

Pierre Bayle, Matter, and the Unity of Consciousness

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Proving the immortality of the soul was a common challenge for the religious metaphysical writers of the seventeenth century. One attractive line of argument was premised on the 'unity,' 'simplicity,' or 'indivisibility' of consciousness ('mind,' or 'soul'). While the religious issue of the soul's immortality dropped to a lower place on the philosophical agenda in the eighteenth century, the question of the unity of consciousness continued to run high as philosophers attempted to apply material atomism to mind and to vital phenomena in general. It is still exercising contemporary philosophers as they continue to attempt a variety of materialistic reductions. The unity of consciousness is a bridge issue that links the Scholastic, Modern, and contemporary platforms, and Bayle's location at the *fin du siècle* gate-post provides a nice high promontory from which to look both backwards and forwards. In what follows, I will provide an account of his argument for the unity of consciousness and set it in the seventeenth-century context, tracing one central powerful premise back to Aristotle by way of Moorish Spain.¹ I will begin with Descartes, move on to Louis de Courcillon and his close friend François-Timoléon de Choisy, then to François Lamy, and finally to Bayle. I will conclude with some reflections on Diderot, Hume, Kant and the general problem of the mind's unity in the eighteenth century and now.

1 For a broader historical introduction with critical analysis, see B.L. Mijuskovic *The Achilles of Rationalist Argument* (The Hague: Martinus Nijhoff 1974).

I Descartes

While Descartes was diffident on presenting 'indivisibility' as the basis of a formal demonstration of immortality, he already signaled the possibility of doing so in the Synopsis to the *Meditations* where he wrote:

the human body, in so far as it differs from other bodies, is simply made of a certain configuration of limbs and other accidents of this sort; whereas the human mind is not made up of any accidents in this way, but is a pure substance. For even if all the accidents of the mind change, so that it has different objects of the understanding and different desires and sensations, it does not on that account become a different mind; whereas the human body loses its identity merely as a result of a change in the shape of some of its parts. And it follows from this that while the human body can very easily perish, the human mind is immortal by its very nature.²

And in the Sixth Meditation, he addressed the unity of mind without taking the further step to its immortality:

The first observation I make at this point is that there is a great difference between the mind and the body, inasmuch as the body is by its very nature always divisible, while the mind is utterly indivisible. For when I consider the mind, or myself in so far as I am merely a thinking thing, I am unable to distinguish any parts within myself; I understand myself to be something quite single and complete... By contrast, there is no corporeal or extended thing that I can think of which in my thought I cannot easily divide into parts; and this very fact makes me understand that it is divisible. This one argument would be enough to show me that the mind is completely different from the body.³

Later writers were not to be so reluctant, but they still adhered in a very straightforward way to Cartesian assumptions.

There were three such assumptions required, one explicitly stated, and two not made explicit until Bayle. The explicit one was a certain commonly accepted double understanding of 'destruction': a 'natural' version, which made it no more than a change in a particular arrangement or 'organization' of particles through which an aggregate was destroyed by losing its identity, and a metaphysical version, which entailed the

2 Rene Descartes, *Meditations on First Philosophy*, AT VII 14; CSM II 10. All references to Descartes are to the standard edition, *The Philosophical Writings of Descartes*, 2 vols., John Cottingham, Robert Stoothoff, and Dugald Murdoch, trans. and eds. ['CSM' below] (Cambridge: Cambridge University Press 1985). There is a third volume devoted to the correspondence which has contributions by Anthony Kenny, when I refer to this, I will label it 'CSMK.' I also include the Adam and Tannery pagination as 'AT.'

3 Descartes, AT VII 86; CSM II 59

actual annihilation of a substance. It was assumed that the latter could be accomplished only by miraculous supra-natural means available only to God. Thus, if it could be shown that the soul was 'without parts,' it followed that the soul was 'naturally' indestructible and thus immortal. Bayle summarized the Cartesian argument to immortality as follows:

C (Descartes' view is ... of very great advantage to the true faith.) What leads the Cartesians to say that beasts are machines is that according to them all matter is incapable of thinking. They are not content to say that only spiritual substances are capable of reflecting and constructing a long chain of reasoning; but they maintain that all thought ... is of such a nature that the most subtle and the most perfect matter is incapable of it and that it can only exist in incorporeal substances. According to this thesis every man can be convinced of the immortality of his soul. Every man knows that he thinks, and consequently, if he reasons in the Cartesian way, he cannot doubt that what thinks in him is distinct from the body; from which it follows that he is immortal in this respect; for the mortality of creatures consists only in that they are composed of several parts of matter that separate from one another.⁴

It is very likely that Descartes was in full agreement with the thesis of the 'natural' indestructibility of the soul, though, as his reply to Mersenne in the *Second Set of Replies* indicates, he did not believe that God was prevented from extinguishing the soul and that thus the ultimate knowledge of the immortality of the soul could not be humanly achieved.⁵

The second assumption was that matter's properties ('accidents,' 'modifications') were necessarily limited to the quantifiable ones assigned by Galileo,⁶ Descartes,⁷ and Locke.⁸ And the third, that even if one were to assume *per impossibile* that matter itself was capable of having some additional property⁹ such as perception (for Descartes and the bulk

4 Pierre Bayle, *Historical and Critical Dictionary*, 1697, 1702, selections trans. and introduced by Richard Popkin (Indianapolis: Hackett 1991) ['Popkin' below], art. Rorarius, rem. C, 216. Some of the marginal notes of the original are omitted in the Popkin edition. See also rem. G, 234.

5 See Descartes, *Second Set of Replies*, AT VII 153; CSM II 108, 109.

6 See Galileo Galilei, *The Assayer* (1623), included in *The Scientific Background to Modern Philosophy*, Michael R. Matthews, ed. (Indianapolis: Hackett 1989), 56.

7 See Descartes, Meditation V, AT VII 63; CSM II 44.

8 See John Locke, *An Essay Concerning Human Understanding*, 1689 P.H. Nidditch, ed. (Oxford: Oxford University Press 1979), Bk. II, Ch. VIII, §9, 135.

9 Descartes' struggle with motion, which did not seem analytically included in the concept of extension, indicates the tension between a prioristic physics and empirical explanatory demands. Similarly, Locke's attribution of 'solidity' also augmented the original a priori assignment of properties to matter.

of his successors, all 'thinking' was a form of perception), this perception would have to be subject to the same limitation as all other natural-material properties, specifically that it could not be 'transferred' from one particular ('subject,' 'substance') to another. Bayle states the principle in a marginal note:

*Accidentia non migrant de subjecto in subjectum.*¹⁰

Roughly, 'Accidents don't travel from substance to substance' [the '*Non Migrant*' principle in what follows].

