

The Structure of the Monadology

The contents of almost all of the ninety sections of the *Monadology* can be categorised as follows:

Definition – gives the essence or nature of a thing

Axiom – a general principle or truth, typically taken to be self-evident and so not requiring further proof

Corollary – a truth that follows from what has already been proved or supposed

Argument – a set of statements or other evidence put forward as grounds to accept a particular conclusion

Postulate – a statement assumed to be true, that is, asserted without any supporting evidence (sometimes the evidence for a postulate will be provided after the postulate)

Scholium – explanatory note

This yields the following structure:

1. Definition of monad: simple substance
2. Argument: there must exist simple substances
3. Argument: monads have no extension or shape, and are not divisible
4. Corollary of 1: monads cannot end naturally
5. Corollary of 1: monads cannot begin naturally
6. Corollary of 4 and 5: monads can only begin and end supernaturally
7. Argument: monads are causally independent
8. Argument: monads must have some qualities
Argument: monads must have different qualities

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9. Axiom: no two beings are exactly alike (the identity of indiscernibles)
Corollary: each monad must differ from every other
10. Postulate: every monad is subject to change, and change is continual
11. Corollary of 7 and 10: every change must come from an internal principle
12. Postulate: monads contain a complete specification of changes, as well as a principle of change
13. Argument: a monad's complete specification always includes a plurality within the unity
14. Definition of perception: representation of a plurality within the unity
Corollary of 13: perception is the basic state of every monad
15. Definition of appetite: the action of the internal principle which brings about change
16. Example of plurality in unity
17. Argument: simple substances are the only source of perceptions
Postulate: perceptions and their changes are all there are in simple substances
18. Argument: simple substances are entelechies
19. Definition of soul
Scholium: bare monads have only perceptions, whereas souls have sensation (understood as distinct perceptions accompanied by memory)
20. Argument: some perceptions are not distinct
Postulate: bare monads have no distinct perceptions
21. Corollary of 4, 8 and 14: monads always have perceptions
Scholium: when a monad has only little perceptions, it is stupefied (unconscious)
22. Corollary of 7 and 12: each state of a monad is naturally a consequence of its preceding state
23. (with 22) Argument: some perceptions are not distinct
24. Repeat of 20, and 21: when a monad has only little perceptions, it is stupefied (unconscious); bare monads have no distinct perceptions
25. Argument: animals have heightened perceptions
26. Argument: animals make inductive inferences, and possess memory
27. Scholium of 26: how different perceptions make inductive inferences possible
28. Corollary of 26: when the perceptions of men arise on the basis of memory, they act as beasts do
Postulate: And this happens three quarters of the time
29. Axiom: men differ from animals by having knowledge of necessary truths through reason
Definition of mind

30. Postulate: through their knowledge of necessary truths, minds are led to acts of self-reflection, which provide materials for their reasonings
31. Axiom: the principle of contradiction is one of the two principles on which reasonings are based
32. Axiom: the principle of sufficient reason is the other
33. Axiom: there are two kinds of truths, those of reasoning, and those of fact
34. Scholium of 33: mathematical truths are resolved to definitions, axioms, and postulates
35. Axiom: there are simple ideas and primary principles which cannot be proved
36. Scholium of 33: there is a sufficient reason for contingent truths (that is, truths of fact), and it is infinite in its detail
37. Argument: the sufficient reason for any contingent thing must lie outside the series of contingent things
38. Corollary of 37: the sufficient reason must lie in a necessary substance, God (37 and 38 together form a cosmological argument for the existence of God)
39. Argument: there is only one God
40. Argument: God contains as much reality as possible
41. Corollary of 40: God is absolutely perfect
42. Corollary of 39 and 40: the perfections of created things come from God, the imperfections from their own nature
43. Argument: the source of the reality of essences or possibilities or eternal truths is God
44. Argument: the source of the reality of essences or possibilities or eternal truths is the necessary being, whose essence includes existence
45. Corollary of 44: if God is possible then he must exist
Argument: God is possible
46. Scholium of 43 and 44: eternal truths depend on God's understanding, but not his will; contingent truths, however, do depend on his will
47. Corollary of 46: God produces all other monads
48. Corollary of 17, 42, 43, 46, and 47: the attributes of God (power, knowledge, and will) correspond to those of created monads (the subject, perception, appetite)
49. Argument: a monad is said to act insofar as it has distinct perceptions, and be acted upon insofar as it has confused perceptions
50. Scholium of 49: one monad is more perfect than another when what is found in it explains *a priori* what is found in another
51. Argument: monads influence each other only ideally

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52. Corollary of 51: in monads, actions and passions are mutual
53. Argument: there must be a sufficient reason for God's choice of universe
54. Postulate: this sufficient reason is to be found in the degrees of perfection in each possible universe
55. Corollary of 54: God chooses the best possible universe
56. Argument: simple substances are perpetual living mirrors of the universe
57. Corollary of 9 and 56: each monad mirrors the universe from its own unique perspective
58. Scholium of 57: and this maximises perfection
59. Scholium of 56: only the hypothesis of substances being unique mirrors of the same universe does justice to God's greatness
60. Argument: every monad represents the whole universe
Scholium: created monads represent only a small part of the universe distinctly; the rest is represented confusedly
61. Postulate: There exists the plenum
Corollary: every compound (body) is affected by every other, the effect diminishing with distance
62. Corollary of 61: each monad represents more distinctly the (monads of the) body with which it is associated
63. Definition: living thing
Definition: animal
Argument: the body of a living thing or animal is always organic
64. Scholium of 63: while living things are organic, manmade things are not
65. Argument: matter is infinitely subdivided
66. Corollary of 65: there is a world of created beings in the least part of matter
67. Simile of 66
68. Corollary of 66 and 67: the matter in between living things itself contains living things
69. Corollary of 66 and 68: there is nothing dead in the universe
70. Corollary of 62: each living body has a dominant entelechy
Corollary of 63 and 65–6: the limbs of this living body are full of other living things
71. Scholium of 70: a soul does not retain the same body forever
72. Corollary of 13 and 71: a soul changes its body gradually, but is never without one
73. Corollary of 72: there is no true generation or death
74. Scholium of 73: empirical findings show that there is no true generation, with organic bodies being present before birth in seeds

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75. Scholium of 74: most seed animals remain in their own kind, but a small number do not, and go on to enjoy a higher status
76. Argument: the animal does not end naturally
77. Corollary of 73 and 76: the animal itself is indestructible
78. Corollary of 56: there is a pre-established harmony between soul and body
79. Scholium of 78: souls act according to the laws of final causes, bodies according to the laws of efficient causes
80. Argument: Descartes' doctrine of causal interaction between body and soul is false
81. Scholium of 78: bodies act as if there were no souls, and souls act as if there were no bodies
82. Postulate: before conception, the seed-animals of humans do not differ in kind from those of other animals, and are supplemented with reason at conception
83. Corollary of 29 and 56: in addition to being a mirror of the universe, minds are also images of God
84. Corollary of 83: minds are capable of entering into society with God
85. Corollary of 48, 83, and 84: together, minds form the most perfect possible state under the most perfect possible monarch, the City of God
86. Scholium of 85: God's glory consists in the City of God
87. Postulate: there is a harmony between the kingdoms of nature and grace
88. Corollary of 87: God's aims in the kingdom of grace are brought about through the workings of the kingdom of nature
89. Corollary of 87: sins are punishments naturally, and rewards are bestowed naturally (though in neither case does this necessarily happen immediately)
90. Corollary of 89: everything will turn out well for the good for those who love God

The Monadology: Text with Running Commentary

1. *The monad*, about which we shall speak here, is nothing other than a simple substance which enters into compounds, ‘simple’ meaning ‘without parts’.

Theodicy, preliminary discourse §10.¹

Leibniz begins with a definition of the monad: a simple substance which enters into compounds. The notion of substance is a very rich metaphysical category which has its roots in the writings of Aristotle (384–22 BCE), and was employed by a number of Leibniz’s predecessors such as Descartes (1596–1650) and Spinoza (1632–77). For Aristotle, ‘substance’ was the answer to the question ‘what is being?’, or, ‘what is most truly real?’ As such, the term ‘substance’ was applied to the fundamental constituents of reality. To determine which things qualified, Aristotle identified various criteria: for example, substances are those things which are the ultimate subjects of predication, being the subject of predicates but not the predicate of anything else;² substances are those things which do not depend for their existence on other things (that is, they are self-sufficient);³ and they are the source of change, being capable of acting and not just being acted upon.⁴ What satisfied these criteria, he claimed, were individual living creatures, that is, individual plants, animals, and humans. By the Middle Ages, Aristotle’s doctrine of substance, as filtered through the teachings

¹ Leibniz here omitted ‘preliminary discourse’ although the reference is in fact to that part of the *Theodicy*.

² Aristotle, *Metaphysics* 1028b36, in *The Complete Works of Aristotle*, 2 vols, ed. Jonathan Barnes (Princeton: Princeton University Press, 1984), II, p. 1624.

³ Aristotle, *Metaphysics* 1029a28, in *The Complete Works*, II, p. 1625.

⁴ Aristotle, *Categories* 4a17–20, in *The Complete Works*, I, p. 7.

of Aquinas and others, had become the conventional wisdom, and by the seventeenth century it was part of the Scholastic tradition that was widely taught and accepted throughout Europe. In writings from his youth and middle period Leibniz characterised substance in recognisably Aristotelian ways, for example as the ultimate subject of predicates,⁵ and as the source of actions,⁶ and in addition to endorsing much of Aristotle's criteria for substances he also agreed with Aristotle that the criteria were satisfied by individual living things. As his career progressed, however, Leibniz placed increasing stress on indivisibility as a mark of substance, insisting that a substance was something that was truly *one* being. He adopted the term 'unity' to capture this essential aspect of substance, and often identified substances as unities. In the 1690s Leibniz came to attribute this unity (oneness) of substance to its simplicity, that is, to its lacking parts, on the basis that whatever has parts cannot be one thing, and hence a true individual, simply because it is composed of several parts.

It should be noted that in other writings Leibniz offers what look to be alternative characterisations of substance. For example, in some texts he draws a strong connection between substance and force, claiming 'I consider it [force] to be what constitutes substance, since it is the principle of action, which is its characteristic feature',⁷ where force is understood as 'something midway between power and action' rather than a faculty for action. Similarly, in PNG1 Leibniz claims that '*Substance* is a being capable of action.' Elsewhere, Leibniz characterises substance in terms of perception and the representation of composites: 'Your Electoral Highness asks me what a simple substance is. I reply that its nature is to have perception, and consequently to represent composite things.' While it is tempting to see these as alternative, and perhaps even competing accounts of substance, Leibniz does not see it that way. As will become clear as we proceed, Leibniz thinks of substance in all of the ways outlined, namely as a unity, consisting of force, having perceptions, and representing external things. Arguably, however, in his later writings, *unity* is the feature that Leibniz most commonly stresses as a mark of a true substance, a monad.

In PNG1 Leibniz explains that the term *monad* derives from the Greek word *monas*, meaning 'unity', that is, that which is one. Leibniz was not the first to use it by any means: Pythagoras had used the term in the sixth century BCE to refer to God, and it was often found in the work of neo-Platonic writers, both ancient and modern. For example, it can be found

⁵ See PPL, p. 307.

⁶ See SLT, p. 73.

⁷ LNS, p. 22; cf. PPL, p. 502.

in the work of a number of Leibniz's contemporaries, such as Henry More (1614–87), Anne Conway (1631–78),⁸ Francis Mercury van Helmont (1614–98),⁹ and Ralph Cudworth (1617–88).¹⁰ They each used the term in a different way; for example, while More wrote of the monad as 'a Symbole of the immaterial nature',¹¹ Conway saw it as something physical (the smallest physical unit, divisible mathematically but not physically).¹² Leibniz's familiarity with the work of Anne Conway has led to claims that he appropriated the word 'monad' from her,¹³ and similar claims have been made in favour of van Helmont¹⁴ and Cudworth.¹⁵ Without a doubt Leibniz encountered the term in the work of all of these writers, as well as in the work of others, but since it was part of the (neo-)Platonic tradition to which Leibniz himself arguably belonged, it is therefore more likely that he appropriated the term from the tradition rather than from any one of those associated with it.¹⁶ In any case, the term is definitely *not* 'Leibniz's own invention', as some have claimed.¹⁷ Indeed, Leibniz very probably added 'monad' to his philosophical vocabulary only because it already had some currency among philosophers.

Leibniz began to use the term 'monad' in his work only in the last two decades of his life. He appears to have first used it in a letter to the Marquis de l'Hospital written on 12/22 July 1695, where it is used simply as an alternative to 'real unity'.¹⁸ This accords with later usage, with Leibniz tending to use 'monad' interchangeably with 'unity', itself just an

⁸ Anne Conway, *The Principles of the Most Ancient and Modern Philosophy* (Cambridge: Cambridge University Press, 1996), p. 20.

⁹ Francis Mercury van Helmont, *A Cabbalistical Dialogue* (London, 1682), p. 4.

¹⁰ Ralph Cudworth, *The True Intellectual System of the Universe* (London, 1678).

¹¹ Henry More, *Conjectura cabbalistica* (1653), in *A Collection of Several Writings of Dr Henry More*, 4th edn (London, 1712), p. 12; cf. p. 170.

¹² Conway, *The Principles of the Most Ancient and Modern Philosophy*, p. 20.

¹³ See Carolyn Merchant, 'The vitalism of Anne Conway: its impact on Leibniz's concept of the monad', *Journal of the History of Philosophy* 17:3 (1979), pp. 255–69.

¹⁴ Allison P. Coudert, 'Leibniz and the Kabbalah', in Allison P. Coudert, Richard H. Popkin, and Gordon M. Weiner (eds), *Leibniz, Mysticism and Religion* (Dordrecht: Kluwer, 1998), p. 71.

¹⁵ Catherine Wilson, *Leibniz's Metaphysics* (Manchester: Manchester University Press, 1989), p. 188.

¹⁶ See Stuart Brown, 'Leibniz and More's Cabbalistic circle', in Sarah Hutton (ed.), *Henry More (1614–1687) Tercentenary Studies* (Dordrecht: Kluwer, 1990), pp. 83ff.

¹⁷ See Douglas Burnham, 'G. W. Leibniz, *Monadology*', in John Shand (ed.), *Central Works of Philosophy 2* (London: Acumen, 2005), p. 63.

¹⁸ A III, 6, p. 451. Earlier dates have sometimes been suggested, but have not stood up to scrutiny: for example, Nicholas Rescher claims that 'Leibniz began to use the term *monad* only in 1690 (in a letter to Fardella)'. In fact Leibniz did not even write to Fardella in 1690. See Rescher, *G. W. Leibniz's Monadology*, p. 46.

alternative way of referring to something that is one, that is, a simple substance. Although monads are quantitatively simple, in the sense that they have no parts, this does not mean that they are simple in other senses, for example in terms of the qualities that they have. Later in the *Monadology* (M13) Leibniz will claim that monads are actually qualitatively complex (that is, they have many qualities) despite being quantitatively simple.

2. And there must be simple substances, because there are compounds; for the compound is nothing but an accumulation or *aggregate* of simples.

Leibniz now gives an argument for simple substances. The argument Leibniz makes can be put into form thus:

Premise 1: There are compounds.

Premise 2: Compounds are nothing other than accumulations or aggregates of simple substances.

Conclusion: Therefore there are simple substances.

The argument is straightforward enough. The assertion that there are compounds seems uncontroversial. (In some writings, Leibniz uses 'multitude'¹⁹ or 'plurality'²⁰ in place of 'compound', but they all mean the same thing.) Indeed, there are many examples of compound things, for example a pile of rocks. The second premise states that a compound is an accumulation of simples. So if there are compounds then there must be simple substances. So stated, the weight of the argument is carried by the second premise, which describes compounds as aggregates of simples. But why should it be thought that compounds are aggregates of simple substances rather than aggregates of other compounds, which are in turn aggregates of other compounds, and so on and so on? Either seems possible. Consider the example of a pile of rocks: the pile itself is a compound of various individual rocks, but none of these component rocks qualifies as a simple substance because they are all in turn compounds of various minerals; these minerals in turn are compounds of various molecules, which are themselves compounds of various atoms, and so on. On the face of it, then, it is not clear why compounds should be defined as aggregates of simple substances, rather than as aggregates of aggregates and so on.

¹⁹ For example SLT, p. 69.

²⁰ For example PNG1.

In other writings Leibniz offers a slightly different – and arguably stronger – formulation of the argument for simple substances. For example, in a text from 1692/3 Leibniz claims ‘it is evident that there could not be composites without simples, nor pluralities without unities’,²¹ and in PNG1 he writes: ‘there must be simple substances everywhere, because without simples there would be no compounds’. The argument is this:

Premise 1: Without simple substances there could be no compounds.

Premise 2: There are compounds.

Conclusion: Therefore there are simple substances.

Here the weight of the argument rests on the first premise, that without simple substances there could be no compounds. In other words, not everything can be a compound: there can’t be compounds that are built out of compounds that are built of compounds and so on forever. At some point there has to be something that *isn’t* compound, and as this something isn’t compound then it must be simple. Hence there must be simple substances. It might be asked why there can’t be compounds built out of compounds forever. To this Leibniz offers a further argument, sometimes known as the ‘argument from borrowed reality’:

I had undertaken to prove that these unities exist from the fact that there would otherwise be nothing in bodies. I gave the following argument: *First*, that which can be divided into many is constituted, i.e., aggregated, from many. *Second*, things that are aggregated from many are not one thing except from a mind, and they have no reality except that which is borrowed, i.e., that is from the things from which they are aggregated. Therefore, *third*, things that can be divided into parts have no reality unless there are things in them that cannot be divided into parts. Indeed, they have no reality other than that which is from the unities that are in them.²²

The thinking here is that a compound thing gets whatever reality it has from its parts, and is therefore real only insofar as its parts are real. But the same must be true of the parts, that is, they are real only insofar as *their* parts are real. And so on, with each compound thing ‘borrowing’ its reality from that possessed by the parts of which it is composed. But this cannot go on forever; there has to be something non-compound that grounds the reality of the parts of the compound, that is, simple things, which are real in themselves, and not because they borrow their reality from parts (which of course, being simple, they do not have).

²¹ LTS, p. 100.

²² LDV, pp. 285–7.

Much the same kind of argument has historically been used to support the view that there must be some kind of ultimate, basic kind of particle out of which everything else in the universe is made.²³ It is still in use by some modern physicists. In the later decades of the twentieth century many physicists held that quarks were the most basic kind of particle, and thus the building blocks of absolutely everything in the universe. It is now believed that quarks are in fact composed of other things, for example preons or strings. It has even been hypothesised that preons and strings will turn out to be made up of even more fundamental elements, but some physicists argue that there must ultimately be something that is truly fundamental which isn't made up of anything else, and therefore qualifies as a true building block of the universe. These physicists suppose that if there are fundamental elements then they will be material in nature.²⁴ Leibniz will challenge this assumption, as we shall see in M3. But the idea that there are fundamental elements, and ones which are material in nature, has great philosophical pedigree, and was resurgent in Leibniz's day in the form of *atomism*. In its classic formulation this doctrine holds that there are little lumps of matter without any parts, and these little lumps of matter compose everything else in the universe. The word 'atom' is Greek, and it means 'uncuttable' or 'unsplittable', and accordingly true atoms were thought to be bits of matter that could not be divided. There is a clear distinction between true atoms and the atoms that physicists postulate today. Modern physics holds that atoms are made up of protons, neutrons, and electrons, and can actually be divided into those parts. So in a sense, the atoms of modern physics are not true atoms at all, because they *can* be divided, whereas a true atom would be something that *cannot* be divided. The belief that the world was ultimately composed of unsplittable atoms goes back to the ancient Greek thinkers Leucippus and Democritus (fifth century BCE), both of whom postulated that atoms moved about randomly in the void, sometimes joining together (on account of having 'hooks') and sometimes breaking apart (on account of random motion). The doctrine was endorsed by Epicurus (third century BCE), amongst others, and then resurrected in the seventeenth

²³ See for example Epicurus' letter to Herodotus, in *The Epicurus Reader: Selected Writings and Testimonia*, ed. and trans. Brad Inwood and L. P. Gershon (Indianapolis: Hackett, 1994), p. 7.

²⁴ For details and references, see Jonathan Schaffer, 'Is there a fundamental level?', *Noûs* 37:3 (2003), pp. 498–517, especially pp. 498–506. Other physicists eschew talk of 'fundamental elements' and 'material things' as being inappropriate in light of modern scientific thinking with regard to field theory, for example. See James Ladyman and Don Ross, *Every Thing Must Go: Metaphysics Naturalized* (Oxford: Oxford University Press, 2009), especially chapter 1.

century by Pierre Gassendi (1592–1655). By the end of the seventeenth century, it was a very popular doctrine; some referred to it under its original name of atomism, while others opted to refer to it under the name of corpuscularianism (from ‘corpuscle’, meaning ‘tiny part’). Robert Boyle (1627–91) and John Locke (1632–1704), for example, are often considered to be adherents of the corpuscular philosophy. Leibniz was an outspoken opponent of it, as we shall see.

3. Now where there are no parts, neither extension, nor shape, nor divisibility is possible. And these monads are the true atoms of nature and, in a word, the elements of things.

Here Leibniz argues that by virtue of having no parts, monads cannot be extended, nor be shaped, nor be divisible. The argument is very compressed, however, and makes more sense once a key assumption is identified. The assumption is that only that which has extension has shape, and only that which has shape is divisible, and only that which is divisible has parts. Consequently monads, which have no parts, cannot be divisible, and hence cannot have shape, nor be extended. Although Leibniz does not say so explicitly, what this ultimately means is that monads cannot be material things, at least in Descartes’ sense of ‘material’. The dominant theory of matter in Leibniz’s day was that developed by Descartes, who identified matter with extension, that is, having the three dimensions of length, breadth, and width.²⁵ It follows from this characterisation of matter that any material thing will, by virtue of being extended, have shape, and consequently be divisible. Since monads do not have any of these features they cannot be material in nature. In other texts, Leibniz affirms the immateriality of monads explicitly; for example, in a 1702 letter to Varignon he insists that ‘simple substances are truly indivisible, but they are immaterial, and are only principles of action’.²⁶

Leibniz’s description of monads as ‘the true atoms of nature’ is an attempt to reclaim the name ‘atom’ from the atomists. In his eyes, it is fair to describe monads as atoms because they are by definition simple, that is, they have no parts and are hence genuinely indivisible (because what could they be divided into?). According to Leibniz, however, the atomists applied

²⁵ See René Descartes, *The Philosophical Writings of Descartes*, John Cottingham, Robert Stoothoff, Dugald Murdoch and Anthony Kenny (eds), 3 vols (Cambridge: Cambridge University Press, 1984–91), I, p. 210.

²⁶ G. W. Leibniz, *Leibnizens mathematische Schriften*, ed. C. I. Gerhardt (Halle: Schmidt, 1859), IV, p. 110.

the name 'atom' to something which *is* at least in principle divisible, namely a material atom. To understand Leibniz's concern, suppose that there were material atoms such as the atomists postulated, that is, very small indivisible lumps of matter. Leibniz holds that on account of being material these atoms would be extended, and so have some shape and size, and as a result they would also be divisible, that is, each one of them could be divided into two, into a left part and a right part. (Bear in mind that for a thing to be 'divisible', all that is required is that it be *possible* for it to be divided. That doesn't mean that it will be *possible for humans* to divide it, whether now or in the future. The issue is whether it is possible *in principle* for a thing to be divided, not whether it is possible for this or that species at this or that time to divide it.) Now if these material atoms are divisible into parts, as Leibniz maintains, then they cannot be atoms, understood as material things without parts! Hence there looks to be a fundamental inconsistency between *extension* (the defining feature of matter) on the one hand, and *indivisibility* (the defining feature of simple substances) on the other. The atomist, of course, held that material atoms have shape and size but denied that they are divisible. But this just raises the question, often not addressed by atomists, of how a material thing could take up space and have shape and size and yet be incapable of division. Leibniz often claims that no answer is possible here; for example, in a text from 1689 he writes 'no reason can be given why bodies of a certain smallness should not be further divisible'.²⁷ In other words, there is no reason why a body of (for example) a millionth of an inch across could not be divided into two bodies each two-millionths of an inch across, and so on, ad infinitum. If this is right, then any material object, no matter how small, will be infinitely divisible, in which case there will be nothing that answers to the description of a material atom.

Although Leibniz does not explicitly say as much, by insisting that his simple substances are not material in nature (because they are not extended, nor shaped, nor divisible), while compounds are, he has now

²⁷ SLT, p. 52. Leibniz sometimes assumes (on the atomist's behalf) that the atomist's position must be that material atoms *are* composed of parts, but ones which are held together by some miraculous force: 'To say that atoms are indivisible in themselves is to say that two masses A and B, parts of an atom which touch each on their surfaces, are inseparable in themselves, and to claim that it is absurd to look for a reason for this

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 . . . God cannot create natural atoms, or bodies that are indivisible by an explicable and unknowable quality, which is to say he cannot create things that are absurd and without reason. If he wants two masses or parts of matter to be inseparably attached to each other, without there being in them or their surroundings any reason for their inseparability, he must prevent their separation by a perpetual miracle. And then they will not be natural atoms, or rather they will be atoms which are indivisible by a certain occult quality lodged in them.' G III, p. 506.

effectively divided reality into two distinct realms. On the one hand there is the (physical) realm of compounds, or bodies, while on the other there is the (metaphysical) realm of monads, which are without shape, size, and extension. On the basis of what Leibniz has said thus far we can meaningfully talk of these two realms as being different levels of reality, with monads being the fundamental or base level from which the secondary level of compounds is derived.²⁸ Leibniz's recognition of two levels of reality brings with it a problem for his readers inasmuch as he does not always make it clear which level he is referring to. In the *Monadology*, as well as other writings, Leibniz sometimes moves from discussing one level to the other without any warning, sometimes in the same sentence. Moreover, terms and expressions appropriate to one level of reality are sometimes applied to the other.²⁹ We are less likely to be misled by what Leibniz says if we keep in mind that he recognises two levels of reality which, while apparently very different, are certainly not separate.

What is not yet clear, however, is *how* the two levels are connected, that is, how compounds are derived from monads. In M2 Leibniz seems to offer a straightforward explanation through his statement that a compound 'is nothing but an accumulation . . . of simples', which if taken at face value might suggest that a compound is literally a grouping or massing together of a number of simples. But we also know (from M3) that a simple has no shape or size, from which it follows that the grouping of any number of simples would fail to produce something which does have shape and size, as the compounds of our experience invariably do. The problem is neatly summarised by Leibniz's near-contemporary Henry More, who wrote: '*Magnitudes cannot arise out of mere Non-Magnitudes. For multiply Nothing ten thousand millions of times into nothing, the Product will be still Nothing.*'³⁰ How, then, do compounds result from monads? An answer

²⁸ Leibniz explains that with matter, or bodies, as well as with other real things, there is a priority of parts to whole, whereby the whole is a result of the parts. This contrasts with ideal things (that is, entities of the mind), in which the whole is prior to any parts that may be taken from it. Leibniz identifies space and time as ideal. See LTS, p. 336. For further details, see Pauline Phemister, *Leibniz and the Natural World: Activity, Passivity and Corporeal Substances in Leibniz's Philosophy* (Dordrecht: Springer, 2005), pp. 106–9.

²⁹ For further details, and some examples, see Homer H. Dubs, 'The misleading nature of Leibniz's *Monadology*', *The Philosophical Review* 50:5 (1941), pp. 508–16.

³⁰ Henry More, *The Immortality of the Soul* (London, 1659), p. 31. The publication date of More's book shows that he made this point some decades before Leibniz developed his theory of monads. This does not affect the validity of his point, however. Interestingly, upon reading this book Leibniz made a similar point against More, whom he believed had tried to compose the world of extended things out of points; Leibniz urged that '*extension is not composed of points, because it would be composed of extended nothings*'. A VI 4, p. 1678.

to this question cannot be found in the *Monadology* itself, and even in other writings Leibniz does not offer a single, definitive answer, but seems to entertain different possible answers, which have been termed by some of his commentators 'phenomenalism' and 'the aggregate thesis'.³¹

(a) In the version of phenomenalism that Leibniz sometimes entertains, bodies are *phenomenal*, that is, existing in appearance rather than as something real in their own right. There are a number of writings in which Leibniz endorses such a view. For example, in a letter written in 1705, Leibniz writes:

I do not really do away with body, but reduce it to what it is. For I show that a corporeal mass that is believed to have something besides simple substances is not a substance but a phenomenon resulting from simple substances, which alone have unity and absolute reality.³²

And in another letter, written shortly before his death in 1716, Leibniz writes: 'I believe that there are only monads in nature, everything else being only phenomena that result from them.'³³ However, while there are a number of writings in which Leibniz does incline towards a kind of phenomenalism, there is no hint of any such inclination in the *Monadology* itself, which does not even contain the word 'phenomenon', let alone apply it to bodies or compounds.

(b) In what looks to be a sharp contrast with phenomenalism, which treats bodies as phenomena, the so-called 'aggregate thesis' holds that bodies are 'in some way' aggregations or accumulations of monads. This is another strand of thought often found in Leibniz's mature writings, and it is the position adopted in the *Monadology*, with Leibniz stating in M2 that 'the compound is nothing but an accumulation or *aggregate* of simples'. How monads can be aggregated into bodies is not addressed in the *Monadology*, and often not in other texts in which the aggregate thesis is advanced. Leibniz often talks as though extended bodies just are an aggregation of unextended monads, while in other writings he urges that bodies *result from* monads or are *founded in* them,³⁴ though whether this means anything different from saying that bodies are aggregates of monads is uncertain.³⁵ This is because, for Leibniz, an aggregate is not a simple

³¹ The terms are from Nicholas Jolley, 'Leibniz and phenomenalism', *Studia Leibnitiana* 18 (1986), pp. 38–51. Reprinted in Nicholas Jolley, *Causality and Mind: Essays on Early Modern Philosophy* (Oxford: Oxford University Press, 2013), pp. 183–98.

³² LDV, p. 319, cf. p. 303.

³³ SLT, p. 54.

³⁴ For example, see LDV, p. 303.

³⁵ See Donald Rutherford, 'Phenomenalism and the reality of body in Leibniz's later philosophy', *Studia Leibnitiana* 22:1 (1990), pp. 11–38.

grouping or cluster of things, but rather the outcome of a mental process in which various things, understood to agree in some way, are construed or treated as a whole: 'an aggregate is nothing other than all the things from which it results taken together, which clearly have their unity only from a mind, on account of those things that they have in common, like a flock of sheep'.³⁶ Hence on the aggregate thesis, bodies are not mereological aggregates, that is, merely a mind-independent group of monads,³⁷ as aggregation is a mental operation such that, without minds there would be no aggregates, just individuals. It is important to note, however, that while the aggregation of monads into a body is something that occurs in the mind, the monads being aggregated exist outside of the mind which aggregates them. Moreover, Leibniz explains that the process of aggregation is more appropriate in some cases than in others; for example, the more connections or agreements there are between individual things, the more appropriate it is for a mind to aggregate them, that is, to treat them as constituting a whole.³⁸ So while aggregation may be a mental process, aggregates themselves are grounded in the reality of their constituent parts, and the connections between them. Parallel to this, we find Leibniz saying something very similar when endorsing phenomenalism, as on such occasions he often describes bodies as 'well-founded phenomena', to emphasise that they are not mere appearance, as would be an illusion or something imaginary, but rather that they do have an underlying reality which grounds them, namely the reality of monads.

Although phenomenalism and the aggregate thesis can appear to be mutually exclusive hypotheses, there are some writings in which Leibniz explicitly endorses them both. One such is the brief 'Appendix on Monads' penned for Remond in July 1714 but not sent to him. At the start of the text Leibniz claims that bodies are aggregates of monads:

I believe that the whole universe of creatures consists only in simple substances or monads, and in their combinations. These simple substances are what are called 'mind' in us and in genies, and 'soul' in animals. They all have *perception* . . . and *appetite* . . . One cannot even conceive of there being anything other than that in simple substances, and consequently in all nature. The combinations are what we call bodies. (appendix p. 278)

While just a few lines further on, Leibniz asserts that bodies are phenomenal:

³⁶ LDV, p. 275.

³⁷ For further details, see Paul Lodge, 'Leibniz's notion of an aggregate', *British Journal for the History of Philosophy* 9:3 (2001), pp. 467–86, especially pp. 479–84.

³⁸ G. W. Leibniz, *Philosophical Essays*, trans. Roger Ariew and Daniel Garber (Indianapolis: Hackett, 1989), pp. 88–9.

all these bodies, and all that is ascribed to them, are not substances, but only well-founded phenomena, or the foundation of appearances, which are different in different observers, but which are related and come from the same foundation, just like different views of the same city seen from various places . . . [T]he Academics have questioned whether material things exist outside of us, which may be given a reasonable explanation by saying that they are nothing but perceptions, and that they obtain their reality from the congruence of perceptions of apperceiving substances. (appendix, pp. 278–9)

(By ‘apperceiving substances’ Leibniz means self-conscious substances, in other words, minds such as those of humans and angels; for a discussion of apperception, see M14.) This is not the only text in which Leibniz explicitly endorses both phenomenalism and the aggregate thesis.³⁹ Evidently he considered both to be compatible,⁴⁰ though he does not divulge his reasons for thinking so. In any case, in the *Monadology* itself Leibniz does not even raise the question of how compounds relate to monads, let alone advance an answer to it; consequently, if there is an answer to that question, it is one that cannot be settled by a study of the *Monadology*.

