

Lecture 4
The Soul in the Machine: Transforming the Cartesian World (II)

In the last lecture, I discussed two motivations that led Leibniz to posit substantial forms in bodies at the end of the 1670s, one deriving from the problem of unity and individuality, and the second deriving from activity. I would like to begin by continuing my discussion of the argument deriving from activity briefly, before turning to some other important themes in the metaphysics of the 1680s and 1690s.

If you remember, Leibniz faced two problems with respect to activity and force. One concerned the metaphysical principle of the equality of cause and effect. On that principle, the ability to do work should be conserved in collision, neither increased or decreased. This is threatened by the fact that on the Cartesian conception of body, as well as on Leibniz's own earlier and Hobbesian view, bodies would seem to offer no resistance to one another in collision, so that a body in motion, however small, could put another body at rest, however large, into motion without losing any of its own. The second problem regards the reality of motion. Taken purely kinematically, as the change of place with respect to other bodies, motion in itself cannot be assigned to one body or another. Leibniz argues that the body in motion is the one that is the genuine and active cause of change; if it is not the cause of change, a body is said to be at rest with respect to a given change of place. And so, Leibniz argues, the true physics requires force, passive force to resist motion in collision, and active force to be able to draw a real distinction between motion and rest. But purely extended bodies cannot have such forces. And so, Leibniz argues, we must put forms into bodies in order to ground active and passive forces in bodies.

Leibniz's idea seems to have been that both the active force that bodies have to cause changes in other bodies and which grounds motion, and the passive forces of resistance that bodies exert in opposition to the active forces that act on them derive from the form, which is added to inert Cartesian (or Hobbesian) matter. But within a few years this evolves into a subtly different view. (There are documents that suggest why Leibniz made this move, but in the interests of time I will pass over this question.) While continuing to locate the active forces in the soul or form, Leibniz moved the passive forces into matter. In a passage from the essay "On the Method of Distinguishing Real from Imaginary Phenomena," now dated as between Summer 1683 and Winter 1685/6, Leibniz wrote:

Concerning bodies I can demonstrate that not merely light, heat, color and similar qualities are apparent but also motion, figure, and extension. And that if anything is real, it is solely the force of acting and suffering [*vim agendi et patiendi*], and hence that the substance of a body consists in this (as if in matter and form).

Those bodies, however, which have no substantial form are merely phenomena or at least only aggregates of the true ones. [A6.4.1504 (L365)]

(This is an important and complicated essay, and we shall have to return to it later.)

Leibniz is somewhat more expansive on this theme in another essay that probably dates from the same period, just before the composition of the DM, an essay that the Akademie editors have entitled "De mundo praesenti":

Corporeal substances have parts and species. The parts are matter and form.

Matter is the principle of being acted on [*principium passionis*] that is, the

primitive force of resisting, which is commonly called bulk or antitypy, from which flows the impenetrability of body. The substantial form is the principle of action or the primitive force of acting. Furthermore, there is in every substantial form a certain knowledge [*cognitio*] that is an expression or representation of external things in a certain individual thing, in accordance with which a body is *per se* one, namely in the substantial form itself. This representation is joined with a reaction or conatus or appetite which follows this thought of acting. This substantial form must be found in all corporeal substances which are *per se* one. [A 6.4. 1507-8] (Arthur 285-7)]

The view that emerged in the early 1680s gets its fullest statement in the essay, *Specimen Dynamicum* which Leibniz published in the *Acta eruditorum* in 1695. [A bit of history about the SD. Comes after the appearance of Newton's *Principia*, and the drafting of Leibniz's own *Dynamica*. A kind of summary presentation of Leibniz's metaphysical physics, part I of which which Leibniz actually published in the *Acta*, his chosen spot for more technical and mathematical writings.] In the SD and related writings Leibniz presents a conception of force that involves two important distinctions, the distinction between primitive and derivative forces, and the distinction between active and passive forces. So in all, there are four principal varieties of force, primitive active and passive force, and derivative active and passive force. Leibniz writes:

