

An Examination of Russell's Objections to Leibniz's Theory of Space in *A Critical Exposition  
of the Philosophy of Leibniz* and Response to Objections against Russell

Research Thesis

Presented in partial fulfillment of the requirements for graduation *with Research Distinction* in  
Philosophy in the undergraduate colleges of The Ohio State University

by

Benjamin Ritts

Ohio State University

April 2023

Advisor: Professor Lisa Shabel, Department of Philosophy

# I

Gottfried Leibniz is truly one of the most towering intellects in all of human history. I share the sorrow of many that he never set forth his philosophy in as clear and concise and systematic of a manner as many of his contemporaries. Yet we are lucky that enough of his philosophical works remain, that we may gain an understanding of his insights on some of the most important issues in philosophy. His views are dispersed and examined throughout many different texts, often written for a certain person, to answer their inquiries on a specific topic. Those works in which he attempts to lay out a system often read like bullet points, with no rigorous deductions or replies to potential objections. Bertrand Russell notices this, and attempts to remedy the issue. After reading Leibniz's previously unpublished *Discourse on Metaphysics* and "Letters to Arnauld," Leibniz's fundamental premises and their justifications became clear to Russell. He saw Leibniz's system as building off of a few reasonable premises. In *A Critical Exposition of the Philosophy of Leibniz*, Russell attempts to rigorously build all of Leibniz's philosophy from these premises. Where Leibniz gives no justification for a view, Russell attempts to reconstruct Leibniz's unwritten reasoning. Ultimately, Russell finds errors in Leibniz. He'll say that Leibniz's premises lead to an internally contradictory theory of space; Leibniz's premises force him to reject an absolute and objective space, yet also force him to reject a relative and subjective space. Leibniz thus has no satisfactory theory of space, and his monadic system is untenable. Russell believes that the criticisms laid out in this book present a fundamental problem for all philosophies which maintain that only substances exist; Leibniz's system is an example of this sort of system, in which it's maintained that the number of unique substances is infinite. I agree with Russell's criticism as it applies to Leibniz. In this paper, I'll first lay out a few principles from both Leibniz's and Russell's work which are essential for

understanding this topic. I'll then expound Leibniz's theory of space, citing Leibniz's own work and Russell's rigorous interpretation. I'll then detail Russell's objection. Finally, I'll consider objections, and respond to them in favor of Russell.

Russell says that the ultimate objection to Leibniz's monadism will lie in the incompatibility of 3 of his premises: that every proposition has a subject and predicate, that the Ego is a substance, and that perception yields knowledge of an external world. (Russell 4) I'll begin the paper by outlining these premises, along with two principles, the Identity of Indiscernibles and the Principle of Sufficient Reason, which are heavily employed by Leibniz in his metaphysical reasoning.

## II

It would be most useful to follow the logic which Russell uses in examining some general parts of Leibniz's philosophy. From which premises, according to Russell, does Leibniz build his system? The first premise is that "every proposition has a subject and a predicate." (Russell 4) Leibniz says exactly as much himself:

"In every categorical proposition (for from them I can show elsewhere that other kinds of propositions can be dealt with by changing a few things in the calculus) there are two terms, the subject and the predicate. To these are added a copula ("is"), affirmation or negation, that is, quality, and finally, the sign, that is "all" or "some," which is the quantity." (*Samples of the Numerical Characteristic* p. 11)

A sentence which is obviously of the subject-predicate form is, "some dogs are brown," where "dog" is the subject and "brown" is the predicate. We'll certainly see later on where this sort of commitment leads to problems. The most immediately problematic propositions, according to

Russell, are those which involve numbers, such as, “there are 3 men;” to reduce this to a series of subject-predicate propositions (e.g. “a man is there” said 3 times) doesn’t convey the same sense as the original proposition. (Russell 10) There’s some content to this proposition which isn’t reducible to a proposition about some predicate applying to some subject. Still, it’s hard to imagine that Leibniz was unaware of these issues. In *Samples of the Numerical Characteristic*, Leibniz examines all standard propositions, including those with quantifiers, negations and “composite notions,” such as prime number, whose definition relies on the notion of number and divisibility, and shows his logical commitment to be satisfactory in those cases. Starting off with such a fundamental commitment, we begin to see the germs of Leibniz’s more complex theories of space, time and number. Leibniz, for instance, will reply that a statement such as, “there are 3 men,” is in part a statement about our perceptions; the aggregation of the 3 men is in part a product of minds. The aforementioned statement is shorthand for “Mind X is perceiving 3 things together.” Closely related to this premise, but barely applicable to our present inquiry, is the Predicate-in-Notion Principle, which claims that the truth of an affirmative proposition depends on whether or not the predicate attributed to the subject is contained in the notion of the subject. Volumes could be written in an attempt to understand this principle, but it’s thorough analysis is not of importance here.

Another principle which will bear heavily on the current topic is the Principle of Sufficient Reason. This is one of the “two great principles upon which our reasoning is based.” (*Monadology* p. 217) It says that every fact, both contingent and necessary, has some sufficient reason why it is what it is and why it isn’t what it isn’t. This may seem trivial, but Leibniz saw this principle as the key for metaphysical reasoning. As an example, Leibniz would respond to an atomist ontology by saying that, if two or more atoms were identical, God would have no

sufficient reason, when creating the universe, to put one of these identical atoms in one place, and another of the identical atoms in another place. Russell points out that in all of Leibniz's mentions of this principle, he never clarifies exactly what a sufficient reason is. (Russell 14) The most obvious example of a sufficient reason, extensively employed in Leibniz's writing, is the fact that God always does the best thing. The universe is the way that it is, because God always does what is best, and creating the universe the way that it is, is for the best. Russell keenly points out that the Principle of Sufficient Reason, when applied to things which exist in our world, simply reduces to an appeal to final causes. (14) The sufficient reason for every contingent truth about our universe is that the state of affairs which correspond to that truth was brought about by a combination of God being drawn towards the good, or other existents being drawn towards their imperfect understanding of the good. Russell ingeniously generalizes the Principle of Sufficient Reason to apply to all possible worlds. What distinguishes possible worlds from each other is their variation in regards to the final causes which motivate God and his created beings. In our world, the final cause which motivates God and his created beings is the good; thus, the specific formulation of the Principle of Sufficient Reason which applies to our world is that everything is motivated by its perception of the best. The general principle, which applies to all possible worlds, is that everything happens due to a motive, either that of God or of created beings. Although the passage in which Russell draws this conclusion, and various results which follow from it, are interesting, they seem to muddle the principle in a way which makes it less applicable to the metaphysical topics at hand. I'll show how it leads to confusion in deducing the Identity of Indiscernibles.

