Space and the Extension of Power in Leibniz' Monadic Metaphysics

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Abstract:
This paper attempts to resolve the puzzle associated with the non-spatiality of monads by investigating the possibility that Leibniz employed a version of the extension of power doctrine, a Scholastic concept that explains the relationship between immaterial and material beings. As will be demonstrated, not only does the extension of power doctrine lead to a better understanding of Leibniz' reasons for claiming that monads are non-spatial, but it also supports those interpretations of Leibniz' metaphysics that accepts the real extension of bodies.

Key Words: Leibniz, space, monads, extension of power

A long-standing problem in Leibniz' late metaphysics concerns the spatial status of the monads: in short, monads bring about extended matter, and hence space, but are not themselves in space or spatially related to one another. This quandary has prompted some commentators to deny the spatiality or extension of Leibnizian bodies altogether, while simultaneously rejecting a purely idealist or Berkeley-style reading that treats bodies as entirely mental items.[1] Other commentators, in contrast, have nonetheless strived to uphold extension as a real bodily feature in addressing the perplexing difficulties associated with the spatiality of monads. Yet, how can a commitment to the view that Leibnizian bodies exist in the external world and are really extended in length, breadth, and width (although perhaps not identical to continuous geometrical extension)—a view we will dub the "real extension" hypothesis—reconcile the non-spatiality of monads with the spatially extended bodies that arise from monads? In this essay, we will attempt to

[1] Henceforth, "spatiality", as used with reference to monads concerns the relationship between monad and space; thus, the non-spatiality monads means that they are not situated in space. As used with respect to bodies, spatiality refers to their extension in length, breadth, and width; hence, to declare that bodies are non-spatial means that bodies are not really extended (in the external world), but only appear extended.

answer this question by examining the possibility that Leibniz may have utilized a variant of the "extension of power" doctrine, an hypothesis that Descartes and many Scholastics had employed as a means of explicating how an unextended immaterial being relates to extended matter. In various late metaphysical discussions, Leibniz refers to this doctrine and other related concepts within the context of discussing extension and the primitive and derivative force of monads. Given this added information, it will be argued that some of the key questions concerning the spatiality of monads, as well as the motivation underlying various aspects of Leibniz' theory, gain considerable insight and clarity. In short, the extension of power doctrine may constitute the best means of defending the real extension hypothesis.

While section 1 will survey the problem of monadic situation as well as various solutions that have been put forward by several prominent commentators, section 2 will present evidence for the extension of powers doctrine alongside an argument that relies on the important function of primitive and derivative force to explain how real extension can arise from monads.

1. The Interpretive Challenge Posed by Monadic Situation.

In his late metaphysics, Leibniz holds that monads are without parts, non-extended, and form composites or aggregates, which are merely collections of monads, i.e., bodies ("bodies are only aggregates", G VII 344; AG 319), and possess merely an ideal unity (G II 256). Yet, Leibniz also insists that bodies are the results of monads: "properly speaking, matter is not composed of constitutive unities [monads], but results from them" (G II 268; AG 179). Despite the fact that extended matter results from monads, Leibniz

repeatedly denies that monads are spatial: e.g., "there is no absolute or spatial nearness or distance between monads" (June 16, 1712; LDB 255), and, "monads in themselves do not even have situation with respect to each other—at least one that is real, which extends beyond the order of phenomena" (May 26, 1712; LDB 241-243). Yet, Leibniz also insists that monads retain a sort of derived position within matter: "although monads are not extended, they nevertheless have a certain ordered relation of coexistence with others, namely, through the machine which they control" (G II 253; L 531).[2]

Leibniz' puzzling claim, that monads have a certain type of situation in extension, has prompted various interpretations. One possibility is to lean heavily on the mind-based aspects of Leibniz' theory, as argued in Futch (2008):

> The solution . . . is to see Leibniz as assigning a monad the position of its body considered representationally, not realistically as an aggregate. . . . But it is the body as represented, as an intentional object, that confers on its representing monad a spatial position. (Futch 2008, 159-160)

Variants on this phenomenalist solution to the problem of monadic situation can be found in, among others, Rutherford (1995, 192) and Adams (1983, 242), with the emphasis placed on linking the "derived position" of monads in bodies, as we will call it, with the monad's own intentional, mind-dependent states. This interpretation is thus in accordance

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[2] While the topic of our investigation concerns the question of the spatial situation of Leibniz' monads in his later metaphysics, roughly from the late 1690s onward, it is worth noting that Leibniz' earlier work seems to support the same non-spatial status for souls/minds as one finds in the later output. In a tract from 1668-1670, he writes (in Cartesian vein) that "[w]hatever is not a body is not in space; for to be in space is the definition of a body" (L 113; G IV 110). The same outlook is likewise in evidence in the middle years, 1680s and 1690s: in *A New System of the Nature and the Communication of Substances*, from 1695 (G IV 477-487), Leibniz claims that "[m]inds thus have special laws that place them beyond the revolutions of matter" (L 455), i.e., after explaining that his pre-established harmony thesis forbids souls from "disturbing the laws" of matter, he nevertheless concludes that "[t]his makes it clear how the souls has its seat in the body by an immediate presence" (L 458).

