

The Principles of Philosophy known as Monadology

G. W. Leibniz

Copyright © 2010–2015 All rights reserved. Jonathan Bennett

[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth.

First launched: September 2004

Last amended: July 2007

* * * * *

1. My topic here will be the *monad*, which is just a simple substance. By calling it ‘simple’ I mean that it *has* no parts, though it can *be* a part of something composite.

2. There must be simple substances, because there are composites. A composite thing is just a collection of simple ones that happen to have come together.

3. Something that has no parts can’t be extended, can’t have a shape, and can’t be split up. So monads are the true *atoms* of Nature—the elements out of which everything is made.

4. We don’t have to fear that a monad might fall to pieces; there is no conceivable way it could •go out of existence naturally.

5. For the same reason, there is no way for a simple substance to •come into existence naturally, for that would involve its being put together, assembled, composed, and a simple substance couldn’t be formed in that way because it has no parts.

6. So we can say that the only way for monads to begin or end—to come into existence or go out of existence—is •instantaneously, being created or annihilated all at once. Composite things, in contrast with that, can begin or end •gradually, through the assembling or scattering of their parts.

7. It doesn’t make sense to suppose that a monad might be altered or re-arranged internally by any other created

thing. Within a monad there's nothing to re-arrange, and there is no conceivable internal motion in it that could be started, steered, sped up, or slowed down, as can happen in a composite thing that has parts that can change in relation to one another. [The passage from here to * is not by Leibniz. It makes explicit what was presumably at work in his mind when he made his remarkable jump.] That rules out every sort of influence that one might think a *created* thing might have on something else. (I stress 'created' because of course I don't rule out God's affecting a monad.) Some philosophers have held that one thing can affect another by sending an 'accident' across to it, understanding an accident to be *an instance of a property* as distinct from *the thing that has the property*. According to these philosophers, in addition to the •universal property *heat* and the •particular thing *this poker* there is a •particular property, an instance, an accident, namely *the heat of this poker*; and they hold that when the poker is plunged into cold water which then becomes warmer, the poker sends an accident—some of its particular heat—across to the water. Now, you might think that although a created thing can't cause re-arrangements in a simple substance it might be able to affect it in a different way by sending an accident across to it. And because you might think this I should add that * monads have no windows through which anything could come in or go out! And anyway, quite apart from the imperviousness of monads to them, these supposed migrating accidents are philosophical rubbish: accidents can't detach themselves and stroll about outside of substances! . . . So neither substance nor accident can come into a monad from outside.

8. Monads, although they have no *parts*, must have some *qualities*. There are two reasons why this must be so. **(1)** If they didn't have qualities they wouldn't be real things at all. **(2)** If they didn't differ from one another in their quali-

ties, there would be no detectable changes in the world of composite things. Here is why. [Leibniz starts the next sentence 'If monads had no qualities,' but this is obviously a slip.] If monads all had the same qualities, they would be indistinguishable from one another (given that they don't differ in any quantitative way, e.g. in size). That would make all composite things such as portions of matter indistinguishable from one another also, because whatever is the case about a composite thing has to come from its simple ingredients. Even if every portion of matter were exactly like every other, there might still be variety in the material world through differences in patterns of distribution of portions of matter in empty space. I think there is no empty space—the extended world is entirely full, a *plenum*. So, assuming a plenum and no qualitative variety, any moving around of matter would only result in each place containing something exactly like what it had contained previously, so that one state of things would be indistinguishable from another.

9. That shows that *some* monads must be qualitatively unlike *some* others; but now I go further. Indeed, *every* monad must be qualitatively unlike *every* other. That is because in Nature no two things are perfectly alike; between any two things a difference can be found that is internal—i.e. based on what each is like in its own nature rather than merely on how they relate to other things, e.g. where they are in space.

10. I take it for granted that every created thing can change, and thus that created monads can change. I hold in fact that every monad changes continually.

11. From what I said in **7** it follows that *natural* changes in a monad—ones that don't come from divine intervention—come from an internal force, since no external causes could ever influence its interior.