The Identity of Indiscernibles, and its importance, are best explained in Leibniz's *Letters to de Volder*:

“Things that differ ought to differ in some way, that is, have an intrinsic difference that can be designated; Hence, in nature, there cannot be two bodies at the same time perfectly similar and equal. Also, things that differ in place must express their place, that is, they must express the things surrounding, and thus they must be distinguished not only by place, that is, not by an extrinsic denomination alone, as is commonly thought.”

(p. 174)

Two things cannot, considered by themselves, be identical. This principle is often deduced from the Principle of Sufficient Reason (Stanford Encyclopedia 3.5); Russell says as much on 57, where he says that God couldn't decide between two indiscernibles due to the Principle of Sufficient Reason. On a naive reading of the PSR, it seems immediately evident that God would have no reason to choose one over the other. In Russell's novel interpretation of the PSR, mentioned in the last paragraph, this isn't so obvious. The sufficient reason upon which God acts is the pursuit of the best. If the best world had to contain indiscernibles, God would have to choose it. The sufficient reason wouldn't apply to a comparison between two possible worlds, but rather in a comparison between a possible world and the model by which God is being motivated. Still, under Russell's interpretation, the Identity of Indiscernibles can be deduced from the Principle of Sufficient Reason with the addition of one other premise which won't at all appear foreign to the scholar of Leibniz. The premise is stated by Leibniz in §10 of his *Principles of Nature and Grace, Based in Reason*:

“It follows from the supreme perfection of God that he chose the best possible plan in producing the universe, a plan in which there is the greatest variety together with the greatest order” (p. 210)

God is motivated by pursuit of the good, and he achieves this goal. The most perfectly good universe would maximize both order and variety. The inclusion of multiple identical beings would not maximize variety. Thus, using Russell's definition of the PSR, and given that the sufficient reason which motivates God is his pursuit of the perfect good, and given that the perfect good involves a maximum of variety, we can deduce that there can be no two beings which lack intrinsic difference, as this would constitute an imperfection.

Russell gives another deduction of the Identity of Indiscernibles. I believe that the long discussion of the PSR and Identity of Indiscernibles is warranted, as these are two tools with which Leibniz will address the issue of space. This deduction follows from the Predicate-in-Notion principle, and Leibniz's commitment that all propositions are ultimately of the subject-predicate form. Begin by supposing that we have two simple substances, each occupying a different position, but otherwise indistinguishable. Per Leibniz's logic, the spatial propositions which can be made about each of these substances are just statements ascribing some predicate to some subject. Assume these mostly-identical substances are *A* and *B*, occupying respective positions *a* and *b*. (These positions can be understood in any way which fits with Leibniz's metaphysics, as this is beside the point for now; for instance, the position *a* can be how *A* is perceived to be in relation to other existents). The statement, "*A* is located at *a*," is a statement which ascribes the predicate "located at *a*," to the subject *A*. Per the Predicate-in-Notion principle, the aforementioned predicate is contained in the notion of the subject. Leibniz lays out the argument in *Primary Truths*:

"That Each Singular Substance Expresses the Whole Universe in Its Own Way, and That All Its Events, Together with All Their Circumstances and the Whole Sequence of External Things, Are Included in Its Notion. SEVERAL notable paradoxes follow from

this; among others, it follows that it is not true that two substances can resemble each other completely and differ only in number” (p. 41)

It’s really a simple argument. All external denominations of a subject (e.g. the subject’s position, time, relation to other subjects) correspond to an internal trait of that subject, a trait which can be found by solely examining the subject and its notion. Looking at *A* and *B* alone, with no reference to their relation to other existents, and just examining their own notions, we can still find a difference between them. Contained in those notions are their respective predicates, describing their positions. Thus, as Leibniz would say, these two subjects differ *per se* and not just *solo numero*. Russell sums it up in section 24:

“Indeed, if we admit that nothing can be said about a substance except to assign its predicates, it seems evident that to be a different subject is to have different predicates... This argument, I think, is valid to the extent of proving that, if subject and predicate be the canonical form of propositions, there cannot be two indiscernible substances.”

Every proposition is reduced, by Leibniz, to be a proposition about the thing considered *per se*. Thus, any difference at all is a difference which lies in the subject itself. Accepting this seems like a trivial result which just follows from an assumption about the nature of logic.

Another essential topic in Leibniz’s philosophy (perhaps the most essential question, according to Russell) is the proper conception of substance. Russell makes clear that this is a distinct topic from the explanation of the nature of monads (Russell §16). The latter consists of propositions about what exists, while this topic is concerned with what can and can’t exist, and what whatever may exist must be like. The first two points Russell notices about Leibniz’s view are nothing groundbreaking. A substance is that to which predicates are attributed, and in turn are not attributed to other subjects. “Red” is not a substance. Although we can attribute



predicates to it (e.g. “Red is a color”), it can obviously be attributed to other subjects (e.g. “The light is red”). A substance can also change its predicates, yet still remain the same substance; a chameleon may be red, then purple, then brown, but is still the same substance. According to Leibniz, all that exists outside of the mind are substances and their qualities. This fits perfectly with his aforementioned logical commitment that all statements are ultimately of the subject-predicate form. The monadic ontology is thus the metaphysical mirror of the subject-predicate logic. The entirety of Russell’s book is motivated by this commitment, and Leibniz’s subsequent denial that objective space can be a single substance or a collection of substances. The most novel part of Leibniz’s conception of substance (again, not his actual theory of what substances are like, but instead what must logically be true about any substance) is his insistence that the various states of a substance are never caused by another substance, but rather by an internal force which drives the substance from one state to another. This assertion hinges on the premise that, although a substance may only have a given quality at a given time, the predicate asserting that this substance has this quality at a given time is always true of the substance, and is always contained in its notion. Russell says the following in section 17:

“For since all my predicates have always belonged to me, and since among these predicates are contained all my states at the various moments of time, it follows that my development in time is a mere consequence of my notion, and cannot depend upon any other substance.”