with the "ideal" status that Leibniz attributes to the continuous and holistic notions, space and time: "For space is something continuous, but ideal, whereas mass is discrete, indeed an actual multiplicity, or a being by aggregation, but one from infinite unities [monads]. In actual things, simples are prior to aggregates; in ideals things, the whole is prior to the part" (September 6, 1709; LDB 141). Yet, while there is much merit to holding that monads have only a derived position in space, a realist about Leibnizian extension is left with few resources and little guidance in explaining how this hypothesis fits into their realist interpretation, i.e., the "real extension" hypothesis.[3]

In contrast, Daniel Garber has tried to rescue something like the view that monads possess a primary, as opposed to derivative, spatiality by recourse to several passages from the Des Bosses correspondence: first (July 21, 1707), "a simple substance, even though it does not have extension in itself, nonetheless has position, which is the foundation of extension" (LDB 99); and, second (April 30, 1709), "extension indeed arises from situation, but it adds continuity to situation. Points have situation, but they neither have nor compose continuity, and they cannot subsist by themselves" (LDB 125). Garber argues that these passages signal a transition in Leibniz' thinking from a view that bases extension on impenetrability and resistance, in the earlier metaphysics, to a new

[3] In Cover and Hartz (1994), the monadic situation puzzle is presented in the guise of a circularity argument: "having monads with spatial position is an essential part of the story about what it takes to have an aggregate, but having an aggregate with spatial location is an essential part of the story about what it takes to have spatially located monads" (308). This criticism would seem to be apt as regards Adams' account of aggregation (1983, 1994), where a body is reckoned to be an aggregate of "the substances whose positions are within some continuous three-dimensional portion of space", and hence "[t]his spatial togetherness is a necessary condition for any corporeal aggregation" (1994, 248-249). Yet, as Cover and Hartz note (1994, 308), if monads have no spatial position with respect to one another, then how can they partake in the "spatial togetherness" required for an aggregate?

conception that utilizes monadic position as the source of material extension, and which is coupled with the phenomenal/ideal perception of mathematical extension mentioned above:

> The position or situation of an infinity of monads now replaces the impenetrability and resistance of the earlier corporeal substance view, ... In this way we can hold that extension arises from situation. But the infinity of monads situated with respect to one another is discrete, and not continuous, of course. In imposing a full-blown Euclidean geometrical structure onto the world of situated monads, we are adding continuity. (Garber 2009, 361-362)

Consequently, it would seem to follow that monads exist in a sort of discrete ur-space, with a discrete distance among monads rather than a continuous Euclidean distance, although the contribution of the mind is responsible for our perceptions of a continuous Euclidean space.

There are numerous difficulties with this view, however. First, as Cover and Hartz argue (1994, 300), the 1707 quotation (LDB 99) that Garber employs as the basis of his interpretation only discusses extension, and not space, and so the position of the simple substance mentioned in the quote is likely a reference to its position in a body's extension, the latter being a well-founded phenomenon. Therefore, Leibniz' analysis in the 1707 passage is perfectly in keeping with his earlier explanations to De Volder that deem monads as having a derived spatiality in bodily extension (such as G II 253, quoted above). Second, if Garber's analysis is correct, and monads have position in a discrete ur-space, then monads would seem to reside in the points of that discrete space (since spatial points have situation in that discrete space, and are the basis upon which Euclidean extension is phenomenally imposed). But, in the 1709 letter to Des Bosses cited by Garber, Leibniz rejects the view that souls, which are often associated with monads (e.g., G IV 512-513), are in points: "I do not think it appropriate to regard souls as though in

points" (LDB 125). In response, Garber could claim that Leibniz is here rejecting the placement of souls in the points of Euclidean space, but is instead advocating that they are situated in the points of a discrete space—yet, as a counter-reply, it is not clear that a non-dimensional spatial point in a discrete space really differs at all from a non-dimensional point in a continuous space; nor is there any textual evidence to back up Leibniz' use of any such distinction. More importantly, not only does Leibniz specifically rebuff the idea that monads are in space in the subsequent correspondence with Des Bosses (see the various 1712 entries cited above), but he explains at great length that any assignment of spatiality to monads—nearness, distance, or that they are in points—is purely fictional and misguided:

> [T]here is no absolute or spatial nearness or distance between monads. To say that they are crowded together in a point or disseminated in space is to employ certain fictions of our mind when we willingly seek to imagine things that can only be understood. (to Des Bosses, 16 June, 1712; LDB 255; also, G III 623)

In short, the generality of Leibniz' argument would appear to cover all cases of the assignment of spatiality to monads, whether discrete or continuous, and thus a position or distance among monads in a discrete space would likely run afoul of this critique as well.