4. There is also no dissolution to fear, and there is no conceivable way in which a simple substance could perish naturally.

Leibniz now draws out another corollary of M1: as monads are without parts, they must be naturally indestructible. Leibniz endorses the view, passed down from the ancient Greeks,⁴¹ that natural destruction involves a thing being broken down into its component parts (in one text, for example, he asserts that ‘every natural destruction consists in the dissolution of parts’).⁴² But monads of course are simple and so don’t have any component parts. Consequently a monad can’t be destroyed by breaking it into parts because there are no parts into which it can be broken

³⁹ For example, see also LDV, pp. 301, 303, and 307.

⁴⁰ Some scholars have claimed that there are in fact inconsistent strands within Leibniz’s metaphysics, and that when Leibniz discusses them they are best interpreted not as truth-claims that describe the world as it is, but rather alternative theories of the world (or ways of looking at the world). See Glenn Hartz, *Leibniz’s Final System: Monads, Matter, Animals* (London: Routledge, 2007). Other scholars, meanwhile, have suggested that Leibniz’s metaphysics was never complete, and that even at the end of his life he was flitting between alternative – and incompatible – positions, never settling on one in particular. See Garber, *Leibniz: Body, Substance, Monad*.

⁴¹ See for example Plato, *Phaedo* 78c, in *Plato: Complete Works*, ed. John M. Cooper (Indianapolis: Hackett, 1997), pp. 68–9.

⁴² SLT, p. 64.

down. And this means that monads are naturally indestructible. Leibniz uses the phrase ‘naturally’ to indicate that he is referring to natural processes, that is, those governed by the laws of nature that are discoverable by natural science. So tearing up a book would qualify as a natural process as it occurs in accordance with the laws of nature. But somehow deleting a book from existence, for example by magic or divine fiat, would be a *supernatural* process, as it goes beyond what is possible according to the laws of nature.

The fact that monads are naturally indestructible does not entail that they are *absolutely* indestructible, since they could still be deleted from existence by some supernatural process, for example by God annihilating them. Leibniz will later allow for the *possibility* that God might annihilate monads (M6), but ultimately he does not think that will ever happen.

5. For the same reason there is no way in which a simple substance could begin naturally, since it cannot be formed by composition.

The claim here – that simple substances cannot begin naturally – follows from M1. As Leibniz indicates, the reasoning parallels that found in M4: there Leibniz showed that a simple substance cannot naturally cease to be because, being simple, it cannot be subject to dissolution, which was assumed to be the only form of natural destruction. Now he shows that a simple substance cannot naturally come to be either, because by virtue of being simple it cannot be subject to composition, that is, compounding, a process by which a thing comes to be from the assembly of pre-existing parts (for example, a car comes to be through the assembly of its various component parts). Since simple substances have no parts they can no more come into being through composition than they can go out of being through dissolution. Since Leibniz assumes that composition is the only way a thing can naturally come into being, the fact that simple substances are not subject to it leads him to conclude that simple substances cannot naturally come into being.

6. Thus it may be said that monads can only begin and end at once, that is, they can only begin by creation and only end by annihilation, whereas that which is composite begins or ends by parts.

In M5 Leibniz ruled out monads beginning naturally, and in M4 he ruled out monads ending naturally, and he now draws the straightforward corollary that monads must therefore begin and end *supernaturally*, that

is, by creation (an instantaneous coming into being) and annihilation (an instantaneous going out of being). This contrasts with compounds, which come into being naturally, through a process of compounding parts, and go out of being naturally, through the dissolution into component parts.

Leibniz was generally averse to invoking the supernatural in his philosophy, and the supernatural act of creation that gave rise to monads was the only instance of it he was prepared to recognise: 'I admit the supernatural here only in the beginning of things.'⁴³ Leibniz gives naturalistic explanations of other events that were often taken to have a supernatural explanation, such as the miracles recorded in the Bible. This leaves for him creation as the only event that cannot be explained naturally, that is, that cannot be explained without invoking the direct operation of God.⁴⁴ And there will be no 'miracle of annihilation' that parallels the miracle of creation: Leibniz doesn't believe that monads *will* end, only that *if* they were to do so then it would have to be by annihilation, there being no other way that they could end. But according to Leibniz it would be 'unfitting' for God to annihilate anything, on account of his perfect goodness.⁴⁵

Leibniz's use of the expression 'tout d'un coup', translated here as 'at once', is slightly ambiguous, inasmuch as in his day it could mean 'suddenly' or 'all at one time'/'all in one go' (the expression still has both meanings, though the former is rather more common now). Leibniz may have had both meanings in mind when writing M6. We have already seen that monads come to exist suddenly, in the act of divine creation. On top of that, Leibniz also holds that each monad was created sufficient and complete right from the outset, with all of its determinations. Hence monads come to exist all in one go. Leibniz will develop this thought in M7.

7. There is also no way of explaining how a monad could be internally altered or changed by any other created thing, since it is not possible to rearrange anything in it or to conceive in it any internal motion that could be started, directed, increased, or diminished within it, as can occur in compounds, where there is change among the parts. Monads have no windows through which anything could enter them or depart

⁴³ H, p. 66.

⁴⁴ See Daniel J. Cook, 'Leibniz on creation', in Marcelo Dascal (ed.), *Leibniz: What Kind of Rationalist?* (Dordrecht: Springer, 2008), pp. 449–60.

⁴⁵ Leibniz, *Die Werke von Leibniz*, 11 vols, ed. Onno Klopp (Hanover: Klindworth, 1864–84), XI, p. 61.

from them. Accidents cannot become detached, or wander about outside of substances, as the sensible species of the Scholastics once did. Thus neither substance nor accident can enter a monad from outside.

Leibniz now argues that there is no *inter-substance causality*, or *transeunt causation*, that is, causation between substances, in which one substance acts on another. In determining what such causation would involve, Leibniz takes as his model causation as it apparently occurs between compound things. He insinuates that when one compound acts on another, it brings about a change in the latter's parts, or to the amount or direction of motion that these parts have. Apparently on the basis of this model alone, Leibniz supposes that any causality that occurred between substances would also involve 'change among the parts', such that if A causes a change in B it would do so by virtue of bringing about change *of* B's parts or *in* B's parts. But as we know from M1, monads have no parts. So if inter-substantial causality involves change of/in parts, and monads have no parts, then there can be no inter-substantial causality. The same point is captured slightly more esoterically in Leibniz's claim that monads have no windows, which means only that nothing can enter them or leave them.⁴⁶ To illustrate this claim Leibniz briefly considers a paradigm case of inter-substance causality, namely the Scholastic theory of perception. How does one substance perceive another? The answer given by some Scholastic thinkers, such as Suarez, who Leibniz sometimes mentions in connection with this theory,⁴⁷ is that we perceive objects because they emit 'sensible species' or 'perceptible forms' (the expressions mean the same) which travel through the air and enter into us through our sense organs. There are different types of species – visible, audible, tangible, and so on – and each needs to be picked up by the right sense organ for perception to occur. The visible species can be thought of as being very thin surface layers which evaporate and are released into the air. If they happen to come into contact with a suitable sense organ (namely the eye) then the visible species enter through it and from there enter the mind, producing a visual perception. On this scheme, the mind of one substance absorbs the surface of another, the process being mediated by the various sense organs. In the *Monadology* Leibniz dismisses this theory rather

⁴⁶ Leibniz's claim that monads have no windows has its precedents, for example in the *Discourse on Metaphysics* (1686): 'nothing enters naturally into our minds from without, and it is a bad habit we have of thinking as if our soul received certain species as "messengers" and as if it had doors and windows'. PPL, p. 320.

⁴⁷ For example, 'Suarez . . . defined *cause* as *what flows being into something else*, a most barbarous and obscure expression'. PPL, p. 126.

brusquely and dogmatically, because he simply asserts that accidents (that is, properties which are not part of a substance's essence) cannot become detached from a substance, nor wander around outside of them. In the *New Essays* (1703–5), however, he explains that if accidents could do these things then evidently they would be self-subsistent beings in their own right, because they would be capable of existing by themselves. He complains, however, that this is a hallmark of *substances*, not accidents, which are by definition properties of substances rather than substances themselves.⁴⁸ So to suppose free-roaming accidents is to collapse the distinction between substance and accident. Leibniz was far from alone in his opposition to the Scholastic theory of perception; Descartes, for example, sought to undermine it in his *Optics* (1637).⁴⁹

Leibniz's denial of inter-substance causality would not have struck his readers as odd, accustomed as they were to the views of occasionalist philosophers such as Nicolas Malebranche (1638–1715). Malebranche denied not only causality *between* created substances, as Leibniz did, but also causality *within* created substances; in other words, both inter-substance and intra-substance causality. Hence Malebranche denied that a created mind can cause an effect in a body, that a body can cause an effect in a mind, that one body can cause an effect in another body, and that a mind can cause an effect in a mind. Like other occasionalists, Malebranche considered God to be the only true causal agent. So on this account, while it might seem as though I am the cause of my actions, such as moving my arms, or directing my thoughts, in fact the true cause in both cases is God. Malebranche does allow, however, that created things can be *occasional causes*, from which the doctrine of occasionalism gets its name. To illustrate what is involved, consider two billiard balls meeting at speed; according to the occasionalist, that moment the two balls meet, the moment of impact, gives God the occasion to cause the two balls to rebound in the way that we see. Their impact is not the true cause of their rebounding, but it does serve as the occasion for God to cause them to rebound. So for Malebranche there is a sense in which the collision of the balls is a cause, but it is an occasional cause rather than a true cause, with God being the only true cause. Malebranche offered a suite of arguments for the various claims of occasionalism, though Leibniz's argument for the denial of inter-substance causality, in M7, was not among them.⁵⁰

⁴⁸ See NE, p. 379.

⁴⁹ See Descartes, *The Philosophical Writings of Descartes*, I, p. 153.

⁵⁰ For details of all of Malebranche's arguments, see Steven Nadler, 'Malebranche on causation', in *The Cambridge Companion to Malebranche*, ed. Steven Nadler (Cambridge: Cambridge University Press, 2000), pp. 112–38.

One of Malebranche's arguments concerned the very nature of causality, which involved, he believed, a necessary connection between the cause and the effect. He claimed that a true cause 'is one such that the mind perceives a necessary connection between it and its effects'.⁵¹ (Hobbes and Spinoza offered similar accounts.)⁵² But according to Malebranche, such a connection is found 'only between the will of an infinitely perfect being and its effects'.⁵³ For it is impossible that God will a thing and it not happen, whereas it is possible that a created being will a thing and it not happen. The thinking here is that God is omnipotent, so when God wills to do some logically possible action X, necessarily X happens (for it would be contradictory to suppose that God wills to do X and that X doesn't happen). This tells us that God is a true cause, and we can also see that nothing else can be, for anything other than God would be a created being, and as created beings are not omnipotent, when they will to do some logically possible action X, it is not the case that necessarily X happens (for there is no contradiction in supposing that a created being wills to do X and that X doesn't happen). From this, Malebranche concludes that 'it is only God who is the true cause and who truly has the power to move bodies'.⁵⁴ Leibniz was a vocal opponent of occasionalism; while he agreed with its denial of *transeunt* or inter-substance causality, albeit for the reasons given in M7 rather than any of those offered by occasionalists, he disagreed with its denial of *immanent* or intra-substance causality, as we shall see in M10–11.

8. [Monads are not mathematical points, for these points are only extremities and the line cannot be composed of points.] Yet monads must have some qualities [and some changes], otherwise they would not be beings at all [and if simple substances were non-entities, compounds also would be reduced to nothing]. And if simple substances did not differ qualitatively, there would be no way of perceiving any change in things, since what is in the compound can only come from its simple constituents, and if monads were without different qualities they would be indistinguishable from one another, since they do not differ quantitatively either. And consequently, supposing the existence of the plenum,

⁵¹ Nicolas Malebranche, *The Search after Truth*, trans. and ed. Thomas M. Lennon and Paul J. Olscamp (Cambridge: Cambridge University Press, 1997), p. 450.

⁵² See Thomas Hobbes, *Elements of Philosophy* (London, 1656), p. 88; Spinoza, *Ethics* Ia3, in Spinoza, *Complete Works*, trans. Samuel Shirley (Indianapolis: Hackett, 2002), p. 218.

⁵³ Malebranche, *The Search after Truth*, p. 450.

⁵⁴ Malebranche, *The Search after Truth*, p. 450.

each place would always receive, in any motion, only the equivalent of what it already had, and one state of things would be indistinguishable from another.

Theodicy. Preface ****2b⁵⁵

So far Leibniz hasn't said a great deal about what monads actually *are*. He starts to rectify that here, with a pair of rather abstract arguments. The first claims that monads must have qualities, the second that monads must have different qualities. The level of abstraction is such that Leibniz does not even explain what these qualities are. In PNG2 we are told that a monad's qualities are its perceptions and its appetitions. We shall find Leibniz discussing perceptions in M14, and appetitions in M15.

In claiming that monads must have qualities Leibniz is denying that monads are (in modern parlance) *bare particulars*, that is, things with no qualities at all. A bare particular is simply a substratum, something in which qualities may inhere but which has no qualities of its own. To get a sense of what one would be, consider an object and then mentally strip away its various qualities (shape, colour, sound, texture and so on) until none of them is left. What remains (if anything does!) is a substratum, a qualityless subject.⁵⁶ Leibniz is saying that there are no such things. His point is that a bare particular would not be a being. (What does this mean? Probably no more than that it would not be thinkable, as Leibniz defines 'being' as 'that which is distinctly thinkable'.⁵⁷)

Leibniz then argues that monads must differ in their qualities, otherwise (1) compounds themselves could not be observed to change, and consequently (2) compounds could not be observed to move (supposing the existence of the plenum). In both cases the argument is presumably intended to be in the *reductio ad absurdum* vein, as it shows that something untenable follows if it is denied that monads differ in their qualities. First of all, suppose that monads did not differ qualitatively, that is, that they all had the same qualities. This would mean that they are indistinguishable, because the only other way they could be distinguished is quantitatively, but we already know from M3 that monads do not have any quantitative characteristics, like size and shape, so distinguishing them quantitatively is out of the question. Now since the qualities of compounds derive from

⁵⁵ Leibniz actually wrote 'Preface ***2b' but this would appear to be a mistake, as the material on that page does not relate to M8 at all. For an explanation of Leibniz's use of asterisks, numbers and 'a' or 'b' when referring to the preface of the *Theodicy*, see p. 162, note 2.

⁵⁶ For the classic account, see John Locke, *An Essay concerning Human Understanding* (London, 1690), book II, chapter XXIII, sections 1–2.

⁵⁷ A VI 4, p. 869.

the qualities of constituent monads, it follows that if monads are qualitatively indistinguishable then compounds would be qualitatively indistinguishable too. Further, Leibniz claims that in such a case it would not be possible to observe ‘change in things’ either, by which is presumably meant change in the constituents of compounds. For example, suppose a compound is composed of three qualitatively identical monads A, B, and C; if one of these were to be replaced by another qualitatively identical monad, say D, then there will have been a change in the constitution of the compound. Now the only way this change could be observed is if it brought about a change in the qualities of the compound, but clearly these will not have changed. Consequently there is no way of observing any change in the constitution of compounds. Since this goes against the evidence of the senses (since we perceive qualitative change in compounds), it shows that the initial supposition – that monads do not differ qualitatively – is false.

Leibniz then proceeds to show that the very same supposition leads to another untenable result, namely that if space were completely full of such indistinguishable compounds, they could not be observed to move. For if space were filled with qualitatively identical compounds then the situation would be like this:

1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	1	1	1	1	1

(Each ‘1’ represents a compound, and each box represents a part of space.)

Now if there were to be motion, for example two adjacent compounds were to swap their current positions, how could we tell? We couldn’t. Indeed, all the compounds could be moved so that they occupy different positions, and there’s no way anyone would be able to tell. Consequently, if monads do not differ qualitatively it would not be possible to observe motion of compounds in the plenum. We can surmise that Leibniz took this to be an unacceptable result (he would not have made the argument otherwise), and as before its unacceptability shows that the initial supposition – that monads do not differ qualitatively – is false. But this time it is not quite

so obvious why the result is unacceptable. Does it go against the evidence of the senses? It is not clear that it does, for while it is uncontroversial to claim that we do perceive the motion of compounds, it is much more contentious to claim that we perceive the motion of compounds *in the plenum*. Such a claim could only be made if there were grounds to think there is a plenum, that is, that space is indeed full. Unfortunately in the argument of M8 Leibniz does not offer any such grounds; instead he treats the plenum as a supposition ('supposing the existence of the plenum'). Later in the *Monadology* Leibniz explicitly endorses the existence of the plenum (see M61), though no grounds for it are offered. This is not the case in other texts, however. In a letter to Samuel Clarke, for example, Leibniz argues that from the fact that God wishes to produce as much perfection as possible it follows that the universe must be a plenum, because any empty spaces could potentially be filled with something:

let us fancy a space wholly empty. God could have placed some matter in it without derogating in any respect from all other things; therefore he hath actually placed some matter in that space; therefore there is no space wholly empty; therefore all is full.⁵⁸

9. It must also be that every monad is different from every other. For in nature there are never two beings which are perfectly alike, and in which it is not possible to find a difference which is internal, or based on an intrinsic denomination.

This goes further than what was said in M8. There the claim was that not all monads could be the same. Now it is that each one is different from every other; in other words, that every monad is unique. Leibniz takes this to follow from his assertion that no two things in nature are exactly alike, a principle now often referred to as the identity of indiscernibles (or sometimes Leibniz's law). The principle states that if everything that is true of A is also true of B (that is, they are indiscernible), then A and B are one and the same thing (that is, identical). To illustrate, consider the morning star and the evening star. If we were to compile two lists, one containing everything that is true of the morning star, and the other containing everything that is true of the evening star, we would discover when putting them side-by-side that the two lists are identical. And that is because the morning star *is* the evening star, that is, the planet Venus. So the indiscernibility between the morning star and evening star is due to

⁵⁸ PPL, p. 691.

their being identical. According to Leibniz's principle, *all* indiscernibles are identical.

It is sometimes suggested that Leibniz believed the principle could be supported empirically.⁵⁹ Certainly he was fond of recounting the story of a friend who tried without success to find two identical leaves:

An ingenious gentleman of my acquaintance, discoursing with me in the presence of Her Electoral Highness, the Princess Sophia, in the garden of Herrenhausen, thought he could find two leaves perfectly alike. The princess defied him to do it, and he ran all over the garden a long time to look for some; but it was to no purpose.⁶⁰

However it is by no means certain that Leibniz ever believed such failure constituted empirical support for the identity of indiscernibles. The principle itself cannot possibly follow from the failure to find two identical leaves, and although such failure would be a natural consequence of the identity of indiscernibles, that is, it is exactly what we would expect to happen if the principle were true, other explanations for it are possible (for example, insufficiently large sample size).

Although in the *Monadology* Leibniz treats the identity of indiscernibles as axiomatic, in other writings he attempts to support it via argument. For example, in 'Logical-metaphysical principles' (1689) he claims that the identity of indiscernibles follows from the principle of sufficient reason, which holds that there must be a reason why things are (or happen) thus rather than otherwise.⁶¹

there is a reason even for eternal things. If we imagine that the world has existed from eternity, and that there have been only globes in it, a reason must be given why there should be globes rather than cubes. From this it also follows that *there cannot be in nature two individual things different in number alone.* For it certainly must be possible to give a reason why they are different, which must be found in some difference in them. And so what St Thomas recognized about separate intelligences, which he said never differ in number alone, must be said about other things too; and two eggs, or two leaves or blades of grass, perfectly similar to each other, will never be found . . . And although gold and other metals, salts, and many liquids are considered as homogeneous bodies, that can be admitted only so far as our senses are concerned, and as such it is not exactly true that they are homogeneous.⁶²

⁵⁹ See for example Roger Woolhouse, *Starting with Leibniz* (London: Continuum, 2011), pp. 102–3.

⁶⁰ PPL, p. 687. Cf. NE, p. 231; LTS, p. 327.

⁶¹ For more details on the principle of sufficient reason, see M32.

⁶² SLT, p. 49.

In claiming that each monad differs from every other, Leibniz stresses that this difference is to be found in their internal qualities, or 'intrinsic denominations', a term which refers to those qualities or properties intrinsic to a thing. It is often contrasted with 'extrinsic denominations', which refers to qualities or properties extrinsic to a thing. For example, my being fair-skinned would qualify as an intrinsic denomination, as it is a property which is inherent to me, whereas my being thought by my partner to be impatient would be an extrinsic denomination as what my partner happens to think of me is not a property intrinsic to me. Extrinsic denominations are sometimes called *relational properties* because they involve a relation between the thing under consideration (in this case me) and something else (in this case my partner). According to the *Port Royal Logic*, a very influential textbook on logic from the latter half of the seventeenth century, the distinction between intrinsic and extrinsic denominations was widely employed by Scholastic philosophers:

There are some [modes] which may be termed internal, because they are conceived in the substance, like 'round' and 'square,' and others which may be called external, because they are applied to something which is not in the substance, like 'loved,' 'seen,' and 'desired,' which are names applied to actions of another. And these are what are called in the Schools *external denominations*.⁶³

10. I also take it for granted that every created being is subject to change, and consequently the created monad also, and even that this change is continual in each one.

Leibniz now assumes that monads are subject to continual change, that is, change which is incessant, without any interruption.⁶⁴ That this is an assumption is indicated by his use of the expression 'I . . . take it for

⁶³ [Antoine Arnauld and Pierre Nicole], *La logique, ou de l'art de penser*, 2nd edn (Paris, 1664), p. 57.

⁶⁴ It has been suggested that Leibniz might here mean 'continuous' (in the sense of gradual, or by degrees) rather than 'continual' (in the sense of incessant), since the French word that Leibniz uses, 'continuel', means both. See Anthony Savile, *The Routledge Philosophy Guidebook to Leibniz and the Monadology* (London: Routledge, 2000), p. 95. But while it is correct to say that the French word 'continuel' *now* can mean either 'continual' or 'continuous', in Leibniz's lifetime it only meant 'continual'; only later, long after Leibniz's death, did it also acquire the meaning of 'continuous'. Compare the entry for 'continuel' in the 1694 and 1762 editions of the *Dictionnaire de l'Académie française* with that in Jean-François Féraud's *Dictionnaire critique de la langue française* (1787–88).

granted'. Certainly the claim that monads are subject to continual change does not follow from what has been said already. Elsewhere Leibniz builds the idea of change into the very concept of substance, for example in PNG1 where he writes: '*Substance* is a being capable of action.'

The connection between substance and change was first made by Aristotle, who had claimed in the *Categories* that a distinctive mark of a substance was not just that it was the subject of properties, but the subject of different properties at different times, for example at one time Socrates is sitting, at another he is standing.⁶⁵ In other words, substances are what undergo change. In developing this idea, some of Aristotle's medieval followers came to suppose that the notions of *change* and even *activity* were built into the very concept of substance. This is the Scholastic doctrine of the *suppositum*, according to which actions belong to (that is, must be attributed to) a *suppositum*, that is, a substantial individual. So actions could not be attributed to aggregates of substances, properties of substances, or parts of substances, but only to substances themselves. This was the philosophy Leibniz had been taught at university, and we can find him adopting it in his very earliest writings,⁶⁶ as well as in later ones, such as 'On nature itself' (1698):

So far as I have made the concept of action clear to myself, I believe that there follows from it and is established by it that most widely accepted principle of philosophy – that actions belong to substances. And hence I hold it also to be true that this is a reciprocal proposition, so that not only is everything that acts an individual substance but also every individual substance acts without interruption, not excepting body itself, in which no absolute rest is ever to be found.⁶⁷

Here Leibniz moves from 'actions belong to substances' to 'every substance acts' and 'every substance acts always', but his rationale for this step is not clear. Nevertheless, the claim that substances always act is axiomatic for Leibniz.

11. It follows from what we have just said that the natural changes of monads come from an *internal principle* [that may be called active force], since an external cause would not be able to influence a monad's interior.

Theodicy §396. §400.

⁶⁵ See Aristotle, *Categories* 4a10, in *The Complete Works*, I, p. 7.

⁶⁶ For example, PPL, p. 115.

⁶⁷ PPL, p. 502.

In M10 Leibniz claimed that monads always undergo change. And in M7 he showed that a monad cannot be affected from without (that is, by anything external to it), from which it follows that any change a monad undergoes must originate from within itself. In other words, every monad contains an internal principle of change (with 'principle' here meaning 'source' or 'origin').

12. [And generally it may be said that force is nothing other than the principle of change.] But besides the principle of change, there must also be a complete specification of that which undergoes the change, which constitutes so to speak the specific determination and [variation] variety of simple substances.

We now learn that there is more to a monad than simply an internal principle of change: it also contains something which dictates what its changes will be, and when. This 'something' contains a monad's 'orders', as it were; in modern parlance, we would probably call it a script, or programme. Without it, nothing would happen; there would be the *potential* for change, but no actual change (likewise, nothing would happen to a computer that had internal power but no program to run). The principle of change in a monad thus needs to be directed if it is to have any effect at all, and Leibniz here states that it is a monad's 'complete specification' which contains the directions. He also claims that this complete specification is what individuates each monad, that is, what makes each one unique and so different from every other one. In other words, each monad has a different set of orders, its own unique programme.

In a number of logical and metaphysical writings from the 1680s, Leibniz developed the notion of a *complete concept*, which is the forerunner of the 'complete specification' described in M12. In these earlier writings, Leibniz insisted that every substance has a complete concept, that is, a set of descriptions that detail everything that will ever happen to it throughout its entire existence. To illustrate, consider the example of Judas (which is one of Leibniz's own examples). According to Leibniz, the complete concept of Judas includes his betrayal of Christ, and it always did and always will.⁶⁸ In other words, it was true of Judas that he would betray Christ not just before it happened, but before Judas was even born. The same holds for everything else that is true of Judas. Hence an inspection of Judas' complete concept would reveal in the most minute detail everything that Judas would ever do, and have done to him, and when.

⁶⁸ See PPL, p. 322.

Leibniz offers no argument in the *Monadology* for the assertion that every substance has a ‘complete specification’: it is simply asserted. However, in his earlier work, he did attempt to justify the doctrine of the complete concept (which that of the ‘complete specification’ looks to have superseded) by claiming that it follows from the nature of truth, that is, from what it is that makes a truth true. The nature of truth demands, Leibniz argued, that in all true propositions ‘the concept of the predicate is always in some way included in that of the subject’.⁶⁹ To give a simple example, in the true proposition ‘a mortal man is mortal’ the concept of the predicate ‘mortal’ is clearly included in the concept of the subject ‘a mortal man’, and this inclusion explains why the proposition is true. Leibniz supposed that all truths are ultimately like this: ‘The fact is that in every true . . . proposition . . ., the concept of the predicate is always in some way included in that of the subject, *praedicatum inest subjecto* [the predicate is included in the subject], or else I do not know what truth is.’⁷⁰ Hence the nature of truth demands that everything that is true about a subject, or substance, be contained in its concept, and that includes all of its past, present, and future predicates:

The complete or perfect concept of an individual substance contains all of its predicates, past, present and future. For certainly it is true now that a future predicate is future, and so is contained in the concept of the thing. And hence all the things that will happen to Peter or Judas, both necessary and free, are contained in the perfect individual concept of Peter or Judas.⁷¹

Moreover, Leibniz held that each individual substance is defined by its own complete concept, with each concept being so detailed as to distinguish it from every other; in other words, the complete concept picks out a specific individual substance, and every substance is unique, being distinct in some way from every other. (A ‘full concept’, on the other hand, would have much less detail, such that it could pick out abstract types of things but not concrete individuals. Hence one can have a full concept of a King, which contains all the defining features of Kings, such as the fact that they are male, that they are rulers, and so on, but which is not specific enough to pick out any individual King.)

Leibniz discussed his doctrine of complete concepts with the philosopher and theologian Antoine Arnauld in a series of letters throughout 1686–7. Arnauld initially found the doctrine horrific: in his view, in the beginning God created Adam, and if Leibniz was right about there being

⁶⁹ SLT, p. 47.

⁷⁰ SLT, p. 45.

⁷¹ SLT, p. 50.

complete concepts then Adam's complete concept included the fact that he would have so many children, and *their* complete concepts included details of the children they would have, and so on. All the people who would ever live, and all the things they would ever do and have done to them, would be fully mapped out in these complete concepts. According to Arnauld, this meant that everything that ever happens is necessary, that is, fixed and unalterable, from the very outset. This seems to leave little room for free will, for if it was true even before a person was born that they would do X and Y and so on, then they could not do X and Y freely. In his replies, Leibniz defended his position vigorously, and even managed to go some way towards assuaging Arnauld's initial concerns, but ultimately he realised from Arnauld's reaction that his doctrine was apt to be (mis)understood as dangerous. By the early 1690s, Leibniz had largely stopped referring to complete concepts, and instead started claiming that every substance had within it a 'law of progression' (sometimes referred to as a 'law of change' or 'law of the series'),⁷² which acted on it from its initial state onwards, and thus unfolded what was already contained within it virtually. It is this idea that he is alluding to in M12, albeit under a different name.

13. This complete specification must encompass a plurality within the unity or the simple. For as every natural change takes place by degrees, something changes and something remains; and consequently in the simple substance there must be a plurality of affections and relations, even though it has no parts.

Leibniz has already argued that a monad must have 'some qualities' (M8); now he goes further, arguing that a monad (the unity or simple referred to in the first sentence) must have multiple qualities (which is the plurality referred to again in the first sentence). Although it is not made explicit, what Leibniz means is that a monad must have multiple qualities at every moment of its existence. The thrust of the argument is: given that substances are in constant change (from M10), and that natural change always occurs in degrees rather than all at once, then it must follow that substances always have many qualities. To see this, suppose there is a substance which has only a single quality, which at this moment of its existence is called quality A. We already know (from M10) that as a substance it is in constant change, which must mean that in the next moment of its existence it will lose quality A and in its place gain a different quality, say quality B (for monads can never be without any qualities,

⁷² See for example PPL, p. 360, p. 500; LDV, p. 75.

as we already known from M8). Similarly, in the moment of existence which follows that, it will lose quality B and gain a different one, perhaps quality C. Since it has only a single quality, the substance can only change by losing the quality it had the instant before and gaining a different one in its place. Here, change would happen all at once. But in M13 Leibniz informs us that natural change does *not* happen all at once, but rather gradually. Clearly this is impossible for a substance with only a single quality, because it would be restricted to all-at-once changes. However, it is perfectly possible for a substance which has multiple qualities, because at each and every moment some of these qualities can stay the same while other ones change. Hence if substances do undergo constant change, and this change is gradual, then substances must have multiple qualities at any given time. Consequently, although substances are spatially simple, that is, have no parts, they are nevertheless qualitatively complex, that is, have many qualities.

The claim that natural change always takes place continuously, by degrees, is often called by Leibniz the *law of continuity*, which is often summed up as ‘nature makes no leaps’ or ‘no transition is made through a leap’.⁷³ To illustrate what is involved, think of the difference between analogue and digital clocks. An analogue clock is a clock with moving hands. As the hands move round the clock face to capture the changes in time, they do so smoothly, such that when the second hand (for instance) does a full circuit it passes continuously through all the points in the clock face: it doesn’t ‘jump’ from one point to another. The same is true of the minute and hour hands. Compare this with a digital clock, which literally jumps from one second to another (if it has a second readout), and one minute to another, that is, when it changes from 10.13 to 10.14 (for example) the readout just ‘jumps’ from one to another, and from one hour to another. In the case of nature, the law of continuity holds that all natural changes, whether from place to place, state to state, or form to form, happen in this smooth, gradual way, through all intervening points or degrees.

Leibniz often claimed to be the first to formulate the law of continuity,⁷⁴ though a clear precursor to it can be found in the work of Aristotle.⁷⁵ Leibniz describes it as an axiom of his philosophy,⁷⁶ and while he presents no formal demonstration of it, he does attempt to justify it in two different ways. First, he insists that the law of continuity is confirmed by experience, which does not furnish us with an example of a natural change occurring

⁷³ See, for example, PPL, p. 447; LDV, p. 69; SLT, p. 137.

⁷⁴ See for example SLT, p. 137; H, p. 333.

⁷⁵ Aristotle, *Metaphysics*, 1069a5–6, in *The Complete Works*, II, p. 1688.

⁷⁶ See LDV, p. 69.

by a leap; in other words, we do not see bodies disappearing from one point of space and time, and appearing at another point without having passed through all the intervening states.⁷⁷ Second, Leibniz claims that the law of continuity follows from the law (or principle) of order. This is itself a higher order, metaphysical law, which holds that '*the more things are analyzed the more they satisfy the intellect*'.⁷⁸ The law of order is thus an architectonic (architectural) principle that God applies to his creation on account of his supreme wisdom. Leibniz sometimes claimed that God is a divine geometrician who employed mathematical principles to construct the world in an orderly way,⁷⁹ and the law of continuity, via the law of order, can be seen as one result of this.