This argument clearly depends upon the Predicate-In-Notion principle. Russell doesn’t give an explicit explanation of this principle, and fails to ever address it by name, but his understanding is clearly that each substance is somehow linked to a certain notion, and that this notion is constantly the same, while the substance develops in time in a way that matches that notion. A

proper ontological account of the notion is beside the point of this paper, so for the sake of example, I may understand the notion as a bundle of data. This bundle of data always contains the same set of propositions of the following form: “substance X has predicate P at time(s) T.” The predicate P changes, as does time T, but substance X is always constant, and signifies that substance to which the notion is tied.

On the issue of the existence of the external world, Russell takes immediate issue with Leibniz. Russell believes that Leibniz has no good ground for believing in the external world. He goes even farther than Kant or Berkeley down the road to solipsism because of his denial that anything outside of the perceiving monad is the cause of its perceptions. Leibniz never gives a sound metaphysical argument for the existence of the external world. The only argument offered by him is one based in his understanding of God’s perfection. He says the following in *An Explanation of the New System in Response to Foucher*:

“I shall be asked, farther, whence it comes that God does not content himself with producing all the thoughts and modifications of the soul without these useless bodies which the soul, they say, can neither move nor know? The reply is easy. It is that God has willed that there should be more rather than fewer substances, and that he has thought it good that these modification of the soul should answer to something external”

I read this argument as being no more satisfactory than if he had just said that the external world exists because God prefers it that way. In fact, that is what he says. We must remember that under Leibniz’s system, he can’t say that the external world clearly exists because we perceive it so. He does, of course, admit that our perceptions are a representation of an external world. The problem is that in Leibniz’s system there’s no necessary connection between the objects which appear in our perceptions and the existence of those objects; the world which exists in our

perceptions isn't caused by a corresponding world existing outside of our perceptions. We may have perceptions of an external world, but we don't actually perceive an external world. The correspondence between our perceptions and the external world occurs for the same reason that the external world exists: God just prefers it that way. God prefers that the universe have as much substance as possible. The maximization of the amount of substance seems to assume, although unquestioningly, the maximization of the amount of the phenomena of matter. The multifaceted structure of the monad makes it such that all monads in some way represent themselves as matter. Russell concludes the following in section 33:

“The ordinary grounds for assuming an external world were thus destroyed by Leibniz, and I cannot discover that anything solid was put in their place. The existence of other substances... is therefore only probable: it has moral certainty.”

Even this moral certainty, however, is on a shaky foundation. Elementary discussion of Leibniz highlights his belief that all substances have perceptions, but the mirror of this claim is that, insofar as perceptions are confused, the substance has a material aspect to it. Russell says the following in section 35:

“There is primary matter as that which, according to Leibniz, is presupposed by extension. Extension... is regarded by him as repetition. That which is repeated, taken per se, is *materia prima*... There is primary matter as an element in the nature of every created monad. (In this sense it is equivalent to passivity or confusedness of perception.)”

In the context from which this quote is taken, Russell is saying that Leibniz believes that every monad has, due to its confusedness of perception, some degree of passivity, and thus some potential to present itself as matter. If we accept that Russell interprets Leibniz right in saying that matter is a product of confused perceptions (in a sense, imperfect substances) then it doesn't

now seem to immediately follow from Leibniz's conception of the good as an abundance of created substance, to the theory that there needs to be an external material world, and certainly not one that is populated with matter to the point of being a plenum. The further premise must be added that created substances in themselves must not be perfect, and thus must present themselves as matter. Since the deduction of an infinite amount of matter doesn't clearly follow from Leibniz's theory of divine perfection, I concur with Russell that Leibniz is merely accepting the commonsense view, and that all deductions for the existence of an external world are merely post-hoc justifications. Discussion of the existence of the external world is what delineates the previously discussed conception of substance from Leibniz's actual theory of monads. In the theory of monads, Leibniz accounts for the nature of the external world by constructing a type of substance which could both form the basis for such a world (both through its phenomenal expression as matter, and whatever ideals it impresses upon it through its perception), and whose structure logically fits in the conception as laid out previously. This whole discussion anticipates the analysis of extension which I'll examine next.

### III

I'll examine what Russell takes Leibniz's view on extension to be. This will include both Russell's exposition of Leibniz's view, and Russell's exposition of what he takes to be Leibniz's justification for adopting this view. I'll then outline the argument(s) given by Russell against this view of extension; namely, that Leibniz's theory must assume the existence of an objective space, which Leibniz himself can't accept. In the following, references to 'Leibniz's view' will be through the lens of Russell.

According to Leibniz, all monads with imperfect perceptions have some degree of passivity, which presents itself in a material aspect as a resistant force, and whose repetition

gives rise to extension. The obvious question to ask is what exactly grounds this repetition. The confusedness of perception exists outside of space, because it exists within the monad, but somehow gives rise to a phenomenon which exists in space. The repetition involved in extension consists of different monads expressing their non-spatial confusedness of perception in a contiguous way in space. The relation which constitutes the type of relatedness which would lead two monads to express themselves as spatially contiguous must be completely inconceivable.

Leibniz's focus on extension illustrates the intimate connection between matter and space, and Leibniz's approach to the issue must be subtle, for a poor explanation of extension will fail to give the relationship between matter, space and substance that Leibniz must take for the sake of consistency. In the opening part of chapter VII, in section 34, Russell prefaces the discussion of matter with a very brief point that speaks volumes on the issue:

“Of what nature is this something external to ourselves? In so far as it appears to be in space, we call it matter. Our problem is then, what is matter? How are we to conceive that which, in perception, appears as spatial and as other than ourselves.”

The dominant conception of matter held by Leibniz's contemporaries, notably Descartes, is burned into any scholar's mind: the essence of matter is extension. Russell correctly notices that in so far as external things exist in space, and occupy so much space, they are matter.

Furthermore, this is what it means to be matter, to occupy so much space. If something exists outside of space, and occupies no space, it may be substance, but it may not be matter. Anything which occupies space, and exists in space, is matter. Matter and motion are intricately connected for Leibniz, and his goal for each is to show that their basis doesn't lie in a substance's relation to an independently existing space, but rather that both motion and matter are the result of internal

forces of the monad, and that the phenomenal expression of these forces is what gives rise to space.

