

Points, Lines, and Bodies: The Mereological Problem in Leibniz

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1: Introduction

In this essay, I wish to address one of the most recalcitrant issues in early modern philosophy: the issue of Leibniz's mereological thought, i.e., the way in which parts, wholes, and aggregation are understood in his system. As Roy T. Cook notes, "The centrality of part and whole to Leibniz's metaphysics is clear.¹ As Cook indicates, it is well known that the Leibnizian system hinges on causally isolated, simple substances which, in his later writings, Leibniz dubs 'monads'. However, the question of how the monads relate to extended matter is significantly more opaque for, as we will see, at various times Leibniz speaks of extended bodies as being 'aggregates' of simple substances and yet this leaves open the question of how non-extended things can, through aggregation, produce extended things. In general, solutions proposed for this problem jive with one of two major interpretive currents, representative examples of which can be found in Adams (1983) and Rutherford (1990). Adams's reading suggests that Leibniz's insistence that the only existent things are monads and their attributes ought to be taken as definitive. This entails that extended matter is merely phenomenal, and that in the absence of a perceiving mental apparatus, all that the universe would contain would be monads existing outside of one another, a picture which has come to be known as a 'phenomenalist' reading of Leibniz. Against this Rutherford argues that although extended bodies are phenomenal, they are grounded in truly existing simple substances, and therefore inherit the reality of these substances, at least to a certain extent. Most scholars concede that Leibniz's corpus is vast and diffuse enough to provide textual evidence for both of these readings. However in what follows I wish to treat a different, yet related question. I refer to the difference between Adams and Rutherford mainly in order to throw my own topic into sharper relief: Whereas Adams and Rutherford are interested in establishing the correct understanding of the relationship between monads and extended bodies, in this paper I ask why Leibniz is so confident about the existence of simple substances in the first place. Although a conclusive answer to this question will undoubtedly be too complex to be undertaken in this essay, I hope to at least illuminate some of the more puzzling elements at play therein.

2: The Non-Extension of Monads

On several occasions, Leibniz stresses that "simple substances," later to be dubbed monads, are *not* extended. This conclusion is, evidently, a consequence of his belief that extended matter is infinitely divisible for, as succinctly expressed by Leibniz himself, "one cannot explain why bodies of a certain

1 Cook, *Monads and Mathematics*, 1

smallness cannot be divided further.”² Here and elsewhere, Leibniz endorses the intuition that any quantity of extended matter, no matter how miniscule, could theoretically be subdivided into still smaller pieces *ad infinitum*, and we have no *a priori* grounds for supposing that such a process of division would eventually arrive at something like an indivisible material corpuscle. This is unacceptable for a simple substance like a monad since if anything can be separated from an entity, then the thing removed must previously have been attached to that entity as a part, and therefore it was never truly simple. Thus, in order to preserve the pure simplicity of the monads Leibniz is compelled to place them outside the realm of extended matter, a move to which he adheres with remarkable consistency, and which also appears in proposition 3 of the *Monadology*: “But where there are no parts, neither extension, nor shape, nor divisibility is possible.”³ Leibniz thus refuses to countenance anything like an atom insofar as an atom is understood to be an indivisible basic unit of matter, and declares the monads, the “true atoms,” to be non-material.

The necessary non-extension of the monads drives Leibniz to a peculiar position regarding their mereological status: “One must not infer that the indivisible substance enters into *composition* of body as a part... just as one grants that a point is not a part that makes up a line, but rather something of a different sort.”⁴ This comparison of monads and bodies to points and lines, to which Leibniz repeatedly appeals in his correspondence with Michelangelo Fardella, is of critical importance. Indeed, it would seem that the point, a geometrical object which exists in zero dimensions, is the only suitable analog for the non-extended monads. Comparing the monads to any other geometrical figure tends toward an erroneous conclusion since any object inhabiting more than zero dimensions -- even one as basic as a line -- has a mathematical size, which suggests that it is divisible. Hence, monads can only be felicitously compared to points which, having no size, are indivisible.

With Leibniz’s doctrine of the non-extension of simples in view, I will now move to an exposition of a line of reasoning which he employs with some frequency in order to advance the existence of simple substances.

3: The Argument *Ex Composito*

For convenience, I have termed the argument in question the *Argument Ex Composito* or argument from composition. At its core, this line of reasoning argues for the existence of simples by inference from the existence of composites. It occurs, for instance, in the second proposition of the *Monadology*: “And there must be simple substances, since there are composites; for the composite is nothing more than a collection, or aggregate, of simples”⁵ and chronologically earlier in the De Volder letters: “Anything which

2 Leibniz, “Primary Truths,” 34. Unless otherwise noted, citations of Leibniz are from Ariew and Garber, (eds.) (1989). *G. W. Leibniz Philosophical Essays*. Hackett.