Active force (which might not inappropriately be called *power* [*virtus*], as some do) is twofold, that is, either *primitive*, which is inherent in every corporeal substance *per se*...or *derivative*, which, resulting from a limitation of primitive force through the collision of bodies with one another, for example, is found in different degrees. Indeed, primitive force (which is nothing but the first entelechy) corresponds to the *soul or substantial form*....Similarly, passive force is also twofold, either primitive or derivative. And indeed, the *primitive force of being acted upon* [*vis primitiva patiendi*] or of *resisting* constitutes that which is called *primary matter* in the schools, if correctly interpreted. This force is that by virtue of which it happens that a body cannot be penetrated by another body, but presents an obstacle to it, and at the same time is endowed with a certain laziness, so to speak, that is, an opposition to motion, nor, further, does it allow itself to be put into motion without somewhat diminishing the force of the body acting on it. As a result, the *derivative force of being acted upon* later shows itself to different degrees in *secondary matter*. [*Specimen dynamicum*, part I, par. 3 (AG 119-20)]¹

In this passage Leibniz draws a distinction between primitive and derivative forces which needs a bit of explanation. In the passage from the SD quoted above, Leibniz characterizes the primitive active force as corresponding to "the soul or substantial form;" the primitive passive force, on the other hand, is characterized as constituting "that which is called *primary matter* in the schools, if correctly interpreted." Derivative forces, in contrast, are the momentary and quantifiable modes of the primitive forces. They are what give rise to motion in the physical world. It is in terms of these forces that the laws of nature are framed. As Leibniz wrote to Johann Bernoulli in 1698:

¹ A very similar account is given in "On Body and Force, May 1702"; see G IV 395 (AG 252).

If we conceive of soul or form as the primary activity from whose modification secondary [i.e. derivative] forces arise as shapes arise from the modification of extension, then, I think, we take sufficient account of the intellect. Indeed there can be no active modifications of that which is merely passive in its essence, because modifications limit rather than increase or add. [Leibniz to Johann Bernoulli, 17 December 1698, GM III 552 (AG 169)]

In this way form and matter, primitive active and passive force constitute the grounds for the particular modifications that are the particular magnitudes of active force and resistance that we can observe in bodies.

It should be noted here that Leibniz's conception of force is radically different from the concept of force that Newton was developing in the same period, and which came to dominate. When Newton talks about (impressed) force there is an implicit supposition that there are different kinds of forces: gravitational force is the example that he develops in detail in the *Principia*, but he is also quite clear that there are certainly other forces in the world, perhaps chemical forces, electrical forces, etc. All of these other forces have the same mathematical structure, and can be handled by the same mathematical tools, etc., but they are in their nature rather different. What they have in common is simply that they are causes of the change in velocity of bodies. However, when Leibniz talks about force, it is an ultimate ontological reality: it is “force” with a capital “F”, the basic stuff of which reality is composed. His derivative forces are somewhat more like Newtonian forces, insofar as they come in different magnitudes, which can change over time, etc. However, Leibniz's derivative forces have a metaphysically more basic status than Newton's impressed forces: they are direct manifestations of the basic stuff of the world, i.e. primitive forces.

We can now see that Leibniz's position is not the simple addition of forms to Cartesian matter that the earlier arguments we have examined might suggest. When the focus is on unity, as in the aggregate argument, one can have the impression that what Leibniz is arguing for is simply adding something like soul to the extended and inert bodies posited by Hobbes or by Descartes and his followers. But looking at Leibniz's position through the lens of the physics suggests something rather different. The conception of matter at issue here, at least after 1683 or so, is something rather different, something that can ground the passive force of resistance, that by which a body resists the acquisition of new motion from another body. In this way we might say that what Leibniz is reviving is not simply the substantial forms of the schoolmen, but the whole hylomorphic framework, form *and* matter, where matter is understood in terms of passivity and potentiality. [This needs more explanation, but perhaps not here....]