“From this, it is obvious that extension is not an absolute predicate, but is relative to that which is extended or diffused, and therefore it cannot be separated from the nature of that which is diffused any more than a number can be separated from that which is counted.”

*(On Body and Force, Against the Cartesians p. 251)*

Leibniz draws an interesting parallel between his conception of space and the common conception of number. No one maintains that things exist in number. If one is presented with 3 eggs, it would be a very strange thing to say that these eggs exist in absolute number, and occupy the position of 3. Number is thus not an absolute predicate, says Leibniz. By absolute predicate, I believe that Leibniz means that this is not a predicate explicitly contained in the notion of the subject, but can instead be deduced from the other predicates, including predicates describing the substance's relation to other substances. In the example of three eggs, there's nothing in the notion of any substance which says, “there are three eggs.” Rather, the notion of each egg-subject will specify its relation to the other and from the fact that these eggs are in close proximity, or are being perceived together, only then can one apply the predicate of number. It's easy to see how extension is similar. Obviously no predicate of any single substance will say anything about its extension, because each individual substance is unextended. The predicate of extension is grounded in the fact that inspection of enough notions will show a relationship of contiguity. This is a patchy explanation of how space and extension are in a sense imaginary. There's no space or extended substance existing in the actual realm of substances. Rather, there's information encoded in the predicates of substances which allow the perceiving mind to structure things in space and as parts of composite and extended bodies. Thus, substances exist prior to

space and there is no fundamental relation between space and substance, where each is a fundamental entity existing on its own. Extension is only a conclusion which the perceiving mind draws from the notions of substances. Russell says it most elegantly in section 63:

“The assertion of a plurality of substances is not of this form—it does not assign predicates to a substance... The mind, and the mind only, synthesizes the diversity of monads; each separate monad is real apart from the perception of it, but a collection acquires only a precarious and derived reality from simultaneous perception. Thus the truth in the judgment of plurality is reduced to a judgment as to the state of every monad which perceives the plurality. It is only in such perception that a plurality forms a whole, and thus perception is defined by Leibniz as the expression of a multitude in a unity.”

This is not to say that extension is an ideal, in the sense that space is. What grounds extension is fully determined in the external world; our knowledge of a thing's extension depends on that thing actually existing. Space, on the other hand, is an ideal; our idea of space is a set of possibilities, as I'll discuss later on. A theory in which extension exists irregardless of minds, yet isn't another predicate of substances, would fail Russell's very first premise of Leibniz's philosophy, that every statement must be subject-predicate. If extension is essential to matter, and matter is real, then space is real as well, and there are things which we can only know about a monad by examining its relationship to a certain part of space. The previous discussion is quite muddled, and should appear so. These transitions from matter to extension to space, according to Russell, are some of the breaking points of Leibniz's system.

According to Russell, Leibniz's theory of extension is concisely expressed in the following opening lines of the *Monadology* (Russell §51):

“THE *MONAD*, which we shall discuss here, is nothing but a simple substance that enters into composites—simple, that is, without parts. And there must be simple substances, since there are composites; for the composite is nothing more than a collection, or *aggregate*, of simples.”

Russell points out that understanding this claim requires an understanding of Leibniz’s view of the three following topics: the meaning of substance, the existence of substantial and complex entities (that is, matter in the common-sense understanding) and the fact that all substantial composites are ultimately composed of simple, non-composite beings. I have already discussed the proper conception of substance. Substance is defined by force. The force is first necessary for the unfolding of the substance’s predicates in line with its eternal notion, must be internal to itself, and is what is responsible for the integrity and unity of substance. This force is also necessary for the reduction of certain seemingly relational statements to statements of the subject-predicate form. The best example of this is the reduction of statements about relative motion. Statements about motion are very difficult for Leibniz to account for in his theory of monads. Normal statements about motion either make reference to other things, to space, to time, or to all three. Examine the following: “Substance A moved 8 miles away from substance B at a rate of 20 miles per hour.” This is an utter mess for Leibniz to clean up. The lazy student of Leibniz might turn the predicate into an indirect statement of the form “Substance A perceived that...” This gives rise, however, to a sort of solipsism which Leibniz seeks to avoid. Leibniz does accept the existence of an external world which in some way corresponds to our perceptions. Leibniz’s idea is that some force may be attributed to the monad, and that examination of this force will reveal everything about the aforementioned problematic statement about motion. The simplest example would be that one can determine whether some substance is



at rest or in motion just by looking at the substance, with no need for seeing how its position changes in relation to other things. We are also aware of Leibniz's claim that something substantial yet complex exists. This is an obvious consequence of his acceptance of the existence of an external world, and is equivalent to saying that matter exists. This stands out as Leibniz's only empirical premise. His theory of extension must give an account of extension and matter as they exist in the world of our everyday perceptions.

Leibniz's primary innovation regarding the topic of extension is his denial that extension is the essence of corporeal substance. Leibniz's rejection of extension as a defining feature of matter is part of a larger rebuttal of the understanding of matter in a geometric way. Along with his rejection of the primacy of extension, Leibniz also attacks a geometric understanding of motion. What Leibniz instead wants to argue for, is the primacy of force in our understanding of matter. The shape, size and solidity of matter must not be understood as a result of extension, but rather as a repetition of its resisting action; an extended body isn't a piece of matter molded to a certain shape and placed in the vat of space somewhere, but is rather a collection of forceful substances, arranged in a repetitive manner, and exerting a resistant force. The force which lays the foundation for extension is claimed at various points by Leibniz to be uniform, unlike the active force. Leibniz argues that extension can't be the essence of matter because extension presupposes simpler notions, and also because matter depends on a resistant force which extension alone can't account for.

Extension is a property of extended things, which possess extension in so far as something is repeated. It follows that whatever is repeated is prior to extension.

“Therefore, we have shown... that the notion of extension is incomplete in itself, but is relative to something which is extended, something whose diffusion or continuous

repetition extension indicates; further, we have shown that the notion of extension presupposes the substance of body, which involves the power of acting and resisting, and exists everywhere as corporeal mass [*massa*], and that the diffusion of this substance is contained in extension.” (*A Specimen of Dynamics* p. 130)

Leibniz maintains that what is prior to extension (that is, what is repeated in extended bodies) is mass, and that mass is identified by its resistance and action. But we must recall that no two substances are identical, and thus no repetition of substances can occur. This is a result of the Identity of Indiscernibles. Mass, then, is not an independently existing substance, but is itself an abstraction, and refers to the two traits of action and resistance which substances have. This circles back to the point about absolute predicates. Extension doesn't even arise as a relation between other substances which must be deduced from their notions, but a relationship between the predicates of those different substances. The substances themselves must be contiguous, and they must also have the passive forces of resistance and impenetrability predicated to them. Thus, the notion of extension can't be the essence of corporeal substance, because the abstract concept of mass is prior to any extension, and extension is predicated of no individual piece of matter.