14. The passing state, which encompasses and represents a plurality within the unity (or simple substance) is nothing other than what is called *perception*, which must be distinguished from apperception, or consciousness, as will be apparent in what follows. And it is here that the Cartesians have fallen far short, as they have given no thought to perceptions which are not apperceived. This also is what made them believe that minds alone are monads and that there are no souls of beasts or other entelechies, and also led them to make the common mistake of confusing a long stupor with death, in the rigorous sense of the term, which has made them fall in with the Scholastic prejudice of souls entirely separate from bodies, and has even confirmed some twisted minds in the belief of the mortality of souls.

Leibniz starts by giving a very technical definition of perception as the representation of a plurality within the unity, which differs somewhat from how we tend to think of perceptions today, as conscious interpretations of sensory information. A representation, or expression (Leibniz uses the terms interchangeably), involves an isomorphic relationship between the thing doing the expressing and the things expressed. Hence Leibniz claims that 'One thing expresses another, in my usage, when there is a constant and regular relation between what can be said about one and about the other.'⁸⁰ A mundane example of this would be a map, the elements of which share the same order as the geographical features the map repre-

⁷⁷ See LDV, p. 71.

⁷⁸ LDV, p. 71.

⁷⁹ See for example Leibniz, *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1672–1686*, trans. and ed. Richard T. W. Arthur (New Haven: Yale University Press, 2001), p. 305; PPL, pp. 305–6.

⁸⁰ PPL, p. 339.

sents. The perceptions had by substances are likewise representations, or expressions, of other substances and their aggregates; hence a substance perceives a pile of books external to it when it is in a state which encompasses a representation not just of each individual book, but also of the relation between them. Accordingly, perception involves a plurality (the various things represented) within the substance, the unity. By combining his definition of perception, the representation of a plurality within the unity, with the claim of M13, that a monad's complete specification encompasses a plurality within the unity, Leibniz is able to conclude that perceptions are the basic states of monads. In other words, not only do all monads have perceptions, but they always have them.

Leibniz then distinguishes perception from apperception. 'Apperception' is a term devised by Leibniz. He defines it in PNG4: '*apperception . . . is the consciousness or the reflective knowledge of this internal state*'; by 'internal state' Leibniz means one's perceptual state, that is, the state of representing a plurality. So apperception is the consciousness of (or reflection upon) a perception. Later (M20), Leibniz will argue that not all perceptions are apperceived, but in M15 he merely conceives that it might be this way, that is, that there might be unconscious perceptions. Indeed, he chides Descartes' followers for not even entertaining the idea of unconscious perceptions.⁸¹ On this point he could have singled out just about any other philosopher or school for criticism. The notion of unconscious mental states is often thought to begin with Leibniz, though there are traces of it in Spinoza. In any case, the idea did not catch on, and we have to wait until the mid-to-late nineteenth century before it finds any followers of note.

Leibniz then proceeds to show some of the unfortunate consequences that come from supposing that all perceptions are apperceived. The only state of the soul that the Cartesians were prepared to recognise (he claims) was consciousness, and because the Cartesians were not prepared to allow that animals were conscious, they were forced to deny that animals had souls. This, Leibniz insinuates, is the wrong result. (It should be noted that it is a bit misleading of Leibniz to say that Cartesians believed that minds alone are monads, as 'monads' is a Leibnizian term, not a Cartesian one.) In developing his complaint, Leibniz introduces the term 'entelechies', which will henceforth be used as an alternative for 'monads'. Leibniz explains what he means by the term in M18, and elaborates a little more in M48, where he explains that the Latin translation of the term is 'perfectihabiae'

⁸¹ Scholars have tended to agree that Descartes did not endorse, and in fact could not have endorsed, a theory of the unconscious. But for a contrary view, see Matthew C. Eshleman, 'The Cartesian unconscious', *History of Philosophy Quarterly* 24:3 (2007), pp. 297–315.

(perfection-havers). The term itself was coined by Aristotle, and in his philosophy means the realisation (that is, the full actualisation) of a thing's potential.

The second half of M14 prefigures claims that will be developed in greater detail later in the text. For example, his assertion against the Cartesians, that death is not the separation of soul and body will be defended in M21 and M73, and his assertion against the Scholastics, that souls never exist separate from bodies, will be defended in M72. In making these assertions, Leibniz alludes to his distinction between three grades of monad that will be elaborated in M19–M30:

(Bare) monads.

Animal souls (or brute souls).

Minds: humans and angels.

All grades of monad have perceptions, and hence represent external things. But there are big differences between the three grades, as will become clear.

15. The action of the internal principle which brings about the change or passage from one perception to another may be called *appetition*. It is true that the appetite cannot always completely reach the whole perception it aims for, but it always attains something of it, and reaches new perceptions.

Leibniz established that there must be an internal principle of change in M11. He now entitles the action of this principle the *appetite*. The appetite drives the monad from the set of perceptions it has at one moment to the set it has at the next.⁸² Although it is continually striving for a new set of perceptions, this is not necessarily a conscious striving: at the level of bare monads it is very much automatic (in much the same way that a computer script can be said to strive, automatically and unconsciously, to complete each step of a subroutine). Moreover, such striving would not be random, since there is a clear hint here of *directedness*. This is true also of the appetites of animal souls and minds: Leibniz refers to the appetite of animal souls as 'passion', and to the appetite of minds as 'will'. Passions are sensible inclinations, that is, ones that are *felt*.⁸³ Hunger and thirst would be everyday examples of passions, and of course are ones that are experienced

⁸² See LTS, p. 316.

⁸³ See NE, p. 194.

by minds as well as by animal souls. But minds also have what Leibniz calls 'distinct inclinations', that is, ones which involve a conscious striving for an end supplied by reason.⁸⁴ These appetites Leibniz refers to as the '*will* where the perception is an intellectual judgement'.⁸⁵

16. We ourselves experience a plurality within a simple substance when we find that the least thought which we apperceive encompasses a variety in its object. So all those who acknowledge that the soul is a simple substance must acknowledge this plurality within the monad, and Mr Bayle ought not to have found the difficulty in it which he did in his *Dictionary* article 'Rorarius'.

Leibniz now gives us an everyday example of a simple substance encompassing a plurality, namely our own thoughts. Every single one of our thoughts involves a variety of things (a plurality), and exists in our soul, which Leibniz insinuates is a simple substance (and hence a unity). It should be noted that in offering this example Leibniz's aim is not to establish that the soul is a simple substance (though of course he thinks that it is), but rather the more modest one of showing that the idea of plurality-in-unity is perfectly intelligible. Obviously the example will only persuade those who are prepared to accept that the soul is simple, though the vast majority of Leibniz's contemporaries would have granted him this.

Leibniz felt the need to show the intelligibility of plurality-in-unity because of an objection raised by one of his chief intellectual opponents, Pierre Bayle (1647–1706). In his sprawling *Dictionnaire historique et critique* (*Historical and Critical Dictionary*) (1697), Bayle included an article on 'Rorarius', a sixteenth-century thinker who claimed that animals had reason; in note H of that article, Bayle discussed some of Leibniz's doctrines and made a number of criticisms. The last of them concerns Leibniz's claim that unities can be the source of their own changes in much the same way that a clock, once wound up, is the source of its own changes. Bayle's objection goes as follows:

It is inconceivable how they [all souls] can be compared to clocks, that is, how by their original constitution they can diversify their operations by making use of the spontaneous activity that they receive from their Creator. It is clearly conceivable that a simple being will always act uniformly if not hindered by some external cause. If it were composed of several parts, like a machine, it

⁸⁴ NE, p. 194. Elsewhere, Leibniz calls the will 'the distinct appetite', and contrasts it with the 'confused and inapperceivable appetites'. G VII, p. 510.

⁸⁵ See 'Appendix on Monads' (p. 278).

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would act diversely because the particular activity of each piece might change the course of that of the others at any moment. But in a unified substance, where can you find the cause of the change of its operation?⁸⁶

In his response, Leibniz conceded that a simple being would always act in the same way unless there was some internal diversity that led it to change. Thus to Bayle he insisted that the plurality of perceptions in the unity had the same effect as does a plurality of parts in a machine, that is, preceding perceptions influence succeeding ones in a unity much like the preceding motion of parts influences the succeeding motion of parts in a machine.⁸⁷ Leibniz seems to have supposed that, in making his objection, Bayle had simply overlooked the fact that there could be plurality in unities. Perhaps because of Bayle's objection, in later writings Leibniz sought various ways to make the idea of plurality-in-unity intelligible. Often he resorted to a mathematical analogy:

It will be asked how the composite can be represented in the simple, or the multitude in unity. I answer that it is somewhat like when an infinity of radii converge and form angles in the center, simple and indivisible though it is.⁸⁸

17. Moreover, we are obliged to admit that *perception* and that which depends on it *cannot be explained mechanically*, that is, by means of shapes and motions. And if we suppose that there were a machine whose structure makes it think, feel, and have perception, we could imagine it increased in size while keeping the same proportions, so that one could enter it as one does with a mill. If we were then to go around inside it, we would see only parts pushing one another, and never anything which would explain a perception. This must therefore be sought in the simple substance, and not in the compound or machine. Moreover, this is the only thing that can be found in the simple substance, that is, perceptions and their changes. It is also in this alone that all the *internal actions* of simple substances can consist.

The argument detailed here is often referred to as 'Leibniz's Mill', or the mill argument. Leibniz deploys it in various texts,⁸⁹ though the version here is probably the most well-known. The argument is designed to show

⁸⁶ Pierre Bayle, *Dictionnaire historique et critique* (Rotterdam, 1702, 2nd edn), p. 2608 (article 'Rorarius', note H). English translation from Pierre Bayle, *Historical and Critical Dictionary*, trans. and ed. Richard H. Popkin (Indianapolis: Hackett, 1991), p. 239.

⁸⁷ See LNS, p. 84.

⁸⁸ LTS, p. 346, cf. p. 141.

⁸⁹ For example, LTS, p. 259, cf. p. 266; LNS, pp. 129–30; NE, pp. 66–7; SLT, pp. 63–4.

that perception cannot be explained mechanically, that is, that its origin cannot be in a material thing, and therefore must lie in simple substances. But how the argument is supposed to work is a matter of debate.

One way of construing Leibniz's Mill is as an argument about the nature of perception.⁹⁰ In essence, the argument would go like this:

Premise 1. Perception is the representation of the multitude in the unity.

Premise 2. Material things are not unities.

Conclusion. Therefore perception does not occur in material things.

If this is the argument Leibniz is making then clearly it is not all contained in M17, as the first premise is to be found in M14: there we were informed that perception is the representation of the multitude in the unity, which means that, *by definition*, perception can occur only in a unity. What Leibniz adds to this in M17 is the claim that, in material things, there is *in principle* no unity to be found, because material things consist of parts upon parts (and of course we know from M1 that whatever has parts is not simple, and hence not a unity). The upshot of which is that perception does not (and could not) occur in material things, in which case, its source must lie elsewhere: in a simple substance.

A second way of construing Leibniz's Mill is as an inexplicability argument for the immateriality of perception.⁹¹ This understanding of the argument runs as follows:

Premise 1. There is no conceivable mechanical explanation for how material things could perceive.

Premise 2. If there is no conceivable mechanical explanation for how material things could perceive, then material things could not perceive.

Conclusion. Material things could not perceive.

If this is the argument Leibniz wants to make in M17, it is perhaps surprising that he says nothing at all there about conceivability. In spite of this,

⁹⁰ Paul Lodge and Marc Bobro construe Leibniz's Mill argument this way; see their 'Stepping back inside Leibniz's mill', *The Monist* 81:4 (1998), p. 564.

⁹¹ One who construes Leibniz's Mill argument this way is Stewart Duncan; see his 'Leibniz's mill arguments against materialism', *Philosophical Quarterly* 62:247 (2012), p. 268.

many contemporary philosophers have construed Leibniz's Mill as an inexplicability argument, and as such it is still the subject of debates in the philosophy of mind.⁹²

Of course, while the only material thing Leibniz mentions in M17 is a mill, what he really has in mind is the brain, and the human brain in particular.⁹³ The argument, whether conceived in terms of perception or inexplicability, effectively invites us to suppose the human brain enlarged to the point where we are able to stroll around inside it and inspect its materials and workings, as we could with a mill.

Having established through the mill argument that perception is not to be found in material things, only in simple substances, Leibniz continues to claim that perceptions and their changes are all that there is to be found in simple substances. Although no reason is given for this claim, it follows from it that whatever activity there is in simple substances must involve the change from one set of perceptions to another.

18. The name 'entelechies' could be given to all simple substances, or created monads, for they have in themselves a certain perfection (ἔχουσι τὸ ἐντελέες). There is a self-sufficiency (αὐτάρχεια) which makes them the sources of their internal actions and incorporeal automata, so to speak.

Theodicy §87.

Leibniz's claim that monads have 'a certain perfection' is significant, and will arise again in the *Monadology*, but he will not formally define the term until M41. Here he insinuates that self-sufficiency is this perfection. That monads are self-sufficient is known from M11, which established that each monad is the source of its own changes. This self-sufficiency means that monads are bearers of perfection, which in turn means that they can be called 'entelechies', since 'entelechy' derives from the Greek word for perfection, 'enteles' (as Leibniz notes in T87).

Self-sufficiency is an important concept in the context of substance. Aristotle thought of substances as those things which were most truly

⁹² See for example John Searle, *Intentionality* (Cambridge: Cambridge University Press, 1983), p. 268; Charles Landesman, *Leibniz's Mill* (Notre Dame: University of Notre Dame Press, 2011), pp. 20–8. A third interpretation of the argument construes it as claiming that thoughts and perceptions are not observable in material things, and therefore must belong to a different order of reality. See Paul M. Churchland, *The Engine of Reason, The Seat of The Soul* (Cambridge, MA: MIT Press, 1996), pp. 191–2.

⁹³ This is clearer in other formulations of the argument, such as that in LTS, p. 259, where Leibniz explicitly mentions the brain.

real, and so did not depend for their existence on other things. Leibniz is clearly recalling that idea here, though he is thinking of self-sufficiency in a different way. For him, monads are self-sufficient not because they do not depend on anything else for their existence (for in fact they do: they depend on God, as he intimates in M40), but because they do not depend on anything else for the changes in their internal states. In this sense, they are independent of all other things. However, later on (M51) Leibniz will claim that there is a sense in which some monads are dependent on other ones, though it does not conflict with what he has said here.

Leibniz's description of monads as 'incorporeal automata' perfectly captures his notion of self-sufficiency. An automaton is literally a self-moving machine. An example of a corporeal automaton would be a robot or clockwork watch, both corporeal things which contain the source of their own actions. Similarly, every monad is an incorporeal thing which contains the source of its own actions, that is, the changes in its perceptual states.

19. If we wish to call 'soul' everything which has *perceptions* and *appetites* in the general sense I have just explained, all simple substances or created monads could be called souls. But as sensation is something more than a simple perception, I hold that the general name of 'monads' and 'entelechies' is sufficient for simple substances which only have perceptions, and that only those whose perception is more distinct and is accompanied by memory should be called *souls*.

Leibniz now develops a distinction first alluded to in M14, between souls on the one hand, and entelechies or monads on the other. In some writings, he seems to treat 'soul' and 'monad' as interchangeable terms,⁹⁴ but in the *Monadology* he seeks to treat souls as a subset of monads. So we have (at the moment) two kinds of monad – one kind just has simple perceptions, while the other has more distinct perceptions and memory. It is the former that Leibniz refers to here as entelechies (he will go on to call them 'bare monads' in M24). Here he tells us that he wishes to reserve the term 'soul' for the latter kind.

20. For we experience within ourselves a state in which we remember nothing and have no distinct perception, such as when we faint, or when we are overcome by a deep, dreamless sleep. In this state the soul does not appreciably differ from a simple monad, but as this state

⁹⁴ For example, NE, p. 145.

does not last, and as the soul emerges from it, the soul is something more.

Theodicy §64.

The claim that there are unconscious perceptions, made in M14, stands in need of defending, and Leibniz finds support for it through the familiar examples of fainting fits and sleep. Bear in mind that in the preceding sections of the *Monadology*, Leibniz has shown that all monads always have perceptions. Yet in the case of our own souls, which are themselves monads, we know there to be occasions when there were no distinct perceptions: fainting fits and sleep are just such occasions. Now if our souls always have perceptions, but there are times when they do not have distinct perceptions, then it must be the case that some perceptions are not distinct. Leibniz claims that this is all bare monads have. Hence their perceptions are akin to ours when we have fainted or are asleep. But bare monads are capable of nothing more, whereas souls (a category which includes us) are: souls have the potential to recover from this state, which is clear enough from our own experience.

Leibniz's use of 'distinct perception' in M20 is different from that in M19. There, distinctness was used as a relative term, to make the point that some perceptions are more distinct than others. But in M20, distinctness looks to be something more absolute, in that some perceptions just do qualify as 'distinct' (which would be true even if there are others that are more or less distinct than they are). What, then, is a 'distinct perception'? In an early writing from the 1670s, Leibniz explains:

We perceive distinctly that whose parts or attributes we perceive as pertaining to it, for example, when a man is before us, we perceive his face, and at the same time we think that the face pertains to this man. Otherwise, when we cast our eyes into a crowd, we perceive individual men and the faces of the individuals turned toward us, but we do so confusedly. And when we hear a far-off sound of rushing water, we hear the noise of a great many waves, for there is no reason why we should hear the sound of one rather than that of another; and if we did not hear the sound of any, we would not hear anything; but this perception is confused.⁹⁵

Hence if a perception is distinct, it is possible to identify the elements of it. A confused perception, on the other hand, is one in which the elements are not separately identifiable.

⁹⁵ A VI 4, p. 58: <http://www.leibniz-translations.com/perception.htm>

21. And it in no way follows that the simple substance is without any perception when in that state. That is not even possible, for the aforementioned reasons; for it cannot perish, nor can it subsist without some affection, which is nothing other than its perception. But when there are a vast number of little perceptions in which there is nothing distinct, we are stupefied, as happens when we continuously spin around in the same direction several times: this makes us dizzy, which can make us faint and prevent us from distinguishing anything at all. And death can put animals into this state for a time.

Here Leibniz starts by repeating some claims already made, that a monad cannot perish (M4), that it must have some qualities to exist at all (M8), and that these qualities are called perceptions (M14); taken together, they entail that monads always have perceptions. So there must still be perceptions even when we might think that there aren't any, such as when a monad is asleep, or in a swoon.

In M20, Leibniz showed that there could be unconscious perceptions, that is, perceptions that are not apperceived. These are now given the name 'little perceptions'. Strictly speaking, a 'little perception' is a perception that cannot be distinguished. This may be because it is intrinsically faint, that is, lacking in intensity, or because it occurs alongside a large number of very similar perceptions from which it cannot be separated out.⁹⁶ To illustrate the point, Leibniz often uses the example of the noise of the sea: in this case, each individual wave produces a perception in us, but these perceptions are too similar to each other for us to be able to distinguish any one, that is, to pick out the sound of one specific wave.⁹⁷ From the fact that little perceptions cannot be distinguished, Leibniz supposes that they must lie below the threshold of consciousness, as to be conscious we have to be conscious *of something*, and that means we have to be able to distinguish that thing from other things. So a perception which cannot be so distinguished is one of which we have no conscious awareness.

Leibniz then notes that there are occasions when we cannot distinguish anything at all, such as when we faint. On such occasions, *all* of our perceptions are little perceptions, that is, ones of which we have no conscious awareness. He then asserts that this is what happens in death. This may seem highly presumptuous, but bear in mind what Leibniz has just shown: a monad cannot perish (M4), so what we think of as death cannot be a true end of the monad, and since a monad always has perceptions (M21), it must continue to have perceptions even in the state of death. However,

⁹⁶ See NE, p. 53.

⁹⁷ See NE, p. 54; LTS, p. 272.

the only perceptions it has in death are little perceptions, so it is not consciously aware of them. In line with this, Leibniz often refers to death as a sleep,⁹⁸ and of course such a claim is not uncommon in the Christian tradition to which Leibniz belonged: Jesus is said to have described a dead person as asleep.⁹⁹ The final sentence of M21 – ‘death can put animals into this state for a time’ – seems to imply that death is a state *from which animals can recover*. In fact this is precisely what Leibniz holds, as we shall see (M73). It is worth noting that Leibniz uses the term ‘animals’ quite broadly to include both rational animals, a category which includes humans, and non-rational animals, a category which covers the rest of the animal kingdom (see PNG5). Following the conventions of his day, Leibniz typically referred to non-rational animals as ‘beasts’ or ‘brutes’. The claim that human beings would recover from death would not have struck Leibniz’s readers as problematic (as his readers largely belonged to the Christian tradition, which holds that God will one day bring all human beings back to life), but the claim that non-human animals would also recover from death was much more controversial.

22. And as every present state of a simple substance is naturally a consequence of its preceding state, in such a way that its present state is big with the future. . .

Theodicy §360.

23. therefore, since we apperceive our perceptions when we come around from our stupor, it must be the case that we had perceptions immediately beforehand, although we did not apperceive them; for a perception cannot arise naturally except from another perception, just as one motion can only arise naturally from another motion.

Theodicy §401–3.

M22 and M23 together constitute a further argument for unconscious perceptions, to supplement the one given in M20.

Leibniz often claimed of substances that the present is pregnant with the future, even going so far as to say that ‘it is in the very nature of substance that the present is pregnant with the future’.¹⁰⁰ In the *Monadology*,

⁹⁸ For example, ‘death . . . is only a sleep, that is, a state in which perceptions are more confused’. LTS, p. 348.

⁹⁹ See Matthew 9.24, Mark 5.39, and Luke 8.52.

¹⁰⁰ LDB, p. 349.

the claim is founded upon two earlier findings, namely that each monad contains its own complete specification of changes (M12), and that monads are causally independent of each other (M7). Taken together, they entail that each state of a monad is completely determined by the state immediately preceding it, and in turn completely determines what the next state will be. So the details of a monad's future states exist within it virtually even before the monad reaches those states, such that the details could in principle be 'read off' of the monad in the same way that a physicist could in principle deduce future states of a closed system by analysing the present state of its parts and the laws to which they are subject. For the purposes of the argument in M22 and M23, it is important to remember that each state of a monad consists of perceptions. This is true even when the monad is in a stupor; as we know from M21, monads continue to have perceptions even when stupefied. This is significant, because it means that when a monad comes around from a stupor it is not starting to have perceptions again, as its sequence of perceptions was never interrupted by the stupor in the first place, but that it starts being conscious of its perceptions again. And it follows that the first conscious perception it experiences upon waking up must have been caused by a preceding perception (because there is nothing else inside the monad that could have caused it, and nothing outside the monad could have done so either); and since that latter perception wasn't conscious (because the monad was then in a stupor), it must have been unconscious. Therefore there are such things as unconscious perceptions.

The concluding part of M23 can be read as Leibniz's response to a hypothetical objection. An opponent may resist Leibniz's argument for unconscious perceptions by telling a different story of what happens when someone comes around from a stupor. The story would go something like this: a person, consisting of a body and a soul, does not have any perceptions at all when in a stupor, and what happens when awaking is that particular motions in the person's body or brain cause the person's soul to start having perceptions again. If this account is accepted, then there would be no need to accept Leibniz's argument for unconscious perceptions. Leibniz's response is to show that this account cannot be accepted because it violates the principle of causal likeness (an expression Leibniz himself does not use), which holds that 'like causes like', or 'like can only be caused by like'. This principle was popular among the Scholastics, and was often assumed to be true by early modern philosophers as well.¹⁰¹ According to this principle, motion causes motion, and perception causes

¹⁰¹ See Richard Watson, *The Breakdown of Cartesian Metaphysics* (New Jersey: Humanities Press International, 1987), pp. 50–1.

perception, but there can be no causality across different categories; so for example, motion cannot cause perception, and perception cannot cause motion. Consequently, a present perception (such as that of someone who has just woken up from a stupor) must have been caused by a previous perception, and could not have been caused by motion in the body or brain, as the opponent's account supposes.

24. From this it is clear that if we had nothing in our perceptions which was distinct and which stood out, so to speak, and which was of a sharper flavour, we would always be in a stupor. And this is the state of bare monads.

Here Leibniz revisits claims already made, namely that if we had no distinct perceptions then we would be stupefied (M21), and that this is the state of bare monads, which have no distinct perceptions (M20). Leibniz has now effectively defined a state of unconsciousness as one in which a monad has only little perceptions, that is, no distinct ones.

25. We see also that nature has given heightened perceptions to animals from the care she has taken to furnish them with organs which gather together a number of light rays or air waves in order to make them have a greater effect through their union. There is something similar in smell, taste, and touch, and perhaps in many other senses which are unknown to us. I will shortly explain how what occurs in the soul represents what occurs in the organs.

Having devoted much of M19–24 to outlining bare monads, Leibniz now turns his attention to animals (a term which covers beasts and humans), and begins to elucidate the capacities of their souls, with the aim of showing that they must be more than bare monads. He has already stated in M19 that the perceptions of animal souls are 'more distinct' than those of bare monads, and now he finds *a posteriori* support for the claim in the fact that animals are endowed with sense organs. On the basis that it is the job of these organs to collect detailed sensory information, it is reasonable to suppose that animals experience heightened perceptions, that is, what Leibniz elsewhere in the *Monadology* refers to as 'distinct perceptions'. Note that these distinct perceptions are not equivalent to 'sensations' for Leibniz, as sensation involves something more. As he explains in another work, 'sensation is perception that involves something distinct and is joined with atten-

tion and memory'.¹⁰² Leibniz has already affirmed that animal souls have distinct perceptions, and in M26 he will claim that they have memory too. Consequently we can say that animal souls have sensation.

In M25 Leibniz supposes that if there are other kinds of sense organ then they will function in much the same way as do our five senses, by collecting relevant data so as to produce a heightened perception. Leibniz's willingness to consider the possibility that there may be other senses beyond the five of sight, hearing, smell, taste, and touch, seems quite foresighted now. After all, we know that birds can perceive ultraviolet light, that bats navigate via echolocation, and that catfish and sharks have an 'electrical sense' often referred to as electroreception, which is the ability to perceive or detect electricity. Leibniz did not know any of this, however; he just speculatively allows for its possibility. This would not have struck his contemporaries as especially odd. Indeed, speculation that there may be more than five senses was one often raised in the context of scepticism, to underscore the point that our knowledge of the world may be incomplete. The classic discussion is to be found in Michel de Montaigne's *An Apology for Raymond Sebond* (1568):

Now, on the subject of the senses, my first point is that I doubt that Man is provided with all the natural senses. I note that several creatures live full, complete lives without sight; others, without hearing. Who can tell whether we, also, lack one, two, three or more senses? If we do lack any, our reason cannot even discover that we do so. Our senses are privileged to be the ultimate frontiers of our perception: beyond them there is nothing which could serve to reveal the existence of the senses we lack . . . We may all lack some sense or other; because of that defect, most of the features of objects may be concealed from us. How can we know that the difficulties we have in understanding many of the works of Nature do not derive from this, or that several of the actions of animals which exceed our powers of understanding are produced by a sense-faculty which we do not possess?¹⁰³

Montaigne in turn was probably influenced by Sextus Empiricus (c. 160–210 CE), a sceptical philosopher from ancient Greece, who similarly argued that there may be extra senses that we lack.¹⁰⁴ Although Leibniz

¹⁰² SLT, p. 65.

¹⁰³ Michel de Montaigne, *An Apology for Raymond Sebond*, trans. and ed. M. A. Screech (London: Penguin, 1987), pp. 171–2.

¹⁰⁴ Sextus wrote: 'That the apple may have more qualities than those apparent to us we deduce as follows. Let us conceive of someone who from birth has touch, smell and taste, but who hears and sees nothing. He will suppose that there is absolutely nothing visible or audible, and that there exist only those three kinds of quality which he is able to grasp. So it is possible that we too, having only the five senses, grasp from among the

is likewise willing to entertain the possibility of extra senses, his doing so should not be taken as evidence of a sceptical agenda. He is merely wishing to claim that all senses serve to produce heightened perceptions in the animal which has them, and this will hold good even if there turn out to be more senses than the five that are commonly accepted.

M25 ends with a promissory note about the connection between soul and body, which will be redeemed in M61–2.

26. Memory provides souls with a kind of *ability to make connections*, which imitates reason but must be distinguished from it. We see that when animals have a perception of something which strikes them, and they have had a similar perception previously, they come to expect – by the representation of their memory – what was connected to this previous perception, and are led to feelings similar to those they had before. For example, when dogs are shown a stick, they remember the pain it has caused them in the past, and yelp and run away.

Leibniz continues his elucidation of the capacities of animal souls, this time via a *posteriori* observation of animal behaviour. Such observation suggests that animals are capable of making empirical inferences, that is, they are able to form connections between different perceptions based on their own experiences. This is sometimes referred to as the principle of association, though Leibniz does not use that description. The example of dogs is a good illustration of the principle, as it involves the dogs associating a past experience (the pain of being beaten with a stick) with a present one (being shown a stick).¹⁰⁵ The principle of association is thus

qualities of the apple only those we are capable of grasping, although other qualities can exist, impressing other sense-organs in which we have no share, so that we do not grasp the objects perceptible by them'. Sextus Empiricus, *Outlines of Scepticism*, trans. and ed. Julia Annas and Jonathan Barnes (Cambridge: Cambridge University Press, 2000), pp. 26–7.

¹⁰⁵ The example of a dog shying away from a stick with which it has previously been beaten was a stock one in early modern philosophy. It appeared often in the context of the so-called beast-machine debate, that is, the debate about whether animals have souls, as the example was thought by some to show that dogs have higher-order mental functions, and therefore souls, while others took it to be evidence of mechanistic behaviour. See for example Jacques Rohault, *Entretiens sur la philosophie* (Paris, 1671), p. 156; Bayle, *Dictionnaire historique et critique*, III, p. 2599/*Historical and Critical Dictionary: Selections*, p. 215; Christian Wolff, *Psychologia rationalis*, new edn (Verona, 1737), p. 380. Leibniz himself employed it in many writings, each time as an illustration of the claim that beasts act as empiricists. See for example NE, p. 143; SLT, p. 66; and PNG5. The constant recycling of the same example makes it quite possible that neither Leibniz,

a kind of inductive reasoning. Induction involves drawing conclusions about unknown cases from known cases, for example, about future cases from past ones. Leibniz does not think that it constitutes true reasoning, as it merely amounts to an *expectation* that what has happened before will happen again.¹⁰⁶ However, because induction involves making inferences (from past to future) Leibniz concedes that it does in some way resemble reason,¹⁰⁷ and on that basis he is even prepared to call it ‘the shadow of reason’.¹⁰⁸

Moreover, the fact that animals are able to act on the basis of past experiences indicates that they are able to recall this experience in some way, and hence that they are endowed with *memory*. Leibniz suggested that animal souls have memory in M19; now he has evidence for the claim.

27. And a vivid imagination, which strikes and stirs them, arises either from the magnitude or from the number of the preceding perceptions. For often a vivid impression has all at once the same effect as a long-formed *habit*, or as the repetition of many moderate perceptions.

In order to account for the ability of animals to act on past experiences (affirmed in M26), Leibniz now appeals to the *imagination*, which reproduces (in a much fainter form) previously experienced perceptions. Leibniz claims (presumably on the basis of experience or observation, though he doesn’t say) that the stronger or more frequent the original perceptions, the more firmly the associations between them will be made in the animal’s imagination.

28. Men act like beasts insofar as the sequences of their perceptions arise only through the principle of memory, like empirical physicians who have just practice without theory. And we are nothing but empiricists in three-quarters of our actions. For example, when we expect that there will be daylight tomorrow, we act as empiricists, because until now it has always happened that way. It is only the astronomer who draws this conclusion rationally.

Preliminary discourse §65.

nor most (if not all) of those who used it, had actually seen a dog cowering from a stick with which it had formerly been beaten.

¹⁰⁶ See NE, p. 50; LTS, p. 363; SLT, p. 66.

¹⁰⁷ For example, H, p. 109.

¹⁰⁸ NE, p. 475.

Leibniz has already established that acting in accordance with memory is characteristic of beasts (M26); here he draws the natural corollary that when humans act that way, they act as beasts do, that is, as empiricists. His subsequent claim that men are empiricists three-quarters of the time is presumably an informed guess based on observations and personal experiences.¹⁰⁹ It is hard to imagine that Leibniz intended the example at the end of the section to support his contention that humans act as empiricists three-quarters of the time, because it quite clearly doesn't support that contention at all. Nevertheless it is a good example of a matter in which the vast majority of humans act as empiricists, because most of us merely *expect* the sun to rise tomorrow on the basis of past experience rather than *know* (on the basis of astronomical theory) why it will. It is in this that Leibniz thinks the astronomer differs from the common man: while the former uses theoretical principles to establish why the sun rises every day, the latter just expects it to happen on the basis that it has happened every day before. The astronomer can thus explain the movement of the sun by its causes, that is, *a priori*.

Leibniz's first example of human empiricists, namely 'empirical physicians', is a reference to the Alexandrian (Empiric) School of Medicine in ancient Greece, dating from the third century BCE. The School famously eschewed theory in favour of experience, for example because such an approach was held to be more in keeping with the origins of medicine, which had begun by observing which actions had which effects on the ill. The School also believed that what mattered was what worked (not *why* it worked), and one only needed experience to discover that.