But, at the same time, it isn't a simple revival of scholastic hylomorphism either. When Leibniz first announced that he wanted to revive substantial forms in the Autumn 1679 letter to the Duke Johann Friedrich, he put his claim as follows: “...I reestablish substantial forms with demonstrative certainty [*démonstrativement*] and explain them intelligibly...” [A1.2.225; cf. A2.1.490] We can now understand what he meant when he said that he could explain them intelligibly. A standard criticism of the scholastic notions of matter and form is that they are obscure and unintelligible. But in Leibniz's system, they are connected directly with notions of active and passive force that play evident and intelligible roles in his physics. Forces manifest themselves in the motions that they cause. Active force manifests itself in the ability that bodies have to do work, say raise a

given weight to a given height. The resistance by which bodies oppose the acquisition of new motion is evident in the way in which one body colliding with another will have its motion slowed as it imparts new motion to the body with which it collides. In this way, Leibniz writes in an essay he published in 1694, “On the correction of metaphysics and the concept of substance,”

...the concept of *forces* or *powers* ... for whose explanation I have set up a distinct science of *dynamics*, brings the strongest light to bear upon our understanding of the true concept of *substance*. [L433; cf. L to Paul Pellisson-Fontanier July 1691, A1.1.226-7]

In this way the very laws of nature reveal the active and passive forces of bodies that make intelligible the notion of substance that Leibniz advances, and the notions of form and matter that compose his conception of substance. I do not at all mean to suggest that Leibniz's view is in any way unproblematic. Leibniz's physics, and the metaphysical foundations that he gives his physics in the notions of form and matter presuppose a radical distinction between activity and passivity, between the active forces that ground motion and the passive forces that ground resistance and impenetrability. This distinction will prove very difficult for Leibniz to make. But even so, one can understand why he thought what he was doing was not merely reviving a discredited old metaphysics.

Furthermore, even though Leibniz wanted to revive the substantial forms of the schoolmen, this was not in any way intended to undermine his commitment to the mechanical philosophy. As Leibniz writes to Arnauld expressing a sentiment that he repeats over and over:

... however much I agree with the Scholastics in this general and, so to speak, metaphysical explanation of the principles of bodies, I am as corpuscular as one can be in the explanation of particular phenomena, and it is saying nothing to allege that they have forms or qualities. One must always explain nature along mathematical and mechanical lines, provided one knows that the very principles or laws of mechanics or of force do not depend upon mathematical extension alone but upon certain metaphysical reasons. [L to Arnauld, 4/14 July 1686; G II 58]

It is not entirely obvious how Leibniz can say this, and there is not time here to unpack Leibniz's thought in the detail that it deserves. But it should be noted carefully that the revival of substantial forms is intended not to replace mechanist physics with the scholastic physics that it had sought to replace, but to ground it properly. The schoolmen were not wrong in wanting to see form and matter as grounding the world, but wrong in the way it does it. For Leibniz, form and matter don't explain particular phenomena in the world. Rather, they are needed to ground the notions of extension and motion, as we have seen in part, and are needed to ground the laws of nature in terms of which mechanical explanations are given.

One rather surprising aspect of the view that I am presenting of Leibniz in this period is that the basic units of his world, corporeal substances, would seem to be extended, very different from the non-extended and mind-like monads that make up the more familiar world of his later thought. I will defend this at greater length later in this lecture and in the following one, but I want to pause for a moment on that claim now. Leibniz begins his career as a kind of Hobbesian mechanist in the 1670s, I have argued:

his is a world populated with extended bodies and souls. When he revives substantial forms in the late 1670s, his basic ontology does, indeed, change, but it isn't transformed all of a sudden into the idealist ontology of the later monadology. As Leibniz put it in the letter to Remond, it was only "after many corrections and forward steps in my thinking," that he came, at last to the view that "monads or simple substances are the only true substances." Leibniz starts the 1670s by believing in a world of extended bodies. By reviving substantial forms in the late 1670s, he is able to recognize genuine individuals in his world, and to provide the grounds for genuine forces, both active and passive. It is important to note that neither of these moves requires the full mentalization of the physical world. But, at the same time, there is a very interesting transformation of the notion of extension in Leibniz's thought.