A can of worms has been opened: how does corporeal mass give rise to extension if corporeal mass itself isn't extended? If extension is understood as the *occupation of so much space*, it seems evident that anything which is repeated to give a certain amount of extension must itself be extended. There seems that there must also be reference to space in the notions of monads. Even the simplest relation which allows for extension, the relation of contiguity, is not reducible to a non-spatial one; what is this contiguity? It's obviously contiguity in space, and to say that two things are contiguous is merely short-hand for saying that they are contiguous in

space. This is a problem with the claim that the unity imparted upon matter by the mind, is what gives it extension. The mind imparts this unity to substances that are contiguous. This is an obvious problem when Leibniz claims that space is an ordering of co-existents. To even conceive of such a claim, it's already implied that this is an ordering in space. Thus, even if we accept that extension is not essential to matter, the notion of contiguity must be essential for extension to arise, and contiguity itself assumes space; contiguity can only be understood in the language of space. Leibniz does make a good point in showing that extension presupposes some entity which is extended by repetition, and it does seem reasonable to suppose that this entity is the material aspect of substance (that is, the power of action and resistance). It seems, however, that Leibniz has only shown that extension by itself isn't enough to account for matter, but has not satisfactorily shown that matter can be understood without reference to extension as something fundamental. Leibniz's attempt to circumvent the primacy of extension just pawns it off onto the notion of contiguity, which is itself a spatial relation. The most reasonable conclusion, it seems, is that matter requires at the same time both extension and mass. This is perhaps most in line with modern understanding, where the simplest particles of matter are considered as both being extended in space and as being endowed with a resistant power.

By denying that the essence of matter is extension, Leibniz can now make the argument that the simple substances which constitute matter aren't themselves extended. This is essential to our discussion of space. Leibniz must show that the appearance of extension in the external world arises from substances which in themselves are not extended. If substances, considered in themselves, are extended, then the space in which they are extended, and which gives any meaning to the phrase "extended substance," must exist in a common-sense way. This space would essentially be a receptacle in which substances are placed, and which they occupy. Leibniz

must instead maintain that substances, considered in themselves, with no reference to perceptions or other substances, occupy no space and are not extended. The space which structures our perceptions only emerges within our perceptions, as our monad unfolds its own notion, and thus its unclear and indistinct perception of other substances. We've also seen how relations like contiguity which are contained in the notions of other monads may lay a ground for the perceptions within our monad.

Russell uses the following argument to show how Leibniz concludes that extended material bodies are made of non-extended substances. Extension is the repetition of some quality of substances. Also, a simple real being is a true unity and independent. No simple real being can be extended; it would then be a repetition of other beings, and thus not be a true unity (it could be broken apart) nor independent (it would depend upon whatever is repeated for its existence). A complex real being is formed from simple real beings; if this were not so, then the complex being would have no real existence, as it would consist of other complex beings *ad infinitum*. Material bodies are complex real beings. Thus, material bodies are formed from simple real beings. Here's the problem: material bodies are extended, while simple real beings are not. Extension arises from that which isn't extended.

In the paragraph concluding §71, Leibniz's whole theory spirals down into a burning crash site. There's no satisfactory answer to the question, "what is the position of these monads?" which doesn't assume an objective space. Russell concludes with the following: "The confusions into which Leibniz falls are the penalty for taking extension as prior to space." Russell previously gives a cryptic comparison of Leibniz's "logical order" with the "order of discovery." The logical order is the order in which Leibniz must develop his system. Leibniz's logical order begins with an analysis of substance. It then moves to the plurality of substances, then to

extension, which is the continuous repetition of substances. He finally attempts to move to an account of space as the assemblage of possible orders of coexistence, while removing the need for actual substances. This paper has shown the difficulty of the logical order. The order of discovery is clearer. The first thing we encounter upon observing the world is extended things occupying space. An analysis of substance must only come after accepting this fact, and must be formulated in such a way as to explain this. Space must have as much reality as the extended matter which occupies it; Leibniz can't get around the fact that extension is simply the occupation of so much space. Russell attributes these flaws to Leibniz's purely logical analysis of substance, which is then forced to account for his empirical premise which claims the existence of an external world.

#### IV

I move now to the theory of space. I've shown already that space cannot be a substance, and thus has no place in Leibniz's theory as something which exists independently. In the opening of his chapter on Leibniz's theory of space, Russell states quite clearly that Leibniz is trying to avoid the existence of space as something other than a mere attribute. Leibniz must give a theory in which the absence of all substances means an absence of space. It is clearly not sufficient to wave the issue of space away. There's clearly a spatial aspect to the universe. Leibniz admits this, and all of the potential problems it entails, when he accepts the existence of an external world, the existence of aspects of monads which exhibit material characteristics, and when he claims that our perceptions somehow correspond with the way the external world is. Let us recall at this point the three premises of Leibniz's theory which Russell claims will ultimately be incompatible. Firstly, every proposition is a subject-predicate proposition. Secondly, the ego is a substance. Thirdly, perception yields knowledge of an external world. (Russell §4) The third

proposition is far from simple and naive. Russell carefully claims that Leibniz maintains that perception yields knowledge, not that we perceive the external world and gain ideas about it in the sense that a representative realist would say. The specification of this premise isn't all that important to the present discussion. We're only concerned here with the specific consequence of this view, namely that we perceive a world of matter existing in space, and thus there must be something outside of us which is grounded in monads, but still resembles matter in space.