29. But it is the knowledge of necessary and eternal truths which distinguishes us from simple animals, and gives us *reason* and the sciences, by raising us to knowledge of ourselves and God. And this is what is called in us the rational soul or *mind*.

Leibniz's suggestion that humans are distinguished from animals by the possession of reason is a conventional one, going back at least as far as Aristotle. Its long history and broad popularity meant that Leibniz would not have felt any need to justify it.

The faculty of reason was often called (by Leibniz and others) the 'internal light', or the 'natural light', or the 'natural light of reason'.

¹⁰⁹ The claim is repeated in PNG5, but again without any supporting evidence. In other writings, Leibniz simply states that empirical inferences are common to humans and beasts; for example, SLT, p. 66.

Leibniz defined reason as ‘the linking together of truths, but especially . . . of those whereto the human mind can attain naturally without being aided by the light of faith’.¹¹⁰ There are two distinct abilities referred to here. The first is what we would now call ‘discursive reason’: this is the ability to work logically, see connections, make inferences, arrive at conclusions, and so on. The second alludes to the idea that there are a set of truths that fall under the domain of the faculty of reason. In other words, a set of truths that this faculty can access and pronounce upon, but no other faculty can. These are the necessary truths (sometimes called the eternal truths or universal truths). Leibniz’s thinking on the latter is as follows:¹¹¹ there are certain truths we know to be necessary, such as the truths of arithmetic and geometry. In other words, we *know* that (to give two examples) it is necessary that $2 + 2 = 4$, and that the sum of a triangle’s internal angles is 180 degrees. How do we know these to be necessary? It cannot be through sense experience, as the senses can only inform us of what is true at a particular place or particular time. Hence the senses furnish us only with a number of examples of two things being added to two things and totalling four things. But nothing in these examples tells us that ‘ $2 + 2 = 4$ ’ is a necessary truth, one that is true in all times and at all places and could not possibly be otherwise. Yet according to Leibniz we do know that this is necessary, and we know it via the faculty of *reason*. Somehow reason ‘sees’ beyond the world of sense; it reaches into the realm of necessary truths, as it were (the visual metaphor is apt: reason is after all the natural *light*, which literally illuminates necessary truths, makes them visible to us). So reason delivers up necessary truths which otherwise we wouldn’t be able to know. The idea that reason is a faculty that gives us direct access to truths that we would not otherwise be able to know goes back to Plato, who thought that reason enables us to access the Intelligible World of Forms.

30. It is also through the knowledge of necessary truths and their abstractions that we are raised to *reflexive acts*, which make us think of what is called the *self*, and consider that this or that is within us. And it is thus that in thinking of ourselves, we think of being, of substance, of the simple and the compound, of the immaterial and of God himself, by conceiving that what is limited in us is boundless in him. And these reflexive acts provide the main objects of our reasonings.

Theodicy. Preface *4a

¹¹⁰ H, p. 73.

¹¹¹ See for example LTS, pp. 199–200.

Here Leibniz claims that our knowledge of necessary truths, and the abstractions they involve, leads us to acts of self-reflection, acts which in turn furnish us with ideas that we then use in our reasonings. To get a better understanding of his thinking, first recall what was said about our knowledge of necessary truths in the remarks on M29, namely that we know certain necessary truths, such as those of mathematics, but we do not know them through experience, which can only inform us of what is true at particular times and places, but rather through reason. Or as Leibniz puts it in a text from 1702:

For since the senses and inductions could never teach us truths that are entirely universal, nor what is absolutely necessary, but only what is, and what is found in particular examples, and since we nevertheless do know some necessary and universal truths of the sciences, a matter in which we are privileged over the beasts, it follows that we have derived these truths in part from what is inside us.¹¹²

It would seem to follow that if we were to reflect on these necessary truths, and then on how we know them to be necessary, we would be led back to ourselves, that is, to the faculty of reason itself and the self to which it belongs. In this way, reflection on necessary truths naturally leads to self-reflection, and Leibniz insists that this in turn furnishes us with new ideas about which we can reason: 'intellectual ideas, or ideas of reflection, are drawn from our mind. I would like to know how we could have the idea of *being* if we did not, as beings ourselves, find being within us.'¹¹³ In claiming that self-reflection provides us with such ideas, described in M30 as the main objects of our reasonings, Leibniz is alluding to his doctrine of *innate ideas*, which holds that there are ideas that are, as it were, integral parts of our very selves, and can be extracted by reflection on our selves, our faculties, and our actions. This runs counter to the empiricist principle held by many Scholastics that 'there is nothing in the understanding which was not previously in the senses', in other words, that all the materials for our thoughts and reasonings come from the senses. Leibniz revised this principle to read 'there is nothing in the understanding which was not in the senses except the understanding itself'.¹¹⁴ In other words, the understanding has more to work with than just the data provided by the senses – it can also think of itself, its actions, and the subject to which it belongs. Leibniz held that by reflection upon these we could derive key metaphysical notions, such as substance, being, one, same,

¹¹² LTS, p. 244.

¹¹³ See NE, pp. 85–6.

¹¹⁴ For example, LTS, p. 284; NE, p. 111.

cause, perception, reasoning, duration, change, action, pleasure and so on. Hence:

This thought *of myself*, who is aware of sensible objects and of my own action which results from it, adds something to the objects of the senses. To think of some color and to consider that one thinks about it are two very different thoughts, as much as color itself differs from the self who thinks about it. And as I conceive that other beings are also entitled to say ‘I,’ or that it could be said on their behalf, I thereby conceive what is called *substance* in general, and it is also the consideration of myself that provides me with other *metaphysical notions*, such as cause, effect, action, similarity, etc., and even those of *logic* and *ethics*. So it can be said that there is nothing in the understanding that did not come from the senses except the understanding itself, or the one who understands.¹¹⁵

It is contrary to experience that we are not substances, although we may actually have no acquaintance with substance, except from an innermost experiences of ourselves, although we perceive the ‘I,’ and by that example we may grant the name of substance to God himself and to other monads.¹¹⁶

In addition to sense experience or sense perception, then, we are also capable of a kind of inner experience or internal perception, that is, self-reflection. And it is through these acts of self-reflection, that is, reflection on what one is, does, and is capable of, that we can derive key metaphysical notions which then serve as material for our reasonings, for example our reasonings about substances and about God.¹¹⁷ Although Leibniz calls these notions *innate*, this does not mean that we are born knowing them. Rather, because their source is one’s own self, which exists from the moment of birth onwards (and indeed, from the moment of creation onwards), the notions are always in us virtually, that is, potentially, waiting to be discovered, once we start looking inwards.

Given the importance of ‘substance’ in the *Monadology*, it is noteworthy that Leibniz should suppose that the source of our notion of it, and of our ability to know what things are picked out by it, lies in self-reflection. This spares him from having to defend the usefulness of the notion, and from having to justify his identification of ourselves, God, and other monads as substances.

31. Our reasonings are based on *two great principles*: first, the *principle of contradiction*, in virtue of which we judge false that which includes a

¹¹⁵ LTS, p. 240.

¹¹⁶ TI, p. 558.

¹¹⁷ As Leibniz says in the *New Essays*, ‘quite often “a consideration of the nature of things” is nothing but the knowledge of the nature of our mind’. NE, p. 84.

Leibniz's Monadology

contradiction, and *true* that which is opposed or contradictory to the false;

Theodicy §44. §169.

Having established that reason separates minds from other (animal) souls, Leibniz now proceeds to show what it involves. The principle of contradiction outlined here is intended to be an axiom, as indeed is the principle of sufficient reason outlined in M32. Leibniz often identified the principles of contradiction and sufficient reason as the cornerstones of our thinking.

What Leibniz here terms the principle of contradiction is in fact two principles rather than just one. The first principle is: a thing cannot be and not be at the same time; in other words, 'A is not-A' is false. So if one were to say 'This square is not square' then that would be false, and it would be false because the claim contains a clear contradiction. The second principle mentioned by Leibniz is: that which is not false is true. This is what we would now call the law of excluded middle. Leibniz often ran the two principles together under the heading of the 'principle of contradiction'. Nowhere is this clearer than in the *New Essays*:

Stated generally, the principle of contradiction is: *a proposition is either true or false*. This contains two assertions: first, that truth and falsity are incompatible in a single proposition, i.e. that *a proposition cannot be both true and false at once*; and second, that the contradictories or negations of the true and the false are not compatible, i.e. that there is nothing intermediate between the true and the false, or better that *it cannot happen that a proposition is neither true nor false*.¹¹⁸

Leibniz sometimes claimed that the principle of contradiction amounted to the principle of identity, which states that 'A is A'. Hence to one correspondent he wrote that 'The great foundation of mathematics is the *principle of contradiction or identity*, that is, that a proposition cannot be true and false at the same time and that therefore *A* is *A* and cannot be non-*A*.'¹¹⁹

Although Leibniz did not attempt to formally prove the validity of the principle of contradiction, he did sometimes offer a qualified defence of it, by showing the undesirable consequences that would follow from its denial. He insisted that if one were to deny the principle of contradiction, and thus allow that something can be granted and denied at the same time, then 'every inquiry into truth would cease immediately from the start'.¹²⁰ Hence if we are to reason at all, then

¹¹⁸ NE, p. 362.

¹¹⁹ PPL, p. 677.

¹²⁰ SLT, p. 41.

we have to suppose some truths, or give up all hope of making demonstrations, for proofs could not go on to infinity. We should not ask for anything that is impossible, otherwise we would show that we were not serious in searching for the truth. So I will always boldly suppose that two contradictories could not be true, and that what implies contradiction could not be the case . . . or else it is to misuse words. Nothing clearer could be provided to prove these things. You yourself suppose them in writing and in reasoning, otherwise you could constantly defend the exact opposite of what you say.¹²¹

For Leibniz, the principle of contradiction is what determined necessary truths: ‘All truths of metaphysics, or all truths that are absolutely necessary, such as those of logic, arithmetic, geometry, and the like, rest on the former principle [sc. that of contradiction], for someone who denies them can always be shown that the contrary implies a contradiction.’¹²² In other words, a truth is necessary when its negation is contradictory, for example, ‘a bachelor is an unmarried man’ is necessary because its negation (‘a bachelor is not an unmarried man’) is contradictory (a bachelor is an unmarried man, so the negation amounts to saying that an unmarried man is not an unmarried man).

32. and second, the *principle of sufficient reason*, in virtue of which we consider that there can be found no fact that is true or existent, or any true assertion, unless there is a sufficient reason why it is thus and not otherwise, even though most often these reasons cannot be known to us.

Theodicy §44. §196.

The principle of sufficient reason is the second of the two great principles on which reasonings are based. Over the course of his career Leibniz offered various formulations of this principle:

1. ‘nothing exists without reason, or rather that there is always *a reason why*’.¹²³
2. ‘nothing happens without a reason why it should be so rather than otherwise’.¹²⁴
3. ‘a reason can be given for every truth’.¹²⁵

¹²¹ A II 2, p. 89: <http://www.leibniz-translations.com/foucher1686.htm>

¹²² PE, p. 19.

¹²³ LTS, p. 355.

¹²⁴ PPL, p. 677.

¹²⁵ G VII, p. 199.

On the surface these do not look to be identical, since the first formulation applies to *things*, the second to *events* (because it refers to happenings), and the third to *truths*. Leibniz evidently wanted to apply the principle across the board, that is, to things, events, and truths. When applied to events, the principle is usually understood *causally*, that is, that every event must have a cause.¹²⁶ (This is sometimes known as the principle of causation, though Leibniz does not use that expression.)

The principle of sufficient reason was first explicitly expressed in the work of Leibniz's contemporary, Benedict de Spinoza, who asserted in his *Ethics*: 'For every thing a cause or reason must be assigned either for its existence or for its nonexistence.'¹²⁷ However Spinoza did not argue for this claim, nor did he refer to it as the principle of sufficient reason. The grand name was coined by Leibniz, who was fond of presenting certain of his ideas as principles.¹²⁸ As with the principle of contradiction, Leibniz considered the principle of sufficient reason to be an axiom of his philosophy. He did not think the principle could plausibly be denied, not least because we all assume the truth of it everyday, whenever we ask *why* and expect there to be an answer. Leibniz sometimes made empirical appeals in favour of the principle, for example, by claiming that it succeeds in all known cases, and/or that no exceptions to it have ever been found.¹²⁹ Such appeals clearly fall short of justification, but were unlikely to be intended as such anyway. They do, however, help to increase the intuitive appeal of the principle.

Many philosophers have assumed or even asserted that there must be reasons for certain things or events, but the principle of sufficient reason goes further than this, as it says that there must be reasons for *all* of them. So stated, many philosophers could not accept it, especially those who endorse a version of the doctrine of free will which holds that for the will to be free it must be able to initiate action or suspend action without any reason or cause for its doing so.¹³⁰ Such philosophers would exempt the will (at least) from the principle of sufficient reason, but Leibniz did not; he insisted that the principle had no exceptions. Consequently, he believed that everything in the universe is potentially explicable, that is, amenable to reason. However as Leibniz notes in M32, in many cases

¹²⁶ See for example SLT, p. 49.

¹²⁷ Spinoza, *Ethics* 1p11d2. From Spinoza, *Complete Works*, p. 222.

¹²⁸ For example, Leibniz offers the principle of the best, the principle of fittingness, the principle of the identity of indiscernibles, and the principle of uniformity, among others.

¹²⁹ For example, PPL, p. 717.

¹³⁰ Leibniz calls this a 'freedom of indifference', but today it is better known as libertarianism. Leibniz advances many reasons against it, chief among them that it involves a violation of the principle of sufficient reason. See for example SLT, pp. 93ff.

we do not know what that reason is; all we know is that there must be one. The principle does not guarantee in any given case that we can (or even will) ascertain the reason for this or that thing or event. In fact, in many cases we simply would not be able to do so. This is because of what Leibniz understands a sufficient reason to be: it is a full account, a complete explanation, of a thing, event, or state of affairs. To understand what this involves, consider a mundane example, such as Pete walking across his kitchen to the fridge to get a drink. What is the reason for this action? A simple answer might be: because Pete was thirsty. We might think this answer to be adequate for everyday purposes, but it falls a long way short of a full account of Pete's action. To obtain that, we would need to know many other things, such as why Pete is thirsty at that particular moment, which in turn would require us to know what Pete had drunk previously, as well as full details of human physiology in general and Pete's physiology in particular; we would also need to know how Pete had come to believe that there was a drink in the fridge, and the source of his knowledge that drinking it would quench his thirst, and so on. In short, to put together a full account of Pete's action we would have to gather a large amount of information about Pete and his life, which in turn could only be explained by broadening the enquiry still further, to encompass Pete's parents, and their parents, and so on, the development of human beings, the origins of life, and even the origin of the universe. A full account, then, potentially involves the whole world and its entire history, and clearly requires more detail than we could ever obtain, even for mundane cases such as Pete getting a drink from a fridge (see M36). Nevertheless, Leibniz's position is that we would be right to presume that there is a complete explanation, or sufficient reason, of Pete's action, even if it is beyond our abilities to discern it in all its detail.

33. There are two kinds of *truths*: truths of *reasoning* and truths of *fact*. Truths of reasoning are necessary and their opposite is impossible, and truths of fact are contingent and their opposite is possible. When a truth is necessary, the reason for it can be found by analysis, by resolving it into simpler ideas and truths until we come to the primary ones.

Theodicy §170. §174.

§189. §280–2.

§367. Abridgement, objection 3.

Leibniz now further elucidates the two principles of reasoning introduced in M31–2. The division of truths into (necessary) truths of reasoning and (contingent) truths of fact here looks to be axiomatic.

A necessary truth is one whose opposite is impossible. Hence 'green grass is green' would qualify as a necessary truth because its opposite ('green grass is not green') is impossible. Moreover, a necessary truth can be proved by analysing it further and further, into simpler truths and the ideas of which they are composed. Although not explicit here, Leibniz often says that necessary truths ultimately resolve to identities, that is, tautologies, such as 'the green grass is green' where the concept of the predicate being asserted of a subject (green) is already contained within the concept of the subject (the green grass). The 'resolving' of a truth tends to involve substituting some or all of its terms for their definitions. So the resolution of the truth 'a bachelor is unmarried' would involve substituting the definition 'an unmarried man' for 'bachelor', to give 'an unmarried man is unmarried', which is an identity.

A truth of fact, on the other hand, is one whose opposite is possible. Hence 'the grass is wet' would qualify as a truth of fact because its opposite ('the grass is not wet') is possible, in that there is no contradiction in the notion of the grass not being wet. Truths of fact are sometimes called particular truths, or contingent truths.¹³¹ They concern that which exists contingently, that is, those things which are not necessary, and so whose non-existence is/was possible. For this reason, Leibniz sometimes says that truths of fact depend upon the will of God;¹³² after all, it is God who decides which contingent things will exist (see M47–48).

For us (and other finite creatures), truths of fact are established by experience. This includes sense experience, but is not limited to it, since Leibniz also allows that we can come to know certain truths of fact by inner experience, for example:

As for primary truths of fact, these are inner experiences which are immediate with the *immediacy of feeling*. This is where the first truth of the Cartesians and St Augustine belongs: *I think, therefore I am*. That is, *I am a thing which thinks*. But . . . not only is it immediately evident to me that *I think*, but it is just as evident that *I think various thoughts*: at one time *I think about A* and at another *about B* and so on.¹³³

34. This is how the speculative *theorems* and practical *canons* of mathematicians are reduced by analysis to definitions, axioms, and postulates.

¹³¹ See LTS, p. 308.

¹³² See SLT, p. 43.

¹³³ NE, p. 367.

Leibniz now suggests that the method of analysing necessary truths described at the end of M33 is akin to the mathematical method of resolving theorems into definitions, axioms, and postulates. In both cases, the aim is to reduce a proposition down to its primitive parts by means of reductive analysis.

35. And finally there are simple ideas of which no definition can be given. There are also axioms and postulates, or in a word *primary principles*, which cannot be proved and also have no need of proof. And these are *identical propositions*, whose opposite contains an explicit contradiction.

The claim that there are simple ideas which cannot be defined, and primary principles which cannot be proved, is here advanced as an axiom. Leibniz here supposes that the substitution of terms in conceptual analysis (that is, replacing one term by its definition) is not a process that can go on indefinitely, in which case it must reach 'simple ideas', that is, primary concepts that admit of no further analysis. Concrete examples are hard to come by – Leibniz is often happier making the argument that analysis must eventually reach simple ideas than he is actually identifying what these might be. In some early writings he claims that the simple ideas are the attributes of God (that is, goodness, power, knowledge, and so on), as everything else can be resolved into (some combination of) them.¹³⁴

As for primary principles, Leibniz identifies them as identical propositions, that is, tautologies. Primary principles are therefore of the form 'A is A', or some variation thereof, such as 'A is not not-A, . . . *each thing is what it is, each thing is like itself or is equal to itself, nothing is greater or less than itself*'.¹³⁵

35. But a *sufficient reason* must also be found in *contingent truths*, or *truths of fact*, that is, in the series of things spread throughout the universe of created things, where resolution into particular reasons could go on into endless detail because of the immense variety of things in nature and the division of bodies to infinity. There is an infinity of shapes and motions, both present and past, which enter into the efficient cause of my present writing, and there is an infinity of minute inclinations and

¹³⁴ DSR, p. 79, p. 81; LPW, p. 77.

¹³⁵ SLT, p. 48.

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dispositions of my soul, both present and past, which enter into its final cause.

Theodicy §36. §37. §44. §45. §49.
§52. §121. §122.
§337. §340. §344.

As we have just seen, the sufficient reason for necessary truths is that they are all ultimately resolvable into identities by a process of reductive analysis. Leibniz now intimates that the sufficient reason for contingent truths (that is, truths of fact) is that they too are all ultimately resolvable into identities by a process of reductive analysis, the difference being that necessary truths are resolvable in a finite number of steps, while the resolution of contingent truths requires an infinite number of steps. In both cases, the reason the truth is true is that the concept of the predicate is contained in the concept of the subject. With necessary truths, the number of steps of analysis required to show this is finite (consider the way that 'a bachelor is unmarried' can be resolved into 'an unmarried man is unmarried' in just one step), whereas with contingent truths it is infinite. Leibniz illustrates the latter using the truth that he wrote M36, this being a contingent truth since its opposite, that he did not write M36, is possible. He claims that the sufficient reason of this truth, that is, the full account of why he wrote M36, will involve the infinite complexity of the universe, both at the time of his writing and at all moments prior to that. Accordingly, if we had access to Leibniz's complete concept, and were capable of carrying out infinite steps of analysis, we would be able to show that the concept of the predicate 'wrote M36' is contained in the concept of the subject 'Leibniz', and hence determine the sufficient reason for his writing M36. In practice, however, we cannot do this, as we do not have access to Leibniz's complete concept, nor are we capable of feats of infinite analysis. Consequently, although we happen to know through experience that it was Leibniz who wrote M36 and not anybody else, from the information available to us we cannot determine the sufficient reason for this truth, though we know from M32 that there must be such a reason.

It might look as though there is a tension between Leibniz's claim here, that there is an infinity of external factors that enter into the act of his writing, and his claim in M7, that there is no causality between substances. The reason is that Leibniz is treating of different levels or aspects of reality, which he only really hints at in M36. First, there is the realm of three-dimensional physical objects in space, and second there is the metaphysical realm of monads. With regard to objects in space, Leibniz takes there to be infinite complexity here, because all physical objects relate to – and have an effect on – all other physical objects. Consequently, the sufficient reason

for any particular physical event (like a hand moving a quill over a page) will involve every other physical thing and event in the entire universe. Leibniz endorses the doctrine of the plenum, which holds that space is full (see M61). In such a case, if one thing changes place then the effect of that change will ripple through to affect everything else, though the effect diminishes with distance, and the effect of faraway things is for practical purposes negligible (as we shall see, Leibniz does not think that things literally push each other, in the sense of exchanging force, but he does allow that it is acceptable to talk that way; see M49–52, and M61). The second aspect of reality is the metaphysical realm of monads; this is where his soul is to be found, along with all other monads. In this realm there is no influence between monads and so no causality between one thing and another. Whatever happens to any given monad is determined entirely by that monad's own internal principle of activity. In spite of being causally isolated, Leibniz says that there is an infinity of factors that enter into his (soul's) decision to write. He won't be drawn on what these are as he holds that the vast majority lie below the threshold of consciousness, and so cannot be identified. Leibniz has not explicitly drawn this distinction between different realms, but arguably he should have done as it makes some of his claims difficult to reconcile otherwise.

Leibniz ends M36 by anticipating an idea he will develop in greater detail later on (in M79), namely that any event can be given an explanation in terms of efficient causes and in terms of final causes. Hence his writing M36 can be explained in terms of physical (efficient) causes, which operate on his body and led his hand to write, and in terms of psychical (final) causes, which operate on his soul and led it to formulate and strive for its own ends.

37. And as all this intricate *detail* includes nothing except other contingents which are earlier or even more detailed, each of which in turn needs a similar analysis in order to explain it, we are no further forward, and so it must be that the sufficient or ultimate reason lies outside the succession or *series* of this detail of contingencies, however infinite it may be.

Leibniz now argues that the sufficient reason for a contingent thing must be found outside the universe, understood as the series of contingent things. The crucial part of the argument is the claim that the sufficient reason for a contingent thing cannot be found in other contingent things. To understand why this should be so, consider our example of Pete walking to the fridge to get a drink. A genuinely sufficient reason of this will be nothing less than an account of his action that is complete, with

nothing left unexplained. Now suppose that Pete's action is part of a universe consisting entirely of contingent things, and that nothing else exists besides the universe. Suppose also that the universe has always existed, that is, that it had no beginning. In such a case, it will not be possible to give a sufficient reason for Pete's trip to the fridge, or any other contingent thing, because the trail of explanations stretches back without end, which rules out a sufficient (that is, a complete) explanation. Moreover, it would not help to suppose that the universe had existed for a finite time, that is, that it began to exist at a definite point in the past. In such a scenario, it will also not be possible to give a sufficient reason for Pete's trip to the fridge, or anything else, because the trail of explanations will go cold as soon as we reach the very first moment of the universe, which would be inexplicable (a 'brute fact', in modern parlance). Consequently, there can be no sufficient reason for anything if all that exists are contingent things. The upshot of Leibniz's argument is that a genuinely sufficient reason must ultimately involve something non-contingent, in other words, something necessary, because only this can provide the completeness (the sufficiency) of the explanation. This is the inference he will draw in M38.

38. And thus it is that the ultimate reason of things must lie in a necessary substance, in which the intricate detail of changes exist only eminently, in the source as it were, and this is what we call *God*.

Theodicy §7.

The claim here follows from M37, for if the sufficient (or final) reason for things cannot be found in the contingent, then it must be found in what is necessary. Leibniz's immediate identification of God as this necessary being is likely to come across as being rather hasty nowadays; after all, he has not considered whether there might be any other candidates. Also, at this stage he has shown only that there must be a necessary being: it is not yet clear whether this being has the attributes traditionally ascribed to God, such as omnipotence, omniscience, and perfect goodness. Leibniz will proceed to argue in M40–1 that the necessary being does have these attributes, and is therefore God.

The one thing we are told about the necessary being in M38 is that it contains eminently the detail of changes (of contingent things). The adverb 'eminently' is a Scholastic term connected with causation, and means 'in the cause in a higher or nobler form'.¹³⁶ For the Scholastics, an effect had to

¹³⁶ See Thomas Aquinas, *Summa Theologiae* I, Q.4, Art. 2, ad.

be contained in the cause in some way, and there were three ways in which it could be: *formally*, *virtually*, or *eminently*. To say that an effect is contained formally in a cause is to say that the same nature or form is present in both cause and effect, for example, a newborn plant or animal is the same nature as its parents; an effect is contained virtually in a cause if this is not the case, for example, an architect who causes the building of a house does not share the same nature as the house; and an effect is contained eminently in a cause when the cause is more perfect than the effect. Therefore to say that the intricate detail of contingent changes exists eminently in God, as Leibniz does in M38, is to say that God is a different, more perfect kind of thing than these contingent changes.

Taken together, M37 and M38 constitute a version of the cosmological proof for the existence of God.¹³⁷ Leibniz presented substantially the same proof in a number of other writings; the classic, or definitive statement of it is to be found in a paper entitled 'On the ultimate origination of things' (1698):

Let us imagine that the book of the elements of geometry has always existed, one always copied from another; it is evident that, even if a reason can be given for the present book from a past one, from which it was copied, nevertheless we shall never come upon a full reason no matter how many past books we assume, since we would always be right to wonder why such books have existed from all time, why books existed at all, and why they were written in this way. What is true of books is also true of the different states of the world; for a subsequent state is in a way copied from a preceding one (although according to certain laws of change). And so, however far back you go to earlier states, you will never find in those states a full reason why there should be any world rather than none, and why it should be such as it is. Therefore, even if you should imagine the world eternal, because you still suppose only a succession of states, and because you will not find a sufficient reason in any of them, and indeed no matter how many states you assume you will not make the least progress towards giving a reason, it is evident that the reason must be sought elsewhere . . . From this it is evident that not even by supposing the eternity of the world can we escape the ultimate, extramundane reason of things, i.e. God.¹³⁸

¹³⁷ It is worth noting that many of the arguments for God's existence are traditionally referred to as 'proofs'. This does not mean that they are logical demonstrations, or akin to such (with the possible exception of the ontological proof, which does purport to offer a logical demonstration for the existence of God), but rather that they constitute evidence for the existence of God. Hence in this context 'proof' should be understood to mean 'evidence' or 'argument' (which is the original sense of 'proof') rather than 'demonstration' (which is the more modern sense).

¹³⁸ SLT, pp. 31–2. See also LTS, pp. 98–9.

39. Now since this substance is a sufficient reason for all this intricate detail, which is also interconnected throughout, *there is only one God, and this God is sufficient.*

Leibniz now offers an argument for the uniqueness of God: because God (the necessary substance identified in M38) is a sufficient reason for all contingent things, which are themselves all connected, there is only one God, which is sufficient. In making this argument, Leibniz assumes that for any given thing, event, or truth (or set thereof), there will be exactly one sufficient reason, and hence no overdetermination, that is, no multiple sufficient reasons for one and the same thing, event, or truth. Why Leibniz would make this assumption is unclear, however, for the principle of sufficient reason, in all of its various formulations, does not state that there has to be just *one* sufficient reason for any given thing, event, or truth (or set thereof). Perhaps an answer can be found in Leibniz's reference to a single God as 'sufficient': he can be read here as saying that as the universe can be explained by a single God, there is *no need* to posit more than one. This can be seen as the application of a principle of parsimony, such as Occam's razor, which is often formulated as 'entities are not to be multiplied beyond necessity'. But of course from the fact that there is *no need* to posit more than one God it would not follow that there is *actually* just one. Yet Leibniz clearly wishes to make the latter claim too.

It is possible to derive the uniqueness of God from the identity of indiscernibles (encountered in M9). To see how, consider the traditional definition of God as a being which is omnipotent, omniscient, and perfectly good. Now suppose that there are two Gods, A and B; if they are genuinely Gods then both would satisfy this definition. But the identity of indiscernibles holds that if everything that is true of A is also true of B (that is, they are indiscernible), then A and B are one and the same thing (that is, identical). In order for there to be two they would have to differ in some respect, but that would mean one of them not being either omnipotent or omniscient or perfectly good, and of course such a being could not be called 'God' at all because it would fail to satisfy the definition of God. In a writing from 1685 Leibniz put forward a proof of the uniqueness of God along these very lines: '*God is unique.* For if there are many, they will differ, and indeed they will differ in their perfections, because nothing else is understood in God, and so each one of them is lacking some perfection, contrary to the definition of God.'¹³⁹

In other writings, Leibniz offers yet another argument for the uniqueness of God, in connection with his doctrine of pre-established harmony,

¹³⁹ A VI 4, p. 2315.

which holds that there is a harmony between the states of every single monad in the entire universe, each one accurately representing in itself all of the others' changing states (see M49–52 and M56 for more details). In the *New System* (1695), Leibniz claims that 'this perfect agreement of so many substances, which have no communication with one another at all, could come only from a common cause'.¹⁴⁰ By 'a common cause' Leibniz means a single being (that is, one God) rather than many of them.

40. We may also conclude that since this supreme substance – which is unique, universal, and necessary – has nothing outside of it which is independent of it, and is a simple consequence of possible being, it must be incapable of limits, and contain just as much reality as is possible.

Having proved the existence of the necessary being in M38, Leibniz now proceeds to tell us more about it. Here he argues that God, the necessary being in question, contains as much reality as is possible. In the first part of the argument, Leibniz claims that God can have no limits, which he takes to follow from the fact that God has nothing outside of him that is independent of him. But what does it mean to say that God can have no limits? Presumably that none of God's attributes is limited, that is, he has them in the ultimate or maximum degree (for example, maximal power, maximal knowledge, maximal goodness, and so on). From that Leibniz concludes that God contains as much reality as possible.

We tend to think of 'reality' as a binary state, inasmuch as something either has reality (and thus exists) or does not (in which case it does not exist). But historically, reality has been understood in a different way. In Scholastic philosophy, 'reality' refers to the state of being a thing, or 'thingliness'. This state can come in degrees, such that one thing can have more reality (that is, be more of a thing) than another, despite both being fully existent. Descartes recognised three degrees of reality – the highest is enjoyed by God alone, as he alone is independent and self-sufficient (since his existence depends upon nothing else); the middle rank is enjoyed by substances (which depend upon God for their existence, but nothing else); the lowest rank is enjoyed by modes, or properties (which depend for their existence upon substances, which in turn depend for their existence upon God). As Descartes wrote:

I have . . . made it quite clear how reality admits of more or less. A substance is more of a thing than a mode; if there are real qualities or incomplete substances, they are things to a greater extent than modes, but to a lesser extent

¹⁴⁰ SLT, p. 76.

than complete substances; and, finally, if there is an infinite and independent substance, it is more of a thing than a finite and dependent substance.¹⁴¹

Reality, understood in this way, is intimately bound up with the notion of independence and self-sufficiency, such that the more reality a thing has the more independent it is from other things and the more self-sufficient it is. It thus follows that the most independent being is the one with the most reality. This, then, is Descartes' understanding of the idea of reality coming in degrees. *Leibniz's understanding is not the same.* What determines a thing's degree of reality for Leibniz is not how self-sufficient it is, or the number of qualities it has, but rather the magnitude of its qualities or attributes, such as power or knowledge. As there can be infinite degrees of these qualities, Leibniz holds that there can be infinite degrees of reality, as opposed to just the three recognised by Descartes. Unfortunately there is nothing at all about this in the *Monadology* or in the cognate text *The Principles of Nature and Grace*. Leibniz is more forthcoming in other writings, however. For example, in the *New Essays*, he draws a connection between a thing's degree of reality and its 'formalities'.¹⁴² What are formalities? In another text he explains that 'Whatever inheres in a subject can be called a formality'.¹⁴³ This suggests that the more reality a thing has, the more there is that inheres in it, that is, the greater the magnitude of its qualities. This is borne out by still other texts, such as one from the late 1670s in which Leibniz writes that the being with the highest degree of reality is the one which contains 'no limits of presence, of duration, of knowledge or of operation, and possesses as much of these as is possible to be possessed by one being'.¹⁴⁴ This contrasts sharply with nothingness, which has no qualities,¹⁴⁵ and hence, quite literally, no reality whatsoever.¹⁴⁶

Leibniz's various descriptions of God in M40 are worthy of note. His initial description of God as 'unique, universal, and necessary' repeats the claims made in M38–9: Leibniz determined that God is necessary in M38 and unique in M39. In describing God as 'universal', Leibniz most likely

¹⁴¹ Descartes, *The Philosophical Writings of Descartes*, II, p. 130.