For Descartes and for Hobbes, geometrical extension is metaphysically basic: it is the stuff of which the extended world is made. It is almost definitive of the Cartesian school of philosophy that bodies are the objects of geometry made real, and contain nothing but extension and its modes. Hobbes goes even farther and actually identifies fundamental physics with geometry itself. But for Leibniz, the extension of bodies has a rather different status. In a passage we have already seen, Leibniz writes:

Concerning bodies I can demonstrate that not merely light, heat, color and similar qualities are apparent but also motion, figure, and extension. And that if anything is real, it is solely the force of acting and suffering [*vim agendi et patiendi*], and hence that the substance of a body consists in this (as if in matter and form).
[A6.4.1504 (L365)]

And in a similar passage from the *Discourse on Metaphysics*, Leibniz writes:

That the Notions Involved in Extension Contain Something Imaginary and Cannot Constitute the Substance of Body. ... I believe that anyone who will meditate about the nature of substance, as I have explained it above, will find that the nature of body does not consist merely in extension, that is, in size, shape, and motion, but that we must necessarily recognize in body something related to souls, something we commonly call substantial form, even though it makes no change in the phenomena, any more than do the souls of animals, if they have any. It is even possible to demonstrate that the notions of size, shape, and motion are not as distinct as is imagined and that they contain something imaginary and relative to our perception, as do (though to a greater extent) color, heat, and other similar qualities, qualities about which one can doubt whether they are truly found in the nature of things outside ourselves. [DM § 12]

For the mechanist, such as Descartes or Hobbes, sensible qualities such as heat, color and taste are reduced to something more basic, size, shape and motion, the broadly geometrical properties of the small corpuscles that make up the bodies that are said to be hot or red or sweet. Leibniz wants to go one step further, and reduce the geometrical properties of bodies to something more basic, to the forces active and passive that make them up. Extension is now to be grounded in the passive forces, the impenetrability and resistance that constitute matter, and motion is to be grounded in the active forces that constitute form. Bodies and the corporeal substances that make them up are still extended for Leibniz, in a sense, in just the way that apples are still red for Descartes. However, just as Descartes would argue that redness isn't a real something that is found in the apple, Leibniz wants to argue that extension isn't a real something that is found in bodies.

What is *really* out there are forces, active and passive, to which abstract and ideal geometrical concepts apply. One can, of course, ask whether behind the forces there is something more basic still, the distinct and confused perception of non-extended mind-like entities. And this is a question that we will, indeed ask in the next lecture. But in general this is *not* a question that Leibniz himself raised in the period we are examining: at that moment, as he wrote to Bossuet in 1694, "I find nothing so intelligible as force." [Woolhouse and Franks, p. 30]

Leibniz's dynamical view of bodies as composed of forces is, at least in part, intended to undermine the occasionalism that was characteristic of the Cartesian school. For the Cartesians, bodies are completely inert, and lack any activity. The source of activity in the world is God, who injects activity (and, indeed motion itself) by recreating bodies from moment to moment in different situations with respect to one another. Leibniz's view of bodies as containing active and passive force is supposed to counter that view by placing activity in bodies themselves.

But the arguments for that position are not entirely evident. As Paul Lodge has insisted during the question periods for the last couple of lectures, the physics itself doesn't *force* one to the position. The physics may show us that we need to have active and passive forces *somewhere* in the world, but this doesn't require us to put them in bodies themselves, as opposed to placing them in God.

Here is the way I suspect Leibniz was thinking about the question. The Cartesian conception of body as extension in a way leads us directly to occasionalism. Because extended stuff is inert, as soon as we recognize the need for force and activity, we are then obligated to appeal directly to something outside of body, God, in order to provide that activity. But even though he himself had toyed with occasionalism on a number of occasions in his youth [letter to Thomasius, the dialogue of 1676, etc.], Leibniz came to see this move to occasionalism as a kind of act of desperation. Often when the position of occasionalism comes up in these years, Leibniz dismisses it as a mere *Deus ex machina*, worse than no explanation at all for the activity in things. [G II 113; AG 125, 147; A6.4.1621, 1647] It seems obvious to him that the right way to go is simply to reject the assumption from which the odious occasionalist conclusion seems to follow, that is, to reject the Cartesian view of body as inert extension, and replace it with the dynamical view of body that he was developing in those years. This view gives us a way of understanding body in which activity can be understood as deriving from within, and which doesn't force us to resort to occasionalism.