But the question remains, if monads are non-spatial, as the evidence of the texts indicates, then how do aggregates (i.e., bodies), which result from monads, acquire spatiality? One possibility is to simply deny that aggregates are spatial, rather, aggregate spatiality is a further contribution of the mind. This interpretational strategy does not lead to Berkeleyan-style idealism, argues Hartz, since an aggregate "is real, active, and has force" (Hartz 2007, 133). The reality posited to the monads in this reconstruction of Leibniz' system hence relates in some manner to force, which is physical (contra idealism). A somewhat different realist strategy that also denies the real extension of

bodies can be found in Rutherford (1990), an approach that places the emphasis on the constitutive relationship between monads and aggregates. While aggregates are "necessarily mind-dependent", Rutherford adds that "[i]t does not follow from this, however, that aggregates are nothing real; on the contrary, Leibniz maintains that in terms of their reality aggregates are to be identified with the plurality of things from which they result [monads]" (1990, 20). Put simply, the fact that monads are constitutive of matter and bodies, a point that Leibniz consistently invokes, is hard to square with idealism: if bodies are merely mental content, then why demand that "an aggregate is nothing other than all those things taken at the same time from which it results" (G II 256)?

Yet, for those who embrace the real extension hypothesis, Hartz and Rutherford's interpretations are unacceptable. For these realists, an interpretation of Leibniz' system must uphold the real extension of bodies, even if the continuous Euclidean extension by which we perceive and understand bodies is an ideal contribution of the mind. Given this presupposition, Garber's thesis that (secondary) matter is really discrete and non-continuous, despite our perceptions that impose a continuous structure, is a more plausible method of preserving real bodily extension. The trick, consequently, would then be to preserve something like Garber's notion of a discrete extended material world alongside Cover and Hartz' persuasive denial of monadic spatiality—a very tall order indeed. In what follows, we will examine important clues that can assist in the development of a truly spatial account of Leibnizian bodies, an aspect of Leibniz' metaphysics that has seldom received the attention it deserves.

2. Monads and the "Extension of Power"

This section develops an interpretation of Leibniz' later metaphysics that accepts that bodies are really extended, although the form of that extension is not identical with geometrical/mathematical extension. It should be noted, however, that the interpretation offered in this section is only one possible strategy for upholding the real extension of Leibnizian bodies, and hence its success or failure does not in itself affect the relevance of the key doctrine that we shall introduce, the extension of power, for addressing the monadic situation problem. In contrast, the extension of power doctrine probably offers little advantage for those realist interpretations that deny the spatiality of both monads and bodies, although it might be useful in understanding the historical and conceptual backdrop to Leibniz' comments on the non-spatiality of monads (i.e., outside of their derived spatiality in matter).

2.1. Incorporeal Beings and Space. Important clues as to what exactly may be driving Leibniz' puzzling conception of the non-spatiality of monads can be found in many late period works, including a discussion in the *New Essays* on the ways that a being can be related to place or space:

> The Scholastics have three sorts of *ubeity,* or ways of being somewhere. The first is called *circumscriptive.* It is attributed to bodies in space which are in it point for point, so that measuring them depends on being able to specify points in the located thing corresponding to points in space. The second is the *definitive.* In this case, one can "define"—i.e. determine—that the located thing lies within a given space without being able to specify exact points or places which it occupies exclusively. That is how some people have thought that the soul is in the body, because they have not thought it possible to specify an exact point such that the soul or something pertaining to it is there and at no other point. Many competent people still take that view. . . . What should be said about angels is, I believe, about the same as what is said about souls. The great Thomas Aquinas believed that an angel can be in a place only through its operations [upon what is there], which on my theory are not immediate and are just a matter of the pre-established harmony. The third kind of ubeity is *repletive.* God is said to have it, because he fills the entire universe in a more perfect way than minds

> fill bodies, for he operates immediately on all created things, continually producing them, whereas finite minds cannot immediately influence or operate upon them. (NE:II.xxiii.21)

While circumscriptive ubeity maps bodies to space over an extended region in a point by point manner, and definitive ubeity only links a spiritual being to a specific place or point within that region, Leibniz opts for repletive ubeity, wherein God "operates immediately" by continually producing things that exist in space. Much in this discussion, as the context makes clear, concerns finite souls and angels and how they relate to material bodies, whereupon Leibniz worries that the definitive account entails that souls can act immediately upon the things in space, with "immediately" pertaining to the soul's acting directly upon things. In contrast, Leibniz prefers a view where "finite minds cannot immediately influence or operate upon" bodies, and he offers his theory of pre-established harmony as an instance of this better strategy.