12. But in addition to this ·general· force for change ·that is the same in all monads·, there must be the detailed nature of the ·individual· changing simple substance, this being what makes it belong to one species rather than another.

13. This detailed nature must bring a •multiplicity within the •unity of the simple substance. ·The latter's detailed nature is a 'multiplicity' in the sense that it has many components that don't stand or fall together·. That is because every natural change happens by degrees, gradually, meaning that something changes while something else stays the same. So although there are no •parts in a simple substance, there must be a plurality of •states and of relationships.

14. The passing state that incorporates and represents a multitude within a unity—i.e. within the simple substance—is nothing but what we call •perception. This must be carefully distinguished from •awareness or consciousness, as will become clear in what follows. [‘Awareness’ here translates *aperception*. French had no noun for that job (nor did English), so Leibniz coined the *aperception* on the basis of the verb phrase *s'apercevoir de*, which meant and still means ‘to be aware of.’] In that the Cartesians failed badly, entirely discounting perceptions whose owners were not aware of them. That made them think that the only monads are *minds*, which led them to deny that animals have souls ·because those would be simple substances below the level of minds· Like the uneducated man in the street they confused a long stupor with death, ·whereas really a long period of unconsciousness is different from *death*· in the strict sense. This led them further into the Aristotelians' wrong belief in souls that are entirely separated ·from any body·, as well as confirming misguided minds in the belief that souls are mortal.

15. The action of the internal force that brings about change—brings the monad from one perception to another—

can be called •appetition. Appetite cannot always get the whole way to the perception towards which it is tending, but it always gets some of the way, and reaches new perceptions—·that is, new temporary states of the monad·.

16. A simple substance that incorporates a multiplicity—that's something we experience in ourselves. ·We *are* simple substances·, and we find that every perception we can be aware of—right down to the least of them—involves variety in its object; ·and a perception representing variety in the object that it is *of* must itself *be* variegated in some way·. Thus everyone who accepts that the soul is a simple substance should accept this multiplicity in the monad, and Bayle oughtn't to have found any difficulty in it, as he did in the article ‘Rorarius’ in his Dictionary.

17. It has to be acknowledged that •perception can't be explained by mechanical principles, that is by shapes and motions, and thus that nothing that •depends on perception can be explained in that way either. ·Suppose this were wrong·. Imagine there were a machine whose *structure* produced thought, feeling, and perception; we can conceive of its being enlarged while maintaining the same relative proportions ·among its parts·, so that we could walk into it as we can walk into a mill. Suppose we do walk into it; all we would find there are cogs and levers and so on pushing one another, and never anything to account for a perception. So perception must be sought in simple substances, not in composite things like machines. And that is all that can be found in a simple substance—•perceptions and •changes in perceptions; and those changes are all that the internal actions of simple substances can consist in.

18. [The word 'entelechy', used in this section, is a Greek label that Leibniz gives to monads, especially when he wants to emphasize the monad's role as a source of power, energy, or the like. He connects it here with the monad's 'perfection', apparently meaning this in the sense of completeness, self-sufficiency, causal power. In **62** he will connect 'entelechy' with the monad's central role in the life of a *body* of which it is the soul.] We could give the name 'entelechy' to all simple substances or created monads, because they have within them a certain perfection. . . .; there is a kind of self-sufficiency which makes them sources of their own internal actions—makes them immaterial automata, as it were.

19. [In this section, the French word *sentiment* is left untranslated. It could mean 'feeling' or 'sensation' or 'belief'.] If we are willing to label as a 'soul' anything that has perceptions and appetites in the general sense that I have just explained, then all simple substances—all created monads—could be called 'souls'. But as there is more to *sentiment* than mere perception, I think that the general name 'monad' or 'entelechy' is adequate for substances that have mere perception and nothing more, and that we should reserve 'soul' for the ones with perceptions that are more distinct and accompanied by memory. ·In this context I shall use the phrase 'mere monad' to mean 'monad whose perceptions have nothing special about them, are not distinct or accompanied by memory, are *merely* perceptions with nothing more to be said about them·.

