (II/222 (i)). Terada also suggests Spinozan sources for Diderot’s thinking in this area, see e.g. Spinoza, *Ethics*, proposition XIX, quoted MT 480.

La Nature nous a tous créés uniquement pour être heureux; oui tous, depuis le ver qui rampe, jusqu'à l'Aigle qui se perd dans la Nuë.¹⁷⁶

Nature created us all solely to be happy—yes, all, from the worm crawling along to the eagle soaring on high.¹⁷⁷

The *Éléments* agrees, and summarises this joint physiological and ethical position at the beginning of the chapter entitled 'Passions':

Il n'y a qu'une seule passion, celle d'être heureux.¹⁷⁸

There is only one passion, and that is to be happy.

The chapter goes on to demonstrate how the fulfillment of bodily needs and happiness go hand in hand, as do sickness, frustration and misery.

The final sentence of the *Éléments* recapitulates this in firm form:

Il n'y a qu'une vertu, la justice; qu'un devoir, de se rendre heureux; qu'un corollaire, de ne pas se surfaire la vie et de ne pas craindre la mort.¹⁷⁹

There is only one virtue: justice; only one duty: to make oneself happy; and only one corollary, not to overvalue one's life and not to fear death.

One's duty is to oneself, and it is to promote one's own happiness, while not clinging onto life and not fearing death. On this virtuous, upright, deeply Epicurean sentiment, the *Éléments de physiologie* ends.

*

In this chapter I have tried to present the key structuring aspects of these theories of nature and the human understanding, or mind, or brain, and I have tried to show how Diderot fits them together into one seamless materialist system. I have also tried to bring out how these key structuring aspects appear again and again, and how their motifs often follow similar patterns and models, despite normal variation from one author to another. It is often not clear who was reading whom and therefore being influenced by whom; the reading routes are carefully hidden in the case of this often highly censored material. However, if it

176 La Mettrie, *L'Homme-machine*, p. 92.

177 La Mettrie, *Machine Man* in *Machine Man and Other Writings*, trans. and ed. by Ann Thomson (Cambridge: Cambridge University Press, 1996), p. 22.

178 DPV 486/PQ 317/MT 301.

179 DPV 514/PQ 362/MT 328. Terada usefully points us in the direction of Spinoza, *Ethics*, proposition XX, and to Boulainvillier's *Réfutation de Spinoza* for other close source material.

seems clear enough that Diderot knew all these writers well (sometimes personally), the aim of this chapter has not primarily been to trace their influence or impact on the *Éléments de physiologie*. What instead I hope to have shown is that he is picking up these multifarious elements, responding to them, and creating a synthesis which no other author had previously brought together, in a style which was more explicit and forthright about its materialist determinism than any other, and therefore able to look at and probe its consequences and implications more clearly. This text is obviously not the first in which Diderot sought to express materialist positions: it is the last, and it contains aspects and developments of all those which lead to it, from the *Pensées philosophiques* of 1746 onwards. In the *Observations sur Hemsterhuis* and the *Réfutation d'Helvétius*, he repeatedly refers to his 'philosophie', a philosophy which, we infer, is more complex, thorough, instantiated, and rigorous than what these two interlocutors had proposed.¹⁸⁰ He can only be referring to the *Éléments*, already underway at that time.¹⁸¹

180 Diderot speaks of 'ma philosophie' [my philosophy], 'mon mot' [what I have to say], and 'ma philosophie' [my philosophy] in *Observations sur La 'Lettre sur l'homme et ses rapports' de Hemsterhuis*, DPV, vol. 24, p. 261, 262, and 340 respectively, and again of 'ma philosophie' in *Réfutation d'Helvétius*, DPV, vol. 24, p. 588.

181 See above, note 13, in Chapter 1.