In the particular correspondence with Des Bosses that we have often explored (April 30, 1709), many of these issues resurface in the context of material extension and souls/monads:

> Nevertheless, I do not think it appropriate to regard souls as though in points. Perhaps someone might say that souls are not in place but through operation, speaking here according to the old system of influx; or rather, according to the new system of preestablished harmony, that they are in place through correspondence, and that in this way they are in the whole organic body that they animate. On the other hand, I do not deny a certain real metaphysical union between the soul and an organic body . . . according to which it can be said that the soul is truly in the body. . . . You realize, though, that until now I have been speaking here not of the union of an entelechy or active principle with primary matter or passive power, but the union of the soul or of the monad itself (which results from both principles) with mass, or with other monads. (LDB 123-127)

Once again, Leibniz offers his notion of pre-established harmony as preferable to the view that souls are "in place but through operation", which he equates with the "old

system of influx". What is important, in these last few quoted passages, is that Leibniz does not openly reject the operation of monads, i.e., that a being can be in space only through its operation, a doctrine also known as "extension of power"[4] (hereafter, EP); rather, as is more clearly stated in the prior citation from the *New Essays,* what Leibniz rejects is the *immediate* operation of soul on body, which he associates in the Des Bosses letter with the system of physical influx. As is well-known, a basic principle of Leibniz' philosophy is the denial that substances can causally interact: e.g., "[s]trictly speaking, one can say that no created substance exerts a metaphysical action or influx on any other thing" (*Primary Truths,* 1686, C 521; AG 33).

To summarize, it is for reasons relating to his denial of inter-substance or inter-monadic causation that Leibniz sides with pre-established harmony. Yet, leaving aside the inter-monadic causation issue, Leibniz' reference to the "the old system of influx" would seem to draw a close analogy between, on the one hand, the monad-matter relationship, and, on the other, the immaterial being-matter relationship in those older

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[4] In use during the Medieval period, the origin of the term "extension of power" is unclear, but other descriptions include "presence of power", "virtual extension", and "virtual presence". There is an additional issue involved with EP that concerns whether the essence that operates immediately must be "really" present where it acts, as Aquinas and many others had held, or whether the essence need not be really present, as Scotus and Middleton had argued (see, Grant 1981, 146-147, for a brief survey). In the 1692 correspondence with Pellisson, Leibniz defends the former thesis, stating that "everything that operates immediately in several places also is in several places by a true presence of its essence, and that the immediate operation cannot be judged to be distant from the individual that operates, since it is a manner of being of it" (A.I.vii.294; Adams 1994; 357). In these letters, Leibniz even defines EP as the essence acting non-immediately, i.e., at a distance: "A presence by power [*presence virtuelle*], as opposed to a real presence, must be without that immediate application of the essence or primitive force, and happens only by actions at a distance or by intermediate operations" (A.I.vii.249; Adams 1994, 356). Yet, by the Des Bosses correspondence, he seems to have reversed himself, such that immediate operations could be at a distance: "if God should bring it about that something immediately operates at a distance, by that fact he would bring about its multipresence" (May 2, 1710; LDB 171).

instances of EP. Leibniz seems willing to concede the general point that a finite entity, soul, angel, or monad, can be conceived as in place through its operations, but only in so far as those operations are not immediate, i.e., there is no influx or real causal interaction, since the influx has been replaced by the mediation of God's providence in establishing the harmony between the soul and its operations. In contrast, since God "operates immediately on all created things" by "continually producing them" (NE:II.xxiii.21), EP straightforwardly applies to God. There are several other notable instances in the later Leibnizian corpus where God's immediate operation is addressed:

> God is not present to things by situation but by essence; his presence is manifested by his immediate operation. The presence of the soul is of quite another nature. To say that it is diffused all over the body is to make it extended and divisible. To say it is, the whole of it, in every part of the body is to make it divisible of itself. To fix it to a point, to diffuse it all over many points, are only abusive expressions, *idola tribus.* (Leibniz and Clarke 2000, 16-17; LC.III.12)

> Where space is in question, we must attribute immensity to God, and this also gives parts and order to his immediate operations. He is the source of possibilities and of existents alike, the one by his essence and the other by his will. (NE:II.xv.2)

In short, God is "not present to things by situation but by essence", yet "his presence is manifested by his immediate operations", i.e., his immediate operations are given "parts and order" in space even though God is not actually situated in space (and where God's "immensity", as used by Leibniz, would seem to pertains to the ontological dependence of matter and space on God; see, LC.V.106). Therefore, to claim that God is present to things by essence is to claim that God's immediate operations are situated in space, with God's essence serving the more general metaphysical role of grounding the possibility of any existing thing. This reading seems to be upheld later in the correspondence with Clarke, for Leibniz rejects the view that "God discerns what passes in the world by being present to the things", rather, God discerns things "by the dependence on him of the

continuation of their existence, which may be said to involve a continual production of them" (2000, 56; LC.V.85). Accordingly, since God's immediate operation correlates with the continual production of the material world, the world's spatial order thereby situates that continual act of production. Returning to the Leibniz-Clarke passage examined above (LC.III.12), Leibniz then goes on to deny that either a soul is diffused "all over a body", which doubtless equates with circumscriptive ubeity in NE:II.xxiii.21, or that a soul is, "the whole of it, in every part of the body", which is consistent with, although not identical to, his account of definitive ubeity in the same *New Essays* passage (i.e., the "whole in every part" doctrine would include definitive ubeity as used by Leibniz).