The third assumption deserves special and separate attention. Bayle calls it a 'most certain and true maxim' (Popkin, 130), which is not surprising since it was a universally accepted principle deriving originally from the Aristotelian doctrine that only substances are capable of existing independently. That the principle survived virtually unchanged from its origin is shown by a passage in which Aristotle argues against the possible Anaxagoran thesis that 'in the beginning all things were mixed.' He writes that this is absurd

because [among other reasons] on this view *modifications and accidents could be separated from substances.*¹¹ (*my italics*)

Descartes still assumed the principle. Responding to Henry More, who challenged him on the question of the transfer of motion, he wrote:

You observe correctly that "motion, being a mode of body, cannot pass from one body to another".... So there is no need for you to worry about the transmigration of rest from one object to another since not even motion, considered as a mode which is the contrary to rest transmigrates in that fashion.¹²

It was also later the basis of Leibniz's famous doctrine that Monads must be 'windowless.'¹³ Bayle, who had been acquainted with Leibniz from

10 Pierre Bayle, *The Dictionary Historical and Critical of Mr. Peter Bayle, 1736*, a translation of the second edition of 1702. (New York: Garland 1984) v. III, art. Leucippus, rem. E, 20, 791. Bayle used margins for numbered notes as we use foot and end notes.

11 Aristotle, *Metaphysics* Book I, Ch. 8, l. 30, 989b, in *The Basic Works of Aristotle*, Richard McKeon, ed. and intro. (New York: Random House 1941), 704

12 Descartes, *To More, August 1649* AT V 405; CSMK III 382. The reference was brought to my attention by a footnote in Steven Nadler's Introduction to *Causation in Early Modern Philosophy* (Pennsylvania: Penn State Press 1958), 'CEMP.' See also Descartes, *The Principles of Philosophy*, Part 2, art. 27 AT VIII A 55; CSM I, 234.

13 Gottfried Leibniz, *Monadology*, 1720, trans., introduced, and annotated by Nicholas

the 1680s on, had developed into a highly interested and impressed commentator on his evolving views.¹⁴

The principle clearly had a long and distinguished history as well as common acceptance; it was also arguably the single most important ground for the wide-spread and powerful doctrine of Occasionalism, the position on mind/body that Descartes might well have held,¹⁵ that Malebranche held, and that Bayle himself found provisionally most plausible. Where Occasionalism was a response to the question of sensory perception, the principle often constituted a reply to the doctrine of 'sensible species' derived from Aristotle and rejected by virtually every significant Early Modern writer beginning with Descartes.¹⁶ While

Rescher in G.W. *Leibniz's Monadology* (Pittsburgh: University of Pittsburgh Press 1991), 7. 'There is, furthermore, no way to explain how a monad could be altered or changed in its inner make-up by some other created being. For one can transpose nothing in it, nor conceive in it any internal motion that could be excited, directed, increased, or diminished within it, as can happen in composites, where there is change among the parts. *Monads just have no windows through which something can enter into or depart from them. Accidents cannot be detached, nor wander about outside of substances, as the sensible species of the Scholastics formerly did. And so, neither substance nor accident can enter a monad from without*' ([my italics] 17). Also: 'shape is an accident, which does not pass from one subject to another, *de subjecto in subjectum*' (*New Essays on Human Understanding*, Peter Remnant and Jonathan Bennett, trans. and eds. (Cambridge: Cambridge University Press 1997), 232).

14 See R.S. Woolhouse and Richard Francks *Leibniz's 'New System'* (Oxford: Oxford University Press 1997), ch. 5.

15 See Daniel Garber, 'Descartes and Occasionalism,' in *CEMP*. Hume writes in the first *Enquiry*: 'DES CARTES insinuated that doctrine of the universal and sole efficacy of the Deity, without insisting upon it' in *Enquiries Concerning Human Understanding and Concerning the Principles of Morals 3rd ed.*, P.H. Nidditch, ed. with notes (Oxford: Oxford University Press 1978), 78, n.1. Hume's remark was frequently echoed in the views of later commentators into the twentieth century. It must be stressed, as Garber does, that while the two are easily conflated, there are really at least two causal issues for Descartes, one concerning causation in general and another concerning mind/body causation. The latter results from the impact required for material causation being impossible for mind. This still leaves the question of whether impact causation is itself compatible with Descartes' assumptions. It is this that Henry More is questioning and that Descartes' reply still leaves unresolved; see n.12. Garber's otherwise illuminating article does not address the question of what Scholastic pressures lead to as counter-intuitive a thesis as Occasionalism. The pressure to which he does draw attention, that of substantial forms, does not by itself entail the impossibility of efficient causation; this is done only by the *Non Migrant* principle.

16 In denying the need to assume that what we see resembles its cause, he writes in the *Optics*: 'By this means, your mind will be delivered from all those little images

Aquinas appealed to the principle in both of his *Summae*¹⁷ as well as in his *Quaestiones Disputatae de Potentia Dei*,¹⁸ and in wording very close to that used by Bayle, it was already present as early as the tenth century among the Mutakallimun, the Arab religious theologians through whom Aristotle was revived and made available to Western Europe. Aquinas applied the principle primarily in his discussions of these philosophers, and he seemed to have acquired the details of their arguments from Maimonides. He refers to the following passage in which Maimonides appeals to the principle in describing the Occasionalist doctrines of the Mutakallimun:

they assert that when a man is perceived to move a pen, it is not he who has really moved it; the motion produced in the pen is an accident which God has created in the pen; the apparent motion of the hand which moves the pen is likewise an accident which God has created in the moving hand; but the creative act of God is performed in such a manner that the motion of the hand and the motion of the pen follow each other closely; but the hand does not act, and is not the cause of the pen's motion; for, as they say, *an accident cannot pass from one thing to another*.¹⁹ (my italics)

As the phrase 'as they say' indicates, this principle had its origins among the Mutakallimun,²⁰ though Aquinas seems willing to adopt it despite the fact that its sponsors espoused Occasionalism and were critical of Aristotle.

The *Non Migrant* principle is an implication of the more fundamental principle that substance and only substance is capable of independent existence. An 'accident,' consequently, can only exist by virtue of a

flitting through the air, called "intentional forms," which exercise the imagination of the philosophers' (AT VI 85; CSM I 153, 52. Cf. Leibniz, n.13 above; Malebranche, *The Search After Truth*, Bk. 3, Pt. II, ch. 2; Bayle, art. Leucippus, rem. E, Popkin 132).

17 St. Thomas Aquinas, *Summa Contra Gentiles* 'accidens non transit a subjecto in subjectum...' (Bk. III, chap. 69, 2441 & 2458). Also *Summa Theologica*: 'accidentia non transeunt de subjecto in subjectum' Pt. III, 77, art. 1.

18 St. Thomas Aquinas, *Quaestiones disputatae de potentia Dei*: 'accidens in aliud subjectum transire non possit' (q. 3, a. 7-8).

19 Maimonides, *Guide for the Perplexed*, 2nd ed., M. Friedländer, trans. (London: Routledge & Kegan Paul 1951), 125

20 For example, Andrey Smirnov quotes Al-Baghadi, 980-1037: 'If there is no latency-and-manifestation, but bodies really undergo alterations of their states, and accidents cannot travel from body to body, then an accident's existence in substance is its origination in it' (my italics). 'Causality and Islamic thought,' included in *A Companion to World Philosophies*, E. Deutch and R. Bontekoe, eds. (London: Blackwell 1997), 493-503.

special relation, say R, that the accident has to a substance, where it is impossible for an accident to ever have R to more than one substance. Furthermore, where the substance in question is mental, R is also the only possible epistemic conduit, so that, barring 'sensible species,' R actually *is* 'awareness.' Accidents are thus ontologically parasitic on substances, remaining in existence only as long as the sustaining connection R to a host substance is maintained. The *Non Migrant* principle entailed that even if matter could think, one parcel of matter could not 'share' its perception with another, either by allowing another parcel direct access to it (because an accident can't have R to more than one substance), by providing it with a copy (transfer would involve a temporary loss of R), or by sending over the original itself (same again). Just as the shape or size of matter-parcel A had to be numerically distinct from that of matter-parcel B, even if they were qualitatively the same, any *perception* of A had to be numerically distinct from that of parcel B and necessarily un-shareable. The reason for this was that if perception was a property, an 'accident,' or 'mode' of some material thing, then it could no more be shared with another material thing than could its size or shape. Ultimately, this powerful principle would further imply in Bayle's mind that if thought was no more than a property of a material atom, then that thought had itself to be as atomic as the atom of which it was a property. More on this below.