But for those who don't see the odiousness of occasionalism as immediately and as clearly as he himself did, Leibniz had some more direct arguments to offer. To Arnauld Leibniz offered the argument that causal interaction requires a perpetual miracle, which Leibniz considers unphilosophical:

However, the hypothesis of occasional cause does not, it seems to me, satisfy a philosopher. For it introduces a sort of continual miracle, as though God were constantly changing the laws of bodies on the occasion of the thoughts of minds, or changing the regular course of the thoughts of the soul by arousing in it other thoughts, on the occasion of the movements of bodies [G II 57-8; cf. G II 92, 93]

Later on, in the *De ipsa natura*, a piece that Leibniz published in the *Acta eruditorum* in 1698, he offers some additional argument. In one striking argument, he argues, for example, that on the occasionalist view, bodies lose their claim to be genuine substances, and become mere modes of the one great substance, God:

... the very substance of things consists in a force for acting and being acted upon. From this it follows that persisting things cannot be produced if no force lasting through time can be imprinted on them by the divine power. Were that so, it would follow that no created substance, no soul would remain numerically the same, and thus, nothing would be conserved by God, and consequently everything would merely be certain vanishing or unstable modifications and phantasms, so to speak, of one permanent divine substance. Or, what comes to the same thing, God would be the very nature or substance of all things, the sort of doctrine of ill repute which a recent writer, subtle indeed, though profane, either introduced to the world or revived. [*De ipsa natura* (1698) § 8]

This is what might be called the *reductio ad Spinozam*: if you can show that the occasionalism ultimately reduces to Spinozism, that is sufficient argument for rejecting it. But one of the most interesting arguments that Leibniz offers against occasionalism is one of the most often commented arguments in his writings, and also one of Leibniz's most misunderstood. I have in mind here the famous argument from section 8 of the *Discourse on Metaphysics*.

In order to appreciate the argument in *Discourse on Metaphysics* § 8, we must appreciate where it comes in the order of the argument. These are the summary paragraphs that Leibniz attaches to the first seven paragraphs of the *Discourse on Metaphysics*:

1. On Divine Perfection, and That God Does Everything in the Most Desirable Way.
2. Against Those Who Claim That There Is No Goodness in God's Works, or That the Rules of Goodness and Beauty Are Arbitrary.
3. Against Those Who Believe That God Might Have Made Things Better.
4. That the Love of God Requires Our Complete Satisfaction and Acquiescence with Respect to What He Has Done without Our Being Quietists as a Result.
5. What the Rules of the Perfection of Divine Conduct Consist in, and That the Simplicity of the Ways Is in Balance with the Richness of the Effects.
6. God Does Nothing Which Is Not Orderly and It Is Not Even Possible to Imagine Events That Are Not Regular.
7. That Miracles Conform to the General Order, Even Though They May Be Contrary to the Subordinate Maxims; and about What God Wills or Permits by a General or Particular Volition.

These sections, then, obviously deal with the activity of God in creating the world and acting on it after he created it. In § 8, then, Leibniz turns away from God and his activity and towards the activity of finite things. Section 8 has the following summary:

8. To Distinguish the Actions of God from Those of Creatures We Explain the Notion of an Individual Substance.

It opens as follows:

It is rather difficult to distinguish the actions of God from those of creatures; for some believe that God does everything, while others imagine that he merely

conserves the force he has given to creatures. What follows will let us see the extent to which we can say the one or the other.

The issue is quite clearly occasionalism: to what extent can we say that God is the real active power in the world, and to what extent can we say that things themselves are genuinely active?