¹⁴² NE, p. 486. The translation by Remnant and Bennett for some reason renders the French 'formalités' as 'attributes'.

¹⁴³ G. W. Leibniz, *Voraussetzung zur Reihe VI (Philosophische Schriften) in der Ausgabe der Akademie der Wissenschaften der DDR*, ed. Leibniz-Forschungstelle der Universität Münster (Münster, 1991), p. 1084.

¹⁴⁴ SLT, p. 190.

¹⁴⁵ A VI 4, p. 551.

¹⁴⁶ To illustrate the difference between God, who has the highest degree of reality, and nothingness, which has no reality at all, Leibniz sometimes appealed to the binary system, which was of his own invention: here we are to take God as the analogue of 1, and nothingness as the analogue of 0. See for example SLT, p. 39; PPL, p. 368.

means not that God is everywhere, that is, omnipresent, but that God is the cause of all things. Not only does this follow from what has been said already, in M39, it also corresponds with what he says in other writings. For example in a text from 1685 Leibniz writes of God that ‘his action [is] so universal that all things depend on him’.¹⁴⁷ Finally, Leibniz’s description of God as ‘a simple consequence of possible being’ anticipates the ontological proof for God’s existence that he will go on to give in M44.

41. From which it follows that God is absolutely perfect, since *perfection* is nothing other than magnitude of positive reality, taken in the strict sense by setting aside the limits or boundaries in the things which have it. And there, where there are no limits, that is, in God, perfection is absolutely infinite.

Theodicy §22

Theodicy Preface *4a

Leibniz often defined perfection as magnitude of positive reality, such that the more reality a thing has the more perfect it is.¹⁴⁸ Since God contains as much reality as possible (ascertained in M40), it follows that he is as perfect as possible. Leibniz allows that other things may have some reality, and hence a share of perfection, but since they are limited they are less real and hence less perfect. At the end of M41 he refers the reader to the preface of the *Theodicy*, in which he writes: ‘The perfections of God are those of our souls, but he possesses them in boundless measure; he is an ocean, of which we have received only drops: there is in us some power, some knowledge, some goodness, but in God they are all complete’ (T pref. *4a). Leibniz identifies power, knowledge, and will (goodness) as God’s perfections in M48.

42. It also follows that created things owe their perfections to the influence of God, but that they owe their imperfections to their own nature, which is incapable of being without limits. For it is in this that they are distinguished from God. [This *original imperfection* of created things is observable in the *natural inertia* of bodies.]

Theodicy §20. §27–31.

§[154]153. §167. §377 onwards.

§30. §380. Abridgement, objection 5.

¹⁴⁷ A VI 4, p. 2314.

¹⁴⁸ See for example SLT, p. 190; A VI 4, p. 867.

If created things were to have unlimited (absolute) perfection then they would be God, but Leibniz has already established that there is only one God (see M39) so their perfection cannot be unlimited. Hence creatures are naturally limited (or as he puts it in one text, 'limits are of the essence of creatures').¹⁴⁹ However, the perfections they do have must come from God, since God is the cause of all things (see M40).

Leibniz in fact holds that all created things possess the same properties as God, but to a limited extent:

there are in him [God] three primacies: power, knowledge and will; the result of these is the operation or creature, which is varied according to the different combinations of unity and zero; or rather of the positive with the privative, for the privative is nothing other than limits, and there are limits everywhere in a creature, just as there are points everywhere in the line. However, a creature is something more than limits, because it has received some perfection or power from God, just as the line is more than points. For ultimately the point (the end of the line) is nothing more than the negation of the progress beyond which it ends.¹⁵⁰

It is therefore only the presence of *limits* in created things that distinguishes them from God. They are not otherwise distinguished, for example, by having different kinds of properties, or fewer properties.

At the end of M42 Leibniz refers the reader to various passages from his *Theodicy*. Most are concerned with the issue of sin, more specifically, its source in the imperfection of creatures. In one of these passages (T20) Leibniz asserts that 'there is an *original imperfection in the creature* before sin, because the creature is essentially limited, which means that it cannot know everything, and that it can be deceived and make other mistakes'. Hence sin can be traced back to the limitation of creatures, and, as Leibniz often claims, there is nothing that God could have done about the limitation of creatures because creatures are limited by their very nature. This position has considerable value in theology, as it entails that God cannot (meaningfully) be blamed for the sins of created beings.

43. It is also true that in God is not only the source of existences but also the source of essences, insofar as they are real, or of what is real in possibility. This is because God's understanding is the region of eternal truths, or of the ideas on which they depend, and because without him

¹⁴⁹ SLT, p. 38.

¹⁵⁰ SLT, p. 39.

there would be nothing real in possibilities, and not only nothing existent, but also nothing possible.

Theodicy §20.

Leibniz now argues that God is the source of essences, or of the reality that essences have, but his argument is far from straightforward, not least because he slides from talking about essences, to possibilities, to eternal truths, to the ideas on which eternal truths depend, without making it clear how they are connected. An essence is an idea of a possible individual person or thing, or rather, all the attributes conceived in the idea of that individual or thing, taken together: 'An "essence" is everything which is conceived in a thing through itself, that is, the aggregate of all attributes.'¹⁵¹ For Leibniz, an essence is possible if the concept of it does not contain a contradiction. So a square triangle is not possible (because the property of being square contradicts the property of being a triangle), but a circle is (because there is no contradiction in the concept of a circle). Understood this way, the realm of the possible would extend not just to simple shapes and objects but also to people, events, histories, and even worlds. Hence Leibniz writes: 'There are as many series of things that can be imagined not implying contradiction as there are possible worlds . . . [F]or I call possible that which does not imply contradiction.'¹⁵² Facts that hold about all possible essences and their relations are expressed by the eternal truths, such as those of logic and mathematics. Hence for Leibniz, essences/ideas, possibilities, and eternal truths, are all connected.

Now in M43, Leibniz assumes that all essences/ideas (and therefore possibilities and eternal truths) have some reality. But in making this assumption Leibniz does not suppose that the essence of a possible-yet-fictional person such as Macbeth is real in the same way that an actual flesh-and-blood person is real, because of course it is not. Nevertheless he thinks the essence of Macbeth, along with that of every other possible thing, does have some reality, insofar as it possesses certain qualities (recall from the comments on M40 that to have reality is to have some qualities). Moreover, the thrust of his argument is such that Leibniz must also suppose that an essence only possesses reality insofar as it is conceived. As an essence, then, Macbeth can be said to exist *ideally*, that is, as an idea in the mind of someone or something, and therefore whatever reality this essence has must be derived from this mind. Leibniz insists that this is the case with all essences, possibilities, and eternal truths: they all derive whatever reality they possess from being conceived by a mind. In identifying

¹⁵¹ DSR, p. 95.

¹⁵² TI, p. 390.

this mind as that of God, Leibniz might be appealing to God's attribute of omniscience (which would enable him to know all there is to know, including all essences, possibilities, and eternal truths), though Leibniz only establishes that God is omniscient later, in M48.

44. For if there is a reality in essences or possibilities, or indeed in eternal truths, it must be the case that this reality be grounded in something existent and actual, and consequently in the existence of the necessary being, in whom essence includes existence, or in whom it is enough to be possible in order to be actual.

Theodicy §184. §189. §335.

This continues the theme of M43, but contains a much sharper argument for the existence of God. The basic argument is this: if essences, possibilities, or eternal truths have any reality, then this must be grounded in something that actually exists, and therefore in the necessary being. We should not be taken in by the use of the hypothetical ('if') here; Leibniz is not seriously entertaining the thought that essences or eternal truths don't have any reality: he thinks they do. So the hypothetical is merely a rhetorical device, and what he really means is: *given that* there is reality in essences or eternal truths, this must come from something that actually exists. In making this claim, Leibniz clearly supposes that the reality of a thing must come from something that itself has reality; in the *Monadology* this is merely assumed, though in other texts it is stated explicitly (for example, in T184 he states: 'Every reality must be founded on something existent'). The thinking is that only an already-existing thing is in a position to impart reality to something else. In M44 Leibniz identifies the already-existing thing that imparts reality to essence and eternal truths as God. In doing so, he seems to overlook the possibility that it might be other, finite minds, such as those of humans. After all, finite minds think about essences and eternal truths, and these finite minds have reality too: could it not be the case, then, that essences and eternal truths get whatever reality they have from finite minds rather than from God? Leibniz would find such a suggestion highly problematic. To see why, suppose that eternal truths were grounded in finite minds. Now what would happen if, even for a moment, an eternal truth would cease to be thought by any finite mind? There are two possible answers. First, that the eternal truth in question would hang unsupported in the air (so to speak) for however long it remained unthought of by finite minds. But this would mean that its reality was ungrounded for that time, which is impossible. The second option is that, if every finite mind ceased to think about an eternal truth for a time, then

for however long it remained unthought of by finite minds the eternal truth would have no reality at all, that is, it would quite literally be nothing. This presumably means that it would, for that time, not be true at all. But it is absurd to suppose that there might be a time when ' $2 + 2 = 4$ ' (for example) ceases to be true, no matter how brief that time might be. By definition an eternal truth is eternal, which means it always subsists, and consequently the source of its reality must likewise always subsist. This automatically rules out finite minds as a candidate, and indicates that the source of its reality must be an eternal mind. And such a mind is the mind of a necessary being, as a necessary being is one whose non-existence is impossible. It is therefore eternal inasmuch as it always has existed and always will exist.

M44 concludes with Leibniz offering a version of what has, since the time of Kant, become known as the ontological proof for the existence of God. Versions of it can be found in Anselm, Descartes, and Spinoza. Leibniz spends a lot more time on it in other writings; here it is squashed into the second half of a single sentence, with key steps omitted. Leibniz gives a more complete version of the proof elsewhere:

If one's essence includes necessary existence then one's essence is inseparable from existence.

The essence of God (i.e. the necessary being) includes necessary existence.

Therefore the essence and existence of God are inseparable.¹⁵³

Usually when discussing this argument, Leibniz claims that it tacitly assumes that God is possible. Because of that, what he thinks the argument actually shows is that *if* God is possible *then* he exists. (This may seem more obvious once one remembers that, for Leibniz, 'essence' just is 'possible existence'.) Consequently it falls short of a true demonstration of God's existence. To qualify as that, it needs to be shown that the concept of God is possible, that is, free from contradiction. Leibniz will go on to show that God is possible in M45. Sometimes when presenting the ontological argument, however, he argues that God should be *presumed* possible until shown to be otherwise, for example in the *New Essays*:

We are entitled to assume the possibility of any being, and above all of God, until someone proves the contrary; and so the foregoing metaphysical argument does yield a demonstrated moral conclusion, namely that in the present state of our knowledge we ought to judge that God exists and to act accordingly.¹⁵⁴

¹⁵³ This version is found in SLT, p. 184.

¹⁵⁴ NE, p. 438.

45. Thus God alone (or the necessary being) has this privilege, that he must exist if he is possible. And as nothing can prevent the possibility of that which possesses no limits, no negation, and consequently no contradiction, this alone is sufficient for the existence of God to be known *a priori*. We have proved it through the reality of eternal truths also.

But we have now just proved it *a posteriori* too, since contingent beings exist, and they cannot have their ultimate or sufficient reason except in the necessary being, who has the reason for his existence in himself.

The conclusion that God must exist if he is possible follows from what was said at the end of M44. Having drawn that conclusion, Leibniz proceeds to offer a proof for the possibility of God. He has already established that God has no limits (see M40), and here he shows that a corollary of that is that God is possible. A being without any limits contains no negation, and no negation means no contradiction, and it is the absence of contradiction that guarantees a thing's possibility. Negation is a result of limits – if a thing is limited in some way then there is some respect in which it is not. And contradictions are derived from negations (since they involve the simultaneous affirmation and denial of something, that is, a thing is both X and not-X). Possibility, of course, is determined by the absence of contradictions, and since there can be none in God, he must be possible.

Leibniz now claims to have given *a priori* and *a posteriori* proofs for the existence of God. Since the time of Immanuel Kant (1724–1804), *a priori* has been taken to mean 'non-empirically' or 'independently of experience', and *a posteriori* has been taken to mean 'empirically' or 'through experience'. But in Leibniz's day, the terms had different meanings. This is apparent enough from a famous seventeenth-century logic textbook, the *Port Royal Logic*, which explains that discovering and comprehending truths is done in two ways: 'either by proving effects through their causes, which is called demonstrating *a priori*, or by demonstrating, on the contrary, causes through their effects, which is called proving *a posteriori*'.¹⁵⁵ If we are demonstrating effects through their causes we are working our way 'outward' from the cause to certain effects which follow from it; for example, if we start with an understanding of magnetism (cause), we can work out from that how much attractive power a magnet of a certain size will have (effect). So *a priori* explanations run from cause to effect, in this way. Conversely, *a posteriori* explanations run the other way around, from effect to cause, for example by starting with

¹⁵⁵ [Arnauld and Nicole], *La logique*, p. 390.

the attractive power of a particular magnet (effect) we can then work our way back to its cause (magnetism). Leibniz's *a posteriori* proof for the existence of God works this way also, as it starts with the effect (contingent beings) and proceeds back to the cause (the necessary being). Conversely, the proof for the existence of God in M44, as an *a priori* proof, runs in the opposite direction, starting with the cause (the essence of the necessary being) and from that proceeding to prove the effect (the actual existence of the necessary being). This might suggest that God literally causes himself to exist,¹⁵⁶ but is better understood as meaning that he is self-explanatory, that is, he explains his own existence.

In all, then, Leibniz has offered three proofs for the existence of God. The cosmological proof in M37–8, the argument from eternal truths in M43, and now an ontological proof in M44–5. It might be wondered whether three proofs is overkill, since if one of them works then there is no need for any others. But it was not uncommon for early modern thinkers to multiply proofs for the existence of God; Descartes, for example, offered three separate proofs in the *Meditations* (some say four). In any case, over the course of his career Leibniz put forward more proofs for the existence of God than just the three found in the *Monadology*. Most notably, he argued that God's existence was established by his doctrine of pre-established harmony (see comment on M39).¹⁵⁷

46. Yet we must not imagine, as some do, that the eternal truths, being dependent on God, are arbitrary and depend on his will, as Descartes, and afterwards Mr Poiret, seem to have supposed. This is true only of contingent truths, whose principle is *fittingness* or the choice of the *best*, whereas necessary truths depend solely on his understanding, and are its internal object.

Theodicy §180–4. §185. §335.
§351. §380.

It is a Leibnizian mantra that God does not *create* eternal truths (or indeed, essences) but rather *discovers* them in his understanding. This is in direct opposition to Descartes, who had claimed that God did create eternal truths:

¹⁵⁶ Spinoza very famously referred to God as *causa sui* (self-caused), though he did not mean it literally. He claimed 'By that which is self-caused I mean that whose essence involves existence; or that whose nature can be conceived only as existing.' Spinoza, *Ethics*, 1d1. The translation is from Spinoza, *Complete Works*, p. 217.

¹⁵⁷ SLT, p. 76.

The mathematical truths which you call eternal have been laid down by God and depend on him entirely no less than the rest of his creatures. Indeed to say that these truths are independent of God is to talk of him as if he were Jupiter or Saturn and to subject him to the Styx and the Fates. Please do not hesitate to assert and proclaim everywhere that it is God who has laid down these laws in nature just as a king lays down laws in his kingdom.¹⁵⁸

Although not a follower of Descartes, Pierre Poiret (1646–1719) endorsed the same view, finding it absurd to suppose that God could simply discover eternal truths in his understanding ‘without having any right over them’.¹⁵⁹ The problem, for both, lay in the consideration that unless God had created these truths they would be independent of him, that is, not under his control. This can be seen to threaten God’s sufficiency and perfection. As Poiret put it, ‘if there were ideas and truths different from those of the divine essence, which God must know necessarily, and, approve independently of his will, God would not be a God which is sufficient to himself through himself, alone necessary to himself, nor perfect through himself’.¹⁶⁰ The position endorsed by Descartes and Poiret is often referred to now as *theological voluntarism*.

Leibniz rejected voluntarism; indeed, he was scathing about the idea of God creating eternal truths, and railed against it often. That he should do so is not surprising, since it involves a clear violation of the principle of sufficient reason: if God had to create eternal truths, such as the truths of mathematics, then there would be no reason for him to decree (for example) that $2 + 2 = 4$ rather than $2 + 2 = 5$. Similarly, if God had to create the laws of logic, then there would be no reason for him to decree the law of identity ($A = A$) as opposed to its opposite ($A = \text{not-}A$). Without a reason to decree certain truths of mathematics and logic over others, he would not act, and so would not create any. In the *Monadology*, however, Leibniz does not expand on his opposition to voluntarism.

While eternal truths are rooted in God’s understanding, contingent truths (that is, truths that could have been otherwise) depend on God’s will. Leibniz holds that as God is perfectly good, his will always chooses the best.¹⁶¹ This is sometimes encapsulated in what Leibniz calls the *principle*

¹⁵⁸ Descartes, *The Philosophical Writings of Descartes*, III, p. 23. Some years later, Descartes would even claim that notions of truth and goodness depend on God, that is, that he decided what truth is, and what goodness is, without being guided in his choice by any prior considerations. See *The Philosophical Writings of Descartes*, II, pp. 293–4.

¹⁵⁹ Pierre Poiret, *L’oeconomie divine, ou Systeme universel et démontré des oeuvres & des desseins de Dieu envers les hommes*, 7 books (Amsterdam, 1687), I, p. 54.

¹⁶⁰ Poiret, *L’oeconomie divine*, I, p. 54.

¹⁶¹ For example, ‘his [God’s] will is always inexorable and is always directed at the best’ (T obj. VIII).

of the best. As Leibniz will explain later (in M55), God's adherence to the principle of the best ultimately leads him to choose for creation the best of all possible worlds.

47. Thus God alone is [the primitive simple substance or monad] the primitive unity, or original simple substance, which produces all created or derivative monads, which are born, so to speak, by continual fulgurations of the divinity from moment to moment, limited by the receptivity of their created nature, the essence of which is to be limited.

Theodicy §382–91. §398. §395.

That God produces all other monads is taken to follow from M46, inasmuch as their existence is contingent, and therefore depends upon God's will. In an earlier draft of M47 Leibniz described God as 'the primitive simple substance or monad', but ultimately changed it to 'the primitive unity, or original simple substance' in the final copy. However, elsewhere he does identify God as a monad, or primitive monad: in 1711 he informed a correspondent that a monad is either primitive, in which case it is God, or derivative, in which case it is called a 'created monad', of which there are three kinds, namely minds, souls, and bare monads.¹⁶² The primitive monad God differs from created monads not only by being more perfect (see M41), but also by being the only unembodied monad, for while God has no body,¹⁶³ 'every created monad is endowed with some organic body'.¹⁶⁴

In M47 Leibniz explains how God produces other monads: by 'fulgurations', which are literally 'lightning-flashes'. This is a clear reference to the ancient doctrine of *emanation*, though ultimately Leibniz's understanding of it is not an orthodox one. In neo-Platonic thought, all existing things are produced by God not out of choice but as unwilled outpourings (or overflows) of his own being. Although this is a continual process it does not involve any loss to God of his own essence, just as the continual emission of light does not thereby cause the sun to lose any of its own brightness. The metaphor of light continuously radiating from the sun was a fruitful one and often used to illustrate key components of the doctrine. For example, just as light is dependent on the sun for its existence, so do created things

¹⁶² G VII, p. 502.

¹⁶³ See LTS, p. 357.

¹⁶⁴ G VII, p. 502.

depend for their existence upon God. Leibniz typically uses the language of emanation to illustrate the process by which he thinks God conserves or sustains the world, namely *continuous creation*, which holds that God continually (re)creates the world at each moment to stop it passing out of existence: 'Now it is clear, first of all, that the created substances depend on God, who conserves them and even produces them continually by a kind of emanation, as we produce our thoughts.'¹⁶⁵ Thus for Leibniz, emanation involved an ongoing recreation (conservation) of created things rather than an ongoing generation of things. The use of the lightning-flash metaphor over the neo-Platonic sun metaphor is intended to capture that. However, there is no indication in the *Monadology* as to his grounds for endorsing the continual fulgurations account.

It might seem that the doctrine of continuous creation takes Leibniz dangerously close to occasionalism, if not all the way there. After all, if God continuously (re)creates things at every moment, then he would seem to be responsible for the existence of these things, and their states, at each moment, which does not seem to leave room for any causal activity aside from his own.¹⁶⁶ In T386–7, Leibniz outlines objections of this sort, which seek to show that, under continuous creation, God is the only causal agent. In his response, Leibniz appeals to the doctrine of *concurrence*, which holds that while created beings are causally active, their actions occur only with the concurrence (that is, the co-operation) of God. Concurrence thus sees creaturely activity as a joint enterprise, brought about by the causal activity of the creature itself together with that of God. Leibniz notes that concurrence applies not to the substance of these creatures, but rather to

¹⁶⁵ PPL, p. 311.

¹⁶⁶ Malebranche based one of his arguments for occasionalism on the doctrine of continuous creation, arguing that under that doctrine God alone is responsible for all the changes in created minds and bodies. To see how the argument works, consider a particular body, such as a tennis ball. Now when God (re)creates the universe, as he does at each moment, either he (re)creates that body in exactly the same place it was in at the previous moment, or he (re)creates it in a different place from the one it was in at the previous moment. If the body is (re)created in the same place it is said to be at rest; if it is (re)created in a different place then it is said to be in motion. In effect, then, God has to (re)create bodies – all bodies – either in motion or at rest. But irrespective of whether God (re)creates a body in motion or whether he (re)creates it at rest, it is God who has put it wherever it happens to be. This must be so, according to Malebranche, because God is the only causal agent in this scenario, and indeed the only causal agent there can be, for under continuous creation there is just no room at all for the causal activity of anything other than God. Hence what we think of as motion is just God continuously (re)creating a thing in successively different places. A parallel argument can be made for minds and their thoughts. See Nicolas Malebranche, *Dialogues on Metaphysics and on Religion*, trans. Nicholas Jolley and David Scott (Cambridge: Cambridge University Press, 1997), p. 115.

their modifications. That is, God does not concur in keeping the substance of these creatures in existence, as he alone is causally responsible for that. He does, however, concur with the internal operations of these creatures, in which creatures themselves also have a causal role. Hence Leibniz says in T391 that a created thing concurs with God ‘for the production of its internal operation, as would be thought or a volition, things really distinct from the substance’. Leibniz thus envisages concurrence as leaving space for the genuine causal activity of substances, notwithstanding God’s continuous (re)creation of all things at every moment; if successful, it enables him to resist occasionalism.¹⁶⁷

48. There is in God *power*, which is the source of everything, then *knowledge*, which contains the detail of ideas, and finally *will*, which brings about changes and products in accordance with the principle of the best.

Theodicy §7. §149. §150.

And these correspond to what there is in created monads: the subject or basis, the perceptive faculty, and the appetitive faculty. But in God these attributes are absolutely infinite or perfect, and in created monads or in *entelechies* (or *perfectihabies*, as Hermolaus Barbarus translated this word) there are only limitations¹⁶⁸ of them, in proportion to the perfection that they have.

Theodicy [§48] §87.

Leibniz has already made explicit references to God’s power (M47), knowledge (M43), and will (M46), but here he briefly notes how each is involved in the creation of the world. Further information will be given in M53–5. Leibniz then proceeds to associate these three attributes of God with three features of created monads, namely the subject or basis, perception, and appetite. This underscores the point made in M42, that monads differ from God only in degree: their attributes are those of God, but whereas his are infinite theirs are always finite. The associations Leibniz makes are as follows:

¹⁶⁷ Not all scholars are convinced that Leibniz does enough to keep his position from collapsing into occasionalism, however. See for example David Scott, ‘Leibniz’s model of creation and his doctrine of substance’, *Animus* 3 (1998), pp. 73–88.

¹⁶⁸ The final draft has ‘imitations’, but this looks to be a copying error as previous drafts had ‘limitations’ instead.

God	Created monads
Power	Subject or Basis
Knowledge	Perception
Will	Appetition

'Basis' means the principal foundation of something. A monad's basis is its active nature, that is, that which makes it a bearer of causal power. Leibniz often insisted that created things are by nature active, that is, have causal powers, even though these powers only operate on themselves (remember that Leibniz established in M7 that there is no inter-substantial causation). God's power, of course, is not so restricted. If the parallel between God's attributes and monads is a close one, as Leibniz suggests in M48, then we would expect him to hold that power is the most basic or fundamental of the three divine attributes, that is, that it is God's 'basis', as it were. And this is precisely his view: 'understanding presupposes the power to act, whilst will presupposes both the power to act and to understand'.¹⁶⁹ The same relationships presumably hold on the monadic side of the table, namely that perception presupposes activity, or causal power, and appetition presupposes both perception and activity.¹⁷⁰

As for the connection between knowledge and perception – Leibniz holds that God's knowledge involves him expressing or representing all things by their ideas,¹⁷¹ and we know from M14 that monadic perception involves the representation of a plurality within the unity. The only difference here seems to be one of degree – God expresses things with perfect clarity whereas in monads the expressions, or representations, are always confused to some extent. Similarly, the connection between the *will* and *appetite* is straightforward as both involve an inner desire or striving for something; God's will is guided by his perfect wisdom, and so always aims at the best, whilst the appetite of created monads always aims at the perceived best. As noted earlier (in the comments on M15), Leibniz also refers to the appetite of minds as 'will', insofar as it involves distinct inclinations supplied by reason rather than confused inclinations such as those of the passions.

¹⁶⁹ A VI 4, p. 2292. See also T149.

¹⁷⁰ An alternative reading of this passage has been provided by Nicholas Rescher, who takes Leibniz to be claiming that God's power corresponds to the 'reality (being)' of a created monad. See Rescher, *G. W. Leibniz's Monadology*, p. 168. This goes beyond what Leibniz says in the text. Also, it doesn't sound right: for Leibniz, as we know, 'reality' means 'perfection', and perfection is power, knowledge, and will, not just power.

¹⁷¹ A VI 4, p. 2317.

Leibniz again refers to created monads as entelechies (following M14, M18–19), this time throwing in an apparently approving reference to the medieval scholar Hermolaus Barbarus (1454–93), who sought to recover Aristotle’s real philosophy from the various Scholastic (mis)interpretations of it. There is a story that Barbarus was so dissatisfied by the Latin translations of Aristotle’s term ‘entelechy’ that he asked the devil to remove the confusion and provide him with the exact equivalent in Latin. The result was the coining of the term *perfectihabia*, which literally means ‘perfection-havers’.¹⁷² To understand the significance of this, consider how the term ‘entelechy’ was used by Aristotle: for him, it indicated the realisation of potency. Hence Barbarus’ *perfectihabia* captures the sense of completion inherent in the term, because ‘perfect’ in its original sense meant ‘complete’ (from the Latin *perficio* – to complete or do thoroughly; this is what used to be meant by referring to God as ‘perfect’: it meant he was complete, lacking nothing). Moreover, Barbarus’ translation also captures (albeit to a lesser extent) the *activity* involved in the process of realising potency; perfection-havers are those things that can realise their own potency. The fact that activity was central to Aristotle’s notion of entelechy led some of his earliest translators to translate the term as ‘act’ or ‘action’ (or, in the case of Cicero, ‘a certain continued and perpetual motion’).¹⁷³ Leibniz alludes to this when he discusses the matter in the *Theodicy*:

The same philosopher [Aristotle] gave to the soul the generic name of ‘entelechy’ or *actuality*. This word, *entelechy*, apparently comes from the Greek word which means ‘perfect’,¹⁷⁴ and for that reason the renowned Hermolaus Barbarus expressed it literally in Latin by *perfectihabia*, since actuality is a realization of potency. And in order to learn just that he had no need to consult the Devil, as he is said to have done. (T87)

Possibly the notion of activity that Barbarus captured in the expression *perfectihabia* is what induced Leibniz to use the term in the *Monadology* also, as in the next paragraph he will proceed to determine how created things act.

49. The created thing is said to *act* outwardly insofar as it has perfection, and to be *acted upon* by another insofar as it is imperfect. Thus *action* is attributed to the monad insofar as it has distinct perceptions and *passion* insofar as it has confused perceptions.

Theodicy §32. §66. §386.

¹⁷² Hermolaus Barbarus, *Themistii peripatetici lucidissimi paraphrasis in Aristotelis* (Venice, 1542), pp. 147–8.

¹⁷³ Cicero, *Tusculan Disputations*, I.10.

¹⁷⁴ In Greek, ‘perfection’ is ‘enteles’.

In M48 there was the barest hint of a link between a monad's perfection and its activity (through the reference to Barbarus' Latin translation of 'entelechy'), but here Leibniz makes the link explicit, and in so doing ties the degree of perfection a created thing has to the extent to which it acts outwardly. Consequently, the more perfect a thing is, the more it acts and the less it is acted upon. But as we know from M7, created monads do not really act outwardly at all. This leads Leibniz to construe a monad's so-called 'outward activity', that is, its effects on other monads, in terms of the relative distinctness of its perceptions (he will explain why in M50). To see what is involved in this, take our example of Pete walking to the fridge to get a drink. The story of this event can be told from the point of view of Pete's mind, which is of course a monad, or from the point of view of any of the monads in Pete's body. All will have perceptions of the event, but their perceptions both of the event itself and of what led up to it will be very different. The monad that is Pete's mind will have a very distinct perception of the sequence of events involved, from his acknowledgment of his thirst to his decision to get a drink to putting this decision into practice, whereby his body moves over to the fridge and opens it. (Recall from the discussion of M20 that a perception is distinct when the elements of it can be separately identified, and confused when the elements are not separately identifiable.) The monads that constitute Pete's body, however, will have a very confused perception of the event: their perceptions of the motion of their own bodies will be the least confused ones they have, but from these it will not be clear why their bodies are in motion; meanwhile, their perceptions of the motion of Pete's body as a whole, along with their perceptions of Pete's mind and its states, such as thirst and the forming of a resolution to get a drink, will be even more confused, and most likely be no more than little perceptions. Hence in this example Pete's mind can be said to be more perfect than any of the monads in his body, on account of it being more active, which means that it has more distinct perceptions.

Only God acts without being acted upon (which makes his action 'pure', as Leibniz puts it in T32); everything else acts and is acted upon, in the sense explained here.

50. And one created thing is more perfect than another when what is found in it serves to explain *a priori* what happens in the other; and this is why we say that it acts upon the other.

Leibniz now seeks to explain why he construes a monad's (causal) activity in terms of the distinctness of its perceptions, and his answer is: what

greater distinctness brings is greater explanatory power. To return to the example used earlier, if we want an explanation of why Pete went to the fridge to get a drink, we need to look to the monad that constitutes his mind rather than to any of those that form his body, and we do so because of the greater perceptual clarity of the former. The fact that Pete's mind contains the more distinct perceptions about the event 'explains' what happens in the same way that a cause 'explains' an effect, that is, it offers an *a priori* explanation. This permits Leibniz to talk of Pete's mind 'acting' on the body.

If it is difficult to understand Leibniz's claim that more perfect things explain *a priori* what happens in the less perfect, this is likely to be because we approach it with the modern, post-Kantian sense of a *a priori* in mind. We saw earlier, in the remarks on M45, that from Kant's time onwards, *a priori* has been taken to mean 'non-empirically' or 'independently of experience', and *a posteriori* has been taken to mean 'empirically' or 'through experience', whereas in Leibniz's day these terms were understood differently. For Leibniz and his contemporaries, as well as those before him, *a priori* demonstrations were those that proved effects through their causes, while *a posteriori* demonstrations were those that proved causes through their effects. If we approach Leibniz's reference to a *a priori* explanation in M50 with this in mind, we can see that it is a clear reference to the direction of illumination, so to speak, that is, the fact that he is looking to the cause (the monad with the most distinct perceptions) to explain the effect (Pete's walking to the fridge), rather than the other way around. And it is for this reason, Leibniz claims, that 'we say that' the one has acted on the other; for example, 'we say that' Pete's mind has acted on his body. Nevertheless there is no true action of one on the other, as Leibniz's carefully chosen words indicate.

51. But in simple substances, the influence of one monad over another is merely *ideal*: it can have its effect only through the intervention of God, inasmuch as in the ideas of God a monad rightly demands that God have consideration for it when organising the others from the beginning of things. For since a created monad cannot have a physical influence on the interior of another, this is the only way that one can be dependent on another.

Theodicy §9. §54. §65. §66.
§201. Abridgement, objection 3.

Leibniz here argues that monads can influence each other only ideally. The argument looks to be a disjunctive syllogism with the following form:

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Premise 1. The influence of one monad over another is either physical or ideal.

