

The Correspondence between Leibniz and Arnauld

G. W. Leibniz and Antoine Arnauld

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[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. Each four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth.—Leibniz was 34 years Arnauld’s junior. Arnauld had had a distinguished exchange of views with Descartes 48 years before the time of the present exchange.—The nobleman through whom Leibniz and Arnauld communicated was a landgrave, German *Landgraf*, meaning a Count who ruled over his County—a kind of minor king.—In this version most of the polite modes of address and reference are replaced by pronouns and surnames.—Except for very short bits, anything by Arnauld, whether said directly or quoted by Leibniz, is in a slanted type similar to italics.

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16. Arnauld to Leibniz, 4.iii.1687

It is a long time [four months] since I received your letter, but I have been so busy since then that I couldn't answer it sooner. I don't clearly understand •what you mean by this 'clearer expression that the soul has of what is happening just then in its body' [page 46], of •how that ·expression· can bring it about that when my arm is injured my soul knows this injury before it feels pain from it. This same clearer etc. expression should therefore inform the soul of an infinity of other things occurring in my body—e.g. the goings-on of digestion and nutrition—of which it actually knows nothing. As for your statement that although my arm rises when I will to raise it, it's not that my soul causes this movement in my arm, but rather:

When I will to raise my arm, that is at the very moment when the body is all set to carry this out by virtue of its own laws. That this happens at the exact moment when the will is inclined to it is part of the amazing but unfailing harmony between things that God set up when he made his decision about the sequence of all events in the universe.

*That strikes me as a rewording of the thesis that •my will is the **occasional** cause of my arm's movement, and that •God is the real cause of it. The occasionalists don't say that*

•God does this in time, through a new act of will that he exercises each time I will to raise my arm;

but rather that

•through a single act of the eternal will he has chosen to do everything that he has foreseen to be needed for the universe to be what he judged it should be.

Isn't that what your thesis boils down to when you say that what causes the movement of my arm when I will to raise

*it is the amazing but unfailing harmony among things that comes from God's having had it in mind in advance when he made his decision about this succession of all things in the universe? ·I think so, and here is why·. This 'having in mind' by God couldn't have made something happen without a real cause; so we must find the real cause of my arm's movement, You won't allow that it is my will. And I don't think you will allow, either, that a body can be moved by itself or by another body as a real and efficient cause. So you'll have to say that this 'having in mind' by God is itself the real and efficient cause of my arm's going up; you yourself call this having in mind God's 'decision', and decision is the same as will; therefore, according to you, every time I will to raise my arm, the real and efficient cause of this movement is God's will—which is just what the **occasionalists** say·.*

Now for the problem numbered (2) [by Arnauld on page 40 and by Leibniz on page 47]. I now know that your position is quite different from what I had thought. I had thought you were arguing like this:

Bodies must be true substances;

They can't be true substances without having a true unity;

They can't have true unity without having a substantial form;

therefore

The essence of body can't be extension; every body, as well as being extended, must have a substantial form.

To this I had objected that a substantial form that is divisible—and according to the friends of substantial forms

most of them are divisible— can't give a body the unity that it would otherwise lack. You agree with that, but claim that every substantial form is indivisible and indestructible, and can't be brought into existence in any way except through a true act of creation. Now see what follows from this. **(i)** A divisible body of which each part has the same nature as the whole—such as metals, stones, wood, air, water and other liquids—has no substantial form. **(ii)** Plants have no substantial form either, because the part of a tree that is either planted in the ground or grafted on to another tree remains a tree of the same species as before. **(iii)** Therefore only animals will have substantial forms. Therefore, according to you, only animals will be true substances. [Here 'animals' translates animaux, which for Arnauld, Leibniz and many others includes humans, unlike brutes and bêtes.]

Yet you aren't completely sure of this, because you say that if the lower animals [brutes] have no soul or substantial form, it follows that except for man there's nothing substantial in the visible world. You base this on your claim that substantial unity requires a complete, indivisible and naturally indestructible entity, and that has to be a soul or substantial form such as what is called myself. All this amounts to saying that none of the bodies whose parts are only mechanically united are substances; they are only machines or aggregates of many substances.

I'll take this last point first. Frankly, there is nothing to it except a quibble over words. Augustine sees no difficulty in recognizing that bodies don't have true unity because unity must be indivisible and no body is indivisible. Hence, in his view, there is no true unity—and no true myself—anywhere except in spirits [esprits = 'minds']. But what conclusion do you draw from that? 'That there is nothing substantial in bodies that have no soul or substantial form.' For this conclusion to be validly inferred, we would have to start by defining

'substance' and 'substantial' like this:

I call 'substance' and 'substantial' that which has a true unity.

But this isn't an accepted definition. Any philosopher •is equally entitled to use this one instead:

I call 'substance' that which is not a property or state •of something else•,

and •can consequently maintain that it is paradoxical to say that there's nothing substantial in a block of marble, because this block of marble is not a state that some other substance is in. This philosopher could add that the block of marble isn't a single substance but many substances mechanically joined together. 'There's a paradox for you,' he may say, 'asserting that something composed of many substances has "nothing substantial" in it!' He may add that he is even further from understanding your statement that 'if there were only matter and its states, bodies would be merely imaginary and apparent'. For you take the line that if something has no indivisible, indestructible, and ungeneratable soul or substantial form, then there is nothing to it but matter and its states; and you deny that anything except animals has such a substantial form. So you are committed to saying that all the rest of nature is 'merely imaginary and apparent', saying this even more forcefully about all the works of men. [Arnauld is here relying on the time-honoured distinction between 'nature' and—though he doesn't use this word—'art'.]

I can't agree with these last propositions. But I see no drawback to believing that in the whole of corporeal nature there are only machines and aggregates of substances, because none of these parts is strictly speaking a single substance. [At this point in the letter, Leibniz wrote in the margin: 'If there are aggregates of substances there must be true substances that the aggregates are made up of.'] All we get out of that it is something

that it is good to notice—Augustine noticed it—namely •that thinking or spiritual substance is in this way much more excellent than extended or corporeal substance, that only what is spiritual [here = ‘mental’] has a true unity and a true myself, which corporeal things lack. From this it follows that you can’t argue like this:

Matter would have no true unity if it had extension as its essence, therefore extension is not the essence of matter.

That doesn’t follow, because ·it may be that matter doesn’t have true unity; indeed· it may be that not-having-true-unity is of the essence of matter! That is what you yourself say about all the bodies that aren’t joined to a soul or substantial form.

*I don’t know what leads you to think that animals have these souls or substantial forms that are indivisible, indestructible, and incapable of being generated. It’s not that you think you need this in order to explain animal behaviour: you explicitly state [page 48] ‘All bodily phenomena can be explained mechanically—i.e. by the corpuscular philosophy, in terms of certain principles of mechanics taken as premises—without raising the question of whether souls exist’. [Arnauld expresses his next point too briefly. It is this: Looking at how an animal survives and behaves, we can just see that there is something unified about it, something in the nature of a *single* organisation. But Leibniz can’t appeal to that as a reason for attributing substantial forms to animals, because that kind of visible unity is also possessed by plants, and Leibniz doesn’t attribute substantial forms to them. Then:] Now can one see how this opinion can easily survive being combined with the view that these souls ·or substantial forms· are indivisible and indestructible. What can we say happens when a worm is cut into two and each part moves as before? What if a shed housing 100,000*

silkworms catches fire—what will become of these 100,000 indestructible souls? Will they continue to exist separated from all matter, like our souls? What became of the souls of the millions of frogs that Moses killed when he put a stop to that plague? of the countless quail that the Israelites killed in the desert? of all the animals that died in the Flood? And there are yet other difficulties, over how these souls are to be found in every animal when it is conceived. Were they in the seed? Were they indivisible and indestructible there? What happens when the seed is wasted without conception taking place? What happens with animals when the males don’t approach the females during the whole of their lives? [Arnauld puts the last two sentences in Latin, using ‘the obscurity of a learned language’ (Gibbon’s phrase) to veil the sexual nature of the points he is making.]. It’s enough to have given you a glimpse of these problems.

The remaining topic is the unity that the rational soul provides. We agree that it has a true and perfect unity and a true myself, and that it somehow conveys this unity and myself to the whole made up of soul and body that is called ‘man’. This whole isn’t •indestructible, because it perishes when the soul is separated from the body, but it is •indivisible in the sense that we can’t conceive of half a man. But given that our soul doesn’t make our body indestructible, how can it provide it with true unity or indivisibility? United though our body is to our soul, its parts are united to one another only mechanically, so that it isn’t a single bodily substance but an aggregate of many bodily substances. It is as divisible as every other natural body; and divisibility is contrary to true unity; so our body has no true unity. ‘Yes it has,’ you say, ‘through its soul.’ What you are saying is that our body belongs to a soul that is a genuine unity. That isn’t a unity intrinsic to the body; it’s like the ‘unity’ of a number of different provinces that make up only •one

kingdom because they are governed by •one king.