20. For we experience *ourselves* being a state in which we remember nothing and have no distinct perception—for example when we fall into a faint, or are overtaken by a deep dreamless sleep. While our soul is in that state, there is nothing to mark it off from a mere monad; but for our soul that state doesn't last—the soul recovers from it—which is why it *is* a soul, something more than a mere monad.

21. But it doesn't at all follow that a mere monad has no perceptions at all. ·It not only doesn't follow·; it couldn't be true, for a three-part reason that I have given: •a monad can't go out of existence, but •to stay *in* existence it has to be in some state or other, and •its states are all perceptions. But ·having perceptions is compatible with being in a very confused state, as we know from our own experience·. When we have a great many small perceptions none of which stand out, we are dazed; for example when you spin around continually in one direction for a time, you become dizzy, you can't distinguish anything, and you may faint. That is the state animals are in, temporarily, when they meet their ·so-called· death.

22. And every momentary state of a simple substance is a natural consequence of its ·immediately· preceding one, so that the present is pregnant with the future.

23. When you recover from your dizzy spell and are aware of having perceptions, you obviously must have been having perceptions just before then, though you weren't aware of them. That is because, ·as I said in **22**·, in the course of Nature a perception can come only from another perception, just as a motion can come only from another motion.

24. We can see from this that if none of our perceptions stood out, if none were (so to speak) highly seasoned and more strongly flavoured than the rest, we would be in a permanent daze. And that is the state that bare monads—what I am here calling 'mere monads'—are in ·all the time·.

25. Nature has given highly seasoned perceptions to animals. We can see this in the care Nature has taken to provide animals with sense-organs that *bring together* a number of light-rays or air-waves, increasing their effectiveness by combining them. Something like this ·also· happens with scent, taste and touch, and perhaps with numerous other senses

that we don't know about. That concentration of influence on the •sense-organs is relevant to my present topic, which is the occurrence of 'highly flavoured' perceptions in the •soul. I shall explain shortly how what happens in the •soul represents what goes on in the •organs.

26. Memory provides souls with a kind of *following from* which mimics reason but must be distinguished from it. It is what we see in an animal that has a perception of something striking of which it has previously had a similar perception; the representations in its memory lead it to expect •this time the same thing that happened •on the previous occasion, and to have the same feelings •now as it had •then. For example, when you show a stick to a dog, it remembers how the stick hurt it •on a previous occasion, and it whines or runs away.

27. The animal in this case is impressed and stirred up by a powerful imagining; and its power comes either from •the size [here = 'strength' or 'intensity'] of the preceding perceptions or from •there being many of them. Either would do the job; for the effect of •a long habituation, the repetition of many mild perceptions, is often achieved in a moment by •one powerful impression.

28. In human beings, the perceptions often follow from other perceptions under the influence of memory; as with empiric physicians, who have elementary technique without theory. [An 'empiric' is someone who cares about which generalizations hold up in practice, but not about why.] We are all mere •empirics in three quarters of what we do. For example, we are empirics in our expectation that the sun will rise tomorrow because it has always done so up to now. Only the •astronomer believes it on the basis of reason. In this empiric aspect of their lives, humans operate in the same way as the lower animals do.

29. What distinguishes us from the lower animals is our knowledge of necessary and eternal truths and, associated with that, our having a kind of 'following from' that •involves necessity and •depends on reason, rather than merely the 'following from' of the animals, which •is wholly contingent and depends on memory. This is what gives us reason and science, raising us to the knowledge of ourselves and of God. And it's what is called 'rational soul' or 'mind' in us.

30. Our knowledge of necessary truths, and our grasp of the abstractions they involve, raise us to the level of acts of *reflection* [= 'looking in on oneself'], which make each of us aware of the thing that is called *I*, and lets us have thoughts about this or that thing *in us*. And by thinking of *ourselves* in this way we think of •being, of •substance, of •simples and •composites, of •what is immaterial—and of •God himself, through the thought that what is limited in us is limitless in him. And so these acts of reflection provide the principal objects of our reasonings.