Premise 2. Monads do not influence each other physically (this was the conclusion of M7).

Conclusion. Therefore the influence of one monad over another is ideal.

'Ideal' means 'in idea', that is, subsisting in the mind of something as opposed to existing in its own right in the real world. Hence in describing the influence of one monad on another as 'ideal' Leibniz is not merely reiterating the (negative) point that monads do not causally interact with each other, but also making the (positive) point that there is nevertheless still a sense in which one monad can be thought to influence another. We can see in this a desire to retain some of the language of causality (influence, dependence) in describing how monads relate to each other. Here Leibniz explains the relation of monads in terms of the *correspondence* that holds between them. Or rather, their *coordination*, since he holds that God has actively accommodated monads to each other so that they mutually correspond. Because his understanding is the realm of all possibles, God is able to inspect monads prior to creation. When he inspected the monad of Pete's mind, he saw that it not only contained perceptions of the event of Pete walking to the fridge, but also 'explained' this event by virtue of having more distinct perceptions of it than the monads of Pete's body. Thus when deciding to create the monad that is Pete's mind, God's desire for mutual accommodation ensures that he also creates other monads, such as those of Pete's body, which are then so adjusted that they (confusedly) perceive moving towards the fridge at the same time as Pete's mind (distinctly) perceives his body doing so. In this way, the less perfect can be said to depend on the more perfect, that is, because God has chosen to adjust the former to the latter. This is all Leibniz means when he talks of one monad *demanding* that God accommodate others to it; the remark should not be taken literally.

Leibniz's talk of God 'organising' monads also has the potential to mislead. He does not envisage God as interfering with one monad so as to adjust it to other monads with which it otherwise would not have corresponded. Rather, he is thinking of a process of *selection*, whereby God sorts all possible monads into consistent sets, each set being a different possible world. Hence the set that includes the monad of Pete's mind also includes (among others) the monads of his body. God's 'mutual accommodation' of these monads therefore amounts to little more than his decision to create the possible world of which they are all a part. This mutual accommodation of substances is sometimes referred to by Leibniz as 'universal harmony' (see, for example, M59). It is, we learn elsewhere

(for example, T7, T8, and T84), a feature of all possible worlds; that is, every possible world, not just our own, is a set of mutually accommodated substances.

Leibniz takes the mutual accommodation to be in place right at the point of creation; it is not something that continually requires God's intervention. Thus every monad is so adjusted from the outset that its perceptions will always accord with those of every other created monad, despite there being no genuine influence or interaction between them. Nevertheless the mutual adjustment is so precise that it creates the impression of mutual causal interaction between substances.

52. And this is why actions and passions are mutual between created things. For when he compares two simple substances, God finds in each the reasons which oblige him to accommodate the other to it, and consequently what is active in certain respects is passive from another point of view: a created thing is *active* insofar as what is known distinctly in it serves to explain what happens in another, and *passive* insofar as the reason for what happens in it is found in what is known distinctly in another.¹⁷⁵

This expands on M51: we now learn that the ideal influence of one monad on another described there is not a one-way process. Instead, the influence is mutual. In other words, all substances, even those with very low degrees of perfection, have their effect on others, and are active to the extent to which they do. To illustrate (using an example from physics), if a bullet hits a clay target it might initially seem as though the bullet is entirely active and the clay target entirely passive, but a closer consideration reveals that both are active *and* passive, albeit to different degrees, for the bullet and the clay target that it hits act upon each other; the bullet may well cause serious damage to the clay target, but the target in turn will slow the bullet down, or change its course, or possibly even fragment it. It would seem to follow from this that no created thing is so active that it is not acted upon by other created things, and no created thing is so passive that it does not act upon other things.

53. Now as there is an infinity of possible universes in the ideas of God, and as only one of them can exist, there must be a sufficient reason for

¹⁷⁵ Some transcriptions of the *Monadology* include a reference to *Theodicy* §66 here (for example, G VI, p. 615), but there is no such reference in the manuscript.

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God's choice, determining him to one rather than to another.

Theodicy [§7.] §8. §10.
§44. §173. §196 onwards.
§225. §414–16.

Leibniz now argues that there must be a sufficient reason for God's choice of universe, given that he could only choose one out of an infinity of possible universes. While the argument itself is straightforward, it is not immediately apparent why Leibniz should hold (a) that there is an infinite number of possible universes, and (b) that God can create only one of them. First, then, why is there an infinite number of possible universes? In a letter from 1712 Leibniz writes 'When I say that there is an infinity of possible worlds, I mean those which do not imply a contradiction, just as one can invent stories that never exist and which are nevertheless possible.'¹⁷⁶ (Note that, for Leibniz, 'possible world' means the same as 'possible universe', and he sometimes uses the terms interchangeably, as we shall see in M54.) Hence a universe (= a complete set of possible monads) is said to be possible if it does not contain a contradiction, and there seems to be no limit to how many of those there can be because there is no limit to how many things a universe can contain or the ways in which they can be arranged.

Why, though, can only one of these possible universes exist? Why can't God create them all, or create one universe which includes all possibles? To this, Leibniz's answer is: because not all possibles are *compossible*, that is, not all possibles are able to exist in the same universe. As far as one can tell, Leibniz did not advance a reason for this view; in one text from 1680 he even states that it is 'unknown to men' why certain things are impossible.¹⁷⁷ Despite that, Leibniz consistently maintained that 'there are many possible universes, each collection of compossibles making up one of them'.¹⁷⁸

The fact that there is an infinity of possible universes, only one of which can exist, ensures that God will need to choose which one to create. It would be difficult to overstate the importance of this for Leibniz. Spinoza had argued in his *Ethics* (1677) that God acted not out of choice but rather the necessity of his own nature, and from that he concluded that whatever is logically possible (that is, does not imply a contradiction) must be

¹⁷⁶ SLT, pp. 207–8.

¹⁷⁷ SLT, p. 30. Of course by this he might have meant that it was unknown to men *other than him!*

¹⁷⁸ PPL, p. 662.

actualised at some time or other.¹⁷⁹ For this (and other teachings) he was vilified, not least by Leibniz himself, who believed that if God acted out of necessity he would not be good (see T173); after all, it would mean that he would create without any consideration of the goodness or worthiness of what it was he was creating.¹⁸⁰

It might seem odd that in M53 Leibniz insists that God has a choice only to proceed to state that there is a sufficient reason ‘determining’ God’s choice. But ‘determining’ here does not mean ‘forcing’ or ‘necessitating’ but rather something softer like ‘resolving’, that is, the sufficient reason is what enables God to whittle down the number of available choices to just one and makes him want to choose it.

In insisting that there must be a sufficient reason for God’s choice of world, Leibniz thereby denies that God’s choice of world is arbitrary, or random. In Leibniz’s day it was not uncommon for thinkers to hold that God chooses what to do by a sheer act of will, unmoved by any prior reasons. Samuel Clarke (1675–1729) maintained such a view in his correspondence with Leibniz in 1715–16; although he agreed with Leibniz that God needed a sufficient reason to act, he claimed that ‘this sufficient reason is oftentimes no other than the mere will of God’.¹⁸¹ Leibniz objected that if God’s will were moved without a reason, as Clarke maintained, it would violate the principle of sufficient reason.

54. And this reason can only be found in the *fittingness*, or in the degrees of perfection, which these worlds contain, each possible world having the right to claim existence in proportion to the perfection it contains. [Thus there is nothing which is wholly arbitrary.]

Theodicy §74. [§78] §167. §350.
§201. §130. §352[–354]. §345 onwards.
§354.

In M53 Leibniz argued that there has to be a sufficient reason for God’s choice of universe, and now he identifies what that reason is. His answer – that this reason can only be found in the various degrees of perfection that these universes contain – is a postulate, for Leibniz merely assumes that in choosing a universe God’s concern is with degrees of perfection alone, and not any other feature (such as the relative worthwhileness of the lives

¹⁷⁹ See Spinoza, *Ethics*, Ip16, in *Complete Works*, p. 227.

¹⁸⁰ Leibniz did, however, occasionally flirt with the thought that God acts out of necessity rather than choice. See PPL, p. 146; TI, p. 336; SLT, p. 114.

¹⁸¹ PPL, p. 680.

of its creatures, or the total number of happy beasts it contains, and so on). But once one supposes that God's concern is with degrees of perfection, then it seems safe to say that the greater the degree of perfection a possible world has, the stronger the reason God has to create it. Leibniz doesn't elaborate on what he means by 'degrees of perfection' in this context, but he presumably has in mind the notion of perfection given in M41, which stated that perfection is magnitude of positive reality. It thus follows that possible worlds differ in terms of the quantity of positive reality that they contain.

Leibniz's use of a legal metaphor, in which possible worlds are described as having 'the right to claim existence in proportion to the[ir] perfection', betrays his background in law. The same point can be made less prosaically by saying that the more perfection a possible world contains, the more attractive it is to God.

55. And this is the cause of the existence of the best, which God's wisdom makes him know, his goodness makes him choose, and his power makes him produce.

Theodicy §8. §78. §80.

[§81.] §84. §119. §204 [and onwards].

§206. §208. Abridgement, objection 1, objection 8.

Leibniz's language here suggests that he takes God's choice of the best possible world to follow from the central claim of M54, that the greater the degree of perfection a possible world contains, the stronger the reason God has to create it. His thinking is that as the best possible world is the one which contains the greatest degree of perfection, God will have more reason to create it than he would any other possible world.

It seems reasonable to ask why Leibniz is so confident that there is a single best possible world, as it seems conceivable that there might be two best (that is, unsurpassable) possible worlds, or three, or even an infinity of them. Leibniz considers this issue in the *Theodicy* and argues that 'among an infinity of possible worlds there is the best of all, otherwise God would not have been determined to create any of them' (T416). Leibniz thus holds that if there had been two or more possible worlds that were equally unsurpassable then God would not have had a sufficient reason to choose one over the other, and without a sufficient reason he would be unable to make a choice. Consequently he would not have created anything. But of course we know that he *did* create (as our world exists), so it must have been the case that when surveying the range of possible worlds he found a single best.

It might be thought that Leibniz would also be able to deduce that God would choose the best possible world from the fact (affirmed in M46) that God's will operates according to the principle of the best, that is, that it always aims at the perceived best. But in itself this is not enough to deduce that God will create the best possible world, as if his wisdom is lacking then it could be that what he perceives to be the best is not in fact the best, or if his power is lacking then it could be that he is just not able to create the best. In M55 Leibniz makes it clear that neither God's wisdom nor power is lacking: God's perfect wisdom ensures that he knows which possible world is best, and his perfect power ensures that he is able to produce it. Hence God will have produced the best of all possible worlds. This is a good example of *a priori* reasoning, in the sense of reasoning that runs from cause to effect, for it is from a consideration of the nature of God alone (cause) that Leibniz infers that this must be the best of all possible worlds (effect). Leibniz did not think it was possible to argue in reverse, that is, from the fact that this is the best of all possible worlds (effect) to the supreme perfection of God's nature (cause). This is because it is impossible for us to determine, through experience, that ours is the best of all possible worlds. As Leibniz writes in the *Theodicy*: 'for can I know and can I represent infinities to you and compare them together? But you must judge with me *ab effectu* [from the outcome], since God has chosen this world as it is' (T10).

God's will is not unique in operating according to the principle of the best, as according to Leibniz, all wills, even those of created beings, aim at the perceived best course. Created beings do not always have a proper and clear perception of what is truly best, however, which means that they can and frequently do choose to act in ways that are less than the best. God is not similarly hampered because his wisdom is perfect; this means that he can never be ignorant of what is best or more perfect, and consequently 'God cannot fall into error in choosing, and therefore always chooses what is most fitting.'¹⁸²

56. Now this *interconnection*, or this accommodation of all created things to each other and of each to all the rest, means that each simple substance has relations which express all the others, and that consequently it is a perpetual living mirror of the universe.

Theodicy §130. §360.

With its reference to the mutual adaptation of substances this seems to pick up the threads from M52. The argument here is as follows: the fact that

¹⁸² MPE, p. 117.

monads are adapted to each other entails that each one is related to all of the others; this relation will be expressed through its perceptions, presumably because there is no other way it could be expressed. Consequently every monad continually expresses every other monad, in such a way that it is a 'living mirror of the universe'.

Each monad is a *perpetual* mirror because it is itself a perpetual being (as Leibniz established in M4 and M5). However, sometimes Leibniz reaches this conclusion via a different argument, namely this: as souls (monads) are by their nature mirrors of the universe, and the universe is perpetual, so must souls be perpetual: ('with each soul being a mirror of the universe in its way, it is easy to conclude that each soul is as imperishable and incorruptible as the universe itself').¹⁸³ This argument does not appear in the *Monadology*, though in M77 Leibniz appears to have it in mind when he describes the soul as 'the mirror of an indestructible universe'. Leibniz was very fond of the mirror metaphor, and repeated it often, mostly in writings intended for himself,¹⁸⁴ for very limited circulation,¹⁸⁵ or letters to sympathetic correspondents such as Electress Sophie,¹⁸⁶ Nicole Remond,¹⁸⁷ and Pierre Dancicourt.¹⁸⁸

In earlier writings, the claim that every single substance contains within itself a 'representation' or 'reflection' of everything else in the universe was taken to be a consequence of the 'complete concept' theory. For if the concept of every substance is complete, then it will have to contain predicates that spell out in complete detail the various relations of that substance to all the other things outside of it. And of course when any of these other things happens to change, these changes will have to be reflected in that substance, its predicates changing to keep up with what was going on outside of it. So with substances, 'when a change occurs in one, there follows some corresponding change in all the others',¹⁸⁹ and consequently the states of one 'mirror' or 'reflect' the states of all the others.

¹⁸³ LTS, p. 347.

¹⁸⁴ For example, TI, p. 554f: <http://www.leibniz-translations.com/pascal.htm>

¹⁸⁵ For example, LTS, p. 290.

¹⁸⁶ See LTS, p. 152.

¹⁸⁷ See 'Appendix on Monads' (p. 279).

¹⁸⁸ SLT, p. 54. It is interesting that the metaphor should be absent from important works like the *New Essays* and the *Theodicy*, not to mention various journal articles that Leibniz wrote in the early years of the eighteenth century. However it does appear in at least one text written for publication, namely 'Reply to the comments in the second edition of M. Bayle's Critical Dictionary, in the article "Rorarius", concerning the system of pre-established harmony' (1702). See LNS, p. 111.

¹⁸⁹ SLT, p. 51.

57. The same town, when looked at from different places, appears quite different and is, as it were, multiplied *in perspectives*. In the same way it happens that, because of the infinite multitude of simple substances, there are just as many different universes, which are nevertheless merely perspectives of a single universe according to the different points of view of each monad.

Theodicy §147.

Leibniz now claims that each monad mirrors the entire universe from its own unique perspective. He does not reveal his basis for this claim, but it would seem to follow from the fact that no two monads are alike (M9) and that they all mirror the same universe (M56), that each one must mirror the universe differently. Each monad is thus a microcosm, that is, the entire world in miniature, with each one perceiving or expressing the world from its own particular point of view. Ultimately, the differences in ‘perspective’ or ‘point of view’ enjoyed by each monad are nothing more than differences in the relative distinctness and confusedness of each monad’s perceptions of one and the same universe, as Leibniz will go on to explain in M57. Nevertheless, it seems fair to say that the universe is multiplied in each monad.

In M57 Leibniz affirms that there are an infinity of monads in the universe; this looks to be a natural consequence of M36, which established the division of bodies to infinity and the ‘endless detail’ of the things of nature. In 1712 a correspondent asked him why he believed there to be an infinity of monads, and Leibniz offered two different reasons:

you ask why there is an actual infinity of monads. I respond that the possibility of this will suffice to establish it, since it is obvious how bountiful the works of God are. But the order of things demands the same thing; otherwise the phenomena would not correspond to all assignable perceivers.¹⁹⁰

58. And this is the means of obtaining as much variety as possible, but with the greatest order possible; that is, it is the means of obtaining as much perfection as possible.

Theodicy §120. §124. §241 and onwards.
§214. §243. §275.

We already know from M55 that God will choose to create the world with the greatest amount of perfection, and now we discover that this is in fact

¹⁹⁰ LDC, p. 277.

the world Leibniz has just described in M57, that is, the world containing an infinity of monads all expressing the others from its own particular point of view.

At first sight, Leibniz's definition of perfection here as maximal variety and the greatest order seems to sit uneasily with the definition of it that he gave in M41, where he claimed that perfection is 'nothing but quantity of positive reality'. But on closer inspection the two definitions converge, and are perhaps even alternative ways of saying the same thing. By 'variety' Leibniz is referring to things which differ in some way. Given that all monads are different from each other (established in M9), maximal variety will be achieved by creating as many monads as possible. As for 'order', elsewhere Leibniz explains that

order is the relation of several things, through which any one of them can be distinguished from any other.¹⁹¹

order is simply a distinctive relation of several things; confusion is where several things are present, but there is no way of distinguishing one from another.¹⁹²

Order, then, is present in a collection of things where each thing is distinguishable from everything else. The greatest order would thus seem to be a natural by-product of creating as many monads as possible, given that every monad is different from every other. Maximal perfection is thus obtained by the creation of as many (different) monads as possible; such an act would also bring into being as much positive reality as possible too, indicating that Leibniz's two definitions of 'perfection' are not as radically dissimilar as they may initially appear to be.

M58 suggests that Leibniz has a very 'metaphysical' understanding of what constitutes a world's perfection. His claim that our world is the most perfect is easily (and often) derided on the basis that, for many creatures, life is (in Thomas Hobbes' famous expression) 'nasty, brutish and short'.¹⁹³ But to object to Leibniz this way is to miss his point entirely, as the hardships and travails of the world's creatures are not obviously inconsistent with the world being perfect in Leibniz's sense of the term, as containing as many different monads as possible. In any case, as it happens Leibniz also holds that the most perfect world in this metaphysical sense is also the most perfect in a moral sense, and is that which ultimately offers the

¹⁹¹ Leibniz, *Die Leibniz-Handschriften der Königlichen Öffentliche Hannover*, ed. Eduard Bodemann (Hanover: Hahn, 1895), p. 124.

¹⁹² LPW, p. 146.

¹⁹³ Thomas Hobbes, *Leviathan parts 1 and 2*, revised edn, ed. A. P. Martinich and Brian Battiste (London: Broadview, 2011), p. 124.

greatest advantage to rational creatures such as ourselves (the hardships of this life notwithstanding). However this claim is made only much later; see M85 and M90.

59. Also, this hypothesis (which I dare to say has been demonstrated) is the only one which properly exalts the greatness of God. Mr Bayle recognised this, when in his *Dictionary* (article 'Rorarius') he made objections to it, in which he was even tempted to believe that I ascribed too much to God, and more than is possible. But he could not put forward any reason why this universal harmony, which ensures that each substance expresses exactly all the others through the relations it has to them, should be impossible.

Leibniz is here referring to his theory of pre-established harmony, which he has outlined in M49–52 and M56 (he will not actually refer to the theory by that name until M78). Given that he believes his theory has been demonstrated, it might seem odd that he should refer to it as a 'hypothesis', but in Leibniz's day the French term 'hypothese' not only meant 'hypothesis' (in the sense of an unproved theory which fits the facts) but also 'system' (in the sense of a set of principles and doctrines which one uses to explain phenomena), and it is in this sense that Leibniz uses the term in M59. His bold claim that his system alone 'properly exalts the greatness of God' has the potential to come across as rather hollow because he does not identify any rival systems, let alone indicate how they fall short in this regard. However it is likely that Leibniz has in mind here the systems developed by Descartes, Malebranche, and Spinoza, as he has a tendency to see these as his main rivals, and he commonly complains that each fails to do proper justice to God. He alleges that both Descartes and Spinoza rob God of justice and goodness, the former by making God act arbitrarily (a complaint already made in M46), the latter by making him act out of necessity,¹⁹⁴ and complains of Malebranche that he has God act with less than perfect wisdom, because he supposes that God, as the only causal agent in Malebranche's occasionalist system, constantly has to intervene in the world, with each intervention counting as the performance of a miracle.¹⁹⁵ Leibniz believed that his own system suffered from none of these flaws, and in fact showed the true extent of God's greatness. This was acknowledged (perhaps ironically) by Bayle in the second edition of his *Dictionnaire historique et critique* (1702), in which he expanded the article

¹⁹⁴ See, for example, A II 1 (2nd edn), p. 786.

¹⁹⁵ See, for example, SLT, p. 74.

'Rorarius', adding a further note (L) devoted entirely to Leibniz's theory. There he wrote:

We are indebted to Leibniz for it [sc. the pre-established harmony]; and there is nothing else we can imagine that gives so exalted an idea of the intelligence and power of the Author of all things. This . . . would make me prefer this theory to that of the Cartesians, if I could conceive some possibility in the way of 'pre-established harmony'.¹⁹⁶

We know that Leibniz was proud of Bayle's verdict that no other theory offered such an exalted idea of God because he often enthusiastically reported it to his correspondents (usually breezing over Bayle's charge of impossibility in the process).¹⁹⁷ In doing so he clearly believed that Bayle had identified an attractive feature of the pre-established harmony that rival theories could not match.

Leibniz's complaint in M59, that Bayle 'could not put forward any reason why this universal harmony . . . should be impossible', is rather puzzling because Bayle in fact put forward a number of such reasons. In the first of these, Bayle claimed that Leibniz's theory 'raises the power and intelligence of divine art above what we can conceive',¹⁹⁸ in other words, that it demands more of God than he could achieve. Bayle illustrates his charge using the example of a ship which steers itself successfully for several years, avoiding rocks and other dangers, despite having no sensation or knowledge. Bayle claims that 'the ship's nature is not capable of receiving this power [sc. of self-direction] from God. However, what Leibniz supposes about the mechanisms of the human body is more wonderful and more surprising than all of this'.¹⁹⁹ Bayle then proceeds to show some of the 'surprising' things that, according to Leibniz's theory, the human body is able to do. For example, he claims that on Leibniz's theory, Caesar's body would have carried out all of its acts (such as attending senate at such and such a day and time) even if God had annihilated Caesar's soul. This, according to Bayle, is simply incomprehensible.²⁰⁰ Bayle alleges that further problems for Leibniz's theory emerge when one focuses on what the theory says about happenings in the soul. Suppose, for

¹⁹⁶ Bayle, *Dictionnaire historique et critique*, III, p. 2610 (article 'Rorarius', note L)/*Historical and Critical Dictionary*, p. 245.

¹⁹⁷ For example, see G III, p. 336: <http://www.leibniz-translations.com/masham.htm>

¹⁹⁸ Bayle, *Dictionnaire historique et critique*, III, p. 2610 (article 'Rorarius', note L)/*Historical and Critical Dictionary*, p. 247.

¹⁹⁹ Bayle, *Dictionnaire historique et critique*, III, p. 2611 (article 'Rorarius', note L)/*Historical and Critical Dictionary*, p. 247.

²⁰⁰ Bayle, *Dictionnaire historique et critique*, III, p. 2611 (article 'Rorarius', note L)/*Historical and Critical Dictionary*, p. 247.

example, that as an infant Caesar had been pricked by a pin immediately after having been suckled; in such a case, because of the causal independence of substances, Caesar's soul would have experienced the sweetness of milk at one moment and the sensation of pain in the next, despite the fact that nothing had acted upon it. This, according to Bayle, violates the principle that a thing always remains in the same state unless something else acts on it.²⁰¹ In these cases, and others, Bayle explicitly states that the objection shows Leibniz's theory to be impossible. Upon reading these objections in 1702 Leibniz put together a detailed response (which was not published until 1716). He was unconvinced by Bayle's efforts to show his theory to be impossible, suggesting that Bayle had confused what was impossible (that is, involved a contradiction) with what was merely surprising: 'I want to see [from Bayle] some positive argument which leads me to some contradiction, or the denial of some established truth. It would be no objection just to say that it is surprising.'²⁰² Given that he had prepared a point-by-point response to Bayle's objections and therefore clearly knew that they sought to show his theory to be impossible, it is odd to find Leibniz claiming in M59 that Bayle 'could not put forward any reason why [the pre-established harmony] should be impossible'. The two most likely explanations are (a) Leibniz had forgotten the substance of Bayle's objections in the years between 1702 and 1714, or (b) his remark in M59 means only that he did not consider Bayle's objections to be successful in showing the theory to be impossible.

60. Moreover, evident in what I have just said are the *a priori* reasons why things could not happen in a different way. For since God, in organising the whole, had regard for each part, and particularly for each monad, and since a monad's nature is to represent, nothing can limit it to representing just a part of things. However, it is true that its representation is merely confused as to the detail of the whole universe, and can be distinct only for a small part of things, that is, those which are either the nearest or the largest in relation to each of the monads, otherwise each monad would be a divinity. It is not in the object, but in the modification of the knowledge of the object, that monads are limited. They all go confusedly to infinity, to the whole, but they are limited and distinguished by the degrees of their distinct perceptions.

²⁰¹ Bayle, *Dictionnaire historique et critique*, III, p. 2611 (article 'Rorarius', note L)/*Historical and Critical Dictionary*, p. 251.

²⁰² LNS, p. 118.

Leibniz here offers a new argument for the claim that every monad represents the whole universe. It is, we are told, the *nature* of the monad to represent, and so nothing can restrict them from representing everything. The argument has three distinct steps, the first of which is not made explicit in M60:

1. If it is in the nature of a monad to represent then it will represent everything unless restricted in some way from doing so.
This is an assumption which Leibniz does not make explicit when laying out his argument.
2. It is the nature of the monad to represent.
This is what Leibniz established earlier, in M13–14, and is affirmed elsewhere too.²⁰³
3. Nothing can restrict a monad from representing.
If we consider a single monad and ask what could possibly restrict it from representing everything, there look to be two possible answers. First, another created monad (or set of monads) might somehow restrict it from representing; we can rule this out on the basis that monads do not causally interact (see M7), so there is no way for one monad to restrict the nature or operation of another. Second, God might restrict it from representing everything; presumably God, being omnipotent, *can* restrict a monad's natural tendency to represent, but there is no reason to think that he will do so. Hence this step in the argument perhaps should be revised to say that 'Nothing will restrict a monad from representing.'

The argument leads to the conclusion that each monad represents the whole universe. The conclusion itself is counter-intuitive, inasmuch as you and I do not seem to be perceiving the whole universe at all, just a small part of it, that is, generally whatever is close to us. Leibniz's response to this is to say that it seems this way only because we are supposing our perception of the universe to be exhausted by our distinct perceptions. Yet as Leibniz has already explained, these are only a very tiny percentage of all of the perceptions we have: many of our perceptions are not distinct at all, but confused, and the vast majority of our perceptions are so small that they lie below the threshold of consciousness. Consequently it is not surprising that it should seem to us as though we are perceiving only a small part of the universe rather than the whole.

Leibniz then draws a distinction between the object of perception and

²⁰³ For example, LTS, p. 346: 'Your Electoral Highness asks me what a simple substance is. I reply that its nature is to have perception, and consequently to represent composite things.'

the mode of perception. For any given monad, the object of perception is every other monad, that is, the entire world of monads. So each monad perceives the whole. But their mode of perception differs, that is, each monad differs in *how* they perceive the whole, or rather in how distinctly they perceive each of its parts. What distinguishes one monad from another is the distinctness of perceptions they have (this develops the claim made in M57). However, being created monads, their perceptions are always confused to some extent; a created monad never has distinct perceptions alone, otherwise it would be God. So it is the fact that we have confused perceptions that distinguishes us from God.

The claim that all monads perceive the whole, albeit confusedly, is sometimes called the doctrine of *confused omniscience*. The most well-known expression of it is to be found in PNG13: ‘Each soul knows the infinite, knows everything, but confusedly.’

61. And in this, compounds are analogous to simples. For the whole is a plenum, which makes all matter interconnected, and in a plenum every movement has some effect on distant bodies in proportion to their distance, such that each body is affected not only by those which touch it, and in some way feels the effect of everything that happens to them, but also by means of them it is affected by those which touch the former ones, the ones which directly touch it. From this it follows that this communication extends indefinitely. Consequently every body is affected by everything that happens in the universe, so much so that the one who sees all could read in each body what is happening everywhere, and even what has happened or will happen, by observing in the present that which is remote both in time and space: *σύνμνησις πάντα*, as Hippocrates said.²⁰⁴ But a soul can read in itself only what is distinctly represented there; it cannot unfold all at once all that is folded within it, for this proceeds to infinity.

Leibniz’s attention now switches from monads (simples) to compounds, by which he means the physical things of the world of everyday experience. As noted earlier, Leibniz’s position in the *Monadology* is that a compound ‘is nothing but an accumulation or *aggregate* of simples’ (M2), where an aggregate is understood not as a mere grouping or cluster of simples, but as a grouping or cluster of simples which are united, or aggregated, by a mind, on the basis of the connections between them. With this in mind, Leibniz now argues that the interconnectedness of all things is not

²⁰⁴ ‘all things conspire’.

restricted to the level of monads, but is also a feature of the physical world, there thus being a clear parallel between the two levels of reality. At the level of the physical world, we are told that this interconnectedness comes about because the universe is a plenum, that is, full, which means that there is no empty space between bodies. Hence when one body moves, it pushes against its neighbours, which in turn push against *their* neighbours, and so on, with the motion of the first body rippling through to every other, like a universe of infinite dominoes. But while all bodies push against each other, or rather, transmit motion to their neighbours, the effect decreases with distance, so the further apart any two bodies are the less effect their changes will have on the other. Of course there is not just a single wave of motion which ripples through from one body to every other, but many such waves operating at the same time, in fact an infinite number of them. There is thus a continuous transmission of motion from one body to the next, with each body registering the effect of every other body.

While M61 paints a picture of a world of compounds transmitting motion or exchanging force, it is worth remembering that Leibniz ultimately denied causal interaction between simples (M7), and since compounds are accumulations of simples (M2), it follows that there can be no causal interaction between compounds either. Yet Leibniz is happy to talk of interaction at the level of compounds as it fits with appearances, that is, preserves our ordinary ways of speaking.²⁰⁵ He has already explained (in M49–52) what he means by terms like ‘action’, and how influence between monads is only ideal.

62. Thus although each created monad represents the whole universe, it represents more distinctly the body which is particularly affected by it, and whose entelechy it is. And because this body expresses the whole universe through the interconnection of all matter in the plenum, the soul also represents the whole universe by representing this body, which belongs to it in a particular way.

Theodicy §400.

The question of how souls relate to bodies is here answered: each soul is associated with a particular body, which qualifies as its body by virtue of the fact that the soul represents it more distinctly than it does anything else. Taking Pete to be a soul, then, what makes Pete’s body *his* body is the fact that the monads of which it is composed are more distinctly represented by his soul than are those of any other body.

²⁰⁵ See for example SLT, p. 76.

There is some looseness in the language of M62 which could easily lead to misinterpretations. We should exercise caution about two claims in particular. The first is that a monad represents more distinctly ‘the body which is particularly affected by it’. The use of ‘affect’ could suggest causal interaction between body and soul. Although Leibniz is happy to allow talk of causality at the level of bodies – consider what he said in M61 about bodies touching each other and mutually communicating motion – he does not accept that there is any causality between bodies and souls, that is, between compounds and simples. So the soul cannot causally interact with the body, or vice versa. In this context ‘affected’ should be taken to mean ‘connected’ or ‘associated’ (which is in line with the meaning of the verb ‘affecter’ in Leibniz’s day).

The other part of this passage we should be careful of is the final clause: the phrasing here might lead one to suppose that Leibniz is claiming that the reason why one monad represents every other is because its body is affected by every other body. If so, this would reverse the proper order of explanation, because he holds that bodies (and their properties) are in some way explained by monads (and their properties), not vice versa.

63. The body belonging to a monad, which is its entelechy or soul, constitutes together with the entelechy what may be called a *living thing*, and with the soul what is called an *animal*. Now this body of a living thing or animal is always organic; for since every monad is in its way a mirror of the universe, and the universe is regulated in a perfect order, it must be the case that there is also an order in whatever represents it, that is, in the perceptions of the soul, and consequently in the body, in accordance with which the universe is represented in it.

Theodicy §403.

Leibniz starts with two definitions: (1) the combination of an entelechy (that is, a bare monad) and its body make a living thing, and (2) the combination of a soul and its body make an animal. Then follows an argument that is designed to show that the body of living things and animals is organic. But what does Leibniz mean by ‘organic’? In his day it was common for the term to be applied to things which had organs, whether living or not. Leibniz, however, takes it to refer to something with infinitely structured organs, for example in PNG3 he states that a body is organic ‘when it forms a kind of automaton or natural machine, which is a machine not only as a whole, but also in its smallest observable parts’. In other words, a body is organic when it has organs, and its parts have organs, and their parts have organs, and so on *ad infinitum*. In another text,

Leibniz refers to an 'organic machine' as one 'having infinite recesses'.²⁰⁶ For Leibniz, then, the term 'organic' is applied to that which has nested organisation, or rather, *infinitely* nested organisation. Hence his argument that bodies are always organic is designed to show that bodies have such infinitely nested organisation. The argument itself is not straightforward. It starts with Leibniz noting that every monad represents the universe (established in M56), and then claiming that the universe is regulated in a perfect order, which in all likelihood is an allusion to Leibniz's view (established in M57) that the universe consists of an infinite series of monads, each of which differs from every other in terms of perception and therefore perfection. Because of the representative nature of both soul and body, the order inherent in this infinite series will be reproduced not just in the perceptions of each soul (established in M60), but also in the structure of each body, which therefore itself has a nested organisation, in the sense of being ordered in each of its infinite parts. And this of course makes it organic.