But although genuine unity exists only in thinking things, each of which can say myself, there are different degrees of this improper 'unity' that bodies can have. Every body, considered in itself, is ·not one but· many substances; but we can rightly ascribe more unity to **(i)** a body the parts of which work together towards one end (like a house or a watch) than to **(ii)** those whose parts are merely close together, like a heap of stones or a bag of coins; and it's really only **(ii)** that are rightly called 'aggregates per accidens' [see note on page 28]. [Regarding the rest of this paragraph, see note about 'one' on page 47.] Almost all natural bodies that we call 'one'—a gold nugget, a star, a planet—are of kind **(i)**; but by far the best examples of this are organic bodies, i.e. animals and plants, ·which qualify as having a high degree of admittedly improper 'unity' without any need to give them souls. . . . Why can't a horse or an orange tree be considered com-

plete and finished works, as well as a church or a watch? Granted, •they are called 'one' (with the unity that a body can have, which has to be different from the unity that thinking beings can have)—a unity based on the fact that •their parts are mechanically unified with one another, so that •they are machines. Granted—but what of it? They are such wonderful machines that only an omnipotent God could have made them; how could they possibly have any greater perfection than that? Our body, considered alone, is one in this way. Its relation to a thinking being that is joined to it and directs it can add some more unity to it, but not the kind of unity that spiritual things have.

[In the final two short paragraphs Arnauld disqualifies himself from being able to comment the issue in physics between Leibniz and the Cartesians, and makes some friendly personal remarks.]

17. Leibniz to Arnauld, 30.iv.1687 and 1.viii.1687

. . . I don't think that there is any difficulty in this statement of mine: The soul expresses more clearly—other things being equal—the states of its body, because it expresses the whole universe from a certain angle, and especially according to how other bodies are related to its own. (It can't express everything equally well. If it did—and if every soul did—there would be nothing to distinguish one soul from another.) It doesn't follow from this that the soul must have a complete awareness of what is going on in the parts of its body, ·and it *doesn't* have this·. That is because the parts of

this body •are inter-related in different degrees, and •aren't all expressed equally ·clearly·. (Any more than external things are: some of them are too far away, others too small or in some other way hard for us to perceive. ·According to a famous anecdote·, Thales was looking at the stars when he fell into the ditch that he hadn't seen right in front of him.) The nerves and membranes are more sensible—·easier for us to be informed about·—than other parts of our bodies, and it may be only through them that we are aware of other parts. The situation seems to be this:

The movements of the nerves or of their associated fluids provide better, less confused, copies of the impressions; and these clearer expressions of the body have their counterpart in the clearer expressions of the soul.

Speaking metaphysically—i.e. strictly—it is *not* the case that the nerves act on the soul, but rather that the soul represents the state of the nerves by a relationship that is spontaneous ·on both sides·. Bear in mind that there are too many happenings in our body for us to perceive them all separately, but they all contribute to our feeling a certain effect to which we become accustomed. We can't sort out its components, because there are too many of them; it is like hearing from a distance breakers crashing on a beach, where we can't pick out the sounds of individual wavelets although each wavelet affects our ears. When a conspicuous change occurs in our body, we notice it quickly and take it in better than we do changes from outside that aren't accompanied by any noteworthy change in our organs.

I don't say that the soul knows of the damage ·to the arm· before it feels pain, except in the sense in which it knows of—i.e. confusedly expresses—*everything*, according to the principles I have established. But this admittedly obscure and confused expression that the soul has of the future is the true cause of •what will happen to it and of the •brighter perception it will have later on when the obscurity lifts—when the darkness brightens—because the future state is a consequence of the earlier one.

I had said that God created the universe in such a way that body and soul, each acting according to its laws, would harmonize in their phenomena [here = 'their transient states and events']. You think that this fits in with the hypothesis of occasional causes. I wouldn't be sorry if it did, because I'm always glad to find allies! But I see your reason: you think

that I won't allow that a body can move itself, ·and you see me as arguing·:

The soul isn't the real cause of the arm's movement;
The body isn't the real cause either; so
The arm must be moved by God.

But that is not my position. I maintain that what is real in the state called 'motion' comes from bodily substance just as much as thought and will come from the mind. Everything that happens in any substance is a result of the first state that God put that substance in when he created it, and in the ordinary course of events all God does for the substance from then on is to keep it in existence in conformity with its preceding state and the changes that it bears. [Leibniz explicitly says that he is excluding 'extraordinary' things that God may do, meaning things that don't accord with any general rule. Miracles? Yes: Leibniz holds that every 'extraordinary' or 'out-of-the-ordinary' event is a miracle; but we'll soon see him saying that there could be 'ordinary' miracles, i.e. ones conforming to some general rule.] But there's nothing wrong with saying that bodies push one another around. That is to say that a body never begins to have •a certain tendency ·to move· unless another body touching it loses a tendency that is proportionate to •it according to the constant laws that we observe in phenomena. . . .

I wouldn't go so far as to assert outright that plants have no soul or life or substantial form. When a cutting from a tree is planted or grafted, the result may be—as you say—a ·new· tree of the same species, but there could be a seminal part ·of the cutting· that already contains a new plant (just as the seed of animals may contain tiny living animals that can be transformed into animals of the same species). So I don't go as far as to assert that only animals are alive and endowed with a substantial form. And perhaps there are infinitely many different degrees in the forms of bodily substances.

You say that those who support the hypothesis of occasional causes, saying that my will is the •occasional cause and God the •real cause of my arm's movement, don't claim that

God does this *in time* through a new act of will that he performs each time I will to raise my arm;

but rather that

God raises my arm through the single act of the eternal will by which he chose to do everything that he foresaw to be necessary for him to do.

To this I answer that the same reason holds for saying that even *miracles* don't occur through a new act of will on God's part, because they are in keeping with his general design, and—as I remarked in earlier letters—every act of God's will contains all the others, though with some order of priority. Indeed, if I understand them aright, the occasionalists introduce a miracle that isn't made less miraculous by being continual; for it seems to me that the notion of *miracle* doesn't consist in *rarity*. I'll be told 'This conduct of God's follows a general rule, so it doesn't involve miracles'; but I don't concede this inference, and I believe that God can adopt general rules in respect even of miracles. Suppose for example that this were the case:

God decides that every time such-and-such occurs, he will bestow his grace immediately (or perform some other action of that kind).

Every action he performs in conformity with such a rule would be a miracle, though an 'ordinary' one. I grant that the occasionalists can define 'miracle' differently, but I don't think they can come up with a definition that will prevail over mine. It seems that as a matter of word-usage a 'miracle' differs from a non-miracle •intrinsically, •through the substance of the act, and not by an external accident of frequent repetition [he means: not through the extrinsic fact that

events like this don't occur often]. Strictly speaking God performs a 'miracle' whenever he does something that exceeds the forces he has given to—and maintains in—created things. For instance, if God caused a stone whirling around in a sling to continue moving in a circle after being released from the sling... that would be a miracle, because according to the laws of nature the stone should continue along a straight line at a tangent to its circular path; and if God decreed that this should always happen, he would be performing *natural miracles*—there would be no simpler explanation for this movement. . . .

Returning now to our main theme, I want to be as clear as I can about where I stand. I believe that the actions of minds change *nothing* in the nature of bodies, nor do bodies cause *any* changes in the nature of minds; and it is not true, even, that God changes bodies (minds) on the 'occasion' of changes in minds (bodies)—except when he performs a miracle. In my opinion things are so prearranged that a mind never effectively wills •something except when the body is prepared to do •that thing by virtue of its own laws and forces; whereas the occasionalists say that God, on the 'occasion' of an event in the mind (body) changes the laws regarding bodies (minds)—that's the essential difference in our views. So I don't think we have to worry over how the soul can give movement or change of speed or direction to the animal spirits [see note on page 40], because it *doesn't*. [Leibniz now presents a very abstract reason why a mind can't affect a body. Its premise is that 'mind and body are incommensurable', meaning that there are no descriptions or measures that can be applied equally to minds and to bodies. Because of this, Leibniz says, there can't be a truth of the form

whenever a mind undergoes a change of kind K_m , that causes in its body a change of kind K_b ,

where K_m and K_b are inter-related in such a way that it just *makes sense* that they would be causally connected like that. Leibniz is sure that real causal relations make sense—are in some way necessary. He adds that this creates a further difficulty for occasionalism also, because there can't be a truth of the form

whenever a mind undergoes a change of kind K_m that is the occasion for God to cause in its body a change of kind K_b ,

where K_m and K_b are inter-related in such a way that it would *make sense* for God to use one as a trigger for the other. (All of this is supposed to hold equally for causes or occasions going in the opposite direction, from body to mind.) Descartes seems to have been an occasionalist (Leibniz says) who held that a mind can alter not the speed but the *direction* of movements in the associated body; he held that this doesn't conflict with any of the laws of physics. Leibniz replies **(1)** that this is still open to the above argument about 'making sense'. Also **(2)** Descartes is wrong, anyway, about the laws of physics, which govern directions as well as speeds. If God did what Descartes credits him with doing, 'it would be a miracle'. It is therefore infinitely more reasonable and worthy of God to suppose •that he first created the machine of the world in such a way that

—without constantly violating the two great laws of nature, the law of force and the law of direction; indeed, following them perfectly, except for miracles—

the springs of bodies are ready to kick themselves into action as required, at the moment when the soul has a suitable act of will or thought that comes to it only in conformity with the preceding states of the body; and •that thus the union of the soul with the bodily machine and its parts, and the action of one on the other, consist only in the concomitance •or going-together or harmony• that testifies to the admirable

wisdom of the creator much better than any other hypothesis. [Notice: Leibniz says that the mind acts 'in conformity with' the body's previous state; this is the language of harmony, not of causation.] It has to be admitted that this hypothesis is at least •possible, and that God is a great enough workman to be able to carry it out; and once that has been admitted, it is easy to conclude that this hypothesis is the most •probable because it is the simplest and the most intelligible, and at once demolishes all the problems •about mind-body relations•. Not to mention the problem posed by the criminal actions •of men•, in which God's only role—it seems reasonable to think—is to keep created forces in action.

