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## **Immaterial Mechanism in the Mature Leibniz**

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**Abstract:** Leibniz standardly associates “mechanism” with extended material bodies and their aggregates. In this paper, I identify and analyze a further distinct sense of “mechanism” in Leibniz that extends, by analogy, beyond the domain of material bodies and applies to the operations of immaterial substances such as the monads that serve, for Leibniz, as the metaphysical foundations of physical reality. I argue that in this sense, Leibniz understands “mechanism” as an intelligible process that is capable of providing a sufficient reason for a series of changes. I then apply these findings to enrich our understanding of Leibniz’s well-known mill argument in *Monadology* ¶17: although material machines and mechanisms cannot produce perceptions, the perceptual activity of immaterial monads is to be understood as “mechanical” according to this analogical sense.

### **1. Introduction**

In a letter to the Jesuit Bartholemew Des Bosses written on August 19, 1715, Leibniz characterizes the activities of monads, the immaterial perceiving unities that underlie and found physical phenomena, as taking place “by means of a certain eminent mechanism” (“*mechanismo quodam eminente*”) (LB: 349/GP.II: 503). This formulation ought to surprise readers of Leibniz’s mature period metaphysics, which relies on a systematic distinction between the physico-mechanical character of bodies and metaphysical character of immaterial substances:

where bodies are extended and passive, immaterial substances are unextended and active (AG: 191/GP.VI: 506; AG: 264/GP.VI: 588); where bodies are aggregates, immaterial substances are simple, partless unities (AG: 262–63/GP.VII: 586; AG: 319/GP.VII: 344); where bodies obey efficient causes, immaterial substances obey final causes (L: 478–79/GP.VII: 273; AG: 223/GP.VI: 620; AG: 319/GP.VII: 344).<sup>1</sup> Indeed, as, Leibniz argues in *Monadology* ¶17, a passage known as “Leibniz’s Mill,” physical mechanisms like mills are incapable of explaining the existence of perception, a task for which he turns to immaterial monads (AG: 215/GP.VI: 609–10; Lodge and Bobro 1998; Blank 2010; Landesman 2011; Duncan 2012; Lodge 2014; Rozemond 2014). Indeed, as Paola Rumore puts it in a recent article,

But as substances for Leibniz were per definitionem active and perceiving beings, the idea of applying mechanical explanation to the realm of substances could only mean considering it as mere passivity and would therefore lead to a form of bad materialism, as stated through the notorious mill-experiment in the *Monadology*. Without condemning mechanism itself, Leibniz distinguishes between two levels: the metaphysical level of substance, which is the level of activity and which excludes any form of mechanism (which should not be confused with the active form of determinism he accepts); and the level of phenomena, that is, the physical realm of bodies as aggregates of monads, which is governed by the mechanical laws of nature. 2016: 928–29

In what sense, then can the activities of monads obey a form of “mechanism” for Leibniz?

The answer to this question lies in an ambiguity in Leibniz’s understanding of “mechanism.” In Leibniz, as we have seen, “mechanism” is typically associated with the interactions and changes of extended material bodies and their aggregates (Bolton 1998; Rumore 2016). “Mechanical” explanations analyze these interactions according to efficient causes and

are contrasted with forms of physical explanation that employ substantial forms and final causality. On this point, Leibniz concurs with the tradition of the seventeenth-century “mechanical philosophy,” arguing that when it comes to explaining physical phenomena, Scholastic explanations in terms of forms and final causality are fundamentally “obscure” and unintelligible, while “mechanical” explanations in terms of efficient causes render the motions of bodies intelligible.<sup>2</sup> Taken in this standard sense, “mechanism” is undeniably incompatible with the nature of a simple, immaterial substance such as a monad. We can also identify, however, a further analogical sense of “mechanism” in Leibniz that extends the intelligibility associated with standard mechanical explanations of bodily phenomena beyond the efficient causal interactions of material bodies, and that this sense aligns with what Rumore refers to in the above-quoted passage as the “active form of determinism” present at the metaphysical level (2016, 929). I argue that Leibniz does so in order to stress the intelligibility, as opposed to obscurity, of immaterial activity, specifically with respect to their capacity to actively produce and provide a sufficient reason for a series of changes. Indeed, as we will see, Leibniz’s point in the letter to Des Bosses is that monads provide a metaphysical foundation for physical reality and generate perceptions in an intelligible fashion inasmuch as they operate according to “a certain eminent mechanism.”