II The Two Abbés and François Lamy

An argument based on these three assumptions surfaced in a book entitled *Quatre Dialogues: 1. Sur l'immortalité de l'ame: 2. Sur l'existence de Dieu: 3. Sur la Providence: 4. Sur la Religion* (1684) by Louis de Courcillon, Abbé de Dangeau (1643-1723), and his close friend François Timoléon, Abbé de Choisy. Pierre Bayle reviewed the book in the Aug. 1684 issue of the *Nouvelles de la republique des Lettres*, attributing it only to Courcillon²¹ and summarized the immortality argument there. Since Bayle

21 Bayle attributes the book only to Louis de Courcillon, Abbé de Dangeau, (Paris: Chez Sebastien Mabre-Cramoisy 1684), but it appears to have been co-authored with his close friend François-Timoléon, Abbé de Choisy, 1644-1724, notorious for being a libertine and transvestite. The Princeton Library lists François-Timoléon as first author. He apparently lived a dissolute life until 1683 when, staying in Paris with Louis, he had an illness so severe as to call for final rites. The experience was life-transforming and recalled him to his faith so far as to motivate him to travel in 1685 to Siam with the objective of converting the king to Christianity. This project failed, and, on his return in 1687, he was made a member of the Academy Française. It may be also that it was the illness and his consequent rededication that inspired

thought there was only one author, I will adopt this as a convention for simplicity's sake.

The Abbé's argument as presented by Bayle was based on a certain fact about human awareness, namely that it exhibits simultaneously a kind of unity and a kind of plurality.²² The Abbé pointed out that we are able to compare at one time an odor and the feeling of warmth, and to make a judgment as to which of the two we find more pleasant:

When you warm your hand, it is certain that you feel a kind of pleasure. If at the same time, an agreeable odor approaches your nose, you feel another type of pleasure. If I ask you which of these two pleasures pleases you more, you respond "it is this one" or "it is that one," you therefore compare these two pleasures at once, and you judge them at the same time.²³

While the odor, the warmth, and the judgment are distinct and therefore plural, the judgment is not possible without the comparison, and the comparison is not possible unless the odor and the warmth are apprehended at once in a single act of consciousness. By itself, however, this fact did not establish enough to yield the simplicity required for immortality; for that, it was necessary to invoke the then current account of

the writing of the book, published in 1684. Louis de Courcillon was also brother to Phillipe de Courcillon, Marquis de Dangeau, 1638-1720. Thomas M. Lennon indicates that both the Marquis and his brother Louis abjured Protestantism and were converted to Catholicism by Bossuet's *Exposition de la doctrine de l'Eglise Catholique sur les matières de controverse*. See his *Reading Bayle* (Toronto: University of Toronto Press 1999), 120. There was also a sister who may have remained Protestant.

22 Later felicitously put by Leibniz:

12. But beyond the principle of change, there must also be an internal complexity, detail of that which changes, which would produce, so to speak, the specification and the variety of simple substances.

13. This internal complexity, detail *must enfold a multiplicity in unity or in the simple*. For as every natural change happens by degrees, something always changes and something remains. Consequently there must be a plurality of properties and relations within a simple substance, even though it has none of parts. (18 [my italics])

23 Pierre Bayle, *Nouvelles de la Republique des Letters*, Aug. 1684, VI, ps. 54-6, reprinted (Geneve: Slatkine Reprints 1966), 162 [translations of de Courcillon and Lamy are my own, but I am indebted to Dr. Marianna Ionescu for reviewing, improving, and repairing them where necessary]. 'Quand vous vous chauffez la main, il est sûr que vous sentez une sorte de plaisir. Si dans le même temps on approche de vôtre nez une odeur agreable, vous sentez une autre espece du plaisir. Si je vous demande lequel de ces deux plaisirs vous plaît davantage, vous me répondez, c'est celui-ci, ou c'est celui-là, vous comparez donc ensemble ces deux plaisirs, & vous jugez d'eux en même temps.'

'natural destruction' so that it could be shown that the unity of consciousness as described above made the soul immune to it. Thus, the Abbé wrote:

It is thus absolutely necessary to conclude that your Soul, which is the principle of your sensations, is a simple being. *If it is simple, it is indivisible, and if it is indivisible, it is immortal, because any natural destruction takes place only during the separation of the parts that make up a whole.*²⁴ (my italics)

Natural destruction required natural plurality, but what if consciousness was a function of the organization of material particles? In this case, it would seem that natural destruction, the rearrangement of material particles, *could* extinguish consciousness. While the Abbé did not address this possibility directly, he seemed to be presuming the *Non Migrant* principle, and this prevented consciousness from being an emergent property of certain material aggregates. The reason would seem to be that 'emergence' requires precisely the kind of property 'sharing' that the *Non Migrant* principle prohibits.

It was this point I believe the Abbé was making when he argued that the odor sensed and the warmth felt could not belong as a property to respectively the nose and the hand, for if they *did*, they could not be compared; comparison would require that the nose and hand be able to share certain of the other's properties, namely their individual perceptions. The Abbé made his point by indicating that the separation of nose and hand is indistinguishable from the separation of people at different spatial locations: if odor and warmth 'belonged' to nose and hand respectively, our own sensations of odor and warmth would be as separate as are the perceptions of different people. The reason, of course, was that matter is no more than matter, whether of the nose, hand, or complete person; separate matter entails separate substances; and separate substances entail epistemically separated modes. Epistemically *separated* modes cannot be compared; comparison requires that the perceptions be modes of a single indivisible substance. What was needed was recourse to a totally distinct ontological kind ('thought ... is of such a nature that the most subtle and the most perfect matter is incapable of it and that it can only exist in incorporeal substances' [n.4 above]). Thus, the Abbé wrote:

24 Ibid., 'Il faut donc conclure de toute nécessité que vôtre ame qui est le principe de vos sentimens, est un Etre simple. Si elle est simple, elle est indivisible, & si elle est indivisible, elle est immortelle, par ce qu'il ne se fait point de destruction naturellement que par la separation des parties qui compoient un Tout.'