For understanding the vexed subject of monadic situation, the ramifications of EP are quite significant, although few commentators have ventured into this territory. Since Leibniz uses the terms "soul" and "monad" interchangeably in his late period, *if* "souls are not in place but through operation, speaking here according to the old system of influx" (LDB 125)—i.e., the immediate operation of monads is hypothetically endorsed—then monads are, like God, in place/space by way of their operation, but not themselves situated in space. In short, while Leibniz does not strictly sanction EP for monads, his comments would seem to admit that the relationship between his non-spatial, non-situated monads and extended bodies is like the relationship between the non-spatial, non-situated immaterial beings and extended bodies in the older influx EP theory, but excluding the influx component of the older theory, of course. This interpretation, which would uphold the non-situated component of immaterial beings in the original influx formulation of the EP hypothesis, thereby explains why monads only have a derived

position in space, i.e., through the body which they control.

In brief, the main argument of this essay is that Leibniz' puzzling reference to the derived position of monads in extended bodies is best understood as a non-influx, pre-established harmony version of EP. Contra Garber, monads are not in space *per se,* i.e., situated in space, although their operations are situated in space, just as God is not in space but God's operations are situated. Specifically, because Leibniz states in LDB 127 that "the union of the soul or of the monad itself . . . with mass, or with other monads" is the context under which he concedes that monads are in place through their operation (under the influx construal), and since mass is associated with extended secondary matter or aggregates (e.g., G II 252; AG 177), the monads are only in place by means of mass/secondary matter. This inference correlates perfectly with his claims concerning the derived situation of monads: "although monads are not extended, they nevertheless have a certain ordered relation of coexistence with others, namely, through the machine which they control" (G II 253; L 531). Furthermore, the fact that the monads themselves are not situated is consistent with the "real extension" hypothesis presented in section 1, where Leibnizian bodies are really extended but perhaps lack the continuous structure of geometrical extension. Hence, while rebuffing Garber's view that monads are actually situated in space, the EP doctrine can provide support for Garber's more general notion that there are non-continuous, discrete extended bodies. To sum up, given the non-influx version of EP suggested above, the only aspect of a theory that posits real extension to bodies that must be sacrificed is the real or actual situation of the monads in matter, and hence in space: like God, monads are not situated in space although their operations are situated. In the next section, we will take up monadic operation in more detail, but further

textual evidence will be examined first.

Besides the *New Essays* and Des Bosses correspondence, there is additional support for the above interpretation of EP in the transubstantiation debate with Pellisson in 1692, an issue that Adams addresses at length (1994, 350-358). Despite its early date, and the specific worries associated with the multi-location of the Eucharist, the Pellisson correspondence is worth quoting for the extra details it supplies:

> [I]t is by the application to several places of this [higher] principle [of action and resistance], which is nothing but the primitive force of which I have spoken, or (to speak in more ordinary terms) the particular nature of the thing, that the multipresence of a body is to be saved. It is true, however, that the substance *in concreto* is something other than the Force, for it is the subject taken with that force. Thus the subject itself is present, and its presence is real, because it emanates immediately from its essence, as God determines its application to the places. . . . I would even say that it is not only in the Eucharist, but everywhere else, that bodies are present only by this application of the primitive force to the place; but this occurs naturally only in accordance with a certain extension, or size and shape, and in regard to a certain place, from which other bodies are excluded. (A.I.vii.249; Adams 1994, 355)

The story that Leibniz tells is that God applies primitive force to a place (or places) in order to bring about the presence of a body or substance in that place (or multiple places); i.e., the subject *in concreto* that, besides being a part of this force, has a "real" presence that emanates from its essence, with "essence" identified with primitive force. While this topic will be taken up in the next section, how the subject comes about from primitive force, and obtains a real presence, must implicate derivative force, but the Pellisson letters leave this process unexplained. At this stage in his thinking, consequently, not only is the essence (i.e., primitive force) of a body present in the body's place, but, in fact, the same essence can be in several different places simultaneously, thereby demonstrating that the normal restrictions on location and spatiality do not apply to primitive force (with primitive force roughly equivalent to a substantial form; see, e.g., G IV 512-513; AG

162-163). Whether Leibniz continues to insist that the essence needs to be present in this manner to operate immediately seems unclear given the evidence of later texts, it should be noted (see endnote 4). Nevertheless, there are obvious similarities here with Leibniz' later claim, in LC.III.12, that God's essence is present to things but only his immediate operations are situated in space—and this lends support to the conclusion that his later monadic metaphysics is roughly analogous to his conception of God's EP, as argued above.