3 Leibniz, *Monadology* 213.

4 Leibniz, “Comments on Fardella” 213.

5 Leibniz, *Monadology* 213.

can be divided into many (actually existing) things is aggregated from many things... From this I have already inferred that there are therefore indivisible unities in things.”⁶ On the one hand, in such passages it might seem that Leibniz is relying on the rather intuitive idea that a composite presupposes the existence of constituent elements which make it up. After all, it is trivially true that a composite must be *composed* of elements. However, if we take this language at face value, the picture becomes rather puzzling in light of Leibniz’s characterization of simples as non-extended.

One encounters no difficulty in considering a case in which a more complex material thing is held to come from one or many simpler material things. Indeed, this is among the most quotidian of phenomena, observable everywhere in nature. But it is another thing entirely to imagine that something material could be produced from *nothing*. Analogously, the proposal that material entities are produced from immaterial ones is odd also. Of course, an immaterial entity is not ‘nothing’ -- it is an existent thing -- but it is analogous to a nothing since an immaterial thing has an extension-value of 0, while a material thing has an extension-value of > 0 , so to speak. It would be quite absurd to presume that a collection of nothings, piled together, could ever produce a something, that adding a value of zero to another value of zero could ever produce a value of more than zero, no matter how many times the calculation is repeated. Given these absurdities, it behooves us to seek a reading of the Argument *Ex Composito* which does not rely on such a movement of nothing to something. This is important to point out, for it is tempting to interpret Leibniz’s language in the passages which have been cited above as suggesting that one can prove the existence of simples merely by considering a process of division. In other words, since a composite entity is divisible, if one were to divide it enough times then eventually an indivisible unity would be the result. But given Leibniz’s strongly expressed doctrine that indivisibility entails non-extension, this would be tantamount to supposing that, given a line with a length greater than zero, dividing it a certain number of times would yield a zero-length point, which is preposterous. Indeed, Rutherford remarks in regard to this very quandary that “one of the strongest arguments in favor of the phenomenalist interpretation is the difficulty of making sense of the thesis that extended bodies are aggregates of unextended monads.”⁷

The principle of charity thus dictates that something other than divisibility must be behind Leibniz’s belief in the existence of simple substances for we have just established that subjecting an extended body to a process of division does not imply that a non-extended unit will emerge on the other side. Moreover, there is ample textual evidence to motivate the claim that Leibniz is aware of these difficulties and makes an effort to evade them. For instance, the compilation of Leibniz’s remarks published under the name *The Labyrinth of the Continuum* contains a number of Leibniz’s very early texts in which he appears to be toying with the possibility that a ‘perfect point’ is entailed by the infinite divisibility of extended matter, a line of thought not dissimilar from the one we have just dismissed.

6 Leibniz, “Letters to De Volder”, 105.

7 Rutherford, “Reality of Body in Leibniz,” 2.

However, at a certain point this language seems to disappear from Leibniz's writings and is replaced by another suggestion. I will explore this transition later on. For the moment, I wish to cite another piece of evidence that Leibniz understands the dangers we have discussed, which is found in his correspondence with Fardella: "Although the aggregate of these substances constitutes body, they do not constitute it as parts, just as points are not parts of lines."⁸ In this passage Leibniz has taken care to stipulate that non-extended or sizeless substances, whether mathematical or metaphysical, cannot be considered parts of extended entities.

So simple substances are not to be arrived at by dividing composites, nor are composites to be arrived at by aggregating simples. But how, then, does Leibniz come to be convinced that the existence of simples is indicated by the existence of composites? The following passage may offer some insight: "One must not infer that the indivisible substance enters into the composition of body as a part, but rather as an essential, internal requisite ... necessarily required for the line [extended matter] to be, and to be understood."⁹ I believe this passage to be of crucial importance for in it the notion of a *requisite* is invoked. The relevance of *requisites* to Leibniz's *Principle of Sufficient Reason* is well-known; he treats the term as being more-or-less synonymous with a *necessary condition*, arguing that for a thing to exist, all of its requisites must be posited. If we assume that, in the passage above, Leibniz is using the term in more-or-less his standard way, we can simply read him as intimating that without the existence of simples, extended matter could not exist, but this does not necessarily imply that simples are required as *parts*, nor that division is the proper method of discovering them. Thus, in the remainder of this essay I will attempt to articulate how and why simple substances function as requisites for extended bodies. I observe, as well, that Leibniz's assertion in the above passage is two-pronged: simples are required for extended matter 1) to be, and 2) to be understood. In light of this, I believe that it will be useful to divide the discussion into two sections, dedicated to the epistemic 'to be understood' and the metaphysical 'to be' respectively.