Here's a comparison •that will help me to explain my position•. The correspondence •between body and soul• that I uphold is comparable with this:

Two choirs are performing their parts separately, unable to see or even hear each other, but harmonizing perfectly—*wonderfully*—because each singer follows his own written score. •Let us call the choirs One and Two• . . .

Someone who is standing in the middle of choir One might be able to judge from it what the choir Two is doing. He could even get into the habit of doing this. If things were so arranged that this person could hear choir One without seeing it, and could see choir Two without hearing it, with his imagination making good the deficiency, he might come to focus his thoughts not on One but on Two. He might think of One—the choir he is *in*—as merely an echo of Two. [Leibniz goes on to suggest situations where the person might give more of a role to One; this obscure passage seems to be omissible without serious loss. He then continues:] However, I don't object to minds' being called 'occasional causes' of certain bodily movements, or even their 'real causes' in a way. Think about this in terms of divine decisions. What

God foresaw and preordained for minds was an occasion for his regulating bodies from the outset in such a way that they would work together ·with minds·, according to the laws and forces that he would give to each; and as the state of one is an •unfailing consequence of ·the state of· the other—often a •contingent and even a •free consequence, but still *unfailing*—we can say that God arranges a *real connection* by virtue of the general notion of substances that implies that they all express one another perfectly; but ·although this connection is •real·, it isn't •immediate, being based only on what God did in creating the substances. [The puzzling phrase 'general notion of substances' is faithful to Leibniz's French, not an artifact of this version.]

If my view that •substance requires a •true unity were based only on a definition that I thought up contrary to common usage, all we would have here is a quibble over words (if it weren't for the fact that my definition served to call attention to a notion that most people had wrongly overlooked). But the common run of philosophers [here = 'the scholastics'] have taken this term in pretty much the same way, distinguishing

- intrinsic unity from •accidental unity [= 'unity through circumstances']
- substantial form from •accidental form,
- perfect substances from •imperfect substances,
- natural substances from •artificial substances

[Leibniz gives all these in scholastic Latin]. More important than that, I walk out on ·these technical· terms and consider matters in a much more abstract way: I believe that where there are only entities through aggregation there won't be any real entities at all; •each entity through aggregation presupposes entities that have true unity, because •it gets its reality purely from the reality of its parts, so that it won't have any reality if each part is also an entity through aggregation. . . .

I agree with you that in the whole of corporeal nature there are only machines (which are often animated), but I don't agree that 'there are only aggregates of substances'—if there are aggregates of substances then there *must* be genuine substances for the aggregates to be aggregates *of*. So we *have to* take one or other of these ways out:

- Appeal to mathematical points, from which certain authors make up extension.
- Appeal to the atoms of Epicurus and Cordemoy (which you dismiss, as I do).
- Admit that no reality is to be found in bodies.
- Recognize certain bodily substances that have a true unity.

I said in an earlier letter that the composite of this diamond and that one can be called 'a pair of diamonds' [indistinguishable in French from 'one pair of diamonds']; but this is merely an entity of **(a)** reason; and even if the diamonds are brought close to one another the pair of them will be ·only· an entity of **(b)** imagination or perception, i.e. a phenomenon. Physical closeness, moving together, working together for a single end—none of this makes any difference to substantial unity. To be sure, it can be all right to talk as though a number things constituted a single thing—more or less all right depending on how tightly connected the things are; but that ·way of talking· is useful only for condensing our thoughts and representing phenomena.

It seems too that what constitutes the essence of an entity through aggregation is only a state of being of its constituent entities; for example, what constitutes the essence of an army is only a state of being of the constituent men—·for an army to exist is for a number of men to be interrelated thus and so·. [Leibniz is saying here that his position is still firm even if he accepts the second of the two definitions of 'substance' that Arnauld gave on page 53.] Such a state of being presupposes a substance

whose essence is *not* a state of being of another substance. Thus, every machine presupposes some substance in its constituent cogs and wheels; there is no multiplicity without true unities.

To be brief, I accept as axiomatic an identical proposition that ·is saved from outright triviality only by· a variation in emphasis:

Something that isn't truly *one* entity isn't truly an *entity* either.

[In Leibniz's French, 'one entity' and 'an entity' are both expressed by *un estre*.] It has always been thought that 'one' and 'entity' are interchangeable. Entity is one thing, entities another; but the plural presupposes the singular, and where there is no entity, still less will there be many entities. How could I make it clearer than that? That is why I thought I was entitled to differentiate entities through aggregation from substances, because the unity of these entities exists only in our mind, which bases itself on the relations or states of genuine substances. If a machine is a substance, a circle of men holding hands will be too, and then an army, and finally every multiplicity of substances.

I don't say that if an item lacks true unity then there is nothing substantial in it, nothing but appearance; for I concede that it will have as much reality or substantiality as there is true unity in whatever makes it up.

You object that lacking-true-unity may be of the *essence* of matter; if that is right, then it will be of the essence of matter to be a phenomenon, stripped of all reality like a coherent dream; for phenomena themselves—a rainbow, a heap of stones—would be wholly imaginary if they weren't composed of entities having unity.

You say that you don't see what leads me to admit these substantial forms, or rather these bodily substances that have true unity. What leads me is the fact that I

can't conceive of any reality without true unity. And to my way of thinking the notion of •individual substance has consequences that are incompatible with ·the notion of· •entity through aggregation. I conceive of substance as having properties that can't be explained in terms of extension, shape and motion; ·and there are two other features of bare material bodies that don't square with their being substances·. **(i)** Because the continuum is ·not merely divisible but· *divided* to infinity, bodies have no exact, fixed shape. **(ii)** Motion—considered merely as a thing's changing its surroundings, i.e. merely in terms of extension—involves something imaginary; so when a number of things are involved in such changes there is no ·objective· way to decide which of them is really moving. Or, rather, the only objective way to do this is in terms of *force* that is the cause of the motion—and force exists in bodily substance! Certainly, there's no need to mention these substances and qualities in explaining particular phenomena; but ·in that respect they are in good company, because in giving those explanations· there's no need either to study God's role in the world, the composition of the continuum, the plenum, or a thousand other things. The particular facts of nature can be explained mechanically, but only after we have discovered—or assumed—the principles of mechanics itself; and these can't be established *a priori* except through metaphysical arguments. Even the problems about the composition of the continuum will never be solved so long as •extension is thought to constitute the substance of bodies, and •we are entangled in our own fantasies.

I think too that to confine genuine unity or substance almost entirely to *man* is to be limited in metaphysics in a way comparable with the limitation in physics of those who enclosed the world in a ball. And since each genuine substance is an expression of the whole universe from a

certain angle, and ·is therefore· a duplication of the works of God, it is in keeping with the greatness and beauty of God's works (since these substances don't get in one another's way) for him to make, in this universe, as many as possible and as higher reasons allow.

Try to base everything on sheer *extension* and you'll destroy the whole of this wonderful variety. *Mass* alone—i.e. stuff that has nothing to it but its sheer occupancy of space—(if such a thing could be conceived) is as much inferior to a perceiving substance that represents the whole universe. . . . as a corpse is inferior to an animal or rather as a machine is inferior to a man. This is how signs of the future are formed in advance and how traces of the past are preserved for ever in each thing. It is also how cause and effect adapt to one another precisely, right down to the finest details, although every effect depends on an infinity of causes and every cause has an infinity of effects. This couldn't possibly happen if the essence of matter consisted of a certain shape, movement, or other definite state of extension. And in nature there is none of that: where extension is concerned, everything is strictly indefinite [*indefini à la rigueur*—perhaps said slightly jokingly], and when we attribute extension to bodies we are talking about mere phenomena and abstractions. This shows how greatly mistaken people are in these matters when they don't *think* about them hard enough to recognize true principles and to form an accurate idea of the universe.

And it seems to me that refusing to go along with this very reasonable idea is as prejudiced as refusing to recognize the •greatness of the world, the •infinite division ·of matter·, or •mechanical explanations of nature. To think of extension as a basic notion, leaving out the true notions of substance and of action, is as big a mistake as it was in earlier days to settle for substantial forms in general, without looking into the details of the workings of shape, size, velocity etc.

The multiplicity of souls shouldn't bother us any more than the multiplicity of the Gassendists' atoms, which are as indestructible as souls are (and I'm not saying that all these souls experience pleasure or pain). It is in fact a perfection of nature to have many souls, because a soul or an animate substance is infinitely more perfect than an atom, which has no separate parts and no internal variety, whereas each animate thing contains a world of diversities within a genuine unity. Now, experience favours this multiplicity of animate things. We find that there are enormously many animals in a drop of peppered water [such as Leeuwenhoek used in his observations of protozoa and bacterial]—we can kill millions of them in an instant. . . . Now, if these animals have souls, we must say of their souls what we can probably say of the animals themselves, namely that they have been alive since the creation of the world and will be alive until its end, and that

just as generation seems to be only a change consisting in •growth, death will only be a change consisting in •diminution, sending the animal back into the recesses of a world of tiny creatures where it has more limited perceptions, until perhaps the order [= God's over-all scheme for the universe] calls it back on stage.