There is not time to discuss this much discussed argument in proper detail. But in outline, here is how Leibniz proceeds. Leibniz begins by announcing a logical premise: Now it is evident that all true predication has some basis in the nature of things and that, when a proposition is not an identity, that is, when the predicate is not explicitly contained in the subject, it must be contained in it virtually. That is what the philosophers call *in-esse*, when they say that the predicate is in the subject. Thus the subject term must always contain the predicate term, so that one who understands perfectly the notion of the subject would also know that the predicate belongs to it. [DM8]

This premise, the so-called Predicate-In-Notion principle, which is the basis of the remarkable studies in formal logic that can be found among Leibniz's writings starting in April 1679, is taken to be uncontroversial; as he writes to Arnauld, "the predicate is contained in the subject, or else I do not know what truth is." [G II 56] From this Leibniz draws the conclusion that every individual substance must have associated with it a concept that contains everything that can be predicated of it, past, present and future:

Since this is so, we can say that the nature of an individual substance or of a complete being is to have a notion so complete that it is sufficient to contain and to allow us to deduce from it all the predicates of the subject to which this notion is attributed. ... God, seeing Alexander's individual notion or haecceity, sees in it at the same time the basis and reason for all the predicates which can be said truly of him, for example, that he vanquished Darius and Porus; he even knows a priori (and not by experience) whether he died a natural death or whether he was poisoned, something we can know only through history. [DM8]

So far the argument is rather trivial: from the Predicate-In-Notion principle it follows that every individual substance has what can be called a Complete Individual Concept, a concept that is so complete that it contains everything true of the individual in question. But from this Leibniz draws a remarkable conclusion:

Thus when we consider carefully the connection of things, we can say that from all time in Alexander's soul there are vestiges of everything that has happened to him and marks of everything that will happen to him and even traces of everything that happens in the universe, even though God alone could recognize them all. [DM8]

How in the world did Alexander's *soul* get into this, not to mention the rest of the universe?

What is going on here is this, I think. The universe enters from the fact that each individual bears some relation to all of the other things in the world in which it exists. Furthermore, Leibniz argues, there are no purely extrinsic denominations: every relational property is in some sense (which we cannot explore here) grounded in the non-relational properties of things. As Leibniz writes in the important "First Truths" paper of 1689:

Every individual substance contains in its perfect notion the entire universe and everything that exists in it, past, present, and future. For there is no thing on which one cannot impose some true denomination from another thing, at very least a denomination of comparison and relation. Moreover, there is no purely extrinsic denomination. I have shown the same thing in many other ways, all in harmony with one another. ["First Truths" (1689); A6.4.1646 (AG 32-3)]

That the CIC, both Alexander's properties and those that pertain to the world in which he exists, must be grounded in marks and traces in his *soul* is a bit more difficult to understand. But not much. First of all, Leibniz reasons that if the CIC is true of Alexander, then there must be something *in Alexander himself* by virtue of which his CIC is true of him; the attribution of a property to a subject requires not just a foundation in the *concept* of the subject, but *in the subject itself*. But why in his *soul*? Leibniz explains to Arnauld:

Substantial unity requires a complete, indivisible and naturally indestructible entity, since its concept embraces everything that is to happen to it, which cannot be found in shape or in motion (both of which embrace something imaginary, as I could prove), but in a soul or substantial form after the example of what one calls Self. [L to Arnauld, 28 Nov./8 Dec. 1686; G II 76]

While this passage is not without its own obscurities, what it suggests is this. Suppose that it is now (at t_1) true of individual substance S that S will at some future time (at t_2) have property P. Leibniz *seems* to be reasoning that if it is true at t_1 that S will have P at t_2 , then there must be something at t_1 which will be P at t_2 , and something at t_2 which is P, and these two somethings must be the same thing. If we are now to have a truth about something in the future, then there must be some one thing to which both the present and future facts attach; an enduring truth requires an entity that endures, for Leibniz. A similar argument can be given from the present truth of facts about the past. Since a CIC includes facts about the future (and past) states of a substance, there must be something that persists from the past, to the present, and into the future, something that is present whenever the substance is, something to which the past, present, and future properties can attach themselves. This something is, of course, the form or soul that unites the corporeal substance, and creates a genuine persisting individual: the matter in the body, fluctuating and changing from moment to moment just will not do, Leibniz thinks. And once again we rejoin the conclusion, arrived at through the other arguments that we have been examining, that we must reintroduce substantial forms into the world.