In addition to the aforementioned letter to Des Bosses, I draw attention to two other examples from Leibniz’s mature period corpus that exemplify this analogical sense of mechanism. These examples include a passage from *On the Ultimate Origination of Things* (1698) in which he attributes God’s choice to create this world to a “metaphysical mechanism” (AG: 151/GP.VII: 304), as well as Leibniz’s repeated characterization of immaterial substances as self-moving “spiritual automata” on analogy with self-moving mechanical devices (WF: 18–

19/GP.IV: 485; T: 52/GP.VI: 131; T: 403/GP.VI: 356; W: 11–12/AG: 279; AG: 215/GP.VI: 610; Serres 1968, 490–511; Giglioni 1995; Noble 2017a). While the passages from the Des Bosses letter and the *Ultimate Origination of Things* see Leibniz directly attributing this analogical sense of “mechanism” to immaterial substances, both created and divine, the concept of the spiritual automaton illustrates Leibniz’s willingness to draw on the explanatory power of physical mechanism in order to shed light on the activities of immaterial substances by likening their mode of operation to that of physical machines.

In drawing attention to these examples, I do not intend to resolve many of the important interpretive challenges posed by Leibniz’s account of spontaneous substantial activity. Such challenges have been the subject of much recent discussion amongst scholars of Leibniz, and range from determining the precise nature of intra-monadic causation (Carlin 2006; Rozemond 2009; Whipple 2010; Jorati 2017), to understanding how Leibniz tries to balance freedom and determinism (Murray 2005; Greenberg 2005; Jorati 2017: 114–47), to identifying whether or not substances desire each of the successive perceptions that they spontaneously generate (Rutherford 2005; Bolton 2013; Jorati 2015, 2017). Rather, my goal is to show that, these examples express a real, if not always readily apparent, tendency in the mature Leibniz to posit a form of “mechanism” that extends beyond the structure, function, and interactions of material bodies to the nature and activity of simple, immaterial entities. In so doing, I aim to shed new light both on Leibniz’s account of the immaterial substance and on his understanding of the nature and meaning of mechanism.

I first analyze Leibniz’s conception of the soul as a “spiritual automaton” in the *New System of the Nature and Communication of Substances* and the controversies directly following its publication in 1695. Based on Leibniz’s comparison between the activity of the spiritual

automaton and the operation of a mechanical clock, I show that the “spiritual automaton” essentially involves an analogy between immaterial substances and self-moving physical machines or automata. Immaterial substances are machine-like in the specific sense of producing a continuous series of well-ordered changes. I then analyze Leibniz’s attribution of “eminent mechanism” to monads in the letter to Des-Bosses as well as his account of God’s choice to create this world as following from a “metaphysical mechanism” within the Divine nature. Like the spiritual automaton, what is key in both cases is that an immaterial entity is capable of actively producing a series of phenomena in a way that is intelligible. I then test these findings against Leibniz’s claims regarding mechanism and perception in “Leibniz’s Mill,” arguing that we can read the latter as in fact suggesting that we use “mechanism” taken in this analogical sense to understand the perceptual activities of immaterial substances.

## **2. Bodily and Spiritual Automata**

Leibniz first characterizes the soul as a “spiritual automaton” in 1695’s *New System of the Nature and Communication of Substances*.<sup>3</sup> In the text, this characterization plays an important role in Leibniz’s theory of the unity of soul and body, according to which the respective states of soul and body correspond without any direct influence. This view, which will come to be known as the “preestablished harmony” posits that soul and body operate according to distinct sets of laws, and while the body is a complex mechanical automaton, the soul is a simple “spiritual automaton.”<sup>4</sup> In this section, I situate Leibniz’s concept of the soul as a “spiritual automaton” in its context within the *New System*, and then show, on the basis of controversies in which Leibniz engaged subsequent to its publication, that in characterizing the soul as an “automaton,” Leibniz

intends to draw an analogy between the well-ordered functioning of a self-moving mechanical device and that of the soul.