The ancients were mistaken in introducing the transmigrations of souls ·from animal to animal· instead of the transformations of one and the same animal always keeping the same soul. . . . But minds are not subject to these revolutions. God creates each of them when the time for it arrives, and detaches it from the body (at least from its coarse body) by death, because they must always keep their moral qualities and their ability to remember, so as to be perpetual citizens of this entirely perfect and universal commonwealth of which God is the monarch, which cannot lose any of its members and whose laws are superior to the laws of bodies.

I accept that the body on its own, without the soul, has only a unity of aggregation; it still retains some reality remaining even then, coming from its constituent parts that retain *their* substantial unity because of the countless living bodies that are included in them. But although a soul may have a body made up of parts that are animated by separate souls, that doesn't mean that the soul or form of the whole is made up of the souls or forms of the parts. As regards a worm that is cut in two: even if each part retains some movement, it doesn't have to be the case that they are both animate. [Leibniz says *insecte*, but this is clearly reference back to the *worm* introduced by Arnauld on page 54.] At least the soul of the whole worm will remain only in one part; and just as in the formation and growth of the worm the soul was there from the beginning in a part that was alive then, so after the destruction of the worm its soul will remain in a part that is still alive—a part small enough to be sheltered from whatever tears or scatters the body of this insect. For this purpose, smallness will do the job. There is no need to conjure up, as the Jews do, a little bone of irreducible hardness for the soul to take refuge in. I agree that there are degrees of accidental unity: an ordered society has more unity than a disorderly mob; an organic body or a machine has more unity than a society. For *x* to 'have more unity' than *y* is for it to be more appropriate to conceive of *x* as a single thing than to think of *y* in that way, because *x*'s constituents are more richly inter-related; but ultimately all these unities are made complete only by thoughts and appearances, like colours and other phenomena that we nevertheless call 'real'. The tangibility of a heap of stones or a block of marble doesn't prove its substantial reality, any more than the visibility of a rainbow proves *its* substantial reality. Don't be over-impressed by tangibility. Everything, however solid, has *some* degree of fluidity; this marble block

may be merely a heap of countless living bodies or like a lake full of fish, though these animals are ordinarily visible only in half-rotten bodies.

So it can be said of these composite bodies and their like what Democritus rightly said about them: 'They exist by opinion, by law, by convention.' And Plato holds the same view about everything that is purely material. Our mind notices or conceives of certain genuine substances that have various modes [= 'states']; these modes include relations with other substances; and from this the mind takes the opportunity—for convenience in reasoning—to link these substances together in thought and bring them under one name. But we mustn't let ourselves be deceived into regarding them as substances or truly real entities. *That* blunder is reserved for those who stop at appearances, or—worse still—those who make realities out of all the abstractions of the mind, thinking of number, time, place, movement, shape as free-standing entities. I go a different way: I maintain that there's no better way to put philosophy back on its feet and turn it into something precise than by focusing on individual substances or complete entities that have genuine unity, their changes all being caused from within themselves; everything else is merely phenomena, abstractions or relationships.

We'll never find any rule or recipe for making a genuine substance out of many entities by aggregation. You might think:

Something whose parts work together towards a single end is a better candidate for the role of *genuine substance* than is something whose parts are merely continuous.

But by that standard the totality of the officers of the Dutch East Indies Company—scattered across Europe and Asia—form a real substance much better than does a heap

of stones. But what is this ‘single end’? It is a mere likeness between the actions of one of the parts and the actions of another substance, or else it is a pattern of active and passive relationships that our mind picks out. If you prefer the unity of contiguity as a basis for something to be a genuine substance, you’ll run into other difficulties. It may be that solid bodies have their parts joined only by the pressure of the surrounding bodies and of themselves, and in their substance they don’t have any more unity than a heap of sand: sand without lime! Why will many rings, interwoven to make a chain, be more likely to make up a genuine substance than if they had openings to allow them to separate one from another? It could be that not a single link in the chain touches any other link, and even that no link is caught by another link, and yet it may be that a certain small trick is needed to separate them. [Leibniz supplies a sketch.] What are we to say in this case? That the chain’s substantiality is suspended, as it were, pending the arrival of someone who has the skill and the desire to pull the links apart? Fictions of the mind, everywhere you look! We’ll have nowhere to *stand*, no basis for real, solid principles, if we don’t if we don’t distinguish what is truly a complete entity, a substance.

And a final point: One shouldn’t assert anything for which one has no basis. So it is up to those who make entities and substances without genuine unity to •prove that there’s more reality in them than I have allowed, and to •show what it consists in. I am waiting! I’m waiting for a substance-notion or entity-notion that can be made to fit all these things that I have disqualified. And who knows what *else* it may be made to fit? Perhaps some day parhelia—and maybe also dreams—will squeeze in under it. That’s what will happen unless very precise limits are set to this right of citizenship that some people want to assign to entities formed by aggregation. [Parhelia are bright patches appearing in

the sky on each side of the setting sun when it is viewed through air containing many ice crystals. They are the theme of one of the most beautiful songs ever written, Schubert’s *Die Nebensonnen*.]

I have gone on at length about these topics so that you can judge not only my views but also my reasons for them. . . . I keep for another occasion some other topics that you touched on in your letter.

* * * * *

[Then about three months later Leibniz wrote Arnauld a short letter on personal topics, including this philosophical bit:] The Reverend Father Malebranche replied recently to my objection in the *Nouvelles de la Republique des Lettres*. He seems to admit that some of the laws of nature or rules of movement that he had put forward may be hard to defend. But he thinks that’s because he based them on infinite hardness, which doesn’t exist in nature; whereas I think that his rules would be indefensible even if nature did contain infinitely hard things. It is a weakness in his and Descartes’s arguments that they overlooked this: everything that is said about •motion, •inequality, and •elasticity must still hold good for the cases where these things are infinitely small and where they are infinite. Infinitely small motion becomes •rest, infinitely small inequality becomes •equality; and infinitely rapid elasticity is nothing but •extreme hardness. This is like what happens in geometry when all the proofs concerning the ellipse hold equally for the parabola when this is thought of as an ellipse whose other focal point is infinitely distant. It is strange to see that most of Descartes’s rules of movement flout this principle, which I consider to be as infallible in physics as in geometry, because the author of the world acts as a perfect geometer. If I answer Malebranche, it will be mainly in order to highlight this principle, which is very useful and has, so far as I know, scarcely yet been considered in its generality.

18. Arnauld to Leibniz, 28.viii.1687

To start with, I must apologize for replying so late to your letter of 30th April. Since then I have had various illnesses and tasks; also, I have a little trouble in setting my mind to such abstract matters. So please forgive the brevity of what I shall say in response to the new points in your last letter.

(A) I have no clear notion of what you mean by ‘express’ when you say that ‘the soul expresses more clearly—other things being equal—the states of its body, because it expresses the whole universe, even, from a certain angle’ [page 55; Arnauld has added the word ‘even’ to what Leibniz wrote]. If you mean ‘expression’ to involve some thought or item of knowledge, I can’t agree that my soul has more thought and knowledge of the movement of lymph in my body than it has of the movement of Saturn’s satellites; and if it doesn’t involve thought or knowledge then I don’t know what ‘expression’ is. So that doesn’t help to solve the problem that I had put to you: how can my soul give itself a feeling of pain when I am stabbed during my sleep? To do that it would have to know that I have been stabbed, whereas *in fact* it has this knowledge only through the pain it feels.

(B) Let us consider following argument in the philosophy of occasional causes: ‘My hand moves as soon as I will it to do so. Now,

The soul isn’t the real cause of the arm’s movement;
The body isn’t the real cause either; so
The arm must be moved by God.’

You say that this assumes that a body cannot move itself, whereas you think that it can. According to you, what is real in the state called motion comes from bodily substance just as much as thought and will come from the mind. But I find it very hard to see how a body that has no movement

can give itself movement. And if that can happen, one of the proofs of God—the argument from the necessity of a first mover—collapses.

Anyway, even if a body could make itself move, that wouldn’t enable my hand to move whenever I willed it to. How could my hand know when I wanted it to move? My hand doesn’t know anything!

(C) I come now to these indivisible and indestructible substantial forms which you think must be agreed to exist in all animals and perhaps even in plants; your reason being that otherwise *anything composed of* matter (which you hold is not made up of atoms or of mathematical points, but is infinitely divisible) would not be intrinsically unified but would *at best* be accidentally unified *like a heap of stones*. I have more to say about this *than about the first two topics*.

(1) I replied that it is may be essential for matter, the most imperfect of all entities, to have no true and proper unity, so that any portion of matter must always be many entities, never properly one entity. This, which is what Augustine believed, is no more incomprehensible than the infinite divisibility of matter, which you accept.

You reply that that’s impossible because there can’t be many entities where there isn’t one entity. This is an argument that *the atomist* Cordemoy might have endorsed; but you are bound to reject it, because in your view of things nearly every body is a case of ‘many entities’ and not properly ‘one entity’. The only exceptions you allow to this are bodies that you think have no substantial forms—animate bodies, which don’t constitute one hundred-millionth of all the bodies there are. So it isn’t after all impossible for many

entities to exist where there is properly not one entity.