It is a manifest proof, that your nose does not sense odor at all, and that your hand does not sense heat at all, etc. because as the hand and the nose are two things absolutely distinct from one another, it is as impossible for the one to sense what the other senses, as it is impossible that we sense in this room the pleasure that those who are at the Opera are presently sensing.²⁵

Bayle heartily approved of this proof, saying that it was as certain as any geometric demonstration, repeating his praise some thirteen years later in art. Dicearchus, rem. M (Popkin, 64), while addressing Locke's controversial suggestion questioning the need for a substance dualism. He said of the Abbé's proof:

It has always seemed to me very proper to show the impossibility of joining together the three dimensions and thought in the same subject. (Popkin, 72)

By which he meant that it was impossible that something that had 'three dimensions' (that is, was Cartesian matter, i.e. was extended) could at the same time have 'thought.'

By 1697, the date of the first publication of the *Dictionary*, the issue had developed new heat as a result of Locke's arguments. In Book IV of his *Essay* (1689), Locke had offered the provocative remark that while thinking matter was humanly inconceivable, it was not impossible. He made the suggestion on the grounds that if God could manage mind-body interaction (also a stark inconceivability to limited human understanding), then God could also manage to create thinking matter:

I see no contradiction in it, that the first Eternal thinking Being, or Omnipotent Spirit, should, if he pleased, give to certain systems of created senseless matter, put together as he thinks fit, some degrees of sense, perception, and thought... What certainty of knowledge can any one have, that some perceptions, such as, v.g., pleasure and pain, should not be in some bodies themselves ... as well as that they should be in an immaterial substance, upon the motion of the parts of body: *Body, as far as we can conceive, being able only to strike and affect body*, and motion, according to the utmost reach of our ideas, being able to produce nothing but motion; so that when we allow it to produce pleasure or pain, or the idea of a colour or sound, we are fain to quit our reason, go beyond our ideas, and attribute it wholly to the good pleasure of our Maker. For, since we must allow He has annexed effects to motion which we can no way conceive motion able to produce, what reason have we to conclude that He could not order them as well to be produced in a subject we cannot

25 Ibid., 'C'est une preuve manifeste, que vôtre nez ne sent point l'odeur, & que vôtre main ne sent point la chaleur, &c. car comme la main & le nez sont deux choses absolument distinctes l'une de l'autre, il est aussi impossible que l'une sent ce que l'autre sent, qu'il est impossible que nous sentions dans cette chambre le plaisir que sentent presentement ceux qui sont a l'Opera.'

conceive capable of them, as well as in a subject we cannot conceive the motion of matter can any way operate upon?²⁶ (my italics)

Locke's understanding of natural causation was essentially still the Cartesian one in which all natural change was the consequence of impact ('*chocque*') and displacement resulting from the motion of matter, understood in terms of its intelligible geometric properties. Since Ideas of Secondary Qualities *qua* ideas had neither extension nor location, there was no humanly conceivable way in which they could participate in impact or displacement. Locke understood this and for this reason he could be considered the originator of the notion of an 'emergent' property. The sensations which made up the Ideas of secondary Qualities were thought by Locke to be the effects of the arrangements and relations of uncolored matter, but in a way that was humanly utterly inconceivable simply because the *manner* of matter's action could not in principle be applied to sensation. This point was even more clearly stated by François Lamy some five years later as we will see shortly. Further, while Locke did not believe that *aggregates* of material particles acquired new causal properties beyond those of impact or extension (as would be the case in a full-blown emergence theory), Locke already understood (as had Descartes) that only an aggregate with specific internal arrangements could have a mental substance associated with it²⁷ or become conscious (if matter could think). This internal arrangement of parts was to become the 'organization' of matter favored by eighteenth-century Materialists as the explanation of emergent vital characteristics (including consciousness).²⁸ Materialism had, of course, already existed in various manifestations before Locke, but this passage caught the imagination of the continent and became prominent in the writings of such philosophers as Voltaire, La Mettrie, and Diderot.²⁹

26 Locke, Bk. IV, Ch. III, §6, l. 8, 541

27 While Descartes was committed to the soul's ability to exist even in separation from a body, its contents were necessarily different in that condition. Having sensory Ideas was dependent on the body's neural activity and the action of the Imagination on the surface of the Pineal gland.

28 See, for example, Julien de la Mettrie's *l'Homme Machine*, 1747, incl. in *Machine Man and Other Writings*, Ann Thomson, intro. and trans. (Cambridge: Cambridge University Press 1996): 'But since all the soul's faculties depend so much on the specific organization of the brain and of the whole body that they are clearly nothing but that very organization, the machine is perfectly explained!' (26)

29 See Aram Vartanian, *Diderot and Descartes: A Study of Scientific Naturalism in the Enlightenment* (Princeton: Princeton University Press 1953).

Locke's suggestion was attractive to materialists, but repugnant to theologically minded metaphysicians who believed that it undermined their ability to make the Cartesian inference from the fact of thinking to the existence of a separate thinking (and immortal) substance. The Abbé's argument against the materialist hypothesis in particular resurfaced in several places. As we saw, the argument held that consciousness has a unique property that is incompatible with matter, namely unity, and that consequently we must assume the existence of a distinct substance capable of supporting that property, namely mind or spirit. This argument, of course, was unable to have an impact on Locke's position that freely conceded that thought is conceptually incompatible with matter, but still left open the thinking-matter option since God had already demonstrated his ability to accomplish the inconceivable, i.e. the miraculous generation of perceptions and sensations from the motions and impacts of particles.

Locke's *Essay* was published in 1689, and we find the Abbé's counter-argument surfacing again in François Lamy's *de la Connoissance de soi-meme*³⁰ which emerged in the period 1694-98. His discussion of the unity of consciousness impressed Bayle, who referred approvingly to it in art. Leucippus. Lamy understood very clearly the heart of the mind/body problem within the seventeenth-century intellectual context. He understood that the problem was an inevitable consequence of the impact/displacement account of materialistic causation, a kind of causation that simply could not be applied to mental phenomena. He wrote:

the great principle of all the forces of nature is movement. They only strike, disturb, break, divide, pulverize; but what can one strike in a being without extension? What can one disturb or break in a being, which has no parts? What to divide & pulverize in a being as indivisible & as immaterial as my soul? Let all nature arm itself against me; let one employ iron, fire, clippers & wheels; my body could be dislocated, chopped & reduced to powder: but nothing of all of that will reach to my soul, which is at an infinite distance, & escapes the grasp of all the natural agents.³¹ (my italics)

30 François Lamy, *De la connoissance de soi-meme* 2nd ed. (Chez Nicolas le Clerc 1701). Lamy was born in Montereau, Diocese of Chartres, 1636 and died Saint-Denis, April 4, 1711. 'While fighting a duel he was saved from a fatal sword-thrust by a book of the Rule of St. Benedict which he carried in his pocket. Seeing the finger of God in this remarkable occurrence, he took the Benedictine habit at the monastery of St-Remi at Reims in 1658' (*The Catholic Encyclopedia* 1913).

31 *Ibid.*, Second Treatise, v. II, Part I, ch. VIII, #6, 119, 120: 'le grand principe de toutes les forces de la nature, c'est le mouvement. Elles ne vont qu'à choquer, qu'à déranger, qu'à briser, qu'à diviser, qu'à pulveriser; mais que peut-on choquer dans un être qui n'a point d'étendue? Que peut-on déranger ou briser dans un être qui l'a point de parties? que diviser & pulveriser dans un être aussi indivisible & aussi immatieriel

Indeed, he used this feature of consciousness just as the Abbé did to prove the immortality of the soul. This was his argument:

4⁰. The indivisibility of the soul is another necessary consequence of its nature. The perceiving I, or, so to speak, the "I perceive" is not at all subject to division; & I defy [any] one to give me, or to conceive the half, the third, or the quarter of a perception. Moreover, that which is without any extension at all is not at all divisible; the perceiving being does not have any extension, because, as I have just proven, it is neither body, nor in any way corporeal, but perfectly immaterial....