In the *New System*, Leibniz presents his solution to the Cartesian mind-body problem, the “theory of agreements” or “concomitance”, later the “preestablished harmony”, as an alternative to two competing theories: that of “influence” and “occasional causes” (O’Neill 1993; Brown 1996; Look 2011: 174–79). The former posits direct influence between body and soul, whereas the latter makes God responsible for inter-substance causation. For Leibniz, mutual influence is unintelligible: “For I could find no way of explaining how the body can make something pass over into the soul or vice versa, or how one created substance can communicate with another” (WF: 17/GP.IV: 483). Occasionalism, by contrast, while possible is nevertheless implausible: since occasionalism has God move bodies in accord with souls’ volitions, Leibniz claims it implausibly renders God a *deus ex machina* continuously making miraculous exceptions to the laws of nature (Jolley 2005; Rutherford 2013). Instead, Leibniz proposes that each substance acts spontaneously, and “everything in it arises from its own nature [...] and yet with a perfect *conformity* to things outside it” (WF: 17–18/GP.IV: 484; Rutherford 2005; Bolton 2013; Jorati 2015, 2017). The conformity between body and soul produces the appearance that they interact. Thus, body and soul are ontologically distinct entities whose activities have been predetermined by God to unfold in mutual harmony.

In this context, Leibniz conceives living bodies as infinitely complex “machines of nature” (Fichant 2003; Smith 2011; Nachtomy 2011; Duchesneau 2011; Phemister 2011). In contrast with human machines, machines of nature are infinitely complex machines designed by God. Each part or organ is itself a new machine of nature, generating a structure composed of machines “even in its smallest parts”:

It needs to be recognized, then, that nature's machines have a truly infinite number of organic parts, and are so well provided for and proof against all accidents that it is not possible to destroy them. A natural machine is still a machine even in its smallest parts; and, what is more, it always remains the same machine it was, being merely transformed by being packed up in different ways; sometime extended, sometimes contracted and as it were concentrated, when we think that it is destroyed. WF: 16/GP.IV: 482

According to the preestablished harmony, God designs each machine of nature to carry out an ordered series of motions over the course of its life. This conception of body provides Leibniz with a way of distinguishing living from non-living bodies and furnishes a proof for God's existence insofar as God's design is a necessary condition of the body's physical structure.

Here Leibniz characterizes the soul or immaterial substance corresponding to the machine of nature as a "spiritual automaton." As he explains in the *New System*, over the course of his philosophical development, he had become convinced that it was necessary to rehabilitate Scholastic notions of forms in order to explain the forms of unity present in nature. These forms play the role of souls, providing metaphysical unity and activity to the body. In explaining the theory of agreement between soul and body, Leibniz argues that God can create the soul in such a way that it produces its perceptions by its nature alone. Further, it is possible for God to create a soul whose spontaneous activity is ordered to correspond with what happens in the body:

This hypothesis is certainly possible. For why could not God give to a substance at the outset a nature or internal force which could produce in it in an orderly way (as in a spiritual or formal automaton; but a free one, in the case of a substance which is endowed with a share of reason) everything that is going to happen to it, that is to say, all the

appearances or expressions it is going to have, and all without the help of any created thing? WF: 18-19/GP.IV: 485

Just as the body is a machine of nature, an infinitely complex automaton carrying out a predetermined series of motions, the soul is an automaton spontaneously producing a predetermined series of perceptions.

This account of spontaneous activity hinges on Leibniz's claim that each perceptual state tends towards the next; thus, just as each state of the body develops through the mechanical disposition of the body's material parts and the relations they have to external bodies, so too the perceptual states of the soul develop through the way that the soul represents its body and the relations the body has to the rest of the world:

we should say that God first created the soul, or any other real unity, in such a way that everything in it arises from its own nature, with a perfect spontaneity as regards itself, and yet with a perfect conformity to things outside it. And thus, since our inner sensations (that is, those which are in the soul itself and not in the brain or in the subtle parts of the body) are only a sequence of phenomena relating to external things, or are really appearances or systematic dreams, as it were, these internal perceptions in the soul itself must arise from its own original constitution, that is to say from its representational nature (its ability to express external things which are in relation with its organs) [...] WF 17–18/GP.IV: 484

Since the soul's very nature is to represent its body and the external world, its perceptions involve a multiplicity of dynamically changing events corresponding to what happens in the body, and the "succession of representations which the soul produces for itself will naturally correspond to the succession of changes in the universe itself" (WF 19/GP.IV: 485). As Justin E.

H. Smith puts it, “the body is thus an automaton, as is the soul (by analogy to the body), in that both move from one state to the following state entirely in accordance with their own laws” (2011: 90). The concept of the soul as a self-moving spiritual automaton therefore complements the bodily machine of nature and supports Leibniz’s preestablished harmony or “theory of agreements.”