Leibniz adopts the following theory of space:

“As for my own opinion, I have said more than once, that I hold space to be something merely relative, as time is; that I hold it to be an order of coexistences, as time is an order of successions. For space denotes, in terms of possibility, an order of things which exist at the same time, considered as existing together; without enquiring into their manner of existing. And when many things are seen together, one perceives that order of things among themselves.” (*Third Letter to Clarke* p. 324)

As seen above, Leibniz maintains that space is relational. Russell (§61) explains the view thus: the space between two coexistent points can be understood in one of two ways. The space between two things can be viewed as a relation between the two or as an actual length of space existing between them. A relational theory of space takes the former as the essence of space. On this view, the two terms involved in a spatial relation are themselves non-spatial (considered in themselves, with no reference to other coexistents, no spatial propositions may be made about them). Russell describes Leibniz's space as an “assemblage of possible relations,” as opposed to Newtonian absolute space, which is an “infinite collection of actual points.” Leibniz often compares his unique conception of space to perhaps a common-sensical view of time. It's easy to conceive of time as nothing more than just the order of coexistence; even if this is not how

people actually conceive of time, and even if this conception is nonsense, the analogy is illustrative. It's more tempting to imagine space as some sort of substantive blanket than it is to imagine time in the same way. Leibniz's space is thus not constituted of parts. A relation between two things is not constituted of smaller relations. Something's locality, on this view, is just the position in which it holds a certain relation to other existents; possible localities are possible relations. Points then can't constitute a space of this form, because a point considered in itself says nothing about its relations.

This warrants a quick word on Leibniz's motives for adopting this view. In §65 and §66, Russell is clear that Leibniz is forced into this position by his adherence to the traditional logic ("the logic underlying all use of substance") – specifically, the principle that all propositions can be reduced to a subject-predicate form. For space to be real, it must be either a subject or a predicate. Leibniz, in his correspondence with Clarke, rejects the possibility of space being a predicate, because void space would be a predicate of nothing, and thus couldn't exist. Space may also not be a predicate because this would amount to extension being essential to matter. Our previous discussion has shown, however, that simple substances are without extension, and thus there's nothing of substance to which space may be predicated. Against space being admitted as a subject, Russell points out two arguments. Firstly, space as a subject would be inadmissible under the rules of the Principle of Sufficient Reason and the Identity of Indiscernibles. If space were to exist as an absolute being, each point of space would be indiscernible from any other, and thus God would have no reason to choose to put each point of space in a specific order. Even if space isn't considered as constituted of points, there'd be no sufficient reason why the entirety of space wouldn't be oriented in one way, as opposed to another; there'd be no reason why the whole of the universe shouldn't be rotated 180 degrees or

flipped upside down. Secondly, space exists as a continuum, where infinitely small shifts in location may occur. To allow for this, space would have to consist of infinitely small points. This is not admissible under Leibniz's analysis of the continuum. Infinitely continuous things, such as the real number line, or space, or time, can only exist as ideals, and not in the real realm of substance. Also, if space were admitted as an absolute being alongside the monads, the relation between a monad and the space it occupies wouldn't be one of substance-accident, and thus the proposition wouldn't be reducible to a subject-predicate proposition. This is because both terms would be independent existents, and neither would depend on the other as a substance in which it inheres. The obvious question arises as to how space construed as relations between monads *can* be made into subject-predicate propositions. The difference, I believe, requires an appeal to more of Leibniz's metaphysics, namely the perceptions of monads. Assuming the existence of absolute space, Leibniz's metaphysics and logic would still allow propositions about space to be made, so long as the monad is the subject. These propositions would require an appeal to the perception of monads, and would take something of the form, "monad A is perceiving itself as occupying spatial point B." The inescapably inadmissible propositions would be those in which the subject is absolute space, as presumably Leibniz denies the possibility of space having perceptions akin to those of the monads. Why Leibniz denies this, I am not sure. Space as being one continuous being with the faculty of perception appears consistent with much of what Leibniz says. Leibniz rejects a similar theory of Newton's, who calls space the sensory organ of God. The claim is rejected on theological grounds, with Leibniz taking issue with God needing a sensory organ, or of God having parts. The previously mentioned argument against absolute space using the Principle of Sufficient Reason and the Identity of Indiscernibles would also apply here. However, earlier in the paper we discussed Russell's interpretation of the Principle of Sufficient Reason,



which has a dubious efficacy in this case. Recall that Russell considers God's Sufficient Reason in creating the universe to be the pursuit of the perfect good. This principle doesn't necessarily say anything about deciding between indiscernibles. All that matters here is whether or not the universe in question is perfectly good, and if a specific orientation doesn't matter for this criteria, then there's no objection to God just randomly choosing one.

Consideration of the perceptions of monads brings us to the second part of Leibniz's theory of space: its subjectivity. As said in the previous paragraph, for the spatial relations to be understood as subject-predicate propositions, reference must be made to the monad's perceptions. The proposition, "Monad A is 15 feet from monad B," really means, "Monad A is perceiving itself as being 15 feet from monad B (and vice-versa)." Thus, the only permissible terms in a spatial proposition are objects of a monad's perceptions; nothing can be said about space outside of some monad's perception. This is what Russell means when he says, in §68, "Spatial relations do not hold between monads, but only between simultaneous objects of perception of each monad. Thus, space is properly subjective, as in Kant." The problem is that the predicate still says something irreducibly spatial. Can we still make sense of the "15 feet away from" in Leibniz's system? This phrase can't apply to an assemblage of points which form a line equal to 15 feet. It must, as seen above, refer to a relation between two things; it's simply the relationship of being 15 feet apart. This, however, does little to clarify. Russell will ultimately claim that the strange metaphysical position, into which Leibniz's logical commitments necessarily lead him, clearly contradict both the facts of the matter and themselves.

In Russell's examination of Leibniz's view of the continuum, he states another reason why relational space must be subjective; that is, why it can only exist in perceptions. Space is an example of a continuum. There exists an infinite number of different spatial relations whose

lengths are between the lengths of any two other spatial relations. This is analogous to the set of real numbers, where there exists an infinite number of real numbers between, say, 2 and 2.1.

Russell says the following about Leibniz's view of the continuous:

“Repetition is... continuous where the parts are indeterminate, and can be assumed in an infinite number of ways. That anything actual is continuous in this sense, Leibniz denies... Only space and time are continuous in Leibniz's sense, and these are purely ideal.” (59)

Space, however, is more properly a continuum than the real line. An infinite collection of things may exist, but these must be determinate. The quantity of monads, for example, is infinite, but each monad can't be divided, and there's a clear determination of which monad is which. The parts of space, according to Leibniz, are indeterminate. Another way to think of this is to compare distances of space with extension. A body's extension is constituted of an aggregate of smaller parts; the smaller parts are necessary for any existence of the whole extension. On the other hand, a distance of space, being a relation, has no smaller parts which are prior to it. This is a feature of continuums. According to Russell, the only proper way to account for the continuum is to relegate it into the realm of the ideal. Thus, space is shown again to necessarily be subjective.