Confirmation of this reading of the evidence can likewise draw upon Adam's insightful commentary on the Pellisson correspondence, although it is interesting to note that he overlooks the relevance of these issues to the problem of monadic situation. After observing that, in these texts from the 1690s, Leibniz had "already rejected the system of influence in favor of that of pre-established harmony, but in which he nonetheless ascribed to primitive forces (doubtless including souls) a local presence by immediate operation", Adams concludes that, by the later Des Bosses correspondence, "being in a place by (immediate) operation, as affirmed in the 1690s, is reduced to being in a place by correspondence" (Adams 1994, 357). Not only is this inference justified, but, as argued above, it holds the key to understanding the monadic situation puzzle. However, rather than apply these findings to his own discussion of monadic situation (1994, 248-255), Adams offers the "spatial togetherness" criterion instead (see section 1).

There is also evidence to support the view that monadic operation, or a surrogate notion, is a factor in other well-known Leibnizian tracts. In these works, various enigmatic discussions that pertain to the "activity" of monads, or monadic change, assume the role that the monadic operation idea had played under the influx theory. For

instance, in the June 20, 1703 letter to De Volder, which contains his oft cited endorsement of the derived position of monads (within extended matter), he states:

> I had said that extension is the order of possible coexistents and that time is the order of possible inconsistents. If this is so, you say you wonder how time enters into all things, spiritual as well as corporeal, while extension enters only into corporeal things. I reply that the relations are the same in the one case as in the other, for every change, spiritual as well as material, has its own place, so to speak, in the order of time, as well as its own location in the order of coexistents, or in space. For although monads are not extended, they nevertheless have a certain ordered relation of coexistence with others, namely, through the machine which they control. (G II 253; L 531)

That "every *change,* spiritual as well as material" has a situation in space is quite significant, for what can spiritual change mean, in the *context* of a discussion of monads, if not monadic change or monadic activity? An objection that might be raised is that spiritual change refers to God's activity in this excerpt. Nevertheless, there is another piece of evidence that more directly cites monadic change:

> There are simple substances everywhere, actually separated from one another by their own actions, which continually change their relations; and each distinct simple substance or monad, which makes up the center of a composite substance (an animal, for example) and is the principle of its unity, is surrounded by a *mass* composed of an infinity of other monads, which constitutes the *body belonging to* this central monad, through whose properties the monad represents the things outside it, similarly to the way a center does. (*Principles of Nature and Grace,* 1714; G VI 598; AG 207).

To insist that monads are "actually separated from one another by their own actions" provides further support for the spatiality of monadic activity or change, especially when it is recalled that by this date, 1714, Leibniz has repeatedly claimed that monads themselves are not in space. Put differently, how can the non-situated monads be *actually separated* by their own actions?: the answer, of course, is that he is still wedded, to some degree, to the extension of powers doctrine, EP, although the powers assumed in his theory now refer to monadic activity. One might reply that the term "separation"

employed in this last quote may signify a mere difference in internal properties, with no spatial connotations intended. Yet, in addition to the context, which implies a straightforward spatial interpretation, such a reading is difficult to justify given the many other spatial terms utilized throughout the discussion—e.g., "everywhere", "center", "surrounded", "outside"—all of which strongly suggests that "separation" is meant in its normal spatial sense.

2.2. Monadic Activity and Derivative Force. At this point in our analysis, it is worthwhile to more closely examine the analogy between God's immediate operation and monadic operation. As we have seen, God's continuous production of the world situates that act in space, even though God is not in space. For the advocates of a realistic account of Leibnizian extended bodies, such as Garber's discrete body hypothesis, it would seem that this analogy should serve as the foundation of an EP-centered account of the monadic-matter relationship: monads are not in space but their operations are situated in space via extended matter. But, turning to the operation of monads, since Leibniz accepts the pre-established harmony view, whereby everything that happens is internal to a monad, it might appear that there is little similarity between God's immediate operation, which creates matter, and monadic operation, which only involves the internal properties of monads. As noted above, Leibniz brings up the older influx-based notion of the operation of monads when discussing "the union of the soul or of the monad itself . . . with mass, or with other monads" (LDB 127), and the Leibnizian concept that fits this aspect of Leibniz' theory is aggregation. But, while bodies depend on the aggregation process, aggregation is obviously not an internal aspect of monads. Nevertheless, besides aggregation, there is one aspect of the story of how extended bodies result from monads

that would appear comparable to an internal monadic operation or activity, namely, the role of force, both primitive and derivative. In the remainder of this essay, we will strive to elucidate how primitive and derivative force might function as a monadic operation within the context of the rise of extended matter, and thereby provide a means for understanding how a monad's operation might be comparable to God's immediate operation. Overall, this final section of our investigation is quite tentative, largely due to the difficult nature of the relationship between primitive and derivative force, an aspect of Leibniz' system that is itself quite tentative and seems to have been constantly evolving. Consequently, what follows is merely a suggestion of what elements in Leibniz' system might correlate with a monad's activity or operation.