31. Our reasonings are based on two great principles: •the principle of contradiction, on the strength of which we judge to be false anything that involves contradiction, and as true whatever is opposed or contradictory to what is false.

32. And •the principle of sufficient reason, on the strength of which we hold that no fact can ever be true or existent, no statement correct, unless there is a sufficient *reason why* things are as they are and not otherwise—even if in most cases we can't know what the reason is.

33. There are also two kinds of truth: those of *reasoning* and those of *fact*.

- Truths of reasoning are necessary, and their opposite is impossible.

- Truths of fact are contingent, and their opposite is possible.

When a truth is necessary, the reason for it can be found by analysis in which it is teased apart into simpler ideas and truths until we arrive at the basic ones.

34. That is how mathematicians use analysis, reducing theorems of mathematical theory and canons of mathematical practice to definitions, axioms and postulates.

35. Eventually their analysis comes to an end, because there are simple ideas that can't be given a definition; and their demonstrations also come to an end, because there are axioms and postulates—in a word, *basic principles*—which can't be proved and don't need to be proved; these are identical propositions, the opposites of which contain explicit contradictions.

36. What mathematicians do is to find sufficient reasons for the truth of mathematical propositions. But a sufficient reason must also be found for contingent truths, truths of fact—for the series of things spread across the universe of created things. For truths of this sort reasons can be given in more and more detail, because of the immense variety of things in Nature and because of the infinite divisibility of bodies. Consider the movements of pen across paper that I am making right now. Their efficient cause includes an infinity of shapes and of motions, present and past; and their final cause—that is, their end or purpose—involves an infinity of tiny inclinations and dispositions of my soul, present and past.

37. But all this *detail* only brings in other contingencies—ones bringing in even more detail, or ones involving events that occurred earlier—and each of these further contingencies also needs to be explained through a similar analysis. So when we give explanations of this sort we move no nearer to the goal of completely explaining contingencies. Infinite though it may be, the train of detailed facts about

contingencies—running down into ever more minute detail, or back to ever earlier times—doesn't contain the sufficient reason, the *ultimate* reason, for any contingent fact. For *that* we must look outside the sequence of contingencies.

38. That is why the ultimate reason for things must be in a necessary substance which we call 'God'. The details of all the contingent changes are contained in him only *eminently*, as in their source. [To say that x contains a property 'only eminently' is to say that x doesn't literally have that property, but does have the resources to cause things to have it. For example, God is not politically astute, but he contains political astuteness eminently.]

39. This necessary substance is a sufficient reason for all this detail, which is interconnected throughout; so *there is only one God, and this God is sufficient*.

40. This supreme substance is unique and universal, because nothing outside it is independent of it; and it is necessary because its existing follows simply—that is, directly, without help from any other premises—from its being possible. Given all this, we can conclude that the supreme necessary being must be incapable of limits and therefore must contain fully as much reality as is possible. (If there were some kind of reality which it did not have as fully as possible—e.g. if it were very powerful but not omnipotent—that would be a limit in it.)

41. From which it follows that God is absolutely perfect. Why? Because a thing's *perfection* is simply *the total amount of positive reality it contains*, using 'positive' in its precise sense, in which it doesn't apply to any of a thing's limitations or boundaries; so that where there are no boundaries at all, namely in God, perfection must be absolutely infinite.

42. It also follows that created things get their perfections from the influence of God, but derive their imperfections from their own natures. Their natures *have* to have limits, for that is what distinguishes them from God.

43. Also, God is the source not only of *existences* but also of *essences* insofar as they are real; that is, he is the source of what reality there is among possibilities. This is because God's understanding is the realm of eternal truths, or the realm of the ideas on which such truths depend. Without God's understanding there would be no reality among possibilities. . . .