Russell will argue for the two following conclusions: there is clearly more to space than just relations, and that Leibniz's subjective theory depends on objective spatial relations between monads. Against space consisting of only relations, Russell believes there's no satisfactory way to say that two things occupy the same place at the same time. Imagine that body A has a certain relation to three other bodies. Suppose then that body B takes A's place. On an absolute view of space, one can say that B occupies the same place that A previously held if B has the same

relation to the other three existents that A had, and that the other three existents remained in the same place. On Leibniz's system, however, you can only say that the three other substances remain in the same place if their relation to all other substances remain the same. The first issue is that the other three substances didn't remain in the same place, because their relations to A and B changed. Even if we ignore A and B, we get an infinite analysis, as we must consider each object's relation to an infinite number of other objects in the same manner to determine if they remained in the same place. Even then we can only say that the places occupied by A and B are similar, not the same. Recall that location only exists as a predicate. A does not transfer its predicate to B; B just expresses a spatial predicate similar to A, yet not even identical, because B's spatial predicates include a relation to A which A's predicate did not have. The extensive patchwork needed to make sense of this is considered as evidence by Russell that there's more to space than merely relations.

On the second point, Russell sums up his view as follows in §68:

“Spatial relations do not hold between monads, but only between simultaneous objects of perception of each monad. Thus space is properly subjective.... Nevertheless, perceptions of different monads differ, owing to the difference of the points of view: but points of view are mathematical points, and the assemblage of possible points of view is the assemblage of possible positions. Thus Leibniz had two theories of space, the first subjective... the second giving an objective counterpart, i.e. the various points of view of the monads. The difficulty is, that the objective counterpart cannot consist merely in the difference of points of view, unless the subjective space is purely subjective; but if it be purely subjective, the ground for different points of view has disappeared, since there is no reason to believe that phenomena are *bene fundata*.”

I break down this passage as follows. We've seen that, due to Leibniz's logical commitments, the only terms of a spatial proposition are the objects of a monad's perceptions. However, issues arise from Leibniz's view that the perceptions of each monad are *different yet similar*, in such a way as to be said to be perceiving the same external world from different points of view. Russell sees "the assemblage of possible points of view" as being another space, which exists outside the perceptions of monads. This recalls, as mentioned earlier in the paper, Newton's theory of absolute space as "an infinite collection of points."

The lengthy quote from the preceding paragraph is Russell's explication of what, immediately prior, he calls, "a difficulty which besets...every philosophy which, while admitting an external world, maintains the subjectivity of space." The final sentence of the lengthy quote is tricky, but gives the ultimate force to the argument. For the objective counterpart (the assemblage of points of view) to not be an actually existing space (for which propositions involving absolute space would need to be made), it must only consist of possible points of view, and not be populated with real existents. If this were the case, however, then the space of the monads would be "purely subjective," in the sense that it would require no reference to an external world to explain the fact that the different monads have perceptions which are *different yet similar*. If this be the case, then the reference to different points of view becomes a strange addition, as it's completely meaningless; what are these different points of view *of*?

## V

Russell does quite an impressive job of reconstructing Leibniz's logic from his texts. The texts which he cites are quite various, and he gives an impressively thorough reading and interpretation to texts on seemingly obscure topics, such as discussions of dynamics and mathematics. I'll focus now on potential objections to Russell's argument against the spatial

theory, and assume that Russell's background is correct. Most reactions at the time of Russell's publishing of this work focus on the primacy of Leibniz's logic in developing the rest of his system (O'Briant). Russell published his work around the same time as Louis Couturat, and in letters exchanged between the two affirm their shared belief in the foundational role which Leibniz's logic plays (O'Briant 203).

The first objection I came across is from Hartz and Cover. They take issue with Russell's supposedly reductionist project. They don't believe that making sense of Leibniz requires reducing claims about the nature of space into propositions of the subject-predicate form, ultimately only referencing monads and their notions (Hartz and Cover 513). Hartz and Cover point out that the reduction from space to monads is two-tiered. They say the following:

“Russell on several occasions recognizes Leibniz's tendency to call space and time 'ideal', but in each case fails to recognize a crucial message... that ideal things are relegated to a third level over above bodies, and that space must as a consequence be given a quite different treatment from that accorded phenomenal entities like bodies.” (Hartz and Cover 513)

Firstly, there is a reduction from the ideal to the phenomenal; space must be reduced from something which the mind creates into some relations between matter. The next reduction is from the phenomenal to the fundamental; relations among the phenomena of matter must be understood in terms of monads and their notions. As I've discussed above, Leibniz's metaphysics is three-tiered. On the bottom tier, there just exists monads and their predicates. On the second tier, there exists matter and certain forces. On the third tier, within perception, there exists the ideals of space, time and number. They put much importance behind the claim that space is ideal. Russell does agree that space, considered abstractly, is an ideal; it's the assemblage of possible

relations. This, however, does not change the fact that relations in the phenomenal world of matter directly dictate our experience of actual space. Leibniz fully accepts that our perception of space is well-founded, meaning that something in the external world corresponds to space. Even granting that space as a whole has no grounding in the phenomenal world, one must still accept that spatial attributes are instantiated in the phenomenal world. Recall the earlier talk about the logical order attributed to Leibniz by Russell. The first two stages, the analysis of substance and the claim which posits the existence of a plurality of substances, concern the foundational realm of monads. The move into the phenomenal realm of matter is the derivation of extension from the plurality of substance. The final move into the ideal realm is the derivation of space, which ceases to have any dependence on real beings, as it's only a possible ordering of things. The existence of spatial attributes must then be accounted for in the phenomenal realm, because that realm is characterized by extended bodies. The third problematic premise, the acceptance of the external world, brings with it the problem of matter, which is inextricably linked to extension, and thus spatial attributes. Recall also Russell's mention of perceptions being *bene fundata*. Even if ideals need not be well-founded and reflected in the world, our basic perceptions must be, and these have a spatial aspect. Hartz and Cover, I believe, give too much importance to space as an ideal. Leibniz must admit space as an ideal because we can conceive of it being continuous, and this can't happen in the realm of real beings; also, although both Leibniz's and Russell's discussion of this is quite difficult, relational space shares many similarities with number, such as the fact that larger relations or quantities aren't constituted by an aggregate of smaller ones, that make the two ontologically similar. The fact that the phenomenal realm has spatial characteristics must still be accepted. Thus, the reduction which the Leibnizian must make must still hold. The question is, how can non-extended monads give rise to extended matter, while still allowing all