4: Simples as Epistemic Requisites

Consider the following passage:

This persisting individual substance is completely different from the nature of body, which, assuming that it is in a state of continual flux of parts, never remains permanent, but is perpetually changed. And so, there must be some incorporeal, immortal substance... over and above the body, something, indeed, incapable of being resolved into parts.¹⁰

Here Leibniz suggests that some sort of unchanging unity is necessary if there is to be any stability or continuity to an individual entity. It is well known that according to Leibniz unity is a precondition of existence. In general, anything which is not united in itself exists only phenomenally, i.e., as an object of

8 Leibniz, "Comments on Fardella", 105.

9 Leibniz, *ibid.*, 105.

10 Leibniz, *ibid.*, 104.

perception. Leibniz is fond of citing rainbows as the paradigm example of such phenomenal entities for a rainbow is actually a collection of water droplets which are united as an image in a perceiving mind but which in reality exist apart from one another. So, as Emilie du Châtelet expresses this idea in her assessment of Leibniz,

If we could see distinctly all that composes extension, this appearance of extension which falls under our senses would disappear, and our soul would perceive only simple Beings existing outside of one another.¹¹

So extended bodies are real only phenomenally, as images in minds.¹² Moreover, extended bodies constantly lose parts and acquire new ones, undergoing evolutions and involutions. And yet somehow we *understand* such bodies as possessing stable identities; we understand that something persists throughout this constant process of metamorphosis. Furthermore, it seems that phenomenal unity alone is not enough to account for this continuity for in certain cases we do not detect such continuity even when an entity is unified phenomenally. In such cases, when the phenomenon is destroyed, so is our idea of it. For instance, as Leibniz remarks to Arnauld in regard to a set of two diamonds, “even if they were brought nearer together and made to touch, they would not be substantially united to any greater extent.”¹³ So although, when touching, a set of diamonds might be phenomenally united, they are clearly not unified under the same identity, and moving them apart kills their phenomenal unity. However, this is manifestly not the case in certain other cases, such as the body of a person; removing a person’s arm does not destroy an observer’s understanding of that person as a stable identity. What, then, accounts for the difference? To illustrate this conundrum with a concrete example, let us imagine a particular tree which I shall, for convenience, call pine X. Pine X begins life as a seed, grows into a sapling, and eventually matures to full height. Over the course of its life it gains and loses branches, drops needles and grows new ones, etc. It seems more-or-less obvious that pine X at the end of its lifespan has practically nothing in common, in terms of its direct material properties, with pine X at the beginning of its lifespan. Why, then, does it appear that the identity of pine X follows this particular body over the course of its existence? Why is there an unbroken continuity shared between the seed and the mature tree, when there is none between a divided set of diamonds?

Some of Leibniz’s earliest reflections shed light on this conundrum. For instance, in 1676 he writes quite straightforwardly that “there seem to be elements, i.e. indestructible bodies, precisely because

11 I am translating: “Si nous pouvions voir distinctement tout ce qui compose l’étendue, cette apparence d’étendue, qui tombe sous nos sens, disparaîtrait, et notre Âme n’apercevrait que des Êtres simples existant les uns hors des autres.” Du Châtelet, *Institutions de Physique*, 149.

12 The picture is complicated somewhat by the controversy surrounding Leibniz’s doctrine of corporeal substance, but this assertion is accepted by most scholars as Leibniz’s ultimate view. See Leibniz, *A New System of Nature*, 139.

13 Leibniz, “Letters to Arnauld”, 79.

there is a mind in them”¹⁴ and furthermore that “the solidity, or unity, of body is due to mind.”¹⁵ In Leibniz’s view, minds are simple substances. Thus, in these passages and through the above considerations we find at least a partial answer to our initial question: The existence of simple substances is entailed by the existence of extended body because without them we would not be able to understand extended bodies as stable identities. The picture that emerges is one in which physical processes would take place ‘blindly’; without monads, there would be no continuity to the universe, but merely scattered and chaotic physical causality. Moreover in such a universe extended entities would have no perception, appetites or memory -- properties which Leibniz attributes to monads. Thus without monads there would be no continuity to the universe but merely scattered and chaotic physical causality without any psychological life to speak of.

However the universe we inhabit is intelligible. In our everyday interactions with the world we do understand certain extended bodies as stable identities which means that there must be something ‘over and above’ them which persists through the changes and anchors their identities, and as far as I can tell Leibniz takes this unifying force to reside within simple substances or minds.