6⁰. I now have all that is needed to demonstrate incontestably the immortality of my soul. The question *de facto* is fully resolved.... I know certainly that this soul is immaterial, indivisible & spiritual: does one need more to prove its legitimacy, I mean to say, to decide if this soul is immortal or not?... The body is destroyed & dies only because its springs relax, its parts get out of order, divide, are detached from each other & change into vapor & smoke, & it is this that is called corruption: but the soul is not extended, not made up of parts; being perfectly indivisible, it is unable to be thus corrupted, & to be dissolved into vapor & smoke. Finally, however I take the word mortal; something which can corrupt; or can perish via the forces of nature; or which can lose its life; my soul seems to me in all cases equally immortal.³²

Thus he attempted to derive immortality from the unity or indivisibility of the soul.

qu'est mon ame? Que toute la nature s'arme donc contre moi; qu'on emploie le fer, le feu, les tenailles & les rouës; mon cors pourra être disloqué, haché & réduit en poudre: mais rien de tout cela n'ira jusqu'à mon ame: èle en est à une distance infinie, & échape aux prise de tout ce qu'il y a d'agens naturel.'

32 Ibid., 118-19. '4⁰. L'indivisibilité de l'ame est encore une suite nécessaire de sa nature. Le moi apercevant, ou, pour parler ainsi, le j'aperçois ne souffre point de partage; & je défie qu'on me done, ou qu'on conçoive la moitié, le tiers, ou le quart d'une perception. D'ailleurs ce qui n'a nule étenduë n'est point divisible; l'être apercevant n'a nule étenduë; puisque, come je viens de le prouver, il n'est ni cors, ni rien de corporel; & qu'enfin il est parfaitement immateriel.'

'6⁰. Enfin j'ai présentement tout ce qu'il faut pour démonstrer incontestablement l'immortalité de mon ame. La question de fait est pleinement résoluë.... Je sai certainement que cète ame est immaterielle, indivisible & spirituelle: en {118} faut-il davantage pour résoudre la question de droit, je veux dire, pour décider si cète ame est immortèle ou non?... Le cors ne se détruit & ne meurt que parceque ses ressorts se débangent, ses parties se dérangent, se divisent, se détachent les unes des autres & se {119} résoudenten vapeur & en fumée, & c'est ce qui s'apèle se corompre: mais l'ame n'aïant ni étenduë, ni parties, & étant parfaitement indivisible, èle est incapable de se corompre ainsi, & de se résoudre en vapeur & en fumée. Enfin de quelque manière que je prène le mot de mortel; soit pour ce qui peut se corompre; ou pour ce qui a peut périr par les forces de la nature; ou pour ce qui peut perdre la vie; mon ame me paroît toujours également immortèle.'

III Pierre Bayle

Pierre Bayle was also interested in the Locke issue, referring specifically to the Locke/Stillingfleet exchange in art. Dicercaus, rem. M. He saw the applicability of the unity argument and was even more taken with Lamy's argument than he had been with the Abbé's. He wrote:

But tell me, if you can, how the image of a wall can place itself entirely at the same instant in a subject divisible to infinity. This and several other reasons that can be found in the writings of some modern thinkers invincibly prove the incompatibility of thought with a composite being²⁴

²⁴ ... I note that no one, it seems to me, has treated this important question more nobly and forcefully — on the immateriality and indivisibility of all that thinks — than Dom François Lami, a Benedictine monk of the Congregation of St. Maur, in his excellent work *De la connoissance de soi-meme*. (Popkin, 133)

As taken as he was by the arguments of his predecessors, in art. Leucippus, rem. E, he offered an argument of his own that further developed that of de Courcillon and Lamy in the context of his discussion of ancient atomism.

He began rem. E by picking up on his comment in the main text that he had 'often been astonished that Leucippus and those who followed in his footsteps did not assert that every atom was animated. Such a supposition would have enabled them to solve some of the objections that were made against their theory' (Popkin, 124). Unfortunately, the text does not make clear exactly what is meant by an atom being 'animated.' Since Bayle indicated that this doctrine would have helped strictly materialistic atomists like Epicurus who accounted for consciousness by making it an *emergent* property, an unacceptable approach for Bayle,³³ it is tempting to think that what he meant by 'animation' is simply making thought an *attribute* of a material atom. This is to some extent further encouraged by his description of one of the advantages of the 'animated atom' hypothesis:

33 Popkin, 129, art. Leucippus, rem. E: 'E.... From the supposition that each atom is not animated, it follows that a collection of atoms feels nothing. They [the ancient Atomists] might have answered an objection they were never able to resolve. It is the one that Plutarch proposed to the Epicurean Colotes, and that Galen has set forth forcefully, as has been seen above. It consists in this: that, since each atom is destitute of a soul and a sensitive faculty, it is obvious that no collection of atoms can become an animated and sensible being.' The unacceptability of 'emergence' also follows from the *Non Migrant* principle; see the discussion of emergence in reference to the Abbé de Dangeau following n.24.

But if each atom had a soul and feeling, we could understand how collections of atoms might constitute a composite being capable of certain particular modifications, both with regard to sensations and knowledge and with regard to motion. The difference noticed between the passions of rational and irrational animals could be explained in general by the different combinations of atoms. (Popkin, 129)

But 'had a soul and feeling' is still ambiguous ('was soul-ish' vs. 'was associated with a soul'), though the idea that these atoms could be combined so as to make a composite being does suggest a materialistic 'soul-ish' interpretation, since we are accustomed to thinking of the aggregation of material atoms. Nonetheless, I think this is not what is intended, primarily because the 'animated atom' theory is later *contrasted* with the thinking matter hypothesis, because Bayle associates indivisibility with the 'animated atom,' and because he identifies the 'animated atom' theory with the theory of the Arabic philosophers called 'the Speakers,' who explicitly held that the atoms making up the world 'had no size' and that at least some atoms were alive and sensitive.³⁴

Were 'animated atoms' merely material atoms with the attribute of thought added to them, the atoms would still remain divisible; the only way an 'animated atom' could be indivisible is by its being a non-material indivisible substance. Thus, the only way to read Bayle's discussion of 'animated atoms' is to treat them very much like Leibnizian Monads, a reading that can even accommodate the line about the animated atoms constituting a composite since Leibniz treated his Monads as the units out of which composites were constructed. I do not mean this to imply that Bayle was here defending the Leibnizian view as his own position on the matter, merely that he was indicating that this kind of atomism might be more defensible than the material kind. Further, not only are Bayleian 'animated atoms' indivisible like Monads, there are good reasons to believe that, again like Monads, they are metaphysically sealed by the *Non Migrant* principle against *any* kind of interaction, not least among which is Bayle's opting for Occasionalism over Pre-Established Harmony.³⁵ More on this below.