In several later works, including the correspondence with De Volder, there are tantalizing hints that incorporate the function of derivative force in Leibniz' aggregation hypothesis:

> [T]he nature which is supposed to be diffused, repeated, continued [i.e., to form extension of bodies via aggregation], is that which constitutes the physical body; it cannot be found in anything but the principle of acting and being acted upon, since the phenomena provide us with nothing else. . . . But when force is taken for the principle of action and passion, and is therefore something modified through derivative forces, that is, something modified through that which is momentary in action, you can understand well enough from what has been said that this principle is bound up with the very notion of extension, . . . [U]nless there is some active principle in us, there cannot be derivative forces and actions in us, since everything accidental or changeable ought to be a modification of something essential or perpetual, nor can it contain anything more positive than that which it modifies, since every modification is only a limitation, shape a limitation of that which is varied, and derivative force a limitation of that which brings about the variation. (June 30, 1704; G II 268-270; AG 179-180)

Primitive force, as the principle of action and passion, is "modified through derivative force" in such a way that derivative force is "that which is momentary in action"; and, since primitive force is "essential or perpetual", derivative force is a mere limitation,

adding nothing positive, as shape is a "limitation of that which is varied". For understanding how monadic operation or activity might relate to the formation of extended matter, the references to primitive force as the principle of action, and derivative force as what is momentary in action, is crucial, for it brings together monadic action or operation and primitive/derivative force, the latter implicated in the account of extended matter ("this principle [primitive/derivative force] is bound up with the very notion of extension").

Accordingly, Leibniz' somewhat perplexing idea of the derived position of monads in extended matter, first explored in section 1, gains a great deal more clarity when the role of derivative force is incorporated into the picture: "For although monads are not extended, they nevertheless have a certain ordered relation of coexistence with others, namely, through the machine which they control" (G II 253; L 531). While monads are not spatial, derivative force is coupled to the phenomena of extended bodies, which are aggregates of monads, or secondary matter: "the derivative force of being acted upon later shows itself to different degrees in secondary matter" (GM VI 236; AG 120). So, monads are not situated in space, but their effects or "results" are spatial via the extended bodies that come about from derivative force. This last inference would seem to explain Leibniz' statement that "I relegate derivative forces to the phenomena" (AG 181), a claim which has puzzled commentators (e.g., Garber 2009, 363), but which makes perfect sense given that extended bodies, i.e., well-founded phenomena, are ultimately manifestations or instantiations of primitive force (via derivative force). Derivative force, in turn, is then associated with the diffusion process: "[T]he nature which is supposed to be diffused, repeated, continued, is that which constitutes the physical body; it cannot be found in

anything but the principle of acting and being acted upon [i.e., primitive force], since the phenomena [i.e., a determinate value of primitive force = derivative force] provide us with nothing else" (G II 268; AG 179). Consequently, the means by which the non-spatial monads obtain spatiality involves derivative force, since extended secondary matter is ultimately linked to derivative force. Therefore, to return to the God-monad analogy, a parallel case can be made since both God's immediate operation and a monad's non-immediate operation or activity are associated with the rise of extended matter, although in different ways. Unlike God's immediate operation, a monad's activity does not involve the creation of an entirely new entity, but this is consistent with the difference between an immediate operation and a non-influx version of monadic operation conceived along the lines of an internal feature of monads—i.e., derivative force as a determinate value of the primitive force internal to each monad.[5]

3. Conclusion.

[5] It is also worthwhile comparing Leibniz and Descartes on EP, for Descartes had sanctioned that doctrine with respect to God, angels, and minds (souls). In his late correspondence with More, Descartes asserts that "[f]or my part, in God and angels and in our mind I understand there to be no extension of substance, but only extension of power. An angel can exercise power now on a greater and now on a lesser part of corporeal substance; but if there were no bodies, I could not conceive of any space with which an angel or God would be co-extensive . . ." (CSMK, 372-373; AT V 342-343). There is a certain similarity here in that the power of Descartes' spiritual beings and the primitive force of Leibniz' monads still remain even if there are, respectively, no actual Cartesian bodies or no limitation imposed on the primitive force, i.e., derivative force as a particular value of primitive force. On the other hand, while Cartesian matter can exist apart from a spiritual beings' EP, Leibniz' force-based conception of matter, especially secondary matter, denies this possibility. Leibniz was familiar with various works of More (e.g., *The Immortality of the Soul,* see, A.VI.iv.1678-1680), as well as the Descartes-More correspondence (L 342; G II 117). Nevertheless, given Leibniz' knowledge of Scholastic metaphysics, he was almost certainly well acquainted with the EP doctrine and its alternatives apart from the Descartes-More correspondence.