So, because of the nature of our universe, the physical side of Leibniz’s metaphysics (the “kingdom of power”) necessitates the introduction of the spiritual or monadic side (the “kingdom of grace”). Thus the very way in which we understand the world implies the existence of simple substances. I take this to be the epistemic ‘to be understood’ element of simple substances’ twofold requisite function.

5: Simples as Metaphysical Requisites

In the foregoing section, I articulated my reading of the “to be understood” element of monadic necessity. The ‘to be’ requisite is somewhat complex; there are at least two ways of interpreting it, one of which must be rejected. To this end, an illuminating passage can be found in Leibniz’s *New System of Nature*, “I perceived that it was impossible to find the principles of a true unity in matter alone, or in what is only passive, since everything in it is only a collection or aggregation of parts to infinity. Now, a multitude can derive its reality only from true unities.”¹⁶ Once again it is tempting to read this language as an appeal to division, and a movement towards what I have called the problematic Argument *Ex Composito*. If Leibniz’s point is that simples must exist at the bottom of a process of division in order to ground the existence of composites, then, as we have seen, this is incredibly difficult to square with his insistence that simples are non-extended. Indeed, if this is what Leibniz means by the “to be” requisite, then I am of the opinion that this move cannot be successful and must be dismissed. However, perhaps we need not read Leibniz in this way.

I observe that, in the above passage, Leibniz does not explicitly invoke division but rather states

14 Leibniz, 121 in Arthur Richard T. W. Arthur (ed.). *The Labyrinth of the Continuum: Writings on the Continuum Problem*.

15 Leibniz, *ibid.* 117.

16 Leibniz, “New System of Nature”, 139.

that composites “derive their reality” from simples. This resonates with Leibniz’s claim to De Volder that “A thing which is aggregated from many things is not one except mentally, and has no reality except that which is borrowed from its constituents.”¹⁷ The possibility of composites ‘borrowing’ reality from simples seems to me to be a promising alternative. I have already mentioned that for Leibniz the only truly real things are unified in themselves, otherwise their existence is merely phenomenal and dependent on a perceiving mind. And yet, in cases in which a mind or simple substance dwells ‘over and above’ an extended body, it does not strike me as totally absurd to say that the extended body ‘borrows’ or inherits some of its mind’s reality. This amounts to the idea that extended bodies whose identity remains stable throughout the changes and metamorphoses they undergo, the continuity of whose phenomenal being is not altered by the separation or addition of parts, are rendered *more* real than mere phenomena by the presence of a unifying mind, although they may not be *fully* real in the same way simple substances are. In other words, so long as the metamorphosing body remains associated with an unchanging mind, its being can persist over time, and it possesses a higher level of reality. Indeed, to express this state of affairs in more contemporary terms, one might say that simple substance is a condition of *identity*, which is implied by our ability to see the seed and the mature tree as one and the same being.

6: Conclusion and Some Objections Considered

Experienced readers of Leibniz will no doubt be quick to point out that the majority of my textual evidence is sourced from the early to early-middle periods of Leibniz’s intellectual development, and that I may have, therefore, neglected the ever-looming issue of Leibniz’s own philosophical evolution which, purportedly, culminates in a ‘mature’ system. However, I do not think this is a problem for the present essay. My ambition here is not to provide a conclusive characterization of Leibniz’s mature view but rather to make some headway on the question of why he came to be so committed to the existence of simple substances in the first place. In this light, it seems to me that the early sources I have utilized are, in fact, especially useful since they serve to shed light on the first murmurs of this doctrine in Leibniz’s own mind.

Furthermore, it should be noted that I have not addressed the granular details of how exactly a non-extended simple substance can dwell over and above an extended body while endowing it with unity. These questions are beyond the remit of this essay. However, it seems to me that a more intricate understanding of the unifying indwelling of simple substance can illuminate what Leibniz will call a *domination* relation in which a *dominant* monad is supposed to preside over a body of ‘subordinate’ monads and bundle them into a single unity. The precise details of this relation have been investigated at length by other scholars.

The question animating this essay was quite simple: Why is Leibniz so committed to simple substance? Leibniz’s thinking on this point often appears to be paradoxical but our analysis offers a

¹⁷ Cook, “Monads and Mathematics”, 2.

possible explanation of Leibniz's puzzling remarks on this topic. Simple substance makes possible continuity or identity in natural objects, a condition of intelligibility of the natural world. This analysis brings us steps closer to grasping obscure but essential details of how this might work.

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