(2) *I don't see how your substantial forms can cope with this problem. ·That is, I don't see how your substantial forms can confer genuine unity on anything·. For something to be one in your metaphysically rigorous way, the attribute that gives it this unity, ·this one-ness·, must be •essential to it and •intrinsic to it. So if a portion of matter *x* ·considered on its own· is not one entity but many entities, I can't see how a substantial form can give *x* unity, making it not many but one. The point is that the substantial form is really distinct from *x*, so that its being conferred on *x* is just giving *x* an external-relational property ·like the property of having-a-crown-on-your-head·; this isn't intrinsic to *x*, so it can't turn *x* into a single entity. I do see that it may be a reason for us to call *x* 'one entity', if we aren't using 'one' in this metaphysically strict sense ·of yours·. But we don't need these substantial forms for that; there are countless inanimate bodies—ones with no substantial form—that can be called 'one' in a legitimate though unstrict sense. Isn't it good usage to say that the sun is one, that the earth we live on is one, and so on? So: I can't see that there is any need to admit these substantial forms so as to give true unity to bodies that otherwise wouldn't have it.*

(3) *You admit these substantial forms only in animate bodies. Now, every animate body is organic, and every organic body is many entities. So, far from your substantial forms preventing the bodies to which they are joined from being many entities, any such body must be many entities if a substantial form is to be joined to it.*

(4) *I have no clear notion of these substantial forms or souls of animals. You must look on them as substances: you call them 'substantial', and say that only substances are genuinely real entities, amongst which you give these substantial forms pride of place. Now, I am acquainted*

with only two kinds of substances, bodies and minds; the onus is on those who claim that there are others to prove it to us, according to the maxim with which you conclude this letter: 'One shouldn't be confident of anything for which one has no basis' [page 63]. Let us suppose, then, that these substantial forms are bodies or minds. •If they are bodies they must have extension and consequently be divisible—infinately divisible—from which it follows that they are not one entity but many entities [he means that each of them is not one entity but many entities]. In that case the substantial form of a given body will be as plural as the body itself, which disqualifies it from being able to confer true unity on it. •If substantial forms are minds, their essence will be to think: for that is how I understand the word 'mind'. An oyster thinks? A worm thinks? And your declared uncertainty about whether plants have soul and life and substantial form should make you uncertain about whether they think. . . .

(5) *The indestructibility of these substantial forms or souls of animals seems to me even more indefensible. I had asked you what became of these animals souls when they die or are killed; when for instance one burns caterpillars, what became of their souls. You reply: 'The soul of the whole caterpillar will remain only in one part—a part small enough to be sheltered from whatever tears or scatters the body of this insect' [page 62]. And that leads you to say that 'The ancients were mistaken in introducing the transmigrations of souls ·from animal to animal· instead of the transformations of one and the same animal always keeping the same soul' [page 61]. Nothing more subtle could be imagined for solving this problem! But consider carefully what I'm going to say to you. When a silkworm butterfly lays its eggs, each of those eggs (you say) has a silkworm soul, from which it comes about that five or six months later little silkworms*

emerge from the eggs. Now, if a hundred silkworms had been burned, there would also be, according to you, a hundred silkworm souls in that many small particles of these ashes. But **(a)** I wonder whom you'll be able to persuade that each silkworm, after being burned, has remained the same animal keeping the same soul attached to a small particle of ash that was formerly a small part of its body! And **(b)** if this is how things stand, why are silkworms not born from ash particles as they are born from eggs?

(6) But this problem seems greater in animals that are known with more certainty to be born always from the union of the two sexes. I ask, for instance, what became of the soul of the ram that Abraham sacrificed instead of Isaac and subsequently burned. You won't say that it passed into the foetus of another ram, for that would be the Ancients' idea of a soul passing from body to body, which you reject. Your answer will be that it remained in a particle of the body of that ram which was reduced to ashes, and that the sacrifice was therefore only 'the transformation of the

same animal, keeping always the same soul'. That has some plausibility when it is a part of your account of the substantial form of a caterpillar that becomes a butterfly, because the caterpillar and the butterfly are both organic bodies, so that the butterfly can be considered to be the same animal as the caterpillar, because it keeps many of the caterpillar's parts unaltered, while the other parts have changed merely in form. But apply this account to the ram that is burned and you get the ram's soul withdrawing into a part of the incinerated ram that isn't organic and can't be thought to be an animal, so that attaching the ram's soul to it won't make an animal, still less a ram, as the soul of a ram should. So what will happen to the soul of this ram in this ash? It can't take itself out of the ash and go elsewhere, because that would be a soul-transfer, which you reject. And it is the same for an infinity of other souls that wouldn't form animals because they would be attached to inorganic portions of matter that one can't imagine becoming or being animals according to the laws established in nature. . . .

19. An interlude concerning Leibniz's salvation, vii-ix.1687

A. [Arnauld sent the preceding letter via the Count, to whom he said in a covering letter:] *Leibniz has very curious opinions about physics that seem to me scarcely defensible. But I have tried to tell him my thoughts on the subject in a way that won't wound him. It would be better if he gave up, at least for a time, this sort of speculation, and applied himself to the greatest business he can have, the choice of the true religion, in accordance with what he wrote about it to you*

some years ago. It is very much to be feared that death will catch him unprepared unless he has taken a decision that is of such importance for his salvation.

B. [Passing that on to Leibniz, the Count weighed in on his own account:] He is quite right to say that, for even if there were thousands amongst the Protestants who don't know left from right, who can in comparison with scholars be thought no better than animals, and who only adhere

to heresy because they don't know what it is, that certainly can't be said of you, who are so learned and on whom I have exerted every possible effort to bring you out of the schism. . . . To take just one point out of a thousand, do you really believe that Christ established his Church in such a way that what one thinks is white the other thinks black, and that he constructed the Church's ministry in such a contradictory way that we and the Protestants are at odds and hold different beliefs? [That challenge is presumably aimed at Leibniz's life-long project of *reconciling* Roman Catholicism with Protestantism, making a choice unnecessary]. . . . Oh, my dear M. Leibniz, do not lose the time of grace in this way, and 'if today you have heard the voice of the Lord, harden not your heart' [the Count puts this in Latin, quoting from Paul's letter to the Hebrews]. Christ and Belial don't agree with one another any more than Catholics and Protestants do, and I have no hope for your salvation if you don't become a Catholic.

C. [Leibniz drafted—though he did not send—this reply to the Count:] On the subject of religion (since you touch that chord), there are people whom I know (I'm not speaking about myself) •who aren't far removed from the views of the Roman Catholic Church, •who find the definitions of the Council of Trent quite reasonable and in keeping with Holy Scripture and the Holy Fathers, •who consider the system of Roman theology more coherent than that of the Protestants, and •who admit that dogma wouldn't hold them back ·from becoming Catholics·; but they are held back by two other things. **(1)** There are by certain very great and all too common abuses of practice that they see to be tolerated in the Roman Catholic communion, especially in matters of worship. They

- are afraid of being obliged to approve these abuses or at least of being in a position where they dare not criticize them; they
- are afraid of thereby shocking people who would regard them as having no conscience, and of leading

others into impiety through their example . . . they •even doubt whether one can live in communion with people who carry on certain intolerable practices; and they consider that in these circumstances it is more excusable to remain in a Church than to enter one. **(2)** Even if that obstacle didn't exist, they find themselves held back by the anathematizations—the solemnly pronounced curses—of the ·Roman Catholic· Council of Trent. They can't bring themselves to endorse these condemnations, which strike them as excessively rigid and unnecessary; they think that doing so is not in the spirit of charity and creates or fosters a schism. Yet these people believe themselves genuinely Catholic, like those who have been unjustly excommunicated because of some factual error by the Church; for they uphold the dogmas of the Catholic Church, and they want the external communion—the participation in the Church's sacraments and ceremonies—that others impede or refuse them.

A famous Roman Catholic theologian had a great deal of support in his suggestion of a certain expedient. He believed that a Protestant

- who is held back from Roman Catholicism only by the anathematizations and even by some of the definitions of the Council of Trent, •who doubts whether this Council truly spoke for the whole Church, but •who is ready to submit to a council that truly does, and •who consequently accepts the first principles of the Catholic Church so completely that his error ·in not being a Roman Catholic· is not an error of principle but only one of fact,

might be received into the faith without any mention being made of the Council of Trent. [Leibniz—or his 'famous theologian'—supports this with remarks about the questionable status of the Council of Trent. He then sums up:] But one doubts whether this expedient will be approved.

20. Leibniz to Arnauld, 19.x.1687

As I will always set great store by your judgment on anything about which you have been able to inform yourself, I want to make an effort here to bring it about that the points of view that I consider important and almost beyond doubt appear to you as (if not certain, then) at least defensible. For it doesn't seem to me hard to answer your remaining doubts. You still have them, I think, only because a person who has prior opinions of his own and also has a lot on his mind, however able he may be, initially has great trouble understanding a new idea on a topic that is abstracted from the senses, where we can't get help from figures, models or mental pictures.