44. That is because if there is to be any reality among essences or possibilities, or among eternal truths, that reality must be grounded in something actually existent; so it must be grounded in the existence of the necessary being, in whom *essence* includes *existence*, meaning that in the case of God *being possible* is sufficient for *being actual*.

45. Thus only God (the necessary being) has this privilege: *if he is possible then he must exist*. Now, something that has no limits involves no negation; every truth about it is positive; so it involves no contradiction (because all contradictions boil down to something of the form 'P and not-P', which contains a negation). So God must be possible, from which it follows that God exists—giving us an *a priori* proof of his existence. In **43** I also proved it *a priori* in a different way, through the reality of eternal truths, which can contain reality only if the ideas they involve are in God's understanding. But what I have just said proves God's existence *a posteriori*, from the premise that contingent things exist, for their ultimate or sufficient reason could only be found in the necessary being which contains within itself the reason for its own existence.

46. Descartes seems to have imagined. . . .that since eternal truths depend on God, they must be arbitrary and depend on his will; but we shouldn't follow him in this. What depend on his will are only contingent truths, which are governed by suitability or the choice of the best; whereas necessary truths depend solely on God's understanding, of which they are the internal object.

47. Thus God alone is the basic unitary thing, the original simple substance. All created or derivative monads are produced by him. They are generated by the continual flashes of silent lightning (so to speak) that God gives off from moment to moment—flashes that are limited in what they can give only by the essential limits on what the created things can take in.

48. In God there is

- (i) power, which is the source of everything, then
- (ii) knowledge, which contains every single idea, and then finally
- (iii) will, which produces changes in accordance with the principle of what is best.

And these are what correspond, respectively, to what in created monads constitute

- (i) the subject, or base, or basic nature of the monad itself,
- (ii) the faculty of perception, and
- (iii) the appetitive faculty.

But in God these attributes are absolutely infinite or perfect, whereas in created monads. . . .they are only imitations of the divine attributes, imitations that are more or less close depending on how much perfection they possess.

49. A created thing is said to act on something else in so far as it has perfection, and to be acted on by something else in so far as it is imperfect. Thus, activity is attributed

to a monad in so far as it has distinct perceptions, and passivity is attributed to the monad in so far as it has confused perceptions. ·Why do I say ‘Thus, . . .’, implying that the second of the above two sentences follows from the first? It is because of a link between being perfect and having distinct perceptions—a link I now explain·.

50. ·To the extent that one monad has distinct perceptions and another has confused ones, the former’s states can explain the latter’s, and not vice versa. And· one created thing is more perfect than another to the extent that what happens in it serves to explain *a priori* what happens in the other; and that is what makes us say that it ‘acted on’ the other.

51. How can the states of monad x explain the states of monad y? *Not* by x’s having a •real influence on y, for that is impossible. All that x has with respect to y is an •ideal influence, which works through the intervention of God. When God is setting things up at the outset, monad x reasonably demands, in God’s mind, that God take account of x in designing y. *That* is how x’s states explain y’s: it has nothing to do with real causal influence of x over y, which is something a created monad could never exert.

52. And here is how monad x can be both active and passive with respect to monad y—acting on y and being acted on by it. God, in comparing the two simple substances, finds in *each* reasons that oblige him to adapt the other to it; so that x can differ from y in some ways that make it active, and in others that make it passive, with respect to y. It is active to the extent that what can be clearly understood in it serves to *explain* what happens in y, and passive to the extent that what happens in it *is explained by* distinct perceptions in y.

53. Now, since in the ideas of God there is an infinity of possible universes, and since only one can exist, there must be a sufficient reason for God’s choice of that one—a reason

that leads him to choose •one rather than •some other of the possible universes.

54. And this reason can only be found in the *suitability* or *degrees of perfection* that these worlds contain, with each possible world’s right to claim existence being proportional to the perfection it contains.

55. And that is the reason for the existence of the best, which God’s wisdom brings him to know, his goodness brings him to choose, and his power brings him to produce.

56. Now, this interconnection, or this adapting of all created things to each one, and of each one to all the others, brings it about that each simple substance has relational properties that express all the others, so that each monad is a perpetual living mirror of the universe.