statements made about the realm of matter to be of the subject-predicate form. Russell's criticism about perceptions being *bene fundata* isn't even a criticism about reduction from the ideal to the phenomenal. It merely shows that for monads to occupy different points of view of other monads, and to themselves occupy a certain part of what is viewed by other monads, Leibniz can only end up with a real (and perhaps absolute, although this isn't clear) space. The phenomenal merely functions as a middle man. Hartz and Cover seem to forget the sly fact that perceptions happen *within the monad*, and that the three tiered system finishes in a circle, going from the monad, to its phenomena, and then back into the monad's perception, its most essential feature. The perceiving monad is perceived by other monads, and thus can't occupy a realm of its own, taking an impartial view of phenomena. Leibniz thus implicitly has an objective space which exists outside of the monad's perception, whether this space is an assemblage of relations between the monads, or whether it's an assemblage of points from which they get their points of view.

Gustav Bergmann gives another rejection to Russell's arguments. Bergmann concurs with Russell in his assessment of the validity of Leibniz's theory of space. Bergmann, however, draws a weaker conclusion from it, rejecting Russell's claim that this is a fundamental objection to all substance-based metaphysics which assume an infinite number of substances. Bergmann believes that Leibniz's theory can be patched up with two fixes, which Leibniz fails to adopt, mostly out of theological and logical reasons. The first is that Leibniz could have posited a world in which the only substances are points in space, and that the monads occupying them, along with their predicates, are predicates of the point of space. (Bergmann 197) Leibniz could also give a satisfactory theory of space by giving up his commitment that all relational statements must be reducible to non-relational predicates of some one subject. Bergmann believes that this

commitment of Leibniz's is unnecessary, and that a satisfactory account of substance can be given even with irreducible relations:

“His [Leibniz's] error is logical, as it were. He claims that all these relations can be defined in terms of nonrelational predicates. As far as the thing itself is concerned, though, individuals with natures [appropriate to substance] can consistently live in a space like ours...” (Bergmann 195)

Bergmann takes Leibniz's crucial error to be the false and unnecessary dual claim that all spatial relations must be and can be reduced to subject-predicate statements. Russell, on the other hand, takes Leibniz's crucial error to be his adoption of the contradictory premises asserting the existence of an external world which mirrors our perceptions, and asserting that all propositions are of the subject-predicate form. Russell and Bergmann also part ways on their own personal theories of space. While Russell claims that there is clearly more to space than just relations, Bergmann denies just this. (Bergmann 196) I concur with Russell on this point. The deciding question here is whether or not, to Leibniz, there is more to space than just relations. In two separate contexts, Russell shows that Leibniz does attribute more to space than relations. Firstly, in section 67, Russell discusses how Leibniz attempts to give an account of how two substances can successively occupy the same place, and also how Leibniz attempts to use force to explain absolute motion. It's difficult to see how a relational understanding of space can account for these. Secondly, Russell convincingly points out how the assemblage of points of view of monads strongly implies an absolute space, which is previously defined as an assemblage of points. My disagreement with Bergmann, like the ones mentioned above against Hartz and Cover, stems primarily from Bergmann's focus on reducibility. Because Russell's work is more comprehensive and covers many topics of Leibniz's thought, he can see well beyond questions of



reducibility, and examine how the theory of space relates to issues such as the continuum, the nature of matter, the nature of extension, dynamics, and monadic force. I don't agree with Bergmann that space may both exist outside of minds yet also consist only of relations; any objective space must be an absolute space. In fact, a relational and objective space is expressly denied by Leibniz's theory of the continuum. Relational space is a perfect example of a continuum, as the whole relation doesn't consist of parts which are smaller relations. Leibniz expressly states that continuums must always be ideal. Bergmann would have to give an entire account showing how the problem of the continuum is inadequately addressed by Leibniz, and how relational space can exist outside of perception. Bergmann accuses Russell of equating absolute space with objective space, as if he'd never considered the possibility of an objective and relational space. Russell did, however, consider this in his prior section on the continuum. Both forms of objective space, absolute and relational, are objected to by Russell on grounds which make no reference to reducibility. The reducibility question comes into play only when a spatial theory passes other tests, such as the Identity of Indiscernibles or an analysis of matter. The criteria for an acceptable Leibnizian spatial theory is quite lengthy. The spatial theory must accord with Leibniz's principles of reason, his theory of the continuum, his theory of extension, and must in some respect resemble the world as we perceive it. On top of all that, the theory must allow for spatial statements to be reduced to the subject-predicate form. Bergmann believes that by dispensing with this final requirement, he does away with Russell's only tool of criticism. This is simply not the case.

In conclusion, Bertrand Russell shows how Gottfried Leibniz's monadic metaphysics loses its coherence when attempting to give a satisfactory theory of the nature of space. Many factors force Leibniz into accepting a subjective space, yet certain other commitments, especially

his acceptance of the existence of an external, phenomenal world similar to how we perceive it, lead to Leibniz building much of his system with the assumption of an objective and absolute space. Russell claims that his criticisms in this work extend to all substance-based metaphysics. Other philosophers have critiqued Russell, attacking his insistence on the fact that reducing spatial propositions to propositions of the subject-predicate form is necessary yet impossible for these sorts of systems. These other systems, however, fail to see that reducibility isn't the only issue at play which gives problems for a relational and subjective theory of space. I consider Russell as vindicated in his claim.

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\*In-text citations in italics are Leibniz's works, found on Past Masters online database.

Page references are listed in source's margins\*

## Acknowledgements

I'll conclude with a special thanks, especially to Professor Lisa Shabel, who advised me in this project, and was critical in the early formulation of my thoughts, and constructive criticisms throughout the process. Thank you also to Professor Lisa Downing and Dylan Flint for participating on my thesis committee.