We can now address Bayle's argument for the indivisibility of mind:

34 *Ibid.*, 134-5, art. Leucippus, rem. F.

35 Speaking of Leibniz's 'Pre-Established Harmony,' Bayle writes: 'Before preferring this theory to that of occasional causes, I will wait until its able author has perfected it' (*ibid.*, art. Rorarius, rem. H, 238).

The hypothesis of animated atoms would have had another great advantage, for their indivisibility could have furnished some reply to the unanswerable objection to which the view of those who maintain that matter can think (that is to say, have feelings and knowledge) is subject. This objection is based on the unity, properly speaking, that ought to belong to thinking beings. *For if a thinking substance was unified only in the way a sphere is, it would never see a whole tree at once; it would never feel the pain produced by the blow of a stick.* (Popkin, 130; my italics)

The wording has the unfortunate suggestion that the animated-atoms hypothesis could in some way save the thinking-matter hypothesis, but this is not what is intended. Rather, the point is that the animated-atoms hypothesis is proof against an objection fatal to ('unanswerable' by) the thinking-matter hypothesis. That is, the thinking-matter hypothesis founders on the unity problem, while the animated-atoms hypothesis does not. Thinking matter would be 'unified only the way a material sphere is,' while animated atoms would be genuinely unified the way our own experience is. In what follows, Bayle tries to show that even if one attributes thought to individual material particles as *accidents* of the particles, they cannot through aggregation provide the normal perceptual experience that separate animated atomic substances (and we) actually enjoy.³⁶ This is how he begins his argument:

Consider the shape of the four parts of the world on a globe. You will never be able to see anything on this globe that contains all of Asia or even an entire river. The part that represents Persia is not the same as the one that represents the kingdom of Siam. And we distinguish a right and left side in the part that represents the Euphrates. (Popkin, 130)

Bayle's point is simply that the normal visual manifold is spatially extended, contains an infinite number of visual points each of which is a representation of a corresponding material atom. While he does not state this view in this part of the text, he does bring it out when later he deals with sensation (pain):

it does not seem to be more possible for the parts of a globe to communicate pain to each other than it is possible for them to communicate their motion to each other. Now it is certain that each of them keeps the portion of motion that falls to it, and that it communicates none of it to the others. Push a globe; the motion that you communicate to it is distributed equally to all its parts, to each according to its mass, and from that time on until the globe stops moving there is no division again of the motion among its parts. Why would you suppose there are other conditions with regard to thought, for example, with regard to the pain you might cause in that globe

36 Mijuskovic, 10, draws attention to a virtually identical argument in Plotinus, *Ennead*, IV, 7, 6; 346-7.

by kicking it? *Ought you not say that this pain is distributed throughout the globe and that each part of the globe takes some of it in proportion to its mass and retains what falls to it?* (Popkin, 131; my italics)

This passage is made difficult by an apparent conflict between the thesis that particles do not communicate motion to each other and the statement that *we* can communicate motion to objects. I suggest that the problem lies with the statement and not with the thesis. The reason is that Bayle's adherence to the *Non Migrant* principle makes not only the transfer of perceptions from substance to substance impossible, it actually also makes the transfer of motion impossible. Recall that this is explicitly the case for Descartes (n.12 above) and, indeed, that apparently, as Leibniz made fully explicit, it makes communication of *any* kind between atoms impossible. That this was also Bayle's view is supported by the fact that Bayle saw only two viable alternatives to the efficient causation question, namely Pre-Established Harmony and Occasionalism, neither of which is interactionist. It should also be noted, however, in all fairness that this fact may be of limited evidential value, if it is true, as Eileen O'Neill argues, that no clear account of an interactionist thesis or representative of such a thesis can actually be found in the seventeenth century.³⁷ Notwithstanding, the simple fact of Bayle's opting for Occasionalism is sufficient to support that, like Leibniz, he saw no way of accounting for causal 'interaction.'

Now, physical interaction was impossible for Bayle because efficient causation in Cartesian Mechanism seemed to require (Descartes' denials notwithstanding) a transfer of motion resulting from impact, but motion was not only a *property* of material substance, but one of its essential properties. It might be thought that because it was an *essential* property and not, in Scholastic terms, a proper 'accident,' that the *Non Migrant* principle did not apply to motion, but the word 'accident' was used in the principle in a broad sense to cover *any* attribute, and the principle still implied counter-intuitively that motion could not be 'transferred' or 'communicated' from one thing to another,³⁸ which also implied in turn that we could not really 'push a globe,' as he asked us to. To believe that

37 Eileen O'Neill, '*Influxus Physicus*,' in *CEMP*. At the same time, if 'the way of influence' was, in fact, a Leibnizian 'construction' as she argues, it is odd that Bayle should have repeated that exact expression in his description of the available alternatives at art. Rorarius, rem. L, Popkin, 245.

38 Recall that the *Non Migrant* principle was taken to imply Occasionalism by the Mutakallimun because of its incompatibility with efficient causation.

motion could be transferred from one body to another was to commit the fallacy of treating an accident as if it were a substance.

This was not to deny that things do in fact move, only that the motion could not be explained by appeal to 'transfers' or 'communications.' Consequently, in a moving aggregate, the particles constituting the aggregate have no effects on each other, while nonetheless each of them 'has' precisely the 'amount' of motion appropriate to its mass. *Since on the thinking-matter hypothesis perception and pain are merely accidents of matter, Bayle argues they must be subject to the same rules to which other natural properties like motion are subject.* Since, when the globe is pushed, 'the motion that you communicate to it is distributed equally to all its parts, to each according to its mass,' so also must perception and pain be proportionally distributed. Now if the material atomist assumes infinitely small particles, then the particle of perception or sensation that it has must also be infinitely small. This is important for Bayle's argument because he wants to establish an incommensurability between the normal perceived object and the perceiving subject. Responding to a possible counter-argument, he wrote: *'It [the counter-argument] can only throw dust in the eyes with regard to the disproportion between the bigness of the object and the smallness of the thinking substance'* (133). The 'object' is 'big' because it is extended, while the 'subject' is necessarily 'small' on the thinking matter hypothesis (it is atomic). On the other hand, the animated atom hypothesis allows the subject to be large enough to accommodate the object. In Bayle's view, an 'animated' atomic substance has the virtue of being able to have simultaneous access to the entire set of atomic representations making up a visual field, while each thinking material atom can only 'perceive' a single one. This is the 'unification' of which 'animated' atoms are capable, and of which thinking material atoms are not. In effect, it is Bayle's point that tying perceptual awareness to matter has the effect of imposing the fragmentation definitive of matter onto the perceptual manifold. He continued his argument as follows:

It follows from this that if this globe were capable of knowing the shapes with which it has been decorated [if matter could think], it would contain nothing [no material particle] that could say, "I know all Europe, all France, the whole city of Amsterdam, the whole Vistula"; *each part of the globe could only know the portion of the shape that fell to it.* (Popkin, 130; my italics)

But what is '*the portion of the shape that fell to it*'?