I had said that since the soul expresses naturally the whole universe from a certain angle and according to how other bodies relate to its own body; so it expresses more immediately what pertains to the parts of its body; and so it must, through the laws of the relationship that are essential to it, express in a particular way certain extraordinary movements of the parts of its body—and that is what happens when the soul feels pain from the body. In reply to this you say that

You have no vivid idea of what I mean by the word 'express'; if by that I mean a *thought*, you don't agree that the soul has more thought and knowledge of the movement of lymph in the body than of Saturn's satellites; but if I mean something else, you say you don't know what it is; and therefore the word 'express', if I can't explain it clearly, won't contribute to any account of how the soul can give itself the feeling of pain. To do this appropriately, the soul would have to know already that I am being jabbed, whereas in fact it knows this only *through* the pain it feels!

I shall respond to this by explaining this term that you judge to be obscure, and will apply the explanation to the objection you have raised.

One thing expresses another (in my terminology) when there is a constant and rule-governed relationship between what can be said of one and what can be said of the other. That is how a perspectival projection 'expresses' its ground-plan. Any kind of thing can 'express' other things; expression is a genus of which **(a)** natural perception, **(b)** animal sensation and **(c)** intellectual knowledge are species. All that is needed for **(a)** natural perception or **(b)** sensation is that something divisible and material and scattered through many entities is expressed or represented in a single indivisible entity, i.e. in a substance that is endowed with genuine unity; and when this representation is accompanied by consciousness in the rational soul it is called **(c)** 'thought'.

Now, this expression occurs *everywhere*, because *every* substance is in harmony with *every* other, and undergoes some proportionate change corresponding to the smallest change anywhere in the whole universe, although this change is more or less noticeable in proportion as other bodies or their actions have more or less relation to ours. I believe that Descartes himself would have agreed with this, because he would surely hold that—because of the continuity and divisibility of all matter—even the smallest movement affects neighbouring bodies, and so the effect is passed on from neighbour to neighbour, to infinity, decreasing as it goes. So our body must be affected somehow by every change in everything else. Now, to all the movements of our body there correspond certain more or less confused perceptions or thoughts of our soul; so the soul too will have

some thought about all the movements in the universe; and in my view every other soul or substance will have some perception or expression of them. True, we aren't clearly aware of all the movements of our body, e.g. the movements of lymph.

But, to return to an old example of mine, it is like my having to have *some* perception of each wavelet on the shore if I am to be aware of their joint effect, namely the crashing noise of the surf. So we do feel some confused result of all the movements occurring in us, but because we're accustomed to this movement within us we aren't clearly and reflectively aware of it—except when there is a considerable alteration in it, as at the start of illnesses. (It would be good if physicians applied themselves to identifying more accurately these kinds of confused feelings that we have of our bodies.) Now, since we are aware of other bodies only through their relations to ours, I was right to say that the soul expresses better what pertains to our body. We know of the satellites of Saturn or Jupiter only through movements that occur in our eyes.

I think that a Cartesian will agree with me about all this (except that •I suppose that we are surrounded by non-human souls to which I ascribe an expression or perception inferior to thought, whereas •Cartesians deny that non-human animals feel anything and don't allow any substantial forms other than human ones; but that has nothing to do with our present question about the cause of pain). Our present concern, then, is to know how the soul becomes aware of the movements of its body, given that we can't see any way of explaining how—along what causal channels—the action of an extended mass might be passed along to an indivisible entity. The ordinary Cartesians admit that they cannot account for this union; the authors of the hypothesis of occasional causes think that it is 'a difficulty worthy of a liberator, where God has to come to the rescue' [Leibniz writes

this in Latin, adapting something by the Latin poet Horace]. As for me, I explain it in a natural manner through the general notion of *substance* or *complete entity*. This notion implies that a substance's state at each moment is a natural consequence of its preceding state, from which follows that the nature of every individual substance—and thus of every soul—is to express the universe. Each soul was initially created to be such that by virtue of the inherent laws of its own nature it must turn out to be in harmony with what is happening in bodies, especially its own; so there's no surprise in its feeling pain when its body is damaged.

[Leibniz now says it all again, trying very hard to be clear, summing up thus:] As one *bodily* movement follows from another, likewise one *mental* representation follows from another in a substance whose nature it is to be representative. Thus the soul *must* be aware of the bodily damage when the laws of the relationship require it to express more clearly a more noticeable change in the parts of its body. It's true that the soul isn't always clearly aware of the causes of the bodily damage and of its future pain, when these are still hidden in its over-all representative state—e.g. when we are asleep or fail for some other reason to see the dagger approaching—but that's because the movements of the dagger are making too small an impression at that time. We are already affected in a way by all these movements *in our body* and representations in our soul; so we have within us

- the representation or expression of the causes of the bodily damage,

and consequently

- the cause of the representation of that damage, i.e. the cause of the pain;

but we can't sort them out from among so many other thoughts and movements, except when they become con-

siderable. Our soul reflects only on unusual phenomena that stand out from the rest; it can't have a separate thought about *any* when it is thinking equally about *all*.

After all that, I can't guess where the faintest shadow of difficulty can be found, unless someone denies that God *could* create substances that are initially built in such a way that their individual life-histories—each caused purely by the nature of that one substance—harmonize with one another. That denial is utterly implausible. We have experience of mathematicians representing the movements of the heavens in a machine; [Leibniz quotes a Latin epigram celebrating this achievement of 'the old man of Syracuse', Archimedes; then:] and we can do this much better today than Archimedes could in his time. Well, God infinitely surpasses human mathematicians, so why couldn't he create *representing* substances in such a way that the natural changes in their thoughts or representations, arising through their own laws, will correspond to everything that is going to happen to every body? This seems to me easy to conceive, and also worthy of God and of the beauty of the universe. And also in a way *necessary*, because all substances *have to* have a harmony and linkage with one another, and *have to* express individually •the same universe and •the cause of everything (i.e. the will of their creator) and •the decrees or laws that he has established to make them adapt to one another as well as possible.

So this mutual relationship of different substances—that can't strictly speaking *interact* with one another, but which harmonize as though they were interacting—is one of the strongest proofs of God's existence or of a common cause that every effect must always express according to its point of view and its capacity. Otherwise the transient states of different minds wouldn't harmonize with one another, and there would be as many systems as substances; if

they did sometimes harmonize it would be through sheer chance. Our whole notion of time and space is based on this harmony, . . . ,but I must stop this. If I explained in full detail everything related to our topic, I would never finish! However, I have preferred writing at length to under-explaining myself.

Passing now to your other doubts, I think now that you will see what I mean when I say that a bodily substance gives itself its own movement at each moment (or, rather, gives itself *what is real* in the movement; movement that is *a phenomenon* requires other phenomena, ·i.e. phenomena of other substances·). It is because the state of a substance at each moment is a consequence of its preceding state. It's true that a body without movement—or, rather, without any action or tendency to change—can't give itself any movement; but I maintain that there is no such body. Strictly speaking, bodies don't push one another when they collide; in a collision a body engages its own movement, or its own elasticity (which is just a movement of its parts). Every bodily mass, large or small, *already has* all the force it will ever acquire. All that it gets from a collision with other bodies is their determination, or rather that determination comes to it only at the moment of the collision. [In this context, 'determination' refers to speed and direction.]

·I said a few lines back that 'there is no such body'·. You will say that God can reduce a body to a state of perfect rest, but I reply that God can also reduce it to nothing! This body without active or passive qualities is far from being substance. Anyway, all I need ·for my immediate purposes· is to declare that if God ever does (miraculously, of course) reduce some body to perfect rest, it will take another miracle to restore some movement to it! You can see too that my opinion •confirms the proof of the prime mover, rather than •harming it. We have to account for how motion first got started, and for its laws and the harmony amongst

movements; and we can't do that without bringing in God. Why does my hand move? Not because I will it to! I could will a *mountain* to move, but unless I have a miraculous faith nothing will come of that. My hand moves because the elasticity in it slackens in the right way to achieve this result; I couldn't have successfully willed my hand to go up if I hadn't chosen that precise moment to do it. . . .

I come now to the topic of forms or souls, which I consider to be indivisible and indestructible. I am not the first to hold this view. [Leibniz now has a long paragraph backing this up, mentioning Parmenides, Melissus, Hippocrates, Albertus Magnus, and others. He continues:] They all saw a part of the truth, but they weren't able to build on what they saw. Many of them believed in transmigration, others in the translation of •souls, instead of thinking of the transmigration and transformation of an •animal that is already formed. Others, at a loss for any other account of the origin of forms, have allowed that they begin through a genuine act of creation, believing that this act of creation happens every day when the smallest worm starts out in life. In contrast with that, the only soul-creating acts that I accept as occurring somewhere along the world's time-line are the ones in which rational souls are engendered; I hold that all non-thinking forms were created with the world. [Again he cites earlier philosophers who seem to have shared this view, and remarks that Aquinas seems to regard the animal soul to be indivisible. Then:] Our Cartesians go much further, because no genuine soul or substantial form can be destroyed or engendered, which is why they don't grant animals a soul (though Descartes, in a letter to More, testifies that he doesn't want to say for certain that they don't have one). No-one objects to the atomists' claiming that atoms last for ever, why should it be thought strange to say the same thing about souls, which are naturally suited to indivisibility,

especially since this follows necessarily from combining •the Cartesians' view about substance and the soul with •the whole world's view about regarding the animal soul. It will be hard to get the human race to give up the universally held opinion that animals have feeling—a catholic opinion if there ever was one! [Leibniz is jokingly using *catholique* in its original sense of 'universal'.]