57. And just as the same town when seen from different sides will seem quite different—as though it were multiplied perspectively—the same thing happens here: because of the infinite multitude of simple substances it’s as though there were that many different universes; but they are all perspectives on the same one, differing according to the different points of view of the monads.

58. And that is the way to get the greatest possible •variety, but with all the •order there could be; i.e. it is the way to get as much perfection as there could be.

59. This theory (which I venture to say I have now demonstrated) is the only one that properly displays God’s greatness. Bayle recognised this when he raised objections to it in his *Dictionary* (the article on Rorarius), where he was even tempted to say that I had attributed to God *too much*—more than is possible ·even for God·. But he couldn’t adduce any reason why this universal harmony, which makes every substance exactly express every other through its relations with them, should be impossible.

60. Anyway, what I have just been saying yields reasons why things couldn't have gone otherwise. Here they are. In regulating the whole universe God had regard to each part, and especially to each monad; so each monad has features that are given to it in the light of the features of every other monad—it won't be restricted to *having correspondences with only a part of the universe*. And since a monad is by nature representative, so that all its features are representations, nothing could restrict it to *representing only a part of the universe*. I am not saying that each monad is omniscient, or anything like that! A created monad's representation of the details of the whole universe is confused; it can be distinct only with respect to a small part of things, namely things that are either *closest* or *largest* in relation to it. Otherwise every monad would be divine! Monads are limited not in how widely their knowledge spreads, but in what kind of knowledge it is. They all reach confusedly to infinity, to everything; but they are limited and differentiated by their different levels of distinct perception.

61. And in this respect composite things are analogous to simple ones. In the world of composites, the world of matter, everything is *full*, which means that all matter is interlinked. If there were empty space, a body might move in it without affecting any other body; but that is not how things stand. In a plenum [= 'world that is full'], any movement must have an effect on distant bodies, the greater the distance the smaller the effect, but always *some* effect. Here is why. Each body is affected by the bodies that touch it, and feels some effects of everything that happens to them; but also through them it also feels the effects of all the bodies that touch them, and so on, so that such communication extends indefinitely. As a result, each body feels the effects of everything that happens in the universe, so that he who sees everything could read off from each body what is happening everywhere; and, indeed,

because he could see in its present state what is distant both in space and in time, he could read also what has happened and what will happen. . . . But a soul can read within itself only what is represented there distinctly; it could never bring out all at once everything that is folded into it, because its folds go on to infinity.

62. Thus, although each created monad represents the whole universe, it represents more distinctly the body that is exclusively assigned to it, and of which it forms the entelechy [see note in 18]. And just as that body expresses the whole universe through the interconnection of all matter in the plenum, the soul also represents the entire universe by representing its particular body.

63. What we call a 'living thing' is

a body that has a monad as its entelechy or its soul,
together with
that entelechy or soul.

And we call a living thing 'an animal' if its entelechy or central monad is a *soul* [see 19]. Now this body of a living thing or animal is always highly organized. Here is why:

- The universe is regulated in a perfectly orderly manner; and
- every monad is a mirror of the universe in its own way; so
- the representing monad must itself be orderly; so
- the body that it represents (thereby representing the universe) must be orderly.

64. Thus every organized body of a living thing is a kind of divine machine or natural automaton. It infinitely surpasses any artificial automaton, because a man-made machine isn't a machine in every one of its parts. For example, a cog on a brass wheel has parts or fragments which to us are no longer anything artificial, and bear no signs of their relation to the

intended use of the wheel, signs that would mark them out as parts of a machine. But Nature's machines—living bodies, that is—are machines even in their smallest parts, right down to infinity. That is what makes the difference between •nature and •artifice, that is, between •divine artifice and •our artifice.

65. And •God•, the author of Nature, was able to carry out this divine and infinitely marvellous artifice because every portion of matter is not only

divisible to infinity,

as the ancients realised, but is

actually sub-divided without end,

every part divided into smaller parts, each one of which has some motion of its own •rather than having only such motion as it gets from the motion of some larger lump of which it is a part•. Without this •infinite dividedness• it would be impossible for each portion of matter to express the whole universe.