How does this address the problem of occasionalism? If every individual substance contains in its soul marks and traces of every property it will ever have, then, Leibniz seems to have inferred, God need not produce these properties in the substance; each individual substance already contains within itself all of its properties, past, present and future: "... all the things that can ever happen to us, are only consequences of our being." [DM 14] And so, it would seem, the activity of individual substances is derived from what appears to be a purely logical premise.

Interesting as this argument is, Leibniz seems to have abandoned it rather quickly. While the claim that individual substances contain all of their properties, past, present and future is one of the enduring theses of Leibniz's philosophy, the argument for it from the PIN seems to drop out of Leibniz's repertoire rather quickly, by the end of the decade

of the 1680s.² When Leibniz first publishes his philosophical thoughts on body and substance in 1695 in the “New System” and in the “Specimen Dynamicum,” it is the aggregate argument and the argument from the necessity of force that come to the fore. (Indeed, in the years after its initial drafting, Leibniz never seriously contemplated publishing the *Discourse on Metaphysics*; it is deeply ironic that it has become one of the most widely used and commented on texts in Leibniz's philosophical corpus.) Perhaps Leibniz was afraid of making too public a doctrine which had obvious implications with respect to Spinozistic necessitarianism: if each individual substance contains all of its properties, past, present and future, then it would seem that everything is necessary, as Arnauld immediately accused Leibniz of believing. Or perhaps Leibniz realized that the argument simply didn't succeed in establishing its anti-occasionalist conclusion. Since God must sustain bodies for them to persist in their existence, as Leibniz knew full well and often admitted, placing all their properties in them doesn't at all settle the question of whether they are genuinely active or whether it is really God who is responsible for them doing what they do. [Cf. DM14]

Let me inject one brief historical note here. Russell took the argument of DM 8 to be the secret argument that bared Leibniz's true soul as the founder of analytic philosophy. For Russell, Leibniz was, at root, a philosopher just like he was to become, a philosopher who solved philosophical problems through the logical analysis of language. Or, at least, Russell wanted to make him so. This view colored Anglo-American readings of Leibniz for decades after Russell published his commentary in 1900. I think that Russell couldn't have been more wrong. The now-celebrated argument of DM 8 was only an interesting but short-lived digression from the main lines of Leibniz's thought, and the *Discourse on Metaphysics*, the text in which it is embedded, only one of a number of attempts to systemize his philosophy that Leibniz ultimately abandoned as unsuccessful.

So far I have been emphasizing the “realistic” aspects of Leibniz's thought in this period. Mind is increasingly important, but it is mind considered as the substantial form of a corporeal substance, and not as the ultimate building-block of the world. In March 1690, Leibniz visited the Italian Cartesian Michelangelo Fardella, and had a long conversation with him about his current philosophical ideas. Fardella misunderstood Leibniz as holding that the ultimate constituents of the world were souls. Leibniz firmly corrected him:

I do not say that the body is composed of souls, nor that body is constituted by an aggregate of souls, but that it is constituted by an aggregate of substances. Moreover, the soul, properly and accurately speaking, is not a substance, but a substantial form, or the primitive form existing in substances, the first act, the first active faculty. Moreover, the force of the argument consists in this, that body is not a substance, but substances or an aggregate of substances. [Fardella memo (1690); A6.4.1670 (AG 105)]

But in the next lecture I want to turn to some other elements of Leibniz's thought in this period that would seem to lead in another direction, toward idealism and toward the complete mentalization of the physical world. And I want to begin to understand the next

² Interestingly enough, though, the PIN appears in a rather late piece as an argument against action at a distance! See Couturat, *OF* pp. 11f.

step that Leibniz took, away from world of form and matter, active and passive forces, animate bugs in bugs down to infinity, and toward a world composed of non-extended substances.

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