Now my thesis about these souls, if it is true, is not only necessary according to the Cartesians but also important for morality and religion. Why? Because it can destroy a dangerous opinion for which many intelligent people have a liking and which the Italian philosophers—disciples of Averroes—had spread about the world, namely, that when any animal dies its soul returns to the world-soul. This conflicts with my demonstrations of the nature of an individual substance; and it can't be made clear sense of, because every individual substance must forever exist separately once it has begun to be. That is why the truths that I put forward are quite important; and given that everyone who acknowledges animal souls must accept them, the rest should at least not find them *strange*.

But to come to your doubts about this indestructibility:

(1) I had asserted that one must admit in bodies the existence of something that is truly a single entity, since matter or extended mass in itself can only be many entities. . . . Now, I infer that you can't have •many entities where there isn't •a single one that is genuinely an entity—that every multiplicity presupposes unity. You reply to this in many ways, but without discussing the argument itself, which is unassailable. Instead, you produce drawbacks and *ad hominem* objections [i.e. objections aiming to show that Leibniz isn't in a position to hold the view in question], and try to show that what I am saying is not enough to solve the problem. First, you are astonished at my using this argument, which would have been obviously

good in Cordemoy's eyes because he composes *everything* out of atoms, while I am bound to think it false (as you see it) because my account of substantial forms attributes them only to animate bodies, which constitute *less than one hundred-millionth* part of the material world—so that all the rest re-raise the many-entities problem. I see that I still haven't explained my hypothesis clearly enough for you to grasp it. For apart from the fact that I don't remember saying that souls are the only substantial forms, I am *far* from holding that only a tiny proportion of bodies are animate. What I actually believe is that *everything* is full of animate bodies. I think there are incomparably more souls than Cordemoy thinks there are atoms, because he thinks they are finite in number, whereas I maintain that the number of souls—or at least of forms—is wholly infinite, and that because matter is infinitely divisible we can't fix on a part so small that it doesn't *contain* animate bodies. (Or at any rate bodies endowed with a basic entelechy, i.e. (if you'll let me use the word 'life' so generally) with a life-source—that is, bodily substances that can in general be described as 'living').

- (2) As for this other problem that you raise, namely—
 the soul joined to matter doesn't make an entity that is truly one, because matter is not truly one in itself; and adding the soul to the body gives it only an
 •external-relational property, which can't endow it with
 •intrinsic unity.

I answer that it is the animate substance to which this matter belongs that is truly an entity, and the matter considered as the mass in itself is only a pure phenomenon or a well-founded appearance, as also are space and time. [See the paraphrase on page 43.] It doesn't even have precise, fixed qualities that can could let it *pass as* a determinate entity. I hinted at this in my previous letter. *Shape* is of the essence of a finite extended mass, and in nature it is never

exact and strictly determinate, because of the actual division ad infinitum of the parts of matter. There is never a sphere without inequalities, nor a straight line without curves mixed in with it, nor a curve defined by a certain formula without some other curve mixed in—and all this holds for small parts as well as large. The result is that *shape*, far from being constitutive of bodies, is not even a wholly real and determinate quality outside of thought, and a certain precise surface of a body can never be fixed on, as it could be if there were atoms. And I can say the same about size and of motion, namely that these qualities or predicates have something phenomenal about them as do colours and sounds; and although there can be much more clear knowledge about size and motion than about colours and sounds, they are no more able than those are to stand up to the most fine-grained analysis. The upshot is that extended mass considered without substantial form, consisting only of these qualities, is not bodily substance but purely a phenomenon like the rainbow; which is why philosophers have recognized that *form* is what gives determinate being to matter, and those who don't attend to that will, if they enter the labyrinth of the composition of the continuum, never escape. The only absolutely real things are indivisible substances and their different states. Parmenides and Plato and other ancient knew this well. [Leibniz then repeats his earlier point about its being colloquially all right to speak of 'a rainbow' or 'a flock of sheep' although these don't have substantial forms.]

(3) You say that I don't admit substantial forms except for animate bodies (I don't remember saying this), and on this you base an objection: since all animate bodies are organic, and every organic body is many entities, it follows that a form or soul, far from making an organic body *one* entity, requires it to be *many* entities so that it can be animate. I reply that supposing that there is a soul in animals or

other bodily substances, we must think about •animals in this respect in the way we all think about •men. A man is an entity endowed by his soul with a genuine unity, even though the mass of his body is divided into organs, vessels, fluids, and spirits, and these parts are undoubtedly full of an infinity of other bodily substances that have their own forms. Objection **(3)** is substantially in line with objection **(2)**, and this solution will serve for them both.

(4) You hold that there's no basis for conferring a soul on animals, and that if there were such a soul it would be a mind, i.e. a thinking substance, because we don't know of and can't conceive of any substances other than minds and bodies. And it is indeed hard to believe that an oyster thinks, that a worm thinks. This objection confronts everyone, apart from Cartesians; and we can't think that there is *no* basis for the belief that the whole of mankind has always had about animals' feeling; but, anyway, I think I have shown that every substance is indivisible and that consequently every bodily substance must have a soul, or at least a form that is analogous to the soul, since otherwise bodies would be no more than phenomena. [This paragraph is aimed at Arnauld's statement 'I am acquainted with only two kinds of substances, bodies and minds; the onus is on those who claim that there are others to prove it to us'. page 65] To assert that every substance that isn't divisible (that is, in my view, every substance whatsoever) is a mind and must think strikes me as incomparably bolder and more groundless than the preservation of forms [i.e. the thesis that forms are indestructible]. We have knowledge only of five senses and of a certain number of metals; should we infer from this that that's all there are in the world? It is much more likely that nature, which loves variety, has produced other forms in addition to the thinking ones. If I can prove that conic sections are the only figures of the second degree, that is because I have a clear notion of these lines, a notion

that supports a precise classification. But as we don't have a clear notion of thought, and can't demonstrate that the notion of *indivisible substance* is the same as that of *thinking substance*, we have no grounds for asserting it. I agree that the notion we have of thought is vivid, but some things that are vivid are not clear. [See the note on these terms on page 1.] We know thought only through inner sensation. . . . but all we can know through sensation are things we have experienced; and as we haven't experienced the workings of any other forms, it's not surprising that we have no vivid notion of them; for we wouldn't have that even if it were agreed that there are such forms. It is an error to wish to use confused notions, however vivid they are, to prove that something can't exist. And when I attend only to clear notions, it seems to me conceivable that phenomena that are divisible or made up of many entities can be expressed or •represented in a single indivisible entity, and that's all you need for conceiving of a substantial form, with no need to add thought or reflection to this •representation. I wish I could expound the differences or degrees of the other immaterial expressions that are devoid of thought—i.e. the ones that are neither material nor mental—so as to draw whatever lines can be drawn separating merely bodily substances from •merely living ones and separating both from animals; but I haven't given this enough thought, and haven't studied nature enough to be able to reach conclusions about forms by comparing their organs and operations. Malpighi is much inclined to believe—on the strength of some very considerable anatomical similarities—that plants can be included in the same genus as animals, and that they are imperfect animals.

(5) It remains only to meet the difficulties that you have find in •the thesis of the indestructibility of substantial forms. I'll say at the outset that I am astonished that you find •this strange and untenable, because according to your

own views •it has to be accepted by anyone who thinks that a non-human animal has a soul and feeling. These supposed difficulties are merely prejudices set up by the imagination—the sort of thing that may hold up common people but can't affect minds capable of meditation. So I don't think it will be hard to satisfy you about this. Those who conceive •that there is something like an infinity of little animals in the smallest drop of water, as Leeuwenhoeck's investigations have shown, and who don't find it strange •that matter is everywhere full of animate substances, won't find it strange either •that there is something animate even in ashes, and •that fire can transform an animal and reduce it in size, instead of totally destroying it. What can be said of one caterpillar or silkworm may be said of a hundred or a thousand; but that shouldn't lead us to expect to see silkworms being born from the ashes. That is perhaps not the order of nature. . . . Are these little organic bodies, infolded by a sort of contraction from a larger body that has collapsed, entirely outside the domain of procreation, or can they can come back on stage in their own time? That's something I can't find the answer to. Those are secrets of nature about which men must admit their ignorance.

(6) The difficulty is no greater with largest animals; it only seems to be so because in their case the truth of the matter is harder to *imagine*. [Leibniz remarks that with large animals we see that they are born from the union of the two sexes, and adds that this seems to be true also of the smallest insects.] I learned some time ago that Leeuwenhoeck's views about this are quite close to mine: he maintains that even the largest animals are born through a kind of transformation; I don't venture to accept or reject the details of his opinion, but I regard it as very true considered as a general thesis; and Swammerdam, another great observer and anatomist, gives sufficient indication that he too was leaning that way.