To summarize the main argument of this essay, the extension of power doctrine provides one of the most plausible explanations for the conjunction of Leibniz' claims about the non-spatiality of monads with his additional stipulation that monads have a derived position in bodies: e.g., the conjunction of (i), "monads in themselves do not even have situation with respect to each other—at least one that is real, which extends beyond the order of phenomena" (LDB 241-243); and (ii), "for every change, spiritual as well as material, has its own place, so to speak, in the order of time, as well as its own location in the order of coexistents, or in space. For although monads are not extended, they nevertheless have a certain ordered relation of coexistence with others, namely, through the machine which they control" (G II 253; L 531). While some commentators have striven to account for both (i) and (ii) through appeal to the cognitive aspects of Leibniz' theory (see section 1), this strategy does not in itself provide a solution for those realists who accept a world of really extended Leibnizian bodies (such as Garber), nor does it explain how the non-cognitive metaphysical/physical description of monadic situation fits into Leibniz' overall plan. That is, for those realists who merely accept the existence of an external world apart from the mind (i.e., who reject the Berkeleyan fully idealist interpretation but deny really extended bodies), our analysis can supply the historical and metaphysical backdrop that motivated these discussions. On the other hand, some commentators who accept the reality of extended bodies (once again, Garber) insist on the spatiality of monads, but that position directly contradicts (i). In contrast, for those who accept the reality of extension (and granting the ideality of geometrical extension), the Leibnizian version of EP developed in this essay provides a straightforward and satisfactory explanation of both the non-spatiality of the monads and their derived

situation in matter. While monads are not situated in space, their activity is situated in secondary matter, and hence monads possess a derivative spatiality via their activity—and this conclusion is in perfect accordance with the basic idea behind the extension of power doctrine.

Of course, there is only indirect evidence in support of an EP conception of monadic activity, although, as argued above, that evidence is both mutually consistent and, in some discussions, compelling: e.g., "[p]erhaps someone might say that souls are not in place but through operation, speaking here according to the old system of influx" (LDB 123). That Leibniz does not openly reject this interpretation is important, and, since his main objections concern an influx of powers among substances, this suggests that a non-influx variant of EP, as a sort of pre-established harmony version of EP, is consistent with his monadic metaphysics. While not conclusive proof, the advantage of a non-influx EP interpretation, once again, is that it reconciles a realism concerning Leibnizian extended matter with the non-spatiality of monads, whereas the alternative conceptions are either inconsistent with the textual evidence or limited to just the cognitive-based aspects of Leibniz' system in their explanation of the external world. The extension of power doctrine, a long neglected theme in the complex story that is Leibniz' monadology, thus offers a more successful method of reconciling a commitment to realism with the mystery of monadic situation than any previous interpretation.

ABBREVIATIONS

[C]: (1903). *Opuscules et fragments inédits de Leibniz,* ed. by L. Couturat. Paris.

[A]: (1923). *Sämtliche Schriften und Briefe,* ed. by Akademie der Wissenschaften der DDR. Darmstadt and Berlin: Akademie-Verlag. Cited with series, volume, and page.

[GM]: (1962). *Leibnizens mathematische schriften,* ed. by C. I. Gerhardt. Hildesheim: Olms. Cited with volume, page.

[G]: (1965). *Die philosophischen schriften von Leibniz,* ed. by C. I. Gerhardt. C. I. Hildesheim: Olms. Cited with volume, page.

[L]: (1969). *Leibniz: philosophical letters and papers,* 2nd ed., ed. and trans. by L. E. Loemker. Dordrecht: Kluwer.

[AT]: (1976). Descartes, R. *Oeuvres de Descartes,* ed., C. Adams and P. Tannery. Paris: J. Vrin. Cited with volume, page.

[AG]: (1989). *Leibniz: philosophical essays,* ed. and trans. by R. Ariew and D. Garber. Indianapolis: Hackett.

[NE]: (1996). *New Essay on Human Understanding,* ed. and trans. by P. Remnant and J. Bennett. Cambridge: Cambridge University Press. Cited with book, chapter, section.

[LC]: Leibniz, G. W. and S. Clarke (2000). *Leibniz and Clarke Correspondence,* ed. and trans. by R. Ariew. Indianapolis: Hackett. Cited with letter and section.

[LDB]: Leibniz, G. W. and B. Des Bosses. (2007). *The Leibniz-Des Bosses Correspondence,* ed. and trans. by B. Look and D. Rutherford. New Haven: Yale University Press.

[AT]: Descartes, R. (1976). *Oeuvres de Descartes,* ed. by C. Adams and P. Tannery. Paris: J. Vrin.

[CSMK]: Descartes, R. (1991). *The Philosophical Writings of Descartes, Vol.3, The Correspondence,* eds. and trans. by J. Cottingham, et al. Cambridge: Cambridge University Press.

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