66. And from this we can see that there is a world of creatures—of living things and animals, entelechies and souls—in the smallest fragment of matter.

67. Every portion of matter can be thought of as a garden full of plants or a pond full of fish. But every branch of the plant, every part of the animal (every drop of its vital fluids, even) is another such garden or pond.

68. And although the earth and air separating the plants in the garden and the water separating the fish in the pond are not *themselves* plants or fish, they *contain* other •organisms•, but usually ones that are too small for us to perceive them.

69. Thus there is nothing barren, sterile, dead in the universe; nothing chaotic, nothing confused except in appearance. •Here is an example of that•. If you see a pond from a certain distance, you may see the swirling of the fish without

being able to pick out any individual fish; it may seem to you that you are seeing *confused movements* of the fish, •but really nothing is confused in itself—what's happening here is that you are *perceiving confusedly*•.

70. We can see from this that every living body has one dominant entelechy, which in an animal is its soul; but the parts of that living body are full of other living things, plants, animals, each of which also has its entelechy or dominant soul.

71. Some people who have misunderstood my ideas have thought •me to have implied• that

every soul has a mass or portion of matter which is its own and is assigned to it *for ever*, and therefore every soul has other living things that are inferior to it, destined *always* to be in its service.

That doesn't follow; and it isn't true, because all bodies are in a perpetual state of flux, like rivers, with parts constantly coming into them and going out.

72. Thus the soul changes its body only gradually, a bit at a time, and is never suddenly stripped of all its organs. So animals undergo a great deal of change of form [French *metamorphose*] but they never undergo the transmigration of souls from one body to another [*metempsychose*]. And no souls are completely separated from matter—there are no spirits without bodies. Only God is completely detached from matter.

73. Another upshot of all this is that there is never either •complete generation •in which a living thing comes into existence• or •complete death, which (taking 'death' in its strict sense) consists in the soul's becoming detached •from its body•. What we *call* generation is development and growth; just as what we *call* death is envelopment and shrinking.

74. Philosophers [here = 'philosophers and scientists'] have been at a loss regarding the *origin* of forms, entelechies, or souls, but not any longer. Careful investigations into plants, insects and animals have shown that Nature's organic bodies are never produced from chaos or from putrefaction, but always from seeds, in which there is without doubt already some preformation. Rather than something *formed* being generated from something *formless*, it has turned out that what is formed always comes from something that was already formed. So these days we think that *before* conception there is an organized body there, and that this has a soul; which is to say that before conception there is already *an animal* there. What conception does is to launch that animal into a great transformation that will turn it into an animal of a different kind. We even have examples of something like this great transformation apart from generation, as when maggots turn into flies and caterpillars into butterflies.

75. The account that is generally accepted these days goes as follows. Tiny animals that *could* get raised to the level of larger animals through the process of conception we can call 'spermatic animals'. The majority of them *don't* go through that process; they remain within their own kind, and are born, reproduce themselves and are destroyed, just like the larger animals. Only the select few move up onto a larger stage.

76. But that is only half right. I came to realize that an animal that has no natural way of *starting* can't naturally *end* either, and thus that not only will there be no generation but also no complete destruction, no *death* in the strict sense of that word. This *a posteriori* line of thought based on observation fits perfectly with the *a priori* principles that I deduced above.

77. So it can be said that not only is the soul—the mirror of an indestructible universe—indestructible, but so too is the animal; though its mechanism may often come to an end in part, and throw off or take on organic coating.

78. These principles gave me a natural way of explaining the union of the soul with the organic body, or rather their *conformity* with one another. Soul and body each follow their own laws; and are in agreement in virtue of the fact that, since they all represent the same universe, there is a pre-established harmony among all substances.

79. Souls act according to the laws of final causes, through appetite, ends and means. Bodies act according to the laws of efficient causes, i.e. the laws of motion. And these two realms, that of efficient causes and that of final causes, harmonize with one another.