I suggest that what Bayle has in mind is based on Descartes' theory of visual perception, in which visual sensation is the end result of a causal process that terminates physically on the surface of the Pineal gland. On Descartes' account, the inner back surface of the eye is lined with an array

of individual receptors whose output is transmitted through tubular nerves to an array on the surface of the pineal gland where an aggregate image is generated by the states of the individual terminating cells.³⁹ I suggest that Bayle's 'globe' is nothing other than the Pineal Gland and 'the shapes with which it has been decorated,' just the final physical form of the signals sent from the inner back surface of the eye. Now Descartes' complete account of visual sensation requires further the existence of a thinking substance whose faculty of Imagination monitors the condition of the Pineal surface and generates a corresponding visual representation, but Bayle asks the question: what if there were no mental substance? What if, instead, visual sensation was merely a mental modification of each separately thinking material atom? Bayle does not believe that this hypothesis can account for the unified manifold we actually have, for reasons most of which rely upon the *Non Migrant* principle.

First, any hypothetically indivisible material point on the gland would have no more than an indivisible visual atom. Second, since the content of that visual atom could not have been transferred to it, there is a sense in which that atom would only be seeing itself. But why? Bayle does not make the answer explicit, but it clearly hinges on the relation of substance and accident and on the *Non Migrant* principle. As discussed earlier, natural properties, attributes, accidents are each modifications of specific material substances. Perception involves an 'acquisition' of some kind of the modification of the perceived object. But, once again, an 'acquisition' involves a 'transfer' from one substance to another, which the *Non Migrant* principle makes impossible. In order for one thinking material atom to perceive another one, it would be necessary for a property of the second one to become available to the first, either in itself or as a copy, and this means that it would have to travel from one to the other as did the 'sensible' or 'intentional' species of the Scholastics.⁴⁰ But since accidents do not have the independent existence of substances, they cannot separate from the substances which they modify without ceasing to exist. When later discussing the pain of a material soul, he asks a parallel question which again shows his presumption of the *Non Migrant* principle:

39 See Descartes, *The Passions of the Soul*, AT XI 355 § 335; CSM I 341.

40 E.g., St. Thomas Aquinas, *Summa Theologiae*: 'But in those things which have knowledge, each one is determined to its own natural being by its natural form, in such a manner that it is nevertheless receptive of the species of other things: for example, sense receives the species of all things sensible' (Part I, q80 a. 1, B. Par. 1/2).

How does part *A* of the soul communicate its pain to parts *B* and *C*, and so on? Does it give it to them by divesting itself of it so that the same numerical pain that was in part *A* is afterwards in part *B*. If this be so, then here is the destruction of a most certain and most true maxim, that *accidents do not pass from one subject to another*. (Popkin, 131)

It is here that the associated marginal note provides the principle in Latin: '*Accidentia non migrant de subjecto in subjectum*' (n.10).

This means that whatever the perception of a material atom might be like, not only would it be *small*, but it could at most be a perception of its own state, it could not be a perception of another. This, of course, does not prevent the perceived self-state from being intentional or a representation, but as an *atomic* visual image it is difficult to say what it would mean for it to be representative. A pixel on a television screen is indeed representative, but perhaps only by virtue of its role and place within the larger pixel array. Bayle seems to be after this when he writes:

and since that part would be so small as not to represent any place entirely, the globe's capability of knowing would be absolutely useless; no act of knowledge would result from this capability; and at least it would be the case that these acts of knowing would be very different from those that we experience; for they make us know an entire object, an entire tree, an entire horse, and so on.... (Popkin, 130)

From these considerations, Bayle concludes the following:

the subject that is affected by the entire image of ... objects is not at all divisible into several parts, and consequently ... man in so far as he is a thinking entity is not corporeal or material or a composite of several beings. (Popkin, 130)

In sum, his argument is this. If 'the subject that is affected by the entire image of ... objects' is to be explained on the hypothesis that the individual material particles that make up the animal associated with that subject each think, then (assuming that emergence is out of the question) that subject and its experience must also be 'unified only in the way a sphere is.' A consciousness unified only the way a sphere is, is no more than a heap or aggregate which is not capable of supporting 'the entire image of ... objects.' Therefore, the 'thinking entity is not corporeal or material or a composite of several beings.' Thus, not only is a strict material atomism of the Epicurean kind incapable of explaining normal human perceptual experience, but so is a modified kind in which the individual atoms are given the accident of thought.

Bayle went on to apply a similar argument to sensation, specifically pain. As the visual experience was spatially extended and composite, he argued, sensations are composite in terms of intensity. Thus, once again, an atomic material particle can only have access on the thinking matter hypothesis to an atom of sensation. But an atom of pain is hardly painful;

how, then, are all of the individual material atoms with their individual atoms of pain processed so as to ever yield *intense* pain? Once again, on the thinking matter hypothesis a man struck with a stick could not feel pain:

he would not feel any blows from a stick since the pain would divide itself into as many particles as there are in the organs that are struck. Now these organs contain an infinite number of particles; and thus the portion of pain that would belong to each part would be so small that it would not be felt. (Popkin, 131)

Could this aggregate of infinitesimal pains be unified so as to constitute real pain? Bayle says that in order for this to happen, each particle would have to 'communicate' with the others. He gives three responses to this.

The first is not so much a response as an expression of the principle I described above, namely that since the contents of consciousness are extended, they must on the thinking matter hypothesis be also atomic. The second response is the appeal to the *Non Migrant* principle, but here with a number of consequences to its denial spelled out. Thus, argues Bayle, if each material atom *can* communicate its portion of pain to the others, it must either give up its own portion or retain it when it does so. If it gives up its own portion, then there can be no increase in the intensity of pain, which is what is desired here. If it does not, then each material atom received the pain-atoms of all of the others. But if this is the case, then it is possible, contrary to the hypothesis, that a material atom can 'contain' a perceptual aggregate. His third response follows from the second, namely that the only way the thinking matter hypothesis can be maintained, even if only briefly, is by assuming that each particle contains the same perceptual and sensational contents as the others, which is objectionable on grounds already mentioned.

Bayle did not stop with this, but went on to consider an atomist counter-argument intended to deal with the unity problem by simply denying the reality of the phenomenon to be explained. Remember, Bayle's target is the divisible material soul view, which has been brought to the point of conceding that if the soul is divisible, then (visual) perception must be a one-to-one mapping of perceptual atoms to material atoms. This has left the position with the problem of unifying the perceptual atoms, which means a way to explain how the physical manifold is seen as a whole in one instant. The reply Bayle considers simply denies that the whole is in fact seen at one instant. It holds, rather, that at any one instant, only a single point is perceived and the overall image is an illusion based on the fact that perceptual stimulations leave ideational traces that continue to work even after the stimulation has ended:

You will perhaps tell me that the soul does not see all the parts of a horse at once but one after another, that this succession is so quick that it is imperceptible, and that the

impression received at the first instant can last long enough to be united with the impression of the following instants, from which it happens that the soul thinks it sees the parts of the object that no longer act upon it. It is thus that it believes it sees a circle of fire when a lighted piece of wood is whirled around. The soul sees each part of this circle successively, and nevertheless it seems to it that it sees them simultaneously. This is due to the fact that the impression that the soul receives lasts a longer time than does the action of the object in making an impression. (Popkin, 132)

But Bayle sees this as an utterly futile rejoinder gaining its superficial plausibility only from an example in which indeed an illusion of a whole is generated, but which does not represent the general nature of perception. The rejoinder attempts to stress the possible interpretation of such an event which has the perceiving subject affected by only a single impression, avoiding the problem of an indivisible unitary subject 'containing' a plurality. This example suffers from many problems, but Bayle satisfies himself with just the following. Much if not most of what we see does not involve this kind of optical residual effect. He makes his point by asking that instead of the whirling firebrand, we consider the visual contemplation of a wall. Since the wall's atomic causes of perception continue to exist all through the contemplation (as opposed to the earlier states of the whirling firebrand), there is no reason why they would stop acting. Consequently, if we can see a whole wall, it cannot be the result of traces from previous stimulations, which means we must be seeing all of its infinite points in one instant.