Now, those gentlemen's judgments on these matters are as good as those of plenty of others. It's true that I don't see them pushing their opinion to the point of saying—as I do—that for living beings devoid of a rational soul decay and even death is also a transformation; but I believe that if this view had been put to them they wouldn't have thought it absurd. There's nothing so natural as to believe that something that doesn't begin doesn't perish either; someone who recognizes that for an animal to be generated is simply for an already-formed animal to be •augmented and unfolded will easily be convinced that decay or death is nothing but the •lessening and infolding of an animal that nevertheless stays in existence and remains alive and organic. Admittedly it isn't as easy to make this credible by particular observations as it is •the analogous thesis• about generation, but we can see why there is this difference: it is because generation moves along naturally and gradually, giving us time to observe it, whereas death *jumps* too far back, returning straight off to parts that are too small for us, happening (ordinarily) in too violent a way for us to be aware of the details of this regression. But we observe plenty of events that differ only in degree from death:

- sleep, which is an image of death;
- trances;
- the burial of a silkworm in its cocoon, which can count as a death;
- the resurrection of drowned flies by covering them with a dry powder without which they would have stayed dead for good;
- the resurrection of swallows that spend the winter in the reeds and are found apparently lifeless;
- our• experiences of restoring to life men who have been frozen to death, drowned or strangled.

(Not long ago an able man published a German-language treatise in which he reports examples of the last of those, including some from his own experience, and goes on to urge those who encounter drowned people to make more than the usual efforts to revive them, and prescribes the way to do it.) All these things can confirm my view that these different states differ only in degree; and if we can't resuscitate people who have died in other ways, that is either •because we don't know how or •because even if we did know our hands, instruments and remedies can't succeed, particularly when the dissolution goes at once to parts that are too small ·for us to be able to do anything with them·.

So we oughtn't to rest content with the notions that common people may have of life and death—not when the opposite is supported by analogies and proved by solid arguments. For I think I have shown well enough that if there are bodily substances there must be substantial forms; when you have admitted these forms or these souls you have to grant that they cannot be engendered or destroyed; ·which leaves us with a question about what happens at the death of a human or other animal·. Well, perhaps **(a)** the soul is transferred to another body, or perhaps **(b)** it keeps the same body, which is transformed; and of these **(b)** is incomparably the more reasonable. The time-hallowed belief in **(a)** seems to have come purely from a misunderstanding over transformation. To say **(c)** that animal souls exist without bodies, or hidden in an inorganic body, appears ·even· less natural ·than **(a)**·. The animal resulting from the contraction of the body of the ram that Abraham sacrificed in place of Isaac —is it to be called a 'ram' or not? That is a question of terminology, pretty much on a par with the question of whether a butterfly can be called a 'silkworm'. The only reason for your seeing a problem in this ram that was burnt to ashes is that I hadn't presented my ideas well

enough. You take it that no organic body remains in those ashes, and this justifies you in saying that this infinity of souls with no organic bodies would be a monstrosity; but my view is that in the course of nature there is never a soul with no animate body, and never an animate body without organs; and neither ashes nor other masses seem to me incapable of containing organic bodies.

As regards minds, i.e. thinking substances that can know God and discover eternal truths, I maintain that God governs them according to different laws from those by which he governs other substances. With all the forms of substances expressing *everything*, we might say that the lower-animal substances express the world rather than God whereas minds express God rather than the world. [In that sentence, 'rather than' translates *plutôt que*. Leibniz may have been using this phrase in its now obsolete sense of 'sooner than'. So his point may be that minds express the world *through* their expression of God, whereas for lower-animal substances the order is reversed. Or perhaps he meant 'better than'. bncause immediate representations are better, clearer, sharper than mediated ones.] So God governs those animal substances according to the material laws of force or of communications of movement, and governs minds according to the spiritual laws of justice, of which the others are incapable. And that is why the animal substances may be called 'material', because God sets them up in the manner of a workman or machinist, whereas with minds he has the infinitely more exalted role of monarch or legislator. God's only relation to •these material substances is the relation he has to •everything, namely that of creator to thing created; but he takes on another role [*personnage*] in relation to minds a role that leads us to conceive of him as having will and moral qualities, because he is himself a mind—as though he were *one of us*, to the point of entering with us into a social relationship in which he is the leader. This society or general

commonwealth of minds under this sovereign monarch is the noblest part of the universe, made up of ever so many little Gods beneath this great God.

For it can be said that created minds differ from God only as less differs from more, as finite differs from infinite. And it can truly be said that the whole universe was created only so as to contribute to the ornamentation and the happiness of this city of God. That's why everything is so arranged that •the laws of force—i.e. the purely material laws—work together throughout the whole universe to apply •the laws of justice or love, why nothing can harm souls that are in God's hands, and why everything must result in the greatest good of those who love him. This is why, since •minds must keep their personal role and moral qualities so that the city of God doesn't lose anyone, it is especially important for •them to preserve a kind of recollection, consciousness or power to know who they are. Their entire morality—their liability to penalties and punishments—depends on this; so they have to be free from any turn of events in the universe that would make them totally unrecognizable to themselves. If that happened to someone, it would turn him, morally speaking, into another person. In contrast with this, for the substance of a non-human animal all that is needed is that it remain the same individual in metaphysical rigour, although it may be subjected to every imaginable •qualitative• change, since it doesn't have consciousness or reflection. What will the state of the soul be after death? And *how* is it protected from upsets •that would deprive it of self-knowledge•? Only revelation can give us details about either of those; the jurisdiction of reason doesn't extend that far.

Another objection might be brought against me. I maintain that God has given a soul to every natural machine that is capable of it, defending this on these grounds:

- (1) It is possible to give souls to all those machines because souls don't interfere with one another and don't take up any space.
- (2) There is more perfection in something with a soul than in something without one, and God does everything in the most perfect possible manner.
- (3) There is no vacuum among forms any more than there is among bodies.

[A 'vacuum among bodies' is a region of space with no bodies in it; Leibniz often says how unreasonable it would be for God to allow such a thing. A 'vacuum among forms' is a possible *kind* of thing such that there are no actual things of that kind.] Now, the possible objection that I mentioned says that those same reasons would support the view that God has given rational souls—souls capable of reflection—to all animate substances. But I reply that laws superior to those of material nature, namely the laws of justice, are opposed to this. Why? Because the order of the universe wouldn't have allowed that all [those substances] were treated justly, so it had to be arranged that at least they wouldn't be treated unjustly; so they were created without the capacity for reflection or consciousness, and therefore unable to be happy or unhappy.

Bringing my thoughts together in a brief summary: I hold that every substance contains in its present state all its past and future states, and expresses indeed the whole universe according to its point of view, because no two things are so far removed from one another that there can't be commerce [see note on page 24] between them. And if a substance has a body, it expresses the states of other substances especially in accordance with •their commerce with• its body, which it expresses more immediately •than it does anything else•. So nothing occurs in a substance except what comes from its own depths by virtue of its own laws. . . . But it is aware of other things because it naturally expresses them, having

been created at the outset in such a way that it can do this in the course of events, and adapt itself to the other things as necessary. . . . As for bodily substances, I hold •that *mass*—thought of purely in terms of its divisibility—is a pure phenomenon; •that every substance has a genuine unity of the rigorous metaphysical kind; •that no substance can be divided, engendered or corrupted; •that every portion of matter must be full of substances that are animate, or at least living [see note on page 48]; •that what happens when animals are born or die is that they are transformed from smaller to larger or vice versa;. . . .

And above all •that God's works are infinitely greater, more beautiful, more numerous and better ordered than they are generally thought to be; and •that right down to their smallest parts they *ordered*, as though order were of their essence, this order being mechanical or organic. And •that therefore no hypothesis acquaints us better with God's wisdom than does mine, according to which there are *everywhere* substances indicating his perfection, substances that are just so many *different* mirrors of the beauty of the universe, with nothing empty, sterile, undeveloped and lacking perception. We have to accept as beyond doubt that the movements of bodies and the laws that govern them are subservient to the laws of justice and order, which are assuredly observed in the best possible way in the government of minds, i.e. of thinking souls, who enter into a social relationship with God and make up with him a kind of perfect city of which he is the monarch.

Now I think I have covered all the difficulties that you presented or at least mentioned, and also the difficulties that I thought you might still have. This has swollen this letter; but I couldn't easily have said all this more briefly, and if I

had it might have been somewhat obscure. Now I think you will find that my views square with one another and with accepted beliefs. I'm not overthrowing established opinions, but explaining them and developing them further. If you could find time some day to revisit what we finally decided about the notion of *individual substance*, you might find that anyone who allows me •those starting-points will have to grant me •all the rest. But I have tried to write this letter in such a way that it explains and defends itself—stands on its own argumentative feet. The questions can still be separated from one another: someone who isn't willing to acknowledge that there are souls in animals and substantial forms elsewhere is still free to approve of •my account of the unity of mind and body and of •everything that I say about genuine substances; and it will be for him to rescue the reality of matter and bodily substances as best he can, without invoking substantial forms or anything that has genuine unity—in terms of points or atoms perhaps? He may avoid making this choice by leaving the question open; we can always limit our researches as we think fit. But we oughtn't to linger along the way—even as enjoyable a way as this—if we want to have true ideas about the universe and the perfection of God's works, which still provide us with the most substantial arguments regarding God and our soul. . . .

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Arnauld did not reply to this letter, or to either of the two further letters Leibniz wrote to him in January 1688 and March 1690. Those aren't included in the present version of the Correspondence; neither adds much to any of the themes of the Correspondence up to here. Arnauld died in August 1694.