80. Descartes recognised that souls can't impart force to bodies, because there is always the same amount of force in matter. He believed, though, that the soul could change the directions of bodies. But that was because in his day the law of Nature which maintains the conservation of the same total direction in matter was unknown. If he had been aware of it he would have ended up with my system of pre-established harmony.

81. This system maintains that bodies act as if there were no souls (though there *couldn't* be no souls); and souls act as if there were no bodies. And both act as if one of them influenced the other.

82. As for minds, or rational souls [see 29]: I stand by my view, just expressed, that

basically there is the same thing in *all* living things and animals, so that both the soul and the animal begin only when the world begins, and never come to an end, any more than the world does;

but I maintain that there is something special to be said about rational animals, as follows. Their little spermatic animals, to the extent that they are no more than that, have only ordinary souls, ones that can *feel*; but when the select few come, through an act of conception, to have the nature of a human being, their feeling souls are raised to the level of *reason*, and to the privileges of *minds*.

83. I have noted some differences between ordinary souls and minds. Here is another. •Souls in general are living mirrors or images [here = 'likenesses'] of the universe of •created things, but •minds are also images of •the Divinity himself, i.e. of •God, the author of Nature. They are capable of knowing the system of the universe, and of imitating aspects of it through sketchy constructions of their own, each mind being like a little divinity within its own sphere.

84. That is what enables minds to enter into a kind of community with God, so that he relates to them not only (as he does to all his other creatures) •as an inventor relates to his machine, but also •as a prince does to his subjects, and indeed •as a father does to his children.

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

86. This City of God, this truly universal monarchy, is a moral world within the natural world, and it is the noblest and the most divine of God's creations. And it is in this moral world that the glory of God truly consists, since there would be no such glory if God's greatness and goodness were not known and admired by minds. Furthermore, although his •wisdom and •power can be seen in everything •he does, strictly speaking it is only in relation to this divine city that God has •goodness.

87. Just as I earlier established that there is a perfect harmony between two natural realms,

one of •efficient causes and the other of •final causes, so I should point out here another harmony, between the •physical realm of Nature and the •moral realm of grace;

that is, between God considered as •designer of the machine of the universe and God considered as •monarch of the divine city of minds.

88. This •second• harmony ensures that things lead towards grace through the paths of Nature itself. For example, the •divine• government of minds •in the City of God• requires that at certain times the planet earth be destroyed and then restored, so as to punish some people and reward others; and •because of the harmony• this •moral requirement• will be brought about through purely natural processes.

89. We can also say •that God the designer satisfies the wishes of God the legislator in every respect, and •that sins must therefore bring their own punishment through the natural order—indeed through the mechanical structure of things; and similarly •that fine actions will draw their reward through the mechanical doings of bodies, even though that reward can't and shouldn't always arrive right away.

90. Finally, under this perfect government there will be no unrewarded good actions and no unpunished bad ones; and everything must work out for the benefit of •the good, i.e. of those in this great state •who are not discontented, •who trust in providence when they have done their duty, and •who love and model themselves (as they should) on the author of all good—getting delight from contemplating his perfections (which is what genuinely *pure love* involves, getting pleasure from the happiness of the beloved). That is what gets wise and virtuous people •to work at everything

that seems to conform to what God can be presumed in advance to want, and what gets them •to be content nevertheless with what God brings about through what—it turns out later—he actually does want. [Leibniz expresses this contrast through technical terms derived from Thomas Aquinas.] They are content with this because they recognise that if we could understand the order of the universe well enough we would find that it surpasses all the hopes of the wisest people, and

that it is impossible to make it better than it is. Not only could the universe not be better as a whole, but—wise and virtuous people recognize—it couldn't be better for *us* in particular, as long as we are properly dedicated to ·God·, the creator of everything; not only as the designer and efficient cause of our being, but also as our master and final cause, who should be the entire goal of our wills, and who alone can make us happy.