64. Thus each organic body of a living thing is a kind of divine machine, or natural automaton, which infinitely surpasses all artificial automata, because a machine which is made by the art of man is not a machine in each of its parts; for example, the tooth of a brass wheel has parts or fragments which are no longer artificial as far as we are concerned, and no longer have anything about them to indicate the machine for whose use the wheel was intended. But the machines of nature, that is, living bodies, are still machines in their smallest parts, to infinity. It is in this that the difference between nature and art consists, that is, between divine art and ours.

Theodicy §134. §146. §194. §483.

The findings of M63 allow Leibniz to draw a clear distinction between the productions of God and those of man: God's machines have infinite complexity, each part being itself a machine consisting of parts and so on, whereas manmade machines have only finite complexity. The most organised of manmade machines will contain some parts which are themselves machines, but as we work our way down we quickly get to parts which are not. For example a computer contains parts such as a processor, memory chips, and a hard drive, which are themselves machines, and these in turn may contain parts which are also machines, but eventually we get down to the level of parts which are not machines, such as bits of plastic or metal or silicon.

²⁰⁶ LTS, p. 274.

65. And the author of nature was able to practise this divine and infinitely marvellous craftsmanship because each portion of matter is not only divisible to infinity, as the ancients recognised, but also actually subdivided without end, each part into further parts, each of which one has some motion of its own: otherwise it would be impossible for each portion of matter to be able to express the whole universe.

Preliminary discourse §70.

Theodicy §195.

The infinite subdivision of matter would follow from the fact that the bodies composed of matter are organic, that is, have infinitely nested organisation, which Leibniz established in M64. However here he opts to establish the infinite subdivision of matter in a different way. The central claim of his argument is that matter could not express the infinite complexity of the universe (as M61 showed that it does) unless it too were infinitely complex. And for matter to be infinitely complex means not only that it be infinitely divisible, but actually subject to infinite subdivision as well. Hence matter actually is infinitely subdivided.

Leibniz's remark that 'the ancients recognised' the infinite subdivision of matter is intended as an appeal to authority. He probably had in mind Aristotle, who claimed in the *Physics* that matter is infinitely divisible.²⁰⁷ It is often suggested that philosophers of the early modern period were much less inclined than their forebears to appeal to the traditional authorities (such as Aristotle and the Bible) when advancing their theories, preferring instead to ground their theories in empirical investigation and the use of reason.²⁰⁸ While it is true that early modern philosophers tended not to use appeals to authority exclusively, it was nevertheless not uncommon for them to make such appeals to support a theory that could also boast empirical or rational support. Leibniz certainly saw value in appealing to authority whenever he felt it would enhance his case. Such appeals also serve a defensive function: in an age which still frowned upon unorthodoxy, and was suspicious of 'novelty' and 'innovation' (both pejorative terms at the time), philosophers wishing to advance new theories often found it beneficial to show how aspects of those theories were in line with the views held by respected authorities, such as the ancients. In any case, Leibniz's appeal to 'the ancients' is somewhat disingenuous, as he was well aware that some of the ancients, such as the atomists Leucippus and Democritus, had *denied*

²⁰⁷ Aristotle, *Physics*, 231b10–13, in *The Complete Works*, I, p. 391.

²⁰⁸ See for example Douglas J. Soccio, *Archetypes of Wisdom: An Introduction to Philosophy* (Belmont: Wadsworth, 2010, 7ed), p. 247 and p. 272.

the infinite divisibility of matter. Clearly he considered this to be unworthy of mention.

It is worth noting that the world Leibniz presents us with exemplifies what Pascal had called a 'double infinity',²⁰⁹ that is, an infinity above us and below us, for whether we consider the macro level or the micro level, what we are faced with is infinity: 'all matter is organic everywhere, and that, however small a portion one takes, it contains representatively, by virtue of the actual decreasing to infinity that it encloses, the actual increasing to infinity which is outside it in the universe'.²¹⁰ While Pascal was humbled by the contemplation of the infinite above him and below him,²¹¹ Leibniz took great delight in it. Indeed, in one writing on the subject, Leibniz's language approaches that of the ecstatic: 'What an infinity of infinities infinitely replicated, what a world, what a universe perceptible in any assignable corpuscle.'²¹²

66. From this it is evident that there is a world of created things – living things, animals, entelechies, souls – in the least part of matter.

The idea expressed here is sometimes referred to as the 'worlds within worlds' doctrine. Leibniz takes it to follow from the claim in M65 that matter is infinitely subdivided. However, although he does not mention it in the *Monadology*, Leibniz also held that this doctrine could be empirically corroborated. He writes, for example, that 'microscopes make us see, in the smallest atom, a new world of innumerable creatures'.²¹³ This is a reference to the findings of one of the first microscopists, Antony van Leeuwenhoek (1632–1723), who discovered in saliva and water droplets a whole world of microorganisms which he called 'animalcules' (which literally means 'little animals'). Leibniz met Leeuwenhoek in 1676, and very likely became acquainted with the latter's research then. In a number of subsequent writings he claimed that Leeuwenhoek's findings corroborated the 'worlds within worlds' doctrine, for example, he wrote to one correspondent that 'Mr. Leewenhoek has shown' that there is 'an infinity of small animals in the least drop of water'.²¹⁴

²⁰⁹ Pascal, *Pensées and Other Writings*, trans. Honor Levi, ed. Anthony Levi (Oxford: Oxford University Press, 1995), p. 68.

²¹⁰ TI, p. 554: <http://www.leibniz-translations.com/pascal.htm>

²¹¹ See Pascal, *Pensées*, pp. 66–72.

²¹² TI, p. 554: <http://www.leibniz-translations.com/pascal.htm>

²¹³ A VI 4, pp. 952–3.

²¹⁴ PPL, p. 345. Nicolas Malebranche entertained similar ideas, speculating on the basis of the microscopists' discoveries that 'perhaps there are in nature things smaller

67. Each portion of matter may be conceived as a garden full of plants, and as a pond full of fish. But each branch of a plant, each limb of an animal, each drop of its humours, is also such a garden or such a pond.

This is the same ‘worlds within worlds’ doctrine found in M66, this time presented as a simile.

68. And although the earth and the air interspersed between the plants in the garden, or the water interspersed between the fish in the pond, are not themselves plant or fish, yet they still contain them, though more often than not of a subtlety imperceptible to us.

This is a consequence of the ‘worlds within worlds’ doctrine presented in M66–7: even those parts of matter which might at first seem not to be organic, such as the intervening matter between the plants in a garden or the fish in a pond, in fact contain living bodies, albeit ones that are so small that we cannot see them. The implication, which Leibniz goes on to draw in M69, is that every part of matter is full of living bodies. Future research, he believed, would reveal this directly: ‘I strongly favour inquiry into analogies: more and more of them are going to be yielded by plants, insects and the comparative anatomy of animals, especially as the microscope continues to be used more than it has been.’²¹⁵

In some texts, Leibniz argues that there is life in every part of matter via his principle of uniformity, which holds that ‘*it is always and everywhere in all things just as it is here*’,²¹⁶ in other words, that the things we do not experience are fundamentally like those that we do. Among other things, this would lead us to suppose that faraway things are like nearby things, and the microscopic is like the macroscopic, since we should recognise ‘in substances beyond our sight and observation something parallel to what we see in those which are within our range’.²¹⁷ Now our experience reveals to us bodies possessing life and perception, and on the basis of the principle of uniformity it follows that ‘this part of matter which composes these bodies would be too privileged if it alone had this advantage; thus . . . there is life and perception everywhere’.²¹⁸

and smaller to infinity, standing in that extreme proportion of man to mite’. This, Malebranche suggested, would be in keeping with ‘the idea we have of an infinite craftsman’. See Malebranche’s *The Search after Truth*, p. 26.

²¹⁵ NE, p. 473.

²¹⁶ LTS, p. 312; cf. LNS, p. 205; PPL, p. 590.

²¹⁷ LNS, p. 204.

²¹⁸ LTS, p. 312.

69. Thus there is nothing uncultivated, nothing sterile, nothing dead in the universe, no chaos, no confusions, except in appearance. This is somewhat like what is apparent with a pond viewed from a distance, in which we see a confused motion and swarming of the pond's fish without making out the fish themselves.

Theodicy. Preface ***5b, ****b

From the existence of life in every part of matter (affirmed in M66 and M68) it follows both that there is nothing dead in the universe, and that there is nothing disordered in the universe. Where there seems to be something inert, or disordered (Leibniz appears to equate the two), it is only so because our perception of it is confused. If we could get ourselves into a position where our perception was distinct, we would find that what seemed dead or disordered it is in fact full of life and fully ordered.

The claim that there is nothing without life in the universe is one that Leibniz made often,²¹⁹ and in an early text from 1676 he also argued that it 'is the only opinion worthy of the supreme creator of things, who has bequeathed us nothing sterile, nothing fallow, nothing unadorned'.²²⁰ It is likely that he continued to hold this view when writing the *Monadology*: see M64–5.

70. From this we see that each living body has a dominant entelechy, which in the animal is the soul; but the limbs of this living body are full of other living things – plants, animals – each of which also has its dominant entelechy or soul.

The language here ('From this we see . . .') would suggest that Leibniz takes the claims made in M70 to follow from what was said in M69. However that is implausible. Leibniz's assertion that 'each living body has a dominant entelechy' follows from M62, which claimed that an animal's soul represents its body more distinctly than it does other things. The connection is not immediately apparent because Leibniz does not explain what makes an entelechy dominant (this is true not just of the *Monadology* but also of many other texts in which he speaks of dominant monads or entelechies). However, in a letter to Barthélémy des Bosses (1668–1738) he explains that 'considered in terms of the monads themselves, domination and subordination consist only in degrees of perception'.²²¹ Hence a

²¹⁹ See, for example, PPL, p. 348; PE, p. 171; NE, p. 72.

²²⁰ Leibniz, *The Labyrinth of the Continuum*, p. 211.

²²¹ LDC, p. 257.

particular entelechy or soul is dominant in a living body inasmuch as it possesses perceptions that are more distinct than those enjoyed by all the other entelechies or souls in that body.

The second claim in M70, namely that the limbs of a living body are full of other living things, follows from the series of claims made in M63 and M65–6. In M63 Leibniz claimed that a living creature consists of a monad (entelechy) and a body, and then showed that its body is always organic, that is, one that has infinitely nested organisation. In M65 he showed that this was made possible by the infinite subdivision of matter, and in M66 drew the conclusion that there is a world of creatures in the smallest parts of matter (the ‘worlds within worlds’ doctrine). From that it follows that the limbs of a living body, being made of matter, are full of other living things. Hence we now have a more nuanced account of a living creature than that given in M63: strictly speaking, a living creature consists of a dominant entelechy and a body which in turn consists of other living creatures, each consisting of a dominant entelechy and a body, and so on. Although it is not immediately apparent, Leibniz takes the dominant monad to serve as the living creature’s principle of unity, that is, that which brings together all of the parts of which its body is composed and makes it *one*.

71. But there is no need to suppose, as have some who have misunderstood my thought, that each soul has a mass or portion of matter of its own, or allotted to it forever, and that it consequently possesses other inferior living things which are forever destined to serve it. For all bodies are in a perpetual flux, like rivers, and parts are continually entering and leaving them.

Developing the claim of M70, Leibniz now argues that while a dominant entelechy always remains embodied, its body is subject to continual change such that no part of the body is permanently united to the entelechy. This corrects the mistaken view of Bayle: in note H of the *Dictionnaire* article ‘Rorarius’, Bayle claimed that Leibniz’s theory entailed that each soul retains the same body forever:

Leibniz’ hypothesis . . . leads us to believe, (1) that God, at the beginning of the world, created the forms of all bodies and, hence, all the souls of beasts, (2) that these souls have existed since that time, inseparably united to the first organized body in which God placed them.²²²

²²² Bayle, *Dictionnaire historique et critique*, III, p. 2607 (article ‘Rorarius’, note H)/*Historical and Critical Dictionary*, p. 236. In his private jottings on Bayle’s note H,

But why does Leibniz reject the suggestion that an animal retain the same body throughout its existence? Apparently because he accepts the ancient doctrine of perpetual flux, often attributed to Heraclitus. According to Plato, 'Heraclitus says somewhere that "everything gives way and nothing stands fast," and, likening the things that are to the flowing of a river, he says that "you cannot step into the same river twice".'²²³ Leibniz gives no grounds for his endorsement of the Heraclitean doctrine of perpetual flux, and it would not seem to follow automatically from his earlier claim that every substance is subject to constant change (M10).

Although Leibniz here dismisses the thought that a soul may remain forever united to a particular piece of matter, this was a view he had endorsed in his youth, in the doctrine of the *flos substantiae*, or 'flower of substance'.²²⁴ The doctrine held that a person's soul was implanted into a tiny piece of matter no bigger than a mathematical point (the 'flower of substance'), which during life was located in the centre of the brain. After death, the soul remained attached to its flower of substance, and while the rest of the body would be destroyed – by fire, decomposition, devouring, and so on – the soul in its flower of substance remained indestructible, the indestructibility being guaranteed by the fact that the flower of substance was a mathematical point: 'a point is indivisible and so cannot be destroyed. So let the body be burned up and dispersed into all corners of the world – the mind will persevere safe and sound in its point. For who will be able to burn a point?'²²⁵ Leibniz abandoned the *flos substantiae* doctrine long before he came to write the *Monadology*; the last mention of it in his writings is in 1686.²²⁶

72. Thus the soul only changes body bit by bit and by degrees, so that it is never stripped of all its organs all at once. In animals there is often metamorphosis, but never metempsychosis or transmigration of souls; neither are there any entirely *separate souls*, nor genies without bodies. God alone is entirely detached from body.

Theodicy §90. §124.

Leibniz wrote: 'It is not that a certain mass always remains inseparable from the animal or the soul, but rather that certain organs always remain, at least by the substitution of an equivalent, as happens when a river remains the same, although matter of the same kind is always entering and leaving it.' LNS, p. 75.

²²³ Plato, *Cratylus* 402a, in *Plato: Complete Works*, p. 120.

²²⁴ See Lloyd Strickland, 'Leibniz, "the flower of substance," and the resurrection of the same body', *The Philosophical Forum* 40:3 (2009), pp. 391–410.

²²⁵ A II 1 (2nd edn), p. 181.

²²⁶ See A VI 4, p. 2454.

The claims made here are a straightforward consequence of what has come before. In M71 we learned that bodies are subject to constant change in terms of their composition. That this should happen by degrees follows from Leibniz's claim in M13 that all natural change happens by degrees. Leibniz then explains that this gradual change in bodily composition is consistent with metamorphosis, that is, a change of form, as would occur in the transformation of caterpillar to butterfly, for example. So even here, where the overall change is quite dramatic, the living body undergoes a gradual change of parts. The fact that a soul changes its body by degrees also rules out the possibility of metempsychosis, that is, the transmigration of the soul. After all, metempsychosis would involve the soul suddenly 'jumping' from one body to another, which is tantamount to saying that all the parts of a soul's body are replaced at once. This conflicts with the conclusion Leibniz has just drawn, namely that a soul changes its body by degrees.

Leibniz then insists that created souls always retain *a* body (even though its constituent parts are constantly changing). So there are no disembodied souls. This contradicts the position of Aquinas (1225–74), who held that human souls could exist in a disembodied state following separation from the body.²²⁷ Leibniz does not here reveal his reasons for rejecting this, but in other texts we can find two distinct arguments. The first states that souls without bodies would be incomplete.²²⁸ For, as created beings, they are necessarily imperfect, and hence a mixture of active and passive, with the body serving as its passive principle, that is, its limitation.²²⁹ Hence every created soul is necessarily accompanied by an organic body, and only God is able to enjoy disembodied existence. A second reason Leibniz sometimes offers for his rejection of disembodied souls is based on the need for order and harmony. Souls are connected not just to their own bodies but to everything else, since the least change in one body ripples through to affect all of the others (see M62ff); the end result is a perfect order between all the parts of the created universe. But this would not be the case if there were disembodied souls, as such souls would cease to be connected to the rest of the world, and hence not be part of the universal order instituted by God. As God would not permit such a disharmonious state of affairs to obtain, it follows that there can be no disembodied souls, except for God, who alone stands outside of the universal order: 'God alone is above all matter, since he is its Author. But creatures free or freed from matter would be at the

²²⁷ See Aquinas, *Summa Theologiae* I, Q.75, Art. 2, ad.

²²⁸ See for example, LNS, p. 219.

²²⁹ See SLT, p. 65.

same time detached from the universal connection, and like deserters from the general order.²³⁰

Often when discussing his rejection of disembodied souls Leibniz would claim that his thinking was in line with the teaching of the Church Fathers, who had granted bodies even to angels.²³¹ His appeal to the authority of the Fathers in this matter may well be due to the fact that he knew that respected figures such as Aquinas and Descartes had accepted the existence of disembodied souls: in endorsing the contrary position, Leibniz felt obliged to offer more than just arguments. By reminding his readers of the theological pedigree of his own position, Leibniz hoped it would be taken more seriously than might otherwise have been the case.

73. It is also on account of this that there is never true generation, nor perfect death, taken in the rigorous sense of the term as consisting in the separation of the soul from the body. And what we call *generation* is development and growth, just as what we call *death* is enfolding and diminishing.

By insisting that souls are never separated from a body (M72), Leibniz is able to rule out both the true generation and death of a living creature. Traditionally, death was understood to be the separation of the soul from the body,²³² and clearly if souls are never separated from a body then they do not die. By parity of argument, absolute generation, understood as the joining of a soul with a body, does not occur either, because the soul is always joined to a body. Rather than retire the terms 'generation' and 'death', Leibniz revises their meaning: generation is now taken to be the process whereby a soul's body grows and develops (for example in childhood), while death is generation in reverse, that is, the process whereby a soul's body shrinks and becomes less developed (for example in decomposition).

74. Philosophers have been greatly puzzled about the origin of forms, entelechies, or souls. But today, when detailed studies of plants, insects, and animals have shown that the organic bodies of nature are never produced from chaos or from putrefaction but always through seeds,

²³⁰ PPL, p. 590 (translation modified).

²³¹ See, for example, PE, p. 170; G III, p. 457.

²³² See, for example, Plato, *Phaedo* 64c, in *Plato: Complete Works*, p. 56.

in which there was doubtless some *preformation*, it has been concluded not only that the organic body was already there before conception, but also that there was a soul in this body. In a word, it has been concluded that the animal itself was already there, and that by means of conception this animal has been merely made ready for a great transformation in order to become an animal of another kind. Even outside generation, something similar is observed when maggots become flies, and caterpillars become butterflies.

Theodicy §86. §89.

Preface ***5b and following pages.

§90. §187. §188. §403.

§86. §397.

In the *Theodicy* Leibniz explains the three traditional theories which sought to explain the origin of souls: (1) pre-existence, which held that souls existed elsewhere before being joined to a body and born into this world; (2) traduction, which held that the souls of children were produced from the souls of parents, just as one flame is started from another; (3) education, which held that souls are created from the power of matter alone.²³³ (We would today term the third theory *spontaneous generation*.) To these was added a fourth theory in the seventeenth century: preformationism. This theory held that all living things develop from miniature versions of themselves which existed in the semen of the parents.²³⁴ Birth was simply the enlargement of these animalcules or homunculi (little humans). The preformationist theory was boosted by Leeuwenhoek's discovery of spermatozoa in 1677, and developed further by the observations of Jan Swammerdam (1637–80) and Marcello Malpighi (1628–94). Leibniz was a keen adherent, and on the back of the evidence adduced by the microscopists he stated that 'it is doubtful that an entirely new animal is ever produced but that living animals as well as plants already exist in miniature in the seeds before conception'.²³⁵ He followed Malebranche in envisioning all living things as being nested inside each other at the moment of creation, like Russian dolls, such that all animals (men included) that were to develop throughout the course of the universe were present as animalcules in the semen of all previous generations of animals. Aside from the evidence from microscopists, Leibniz also found support for preformationism

²³³ H, p. 170f.

²³⁴ A rival version of the theory – endorsed by Malebranche among others – held that preformed animals were held in the female ova rather than the male sperm. Leibniz rejected this on the grounds that 'the ovaries have not yet shown anything animated'. G III, p. 564.

²³⁵ PPL, p. 589.

in the Bible; the theory, he claimed, 'is sufficiently in accordance with Holy Scriptures, which insinuate that seeds have existed from the beginning'.²³⁶

For Leibniz, then, conception does not mark the beginning of the animal (or indeed the soul), but rather the start of its development from animalcule to animal proper, which is merely a particular stage of its existence rather than the beginning of its existence. Such great transformations are not limited to conception and birth, however, as we also see caterpillars transforming into butterflies and worms (presumably larvae) transforming into flies. Leibniz sometimes suggests that these transformations we can see should alert us to the existence of those transformations that we cannot see: 'nature shows us . . . the transformation of caterpillars and other insects . . . to make us deduce that there are transformations everywhere'.²³⁷

75. *Animals*, some of which are raised by means of conception to the level of larger animals, may be called *spermatic*. But those of them which remain in their own kind, namely the majority of them, are born, multiply, and are destroyed like the large animals, and there are only a chosen few which pass through to a greater stage.

In Leibniz's day, 'spermatic' did not mean (as it does now for us) 'relating to sperm' but rather 'relating to seed' (indeed, our word 'sperm' originally meant 'seed'). Hence a spermatic animal is literally a seed animal, that is, an animal that exists (or once existed) in seed form. Leibniz held that all animals are seed animals.

A key claim of M75 is that animals have their own lifecycles: they begin as seeds, many then grow into larger animals after conception, then reproduce and die (in the sense of becoming smaller again). The process is the same no matter how large or small the seed animal happens to be. This is perhaps not such an odd thought, given that the microscopic organisms recognised today, such as bacteria and viruses, are held to have their own lifecycles of generation, growth, reproduction, and death.

A second key claim in M75 is that while most seed-animals remain in their own kind throughout the lifecycle, a small number do not, and go on to enjoy a higher status. Leibniz's remarks about this here are rather cryptic, but seem to foreshadow what he will go on to say in M82 about human souls. There he will claim that, prior to conception, human souls are no different from animal souls, but at the moment of conception they

²³⁶ LTS, p. 285. Leibniz is presumably thinking here of Genesis 1.11–12, in which God creates seed-bearing plants.

²³⁷ LTS, p. 285.

are suddenly elevated to the rank of rational souls (minds). Human souls thus undergo a change in kind (from animal to human), while all other souls remain in their own kind.

76. But this is only half the truth. I have therefore concluded that if the animal never begins naturally, neither does it end naturally, and that not only will there be no generation, but also no complete destruction, or death, in the rigorous sense of the word. And these arguments, which are *a posteriori* and drawn from experience, agree perfectly with the principles I deduced *a priori* above.

Theodicy §90.

In M73 Leibniz gave an *a priori* argument for the claim that there is no true generation, and immediately afterwards, in M74, he offered *a posteriori* grounds for it, appealing to the researches of the microscopists and the theory of preformationism that grew out of their observations. Hence Leibniz thought it possible to offer *a priori* and *a posteriori* grounds for the claim that animals never begin naturally.

But what about the second claim, that there is no true death, and that what we think of as death is merely the envelopment and diminution of an animal? Leibniz offered *a priori* grounds for this claim in M73, but does not attempt to give parallel *a posteriori* grounds for it. This is unsurprising, given that there was no more observational evidence in its favour in Leibniz's day than there is in ours.²³⁸ So Leibniz was only able to offer *a priori* (M73) grounds for the claim that there is no true death, though in M76 he also appears to try to infer it from the fact that there is no true generation. He might be thinking that the fact that there is no true generation makes it 'natural' to think that there is no true death either; certainly on occasion Leibniz argued this way:

There is nothing more natural than to think that whatever has no beginning will also never perish. When one recognizes that all generation is but the

²³⁸ The reason for this, according to Leibniz, is 'because generation proceeds in a natural manner, little by little, so that we have leisure to observe it, but death is a sudden reverse by a leap [*per saltum*] a return all at once to parts which are too small for us, because death ordinarily occurs in too violent a way to permit us to observe the details of the retrogression'. PPL, p. 345. On the face of it, Leibniz's characterisation of death here as involving a leap would seem to conflict with the law of continuity. But the conflict can no doubt be removed: the law of continuity actually demands that all natural changes take place continuously, and Leibniz would presumably say that while the change from life to death is very quick, it is nevertheless continuous, and does not involve an animal being reduced to a seed-like state in a single instant.

increase and development of an animal which is already formed, it is easy to be persuaded that corruption or death is nothing but the diminution and involution of an animal which does not cease to subsist and to remain alive and organized.²³⁹

77. Thus it may be said not only that the soul (mirror of an indestructible universe) is indestructible, but also the animal itself, although its machine may often perish in part, and cast off or put on organic integuments.

Leibniz established the indestructibility of the soul (along with all other kinds of monads) in M4–5. His description of the soul here as ‘the mirror of an indestructible universe’ hints at an argument for the soul’s immortality which is made in other writings (for details, see the comments on M56).

We are now told that animals are indestructible also. The indestructibility of animals follows from M73, in which Leibniz established that animals neither begin nor end naturally. But we have also learned (from M72) that animals are never without a body, and (from M74) that they can and do undergo great transformations. Leibniz thus reimagines an animal’s death not as consisting in the separation of its soul from its body, but rather as involving a great transformation of its body, that is, the loss of much of its mass and most of its organs. But even after death, the animal’s soul always remains attached to *some* organs, and thus is always embodied.

Although he does not say so explicitly, Leibniz must mean that animals are *naturally* indestructible, in that they cannot be destroyed in the course of nature. This of course leaves open the possibility that they might be destroyed by a supernatural process, as would happen if God were to annihilate them.

In the seventeenth and eighteenth centuries, the body (whether of an animal or a human) was often referred to as a ‘machine’, especially when viewed mechanistically, that is, as operating in accordance with natural laws. As for ‘integuments’, these are coverings, normally in the sense of the natural coverings of an organism, such as its skin or shell. To say that an animal’s machine may ‘cast off or put on particular organic integuments’ is to say that it changes in terms of its composition.

²³⁹ PPL, p. 345.

78. These principles have given me a way of naturally explaining the union, or rather the agreement, of the soul and the organic body. The soul follows its own laws, and the body likewise follows its own, and they coincide by virtue of the pre-established harmony between all substances, since they are all representations of one and the same universe.

Preface ***6

Theodicy §340. §352. §353. §358.

The doctrine espoused here, that of pre-established harmony, is the one for which Leibniz was most famous in his own lifetime (so much so that he even signed one of his later articles ‘by the author of the system of the pre-established harmony’).²⁴⁰ The doctrine holds that God so established things from the very beginning that the states of the body and the states of the soul are always in harmony, and are so entirely as a result of body and soul following their own laws rather than because there is any interaction between them, or because one is constantly adjusted to the other by an outside agency (such as God). The soul follows its own psychical laws, while bodies follow the laws of motion, and together these laws ensure agreement between soul and body. Hence at the moment that the psychical laws operating on Pete’s soul lead him to decide to raise his hand, the laws of motion at work on his body make his hand rise. Similarly, when the laws of motion lead to an object hitting Pete’s leg, the psychical laws bring about in his soul a feeling of pain. By way of illustration, Leibniz sometimes used the example of two clocks. Suppose a sufficiently skilled clockmaker makes two clocks which both keep perfect time of their own accord: their agreement is thus due to the supreme artisanship of the clockmaker at the outset, rather than to any influence between the clocks, or on account of any intervention of the clockmaker.²⁴¹

The pre-established harmony of soul and body follows from the pre-established harmony of all monads as detailed in M56. For the soul is a monad and the body consists of monads, and since all monads agree in their states, the soul and all of the monads of the body must agree in their states also. Leibniz holds that the union of the soul and body consists in nothing more than their mutual agreement;²⁴² they are thus not bound together in any other way. As he explains in the *New System* (1695): ‘It is this mutual relationship, arranged in advance in each substance of the universe, which produces what we call their communication, and which

²⁴⁰ See PPL, p. 586.

²⁴¹ See SLT, p. 77.

²⁴² SLT, p. 75.

alone constitutes *the union of the soul and the body*.²⁴³ In 1703, this claim was challenged by René Joseph de Tournemine (1661–1739), who argued that

*correspondence, or harmony, does not make a union, or essential connection. Whatever parallels we imagine between two clocks, even if the relation between them were perfectly exact, we could never say that these clocks were united just because the movements of the one correspond to the movements of the other with perfect symmetry.*²⁴⁴

In his response (1708), Leibniz claimed that Tournemine had misunderstood what he had meant by ‘the union of the soul and the body’. Leibniz insisted that when he spoke of this union he meant only ‘the relation we perceive between the soul and the body’, in other words, the mutual adjustment of the two. Tournemine, on the other hand, took ‘union’ to be something more than this; specifically, he thought it required some kind of metaphysical bond or glue that made soul and body into a single thing. Leibniz claimed that if there was such a ‘metaphysical union’ it was, like the mysteries of faith, something beyond human understanding, and therefore he could not explain it.²⁴⁵ Perhaps wary of being misunderstood again, in M78 Leibniz makes it clear that by ‘the union of the soul and body’ he means only the agreement between soul and body.

The name ‘pre-established harmony’ was coined only in 1695.²⁴⁶ Prior to that, Leibniz referred to the doctrine as the ‘hypothesis of concomitance’²⁴⁷ or the ‘hypothesis of agreements’.²⁴⁸

79. Souls act according to the laws of final causes through appetitions, ends, and means. Bodies act according to the laws of efficient causes, or laws of motion. And the two kingdoms, that of efficient and that of final causes, are in harmony with each another.

This section elaborates on the preceding one, which simply stated that souls and bodies follow their own laws. We are now told what these laws are. Souls are driven from one state to another by the laws of final causes, or as Leibniz puts in PNG3, ‘the laws of appetites, or *final causes of good and evil*, which consist in the observable perceptions’. More simply, what

²⁴³ SLT, p. 75.

²⁴⁴ LNS, p. 249.

²⁴⁵ See LNS, pp. 250–1. See also LDV, p. 331.

²⁴⁶ See A III 6, p. 505.

²⁴⁷ SLT, p. 46.

²⁴⁸ SLT, p. 75.

drives the internal changes of souls is their appetite, or *will*, which forms volitions to bring about desired ends, namely those which are perceived to be the best. However, the will itself is inclined by all of a soul's (infinite) perceptions taken together at any given moment, the vast majority of which are confused, which means that the perceived best course is often not the actual best course. Nevertheless, the form of causality operative in souls is final causality, because souls are constantly driven to attain desired ends.

Bodies, on the other hand, are pushed from one state to another by the natural laws of motion and impact, and are thus affected by efficient causality only. Efficient causality is 'blind' inasmuch as it is not directed by knowledge and does not work towards an end.

The two kinds of cause – final and efficient – operate strictly within their own realms: final causes only on souls, efficient causes only on bodies. Hence one should not explain the states of the soul by means of efficient causes, nor the movement of bodies by means of final causes. Nevertheless souls and bodies always agree, because of the pre-established harmony between them.

80. Descartes recognised that souls cannot impart force to bodies because there is always the same quantity of force in matter. However, he believed that the soul could change the direction of bodies. But this is because the law of nature which also affirms the conservation of the same total direction in matter was not known in his day. If he had noticed this, he would have come across my system of pre-established harmony.

Preface ****

Theodicy §22. §59. §60. §61.

§63. §66.

§345. §346 onwards. §354. §355.

Leibniz now seeks to support his system of pre-established harmony in an indirect way, by undermining one of its main rivals, namely the 'way of influence' endorsed by Descartes.²⁴⁹ Descartes had recognised the existence of minds (mental substance), the essence of which is thought, and body (material substance), the essence of which is extension. He also held that there was causal interaction between the two, mediated via the pineal gland at the centre of the brain. Leibniz's understanding of Descartes'

²⁴⁹ The 'way of influence' is Leibniz's own description of Descartes' hypothesis, and was not used by Descartes. See SLT, p. 77.

position was that such interaction involves the non-material soul changing the direction of the pineal gland, which in turn changes the direction of animal spirits which circulated throughout the nervous system, and thus leads to physiological changes. Such interventions, Leibniz argues, are fully consistent with the conservation principle endorsed by Descartes, which holds that the total quantity of motion in the material world is always held constant. After all, on the scenario just outlined, the soul only changes the direction of motion of the pineal gland, and does not add to or detract from the total quantity of it. However, in his own physics, Leibniz demonstrated that it was not just motion that was conserved, but also *direction of motion*. This led to him ruling out as impossible the sort of interaction between soul and pineal gland that he thought Descartes had advanced.²⁵⁰

However it is not entirely certain that Leibniz's reading of Descartes is accurate. While there is clear textual evidence that Descartes held the position that the soul interacts with the pineal gland by changing the direction of its motion (he claims that the pineal gland 'can be pushed to one side by the soul and to the other side by the animal spirits'),²⁵¹ it is less clear that the textual evidence supports the claim that he believed the soul interacts with the pineal gland *only in this way*, which is the position Leibniz ascribes to him. In fact, the textual evidence seems to point in a different direction. For example, in §34 of *The Passions of the Soul*, the work in which Descartes dealt with the topic of interaction at some length, Descartes talks of the gland being moved 'in many different ways' by the soul.²⁵² And in §41 he writes that 'the activity of the soul consists entirely in the fact that simply by willing something it brings it about that the little gland to which it is closely joined moves in the manner required to produce the effect corresponding to this volition'.²⁵³ Such passages could quite readily be interpreted as claiming that there are various ways in which the soul affects the state of the pineal gland; changing the direction of its motion would be one such way, but perhaps not the only one.