In point of fact, this argument is vulnerable to a much simpler counter, namely that it doesn't matter whether the atomic idea is a trace or the result of an ongoing stimulation. The reason is simply that the perceptual manifold we actually have does seem to unify all the parts of an extended whole and this is a problem for the material soul view whether the parts of the apparently extended visual manifold are traces or are currently caused. Surely the 'traces' of the rejoinder are as much mental representations as the current 'impression.' The key question is simply this: how can a mental-material atom 'contain' a plurality of representations? And this is exactly how Bayle himself sees the question:

But tell me, if you can, how the image of a wall can place itself entirely at the same instant in a subject divisible to infinity. (Popkin, 133; cited above)

IV Conclusion

Bayle clearly rejects the thinking-matter option, but despite the fact that he considers the animated atom alternative proof against *some* of thinking matter's objections, it soon becomes clear that the root problem is atomism, rather than materialism per se. Materialism seems inevitably

drawn into atomism and, to that extent, is subject to all of atomism's problems. For this reason, it is not to be concluded that he was satisfied with even a Monadological solution to the problem of mental unity or the immortality of the soul. Indeed, his discussion was notably free of religious involvement. Because of this, it served well to set the agenda for the scientific issues of unification that would face his eighteenth-century successors struggling with the application of atomistic materialism to organic phenomena. David Hume, for example, wanting to apply the 'experimental method' of Newton to 'moral' questions adopted a perceptual atomism in his *Treatise of Human Nature* (1739-40) in which experience was constructed out of *minima sensibilia*. Depending on how strongly the analogy to physical atoms was stressed, he inherited the unification problems of the thinking-matter hypothesis as represented by Bayle. He seems to have seen this himself in the Appendix of the *Treatise*:

In short there are two principles, which I cannot render consistent; nor is it in my power to renounce either of them, viz. that all our distinct perceptions are distinct existences and that the mind never perceives any real connexion among distinct existences. Did our perceptions either inhere in something simple and individual, or did the mind perceive some real connexion among them, there would be no difficulty in the case. For my part, I must plead the privilege of a sceptic, and confess, that this difficulty is too hard for my understanding.⁴¹

In Book I, he had attempted to substitute for the unification that Bayle concluded unavoidable and that he now acknowledged, a serial associational process which generated 'fictional' or 'illusory' perceptual or Ideational unity. Yet later, while on the one hand a radical materialist like Julien de la Mettrie (1709-1751) was utterly insensitive to the unification problems attending materialism, we find Diderot, in his dialogue *d'Alembert's Dream* (1769), representing his friend, the mathematician and astronomer Jean Le Rond d'Alembert, as muttering philosophy in his sleep while his mistress, Mlle. De l'Espinasse, hovers solicitously over him. D'Alembert sleep-speculates on organic and mental unity:

"A living point.... No, I'm wrong. First nothing, then a living point.... To this living point is applied another, and yet another; and the result of these successive increments is a being that has unity, for I cannot doubt my own unity...." As he said this, he felt himself all over. "But how did this unity come to be?" Oh, my friend, I said to him, what does that matter to you? Go to sleep.... He was silent for a moment, but began again as if speaking to someone: "I tell you, philosopher, I can understand

41 David Hume, *A Treatise of Human Nature*, L.A. Selby-Bigge, ed. (Oxford: Oxford University Press 1964), 636

an aggregate or tissue of tiny sensitive beings, but not an animal!... a whole! a system, an individual, having consciousness of its unity! I can't accept that, no, I can't accept it."⁴²

For d'Alembert and Diderot, as well as other *Philosophes*, as the immortality concern receded, the unity issues raised by Bayle and Leibniz extended quite naturally from the purely mental phenomena to organic phenomena in general. A famous final eighteenth-century struggle with the issue occurs in Kant's discussion of the 'synthetic unity of apperception.' He writes:

only in so far as I can grasp the manifold of the representations in one consciousness, do I call them one and all *mine*. For otherwise I should have as many-coloured and diverse a self as I have representations of which I am conscious to myself. Synthetic unity of the manifold of intuitions, as generated *a priori*, is thus the ground of the identity of apperception itself, which precedes *a priori* all my determinate thought.⁴³

Locke's thinking-matter hypothesis is alive and well today, though philosophers now are more broadly concerned about the mental properties to be reduced, not focusing exclusively on indivisibility. Herbert Feigl, writing in 1958, isolated eight properties peculiar to mind, one of which was 'holistic,' contrasted with the physical, which was 'atomistic.'⁴⁴ Another of them was 'intentional,' and much more recently Dennett has claimed that Hume's particulate account of perception runs afoul of the problem of reducing intentional properties.⁴⁵

Despite the fact that Bayle's argument and that of the Abbé appeals to a principle no longer held (the *Non Migrant*), they also make a fundamental point that still survives. It is this. In a situation in which you and I see the same two objects, say vases, there is an important difference between (1) the relation that holds between the two vase images I have, and (2) the relation that holds between the two vase images I have and the two vase images you have. The two I have are directly comparable,

42 Denis Diderot, 'd'Alembert's Dream,' in *Diderot: Interpreter of Nature*, Jean Stewart and Jonathan Kemp, trans. (Westport, CT: Greenwood 1990), 65

43 Immanuel Kant, *Critique of Pure Reason*, Norman Kemp Smith, trans. (New York: St. Martin's Press 1965), the Transcendental Deduction, B, paragraph 16, B134, 154

44 Herbert Feigl, *The 'Mental' and the 'Physical'* in *Minnesota Studies in the Philosophy of Science*, Vol. II (Minneapolis: University of Minnesota Press 1967), 396.

45 Daniel Dennett argues that Hume's commitment to what I call 'perceptual atomism' forced him to assign the intentional properties we normally assign to persons instead to the atoms. See his 'A Cure for the Common Code?' *Brainstorms* (Hassocks, Sussex: Harvester Press 1979), 101.

but the two I have are not in the same sense comparable with the two you have. We try to capture this difference with the formula that the comparability of mine is due to their 'being the perceptions of a single mind and thus unified.' It was this intractable difference that made the thinking matter hypothesis untenable for the Abbé and for Bayle, and has continued to be resistant to materialist reduction in the present. The material atomist hypothesis has the effect of extending the direct incomparability of the perceptions of two persons to the putative perceptions of the material atoms out of which any person is supposed to be constituted. To the extent that perceptual experience becomes atomized, its atoms become as separate as the sensations of different people. The moral that Bayle might be perceived as having drawn is this: *What once philosophers have rent asunder, no man again can join together.*

Received: June, 2001

Revised: January, 2002