It is interesting to note that in the earliest text in which Leibniz advances

²⁵⁰ Leibniz frequently levelled this objection. See, for example, LNS, pp. 51–2; PPL, p. 587.

²⁵¹ Descartes, *The Philosophical Writings of Descartes*, I, p. 346.

²⁵² Descartes, *The Philosophical Writings of Descartes*, I, p. 341. The point is developed by Daniel Garber in his *Descartes Embodied* (Cambridge: Cambridge University Press, 2000), pp. 133–67, especially pp. 144–9. Garber also claims that while Descartes held that motion is conserved, he may not have treated this as a universal law, and may have wished to exempt animate (human) bodies from it. See Garber, *Descartes Embodied*, pp. 150–2.

²⁵³ Descartes, *The Philosophical Writings of Descartes*, I, p. 343.

his reading of Descartes, a letter from 1687, he does so somewhat hesitantly, as though making a tentative suggestion as to what Descartes may have believed or may have intended ('... as, it seems, Descartes wishes to say ...').²⁵⁴ However, in later writings, such as the *Monadology*, this hesitancy is replaced by a confident assertion that Descartes *did* in fact believe that the soul only influenced the pineal gland by changing the direction of its motion. Why Leibniz became increasingly confident of his interpretation of Descartes is unclear. One possibility that is difficult to dismiss, especially given that Leibniz failed to amass any positive textual evidence in favour of his interpretation, is that his frequent repetition of his interpretation eventually strengthened his confidence in it.²⁵⁵

81. This system means that bodies act as if there were no souls (although this is impossible), and souls act as if there were no bodies, and both act as if each influenced the other.

This is a succinct summary of the pre-established harmony between soul and body. In some texts Leibniz develops one of the scenarios briefly mentioned here, and considers what would happen if all souls were suddenly removed from the world while the bodies remained: because bodies are not and never were affected by souls, but only by the laws of motion and impact, they would continue to behave exactly as before, and so human bodies would continue to read and write books, though there would be no souls to understand what was being read or written.²⁵⁶ (The scenario, Leibniz insists, would never come to pass, though this does not detract from its usefulness as an illustration of the independence of the realms of soul and body.)

82. As for *minds* or rational souls, although I find that, fundamentally, what we have just said holds good of all living things and animals (namely

²⁵⁴ PE, p. 83.

²⁵⁵ Similar to this, Peter Remnant suggests that Leibniz may have engaged in 'a piece of creative elucidation' in his presentation of Descartes' position. Peter Remnant, 'Descartes: body and soul', in Georges J. D. Moyal (ed.), *Descartes: Critical Assessments Volume III* (London: Routledge, 1991), p. 329. Not all scholars think that Leibniz misinterpreted Descartes, however; Peter McLaughlin, for instance, claims that Leibniz's reading – and criticism – of Descartes, is fair. See Peter McLaughlin, 'Descartes on mind-body interaction and the conservation of motion', *The Philosophical Review* 102:2 (1993), pp. 155–82.

²⁵⁶ See A VI 4, p. 367: <http://www.leibniz-translations.com/howthesoul.htm>

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that the animal and the soul only begin with the world, and no more come to an end than the world does), nevertheless rational animals are distinctive in that their little spermatric animals, for as long as they are only spermatric animals, have only ordinary or sensitive souls; but as soon as those which are chosen (so to speak) attain human nature through an actual conception, their sensitive souls are raised to the rank of reason and to the privilege of minds.

Theodicy §91. §397.

Leibniz now turns his attention to rational souls (minds), which will remain his focus for the remainder of the text. The claim he makes here was hinted at earlier, in M75, and is this: before conception, rational souls are no different from animal souls, but are raised in status (given the spark of reason) at the moment of conception. This is a view Leibniz adopted in the 1680s, after writing a series of short texts in which he wrestled with the problem of the origin of human souls.²⁵⁷ In these texts, Leibniz considers and rejects various alternative hypotheses, for example:

- that human souls existed from the outset in human seeds ('if we suggest that human souls are . . . created in the beginning by God to lie hidden in seeds and await conception, we fall into [a] paradox, because evidently innumerable human souls may remain unused in seeds and never come to use reason'.²⁵⁸ Such waste – most sperm do not fertilise ova and so do not develop into human beings – does not seem consistent with God's wisdom).
- that human souls do not exist in seeds, and are instead created at the point of conception (this 'makes human seeds inferior to the seeds of beasts, for who would believe that souls are rather inside the seeds or eggs of animals, but no souls are in humans alone?')²⁵⁹

As a result of these considerations, Leibniz reasoned that it is more in keeping with reason to suppose that each human seed contains an animal soul which God supplements with reason at the moment of successful conception. In later years he referred to this process as *transcreation*.

Leibniz appears to have conceived two different ways in which transcreation might take place. In T91 he claims that transcreation involves 'a particular operation', that is, God's immediate operation, which supports his claim elsewhere that it is a miraculous process.²⁶⁰ However his discom-

²⁵⁷ See SLT, pp. 61–3.

²⁵⁸ SLT, p. 63.

²⁵⁹ SLT, p. 63.

²⁶⁰ See for example LDB, p. 127.

fort with the idea of admitting so many miracles ('I would prefer to do without a miracle in the generation of man' he writes in T397) led him to develop a naturalistic alternative, in which the rationality of human souls does pre-exist in human seeds but remains latent until some pre-ordained time, namely the moment of conception, at which point its powers naturally develop:

either this [sc. elevation to the degree of rationality] is brought about miraculously through a divine superaddition or, in those seminal souls that are destined for humanity, it is already concealed in a prearranged act. In the latter case, it will finally be uncovered and reveal itself when the organic body proper to such a soul, through a final conception, is also partly uncovered and partly transformed into a human body, for a human organism certainly has only been pre-established in the bodies of these souls, while an infinity of other souls and seminal animalcula (if such are acknowledged), or at any rate preformed living organic bodies, remain within the limits of a sensitive degree of nature, with respect to both prearranged and exercised acts, as the schools say.²⁶¹

Leibniz entertains this idea in T397 also. Leibniz thus offers a miraculous account and a naturalistic account of how certain animal souls may come to be elevated to the rank of reason. There is insufficient information in M82 to determine which of these accounts he had in mind at the time of writing the *Monadology*.

83. Among other differences which exist between ordinary souls and minds, some of which I have already pointed out, there is also this one: that souls in general are living mirrors or images of the universe of created things, whereas minds are also images of the divinity itself, or of the very author of nature, capable of knowing the system of the universe, and of imitating something of it through their own smaller-scale constructions, each mind being like a little divinity in its own sphere.

Theodicy §147.

The differences between minds and ordinary souls were detailed in M29–30: minds can know necessary truths through reason, are self-conscious, and have a concept of God. We now learn that while souls are living mirrors of the universe, minds are also images of God. That every soul and mind is a living mirror of the universe can be deduced from M56, in which Leibniz claimed that every monad is a living mirror of the universe. That minds

²⁶¹ LDB, p. 151.

are more than that, being also images of God, is due to their possession of reason (M29). This enables them to know the system of the universe and to imitate it, to some extent.

But to imitate it how? Here there is some uncertainty as to what exactly Leibniz meant. Much of the problem is due to Leibniz's use of the obscure phrase 'echantillons architectoniques' which literally translates as 'architectonic samples', where 'architectonic' means 'relating to the art of construction'. Because the literal translation is not very illuminating, Leibniz's translators have opted to translate 'echantillons architectoniques' in a different way. These are some of the suggestions:

Translator	Translation
Robert Latta	architectonic patterns ²⁶²
Roger Ariew and Daniel Garber	schematic representations ²⁶³
Anthony Savile	constructive exemplars ²⁶⁴

Each translation comes with, or invites, its own interpretation of M83. Latta takes Leibniz's 'echantillons architectoniques' to refer to 'subsidiary creations or imitative constructions'. He explains: 'Man can not merely express in himself the "machine" of the universe, but he can also make for himself small "machines," constructed on similar principles.'²⁶⁵ Here, then, 'echantillons architectoniques' are to be understood as manmade machines, and Leibniz's point would be that we imitate God by constructing them. Ariew and Garber, on the other hand, take Leibniz's 'echantillons architectoniques' to be 'schematic representations'; this seems to take Leibniz to be saying that we imitate God by devising mathematical or physical accounts of the universe. However, in M83 Leibniz states that minds are capable of knowing the universe *and* of imitating something of it. If this imitation is nothing more than the ability to produce 'schematic representations', it is difficult to see that it amounts to anything more substantial than knowing the system of the universe (since to devise a mathematical account of the universe is just a way of coming to know it), in which case Leibniz would be effectively repeating himself. Lastly, Savile translates 'echantillons architectoniques' as 'constructive exemplars', and in so doing construes Leibniz as saying that

We exert our intellectual powers in the pursuit of knowledge in science, in the construction of artefacts (engineering and art) and in the devising of politi-

²⁶² MPW, p. 266.

²⁶³ PE, p. 223.

²⁶⁴ Savile, *The Routledge Philosophy Guidebook*, p. 238.

²⁶⁵ MPW, p. 266.

cal and social organizations for the orderliness of our lives. In this exercise of power, knowledge, wisdom and spiritual goodness we imitate God.²⁶⁶

As plausible as this might look at first glance, at its heart is an interpretation of the French expression ‘*echantillons architectoniques*’ which looks to be untenable: ‘*architectonique*’ refers to construction in the architectural sense, rather than the devising of political or social structures. This sense informs my own translation of ‘*echantillons architectoniques*’ as ‘smaller-scale constructions’; this translation suggests Leibniz’s point to be that not only can minds know the system of the universe, they can also construct little models or machines based on the same principles. This of course is Latta’s interpretation also. It is worth noting, however, that the matter is far from clear cut. At the end of M83 Leibniz refers the reader to T147, where he explains that God allows man to govern his own little world, that is, his own life, in accordance with reason. If M83 is to be read in light of this, it suggests a different sense of minds being images of God. To complicate matters still further, in PNG14 Leibniz claims that minds are images of the divinity in part because they are able to produce something of God’s works, which he there takes to mean that they can invent things in dreams, act freely, and make scientific discoveries.

However it is understood, the claim that minds are images of God has clear echoes of the common Judeo-Christian motif that humans have been made in God’s image, asserted in Genesis 1.27–8, 5.1–2, and 9.6. It is one of the few such motifs to be found in the *Monadology* (another occurs at M85), which otherwise largely presents a metaphysician’s account of God and his activity.²⁶⁷ Note that by claiming that *minds* are made in God’s image Leibniz goes beyond what is said in Genesis, which very clearly states that *human beings* are made in his image: for Leibniz, the category of ‘minds’ includes not just human beings but also higher (superhuman) beings such as genii and angels; this is not very clear in the *Monadology* itself (though see M72) but is affirmed in numerous other writings.²⁶⁸

84. It is for this reason that minds are capable of entering into a kind of society with God, and that his relation to them is not only that of an inventor to his machine (which is God’s relation to other created things) but also that of a prince to his subjects, and even of a father to his children.

²⁶⁶ Savile, *The Routledge Philosophy Guidebook*, pp. 214–15.

²⁶⁷ This has led one scholar to claim that ‘the *Monadology* could be read as being compatible with an eighteenth-century deist perspective’. Peter Loftson, ‘Introduction’, in G. W. Leibniz, *Discourse on Metaphysics and Other Writings* (London: Broadview, 2012), p. 26.

²⁶⁸ For example, PNG15; LTS, p. 349.

This claim follows directly from M83: because minds are endowed with reason there is an affinity between them and God, which enables them to enter into a personal relationship with him. Lesser beings cannot, as they lack the requisite moral and intellectual capacities. Moreover, because minds are images of God, his interest in them is not one of curiosity (as would be the relationship of an inventor to his machine) but rather one of concern and love (as would be the relationship of a benevolent monarch to his subjects and of a father to his children).

The belief that God's relationship to humans is like that of a father to his children is a common one in Christianity; it is affirmed, for example, in the opening line of a number of creeds, such as the Apostle's Creed ('I believe in God, the Father Almighty . . .') and the Nicene Creed ('We believe in one God, the Father, the Almighty').

85. From this it is easy to conclude that the assemblage of all minds must make up the City of God, that is, the most perfect possible state under the most perfect of monarchs.

Theodicy §146.

Abridgement, objection 2.

The claim here follows from a number of others. All minds are capable of entering into society with God (M84), and because of their special status as images of God (M83) the resulting community will be the best one possible. Moreover, as God is perfectly good (M48), he will be concerned with the welfare of all minds, so God will be the most perfect monarch of this community.

In referring to this community as the 'City of God' Leibniz deliberately employs another Christian motif, as the notion is borrowed from St Augustine (354–430 CE), who wrote a book with that title. However Leibniz's understanding of the 'City of God' is not the same as Augustine's: for Augustine, the City of God is the Christian church, encompassing the saints, the angels, and the blessed. Moreover, it is a heavenly or celestial city, which exists on Earth only for a time (as such it is contrasted with the Earthly City). The idea of such a City Of God is rooted in Scripture, for example Psalm 87.3, Psalm 48.1, and Psalm 46.4. Leibniz's City of God, on the other hand, has two distinct features: it is populated not just by Christian minds but by all minds (on which basis he sometimes refers to it as the 'republic of minds' or 'commonwealth of minds'), and it is the best-governed state of all, on account of it being ruled by God.²⁶⁹

²⁶⁹ Both of these features are affirmed in other texts. See for example T obj. 2, and PNG15. When discussing the 'City of God' Leibniz appears only to have these two features in mind.

86. This City of God, this truly universal monarchy, is a moral world in the natural world, and is the most exalted and the most divine of God's works, and it is in this that God's glory truly consists, since there would be no glory if his greatness and his goodness were not known and admired by minds. It is also in relation to this divine city that he may properly be said to have goodness, whereas his wisdom and his power are apparent everywhere.

Leibniz starts by affirming that the City of God has a moral dimension, which would seem to follow directly from the way it was characterised in M85. That it should be the most exalted and most divine part of God's work is due to the fact that it is an assemblage of all minds: as minds (and minds alone) are images of God (established in M83), together they must form the most exalted and divine part of creation. Leibniz then claims that God's glory can be found in this City of God. To understand this we need to know what Leibniz understands by the glory of God. Traditionally, God's glory was thought to consist in his own perfect nature, and/or in his expression of that nature.²⁷⁰ But Leibniz clearly thinks there is more to glory than this; specifically, he thinks that God's glory also requires other beings to recognise his supreme qualities, since he claims in M86 that if there were no such recognition then God would have no glory. Hence for Leibniz it would be correct to say that God's glory requires (a) that God have a perfect nature, (b) that he express that perfect nature, and (c) that his perfect nature be recognised by other creatures (that these are individually necessary for glory should be clear from the fact that (c) is not possible without (b), which in turn is not possible without (a); taken together, they are for Leibniz jointly sufficient conditions for glory).²⁷¹

Lastly, Leibniz claims that whilst God's wisdom and power are manifested in all parts of creation, his goodness is most apparent in the City of God. If creation consisted merely in the machine of the universe, with all parts following only the (efficient) laws of nature, then God's great wisdom and power would be evident, but not his goodness. In order to manifest his goodness, God needs to create minds, rational and moral creatures upon which he can exercise justice, mercy, forgiveness, and so on.

87. As we have established above a perfect harmony between two natural kingdoms, the one of efficient causes, the other of final causes, we ought here to point out yet another harmony between the physical

²⁷⁰ See for example Nicolas Malebranche, *Dialogues on Metaphysics and on Religion*, p. 153.

²⁷¹ The position Leibniz adopts here is consistent with that endorsed elsewhere. See for example SLT, p. 108.

Leibniz's Monadology

kingdom of nature and the moral kingdom of grace; that is, between God as architect of the machine of the universe, and God considered as monarch of the divine city of minds.

Theodicy §62. §74. §118. §248.
§112. §130. §247.

Leibniz was very fond of harmonies, and identified them wherever he could. The harmony between the realms of efficient causes (in bodies) and final causes (in souls) was affirmed in M78–9, and M81. He is now alerting us to the existence of another harmony, that which holds between the kingdoms of nature and grace. As he states, the ‘kingdom of nature’ refers to the machine of the universe, that is, the physical universe subject to laws of nature, while the ‘kingdom of grace’ refers to the City of God, that is, the entire community of minds. Leibniz will explain what this harmony involves in the final three sections of the *Monadology*.

It is notable that in the *Monadology* Leibniz offers no reason for his claim that there is a harmony between the kingdoms of nature and grace. In the *Theodicy* he suggests that it follows from God’s wisdom, for ‘it is in accordance with God’s wisdom that everything be harmonic in his works’ (T91).

88. This harmony means that things lead to grace by the very ways of nature, and that for example this globe must be destroyed and repaired by natural ways at the times the government of minds demand it for the punishment of some and the reward of others.

Theodicy §18 and onwards. §110.
§244. §245. §340.

Leibniz starts by explaining what is meant by the harmony of nature and grace: God’s plans for minds are effected by the normal workings of nature. Leibniz’s choice of example is of the world being destroyed, and then subsequently repaired, by natural means, at the very times when such destruction and repair is morally required. While it is clear enough how the harmony is supposed to work in practice, Leibniz’s choice of example may come as a surprise, because it insinuates that there will be a series of apocalyptic upheavals, which might seem to be more in keeping with Stoic teachings than with traditional Christian doctrine. The ancient Greek Stoics held that the world is subject to an eternal cycle of conflagrations and renewals,²⁷² whereas Christian doctrine has it that the world as we

²⁷² See for example A. A. Long, ‘The Stoics on world-conflagration and everlasting recurrence’, in *From Epicurus to Epictetus: Studies in Hellenistic and Roman Philosophy* (Oxford: Oxford University Press, 2006), pp. 256–82.

know it ends at the time of the Last Judgement, and is then restored so that the blessed may enjoy eternal life under Christ's rule. Despite initial appearances, however, it is unlikely that Leibniz is brazenly endorsing a heterodox position in M88. Nothing he says is actually inconsistent with Christian doctrine: he is not, after all, asserting that the cycle of destruction and renewal will be everlasting, so there is no reason to attribute such a view to him. Moreover, if we consider Leibniz's geological work we can get a good idea of how he envisaged the world being naturally destroyed and repaired. In the *Protogaea* (1691–93), for example, Leibniz describes the formation of the Earth and its subsequent upheavals, including earthquakes, great floods, and volcanic eruptions. He believed that some of these events had been very devastating, for example, he describes floods of such magnitude that they submerged almost the entire surface of the Earth. But not only did he think that the deluges responsible for such great floods had occurred solely through natural processes, he also held that it was through natural processes alone that the waters had drained away each time.²⁷³ (Among these naturally occurring floods Leibniz seems to have included the great flood described in Genesis 6–9.) He had at his disposal, therefore, an entirely naturalistic model of how a series of destructions and renewals might occur. There is some evidence that it was what he had in mind when composing the *Monadology*, for at the end of M88 he refers the reader to T244 and T245, in which he describes some of the (natural) upheavals that had occurred on the Earth, such as conflagrations and floods.

89. It can also be said that God as architect satisfies in every way God as legislator, and that sins must therefore carry their punishment with them by the order of nature, and by virtue of the mechanical structure of things itself, and that likewise good actions will receive their rewards by ways which are mechanical with regard to bodies, although this cannot and need not always happen immediately.

Leibniz here draws out a further corollary of the harmony of nature and grace: punishments and rewards are administered by the order of nature rather than by special interventions of God. In M88 Leibniz identifies one way in which this might happen, namely the natural destruction of the Earth as a punishment for the sins of its inhabitants. According to Genesis 6, the great flood was sent by God as punishment for the wickedness of humanity. Given Leibniz's inclination to explain that flood naturally, he may have been inclined to identify the great flood as an example of the harmony of nature

²⁷³ See G. W. Leibniz, *Protogaea*, trans. and ed. Claudine Cohen and Andre Wakefield (Chicago: Chicago University Press, 2008), pp. 15–19.

and grace at work, that is, at the very time when the wickedness of humanity had reached the point when punishment was warranted, there occurred by natural means a deluge which flooded the Earth. Although there is evidence that suggests Leibniz may have thought this way, it is far from conclusive, and unfortunately Leibniz shies away from providing precise examples of sins leading naturally to their punishments, and virtues leading naturally to their rewards. His belief in the natural punishment of sin/reward of virtue is thus *a priori*, in the sense of running from cause (God's instigation of a harmony between the realms of nature and grace) to effect (such a harmony involves the natural distribution of desert).

A very different explanation of the natural punishment of sins can be found in an early work, the *Philosopher's Confession* (1672–73), in connection with the punishment of the damned in the afterlife. Leibniz there states that the damned are those who are discontented with the world, that is, God's work, and with God himself. When such people die, they carry their hatred with them into the afterlife, and because they no longer have any sense organs to provide them with new material to think about, their hatred grows stronger and stronger via a process of positive feedback:

*Whoever dies malcontent dies a hater of God . . . And now . . . since access to his senses has been closed off, he nourishes his soul, which has withdrawn into itself, with that hatred of things already begun, and with that misery and disdain, and with indignation, envy, and displeasure, all of them increasing more and more.*²⁷⁴

Leibniz goes on to claim that the hatred, anger, and misery of the damned person is not eased by the return of his bodily senses in the resurrection, because by that time he is so twisted that his pain is somehow pleasing to him. Consequently, after being resurrected, he will deliberately seek out things which incense him. The upshot is that his hatred of God and the world continues without end, as does the torment that this hatred brings. Although Leibniz only offers what we might call a 'psychology of the damned', it is possible to piece together a cognate 'psychology of the saved', as it were. For in the *Philosopher's Confession* Leibniz holds that any given person's final thoughts (or state of mind) will dominate his posthumous thoughts (or state of mind), irrespective of whether he is saved or damned:

For since the soul is not open to new external sensations from the moment of death until its body is restored to it, it concentrates its attention only on its last thoughts, so that it does not change but rather extends the state it was in at death.²⁷⁵

²⁷⁴ Leibniz, *Confessio Philosophi*, trans. and ed. R. Sleigh Jr. (New Haven: Yale University Press, 2005), p. 91.

²⁷⁵ Leibniz, *Confessio Philosophi*, pp. 35–7.

There thus seems no reason to suppose that this would not hold good of those who are saved as well as those who are damned. In the case of the saved, of course, they die *loving* God and his work. These thoughts of love are what they will think about between the time of death and resurrection, and by a similar process of positive feedback they can be expected to intensify to the point where the souls experience a kind of bliss. This would very much be a natural psychological process, not requiring any special intervention of God, just as the descent into permanent self-punishing madness experienced by the damned can be seen as a natural psychological process, in that it is just what happens when an evil and disgruntled will is left to reflect on its own thoughts in the afterlife. There is certainly no suggestion in Leibniz's works that God actively makes the wicked mad. Although these would qualify as examples of natural punishment of sin/reward of virtue, it is far from certain that they were what Leibniz had in mind when composing the *Monadology*. The crucial claim on which the examples are based, that the posthumous attention of the dead is focused solely on their final thoughts, does not seem to appear again in Leibniz's writings after 1686, almost thirty years before the *Monadology* was written. Although Leibniz's later writings do contain numerous statements about how death affects human psychological activity, they are much less detailed. The following passage is representative of Leibniz's later thought:

In death . . . we do not lose life, sensation or reason, but what prevents us from noticing that for a time is the confusion, that is, the fact that at that time we have an infinity of little perceptions all at once, in which there is no single one which is clearly distinguished from the others. That is why in a dream that is barely distinct, and in a fainting fit, we remember nothing.²⁷⁶

These remarks do not sit easily with the idea that the dead focus their attention on their final thoughts; indeed, they suggest that death is akin to a deep state of unconsciousness. This is confirmed elsewhere, with Leibniz describing the psychological state of the dead as being akin to a 'stupor'.²⁷⁷ At the time of writing the *Monadology*, then, Leibniz's other philosophical commitments may have prevented him from accepting the naturalistic process of punishment that he had outlined more than forty years beforehand, in the *Philosopher's Confession*.

Yet in spite of this, it is far from clear that the mature Leibniz entirely ruled out this psychological account, or at least something like it. For in an appendix to the *Theodicy*, Leibniz discusses a similar theory that had been advanced by William King, and says 'These thoughts are not to be

²⁷⁶ LTS, p. 296.

²⁷⁷ SLT, p. 65.

despised, and I have sometimes had similar ones, though I am careful not to make a decisive judgement about them.²⁷⁸ Moreover, he writes to Rudolf Christian Wagner in 1710:

since this [the Commonwealth of God] is governed with the utmost justice and beauty, it follows that, by the laws of nature themselves, souls are rendered more suited for rewards and punishments by the force of their own actions, on account of the parallelism between the Kingdom of grace and [the Kingdom of] nature. And in this sense it may be said that virtue brings about its own reward, and crime its own punishment, because by a sort of natural consequence of the very last state of the soul, according as it departs expiated or unexpiated, there arises a sort of natural watershed, preordained in nature by God, and consistent with divine promises and threats, and with grace and justice; and also with the additional intervention of good and bad genii, according to which side we have joined. The operations of these genii are undoubtedly natural, although their nature is more sublime than ours.²⁷⁹

It is possible that Leibniz's reference here to a 'natural watershed' that arises from 'a sort of natural consequence of the very last state of the soul' harks back to the psychological doctrine of posthumous self-punishment developed almost forty years earlier, or something of that order anyway. But there is insufficient detail to allow for certainty on the matter. Indeed, it is possible that in the Wagner letter Leibniz has something rather more mundane in mind, perhaps nothing more than the thought that it is the state of one's soul at death that determines whether one is destined for rewards or punishments in the afterlife, with the 'good' and 'bad' souls thereafter following different paths.²⁸⁰

But the Wagner letter does reveal one way in which rewards and punishments might be naturally distributed in the future life: by genii, that is, angels and demons. That Leibniz should have recourse to angels and other genii to facilitate the harmony between nature and grace is fully consistent with what he says about their role elsewhere. In the *Theodicy*, for example, Leibniz claims that 'God employs the ministry of angels in order to govern mankind, without the order of nature suffering thereby'.²⁸¹ Leibniz is able to count the actions of angels as part of the natural order, rather than as

²⁷⁸ H, p. 441.

²⁷⁹ Leibniz, *Opera omnia*, vol. II, 1, p. 229.

²⁸⁰ This of course entails that one's fate is essentially fixed by the state of one's soul at death, such that a soul which is damned (for example) does not become un-damned by turning over a new leaf in the afterlife. And this is in fact Leibniz's position; he says in the *Theodicy*: 'there is always in the man who sins, even when he is damned, a freedom which renders him culpable, and a power, albeit remote, of recovering himself, although it never passes into action'. H, p. 292.

²⁸¹ H, p. 439.

a deviation from it, because of the sharp distinction he draws between the nature of created beings (that is, finite substances), and the nature of God.²⁸² Those actions of created beings which are in accordance with their own natures are squarely part of the order of nature. This order is disturbed only by those actions of created beings which are beyond their own natures, for which they must be assisted by God. As this does not apply to the normal actions of genii, these actions fall within the order of nature, and so are not genuinely supernatural or miraculous.

90. Finally, under this perfect government there will be no good action without reward, no bad action without punishment, and everything must turn out right for the good, that is, those who are not malcontents in this great state, who trust in providence after they have done their duty, and who love and imitate the author of all good as they ought to, delighting in the consideration of his perfections in accordance with the nature of true *pure love*, which makes us take pleasure in the felicity of the beloved. This it is which makes the wise and virtuous work for everything that seems to conform to the presumptive or antecedent divine will, and yet leaves them contented with what God actually makes happen by his secret, consequent or decisive will. For they recognise that if we could understand the order of the universe well enough, we would find that it surpasses all the wishes of the wisest people, and that it is impossible to make it better than it is, not only for the whole in general, but also for ourselves in particular, if we cleave to the author of all as we ought to, not merely as the architect and efficient cause of our being, but also as our master and the final cause which must constitute the whole aim of our will, and can alone constitute our happiness.

Theodicy §134 end.

Preface *4ab

Theodicy §278.

Preface *4b

The central claim here is that everything will turn out well for the good for those who love God, and Leibniz may have intended it as a corollary of points already made; certainly, from the assertion made in M89, that God has so established things as to bring about the natural punishment of sin and reward of virtue, it would seem to follow that no good action will go unrewarded and no sin unpunished. But as we shall see, this does not

²⁸² See for example LTS, p. 88.

adequately capture all that Leibniz means when he claims that everything will turn out for the good for those who love God. The claim itself very closely echoes Romans 8.28 ('all things work together for the good for those who love God') which Leibniz sometimes quoted approvingly.²⁸³ Alternatively, it can be derived from God's perfect justice, that is, his perfect goodness conformed to perfect wisdom.²⁸⁴

What does a love of God involve? As Leibniz notes, it involves taking pleasure in God's perfections. But for this to be possible at all, one must first know his perfections ('we could not love God without knowing his perfections or his beauty').²⁸⁵ One corollary of a true love of God is that we attempt to imitate God insofar as this is possible for us. We do this by willing what he wills, that is, we align our will with that of God. Or rather, we align our will with what we presume God's will to be, since we cannot be certain of its detail.²⁸⁶ Leibniz's distinction between God's 'presumptive or antecedent will' on the one hand, and his 'secret' or 'consequent' or 'decisive' will on the other, is important here.²⁸⁷ The distinction was first made by St John Damascene (c. 676–749),²⁸⁸ and became a staple of Scholastic theology, being found in the work of Aquinas and others.²⁸⁹ The antecedent will is God's desire for the good for each person taken individually, that is, abstracted from the whole. Hence God antecedently wills that all live a virtuous life, for example. God's consequent will, however, is his overall preference, having taken all things and all circumstances into consideration. Hence God's consequent will is to permit certain people to lead unvirtuous lives, because he has determined that this will be for the best of the whole. Leibniz describes God's consequent will as 'secret' because, as finite creatures, we are incapable of taking all things into consideration as he can, which means that we cannot know his consequent will. Since there is no way we could even attempt to act in accordance with God's consequent will, we are therefore left with no option but to act in accordance with his antecedent will, which desires the good in each specific circumstance for each individual. Hence we should act so as to procure the good of others

²⁸³ See for example SLT, p. 202.

²⁸⁴ See for example LTS, p. 124; G. W. Leibniz, *Political Writings*, 2nd edn, trans. and ed. Patrick Riley (Cambridge: Cambridge University Press, 1988), p. 59.

²⁸⁵ SLT, p. 297.

²⁸⁶ 'One of the strongest indications of a love of God which is sincere and disinterested is being satisfied with what he has already done, in the assurance that it is always the best: but also trying to make what is yet to happen as good and in keeping with his presumptive will as is possible for us.' LTS, p. 178.

²⁸⁷ In the *Theodicy* Leibniz also refers to the latter as God's final will. See H, p. 189.

²⁸⁸ John Damascene, *An Exposition of the Orthodox Faith*, book II, chapter 30.

²⁸⁹ See Aquinas, *Summa Theologiae* I.q19a6 ad. 1.

as we presume God wills it. But sometimes our actions do not turn out in the way that we hoped, or things happen which do not seem to contribute towards the good. We should not be discouraged by this: God will have permitted such cases by his consequent will, unknown to us in advance, so all we can do is trust that he has made the best and wisest choice, even if it might not seem that way to us, from our very limited perspective. If we were somehow able to see the whole, from God's perspective, we would see that everything contributes to the perfection and order of the whole, which could not be better than it is.

Such a picture has the potential to give the impression that God is happy to sacrifice the goods of some individuals for the benefits of the whole. Leibniz, however, flatly denies this, at least with regard to *virtuous* individuals. This is what grounds his assertion in M90 that it is impossible for the universe to be better 'for ourselves in particular, if we cleave to the author of all as we ought to'. The virtuous, then, can be confident that God is concerned not only for the world as a whole, but also for their own welfare. They will know, for example, that on account of his perfect justice God will ensure that there will be a balancing of books, involving punishment of the evil and reward of the virtuous. If this does not happen in this life – and Leibniz conceded that often it did not – then we can be certain that it will happen in the next. As Leibniz makes clear in PNG16, the root of this certainty lies in what can be deduced by *reason*, for 'although reason cannot teach us the detail of the great future, which is reserved for revelation, this same reason assures us that things are accomplished in a manner which exceeds our desires'. That is, the virtuous can deduce that everything will turn out well for them from the fact that God is perfect and always acts for the best (cf. M48, M55). The virtuous thus have grounds to feel satisfied or contented, for not only has everything been ordered in the best way possible, but ultimately also in the best way possible *for them*, and that no matter what the trials and tribulations of this life, a better future awaits them.