In characterizing the soul as a “spiritual automaton,” does Leibniz intend to liken a soul to a self-moving mechanical device? Some commentators have expressed skepticism on this point, arguing that by “automaton” we ought to simply understand “*self-moving thing*” and not “*self-moving mechanical device*” (Cottingham 1978: 553; McDonough 1995: 177–78; Gaukroger 2000: 386). There is clear evidence, however, that both Leibniz and his critics understood the “spiritual automaton” as involving a comparison between the soul and a machine, where soul and body are likened to two synchronized clocks (Scott 1997; Favaretti Camposampiero 2017). Simon Foucher writes in 1695, for instance, that “whether or not [the spiritual automaton] will be a new kind of machine” (WF: 42/GP.IV: 488), Leibniz’s theory “is no more impossible than it would be to make two clocks which are so well synchronized, and which operate so uniformly, that just when clock A strikes midday, clock B does the same, so that one would think that the two clocks were driven by the same weight, or the same spring” (WF: 43/GP.IV: 488-89). For Foucher, even if the spiritual automaton is not itself a type of machine, its activity can be likened to one of two clocks operating in parallel. Although there is no direct causal relationship between body and soul, their individual states correspond based upon their initial settings, as in the two clocks. Leibniz himself uses this example in a letter to Basnage de Beauval of January 3, 1696 (WF: 62/GP.IV: 498), showing that he affirms the comparison between souls and clocks.

We find further evidence for this conclusion in Leibniz's exchanges with Pierre Bayle on the preestablished harmony. In 1697, Bayle criticizes the comparison between the soul and a clock in footnote H of the entry *Rorarius* in the *Dictionnaire Historique et Critique*, expressing skepticism that a simple being such as the soul could change itself spontaneously:

as [Leibniz] very justly supposes that all souls are simple and indivisible, it is inconceivable how they can be compared to clocks, that is, how by their original constitution they can diversify their operations by making use of the spontaneous activity that they receive from their Creator. It is clearly conceivable that a simple being will always act uniformly if not hindered by some external cause. If it were composed of several parts, like a machine, it would act diversely because the particular activity of each piece might change the course of that of the others at any moment. But in a unified substance, where can you find the cause of the change of its operation? Bayle 1991: 239

In short, Bayle finds it difficult to conceive how a substance that is truly simple and is not affected by anything external to it would ever change, as the theory of spontaneity appears to suggest.

Leibniz responds to Bayle's criticism by arguing that a substance spontaneously perceives according to a rule or law determining its changing series of perceptions. This rule or law, which Leibniz conceives on analogy with an ordered mathematical function (Cover & O'Leary Hawthorne 1999: 214–52), remains constant throughout a substance's existence, and determines the way that each of its perceptual states passes into the next.<sup>5</sup> Furthermore, it individuates a particular substance inasmuch as it determines a unique set of perceptions that the substance will produce. Leibniz thus maintains that a simple being both acts the same and

produces spontaneously produces a series of changes insofar as these changes unfold to a rule or law that remains constant:

When it is said that a simple being will always do the same thing, a certain distinction must be made: if “doing the same thing” means perpetually following the same law of order or of continuation, as in the case of a certain series or sequence of numbers, I admit that all simple beings, and even all composite beings, do the same thing; but if “same” means acting in the same way, I don’t agree at all. WF: 84/GP.IV: 522

Significantly, Leibniz associates the lawful progression of a substance’s perceptual change with the orderly and precise activities of a well-designed machine. Indeed, he clarifies that the concept of the “spiritual automaton” and its comparison between the soul and a machine was solely meant to express the way that both operate in a precise and regular fashion: “I compared the soul with a clock only with regard to the regulated precision of its changes, which is only imperfect even in the best clocks, but which is perfect in the works of God. In fact, one can say that the soul is a most exact immaterial automaton” (WF 83–84/GP.IV 522). Thus, for Leibniz, the relevant point of comparison between a soul and a physical automaton such as a clock is not to be found in the interaction of material parts, but rather in the form of orderly change they exhibit. It is this aspect of mechanical activity—and one that can apply equally to functionally organized material bodies and to simple, spontaneously acting immaterial souls—that Leibniz wishes to attribute to the soul. Although the soul does not act in a machine-like fashion in the sense of possessing functionally organized material parts, it does so in the sense of performing a continuous series of regularly ordered activities. Indeed, returning to Leibniz’s introduction of the “spiritual automaton” in the *New System*, we see that he specifically invokes the concept to capture the orderly nature of the soul’s activity: “why could not God give to a substance at the

outset a nature or internal force which could produce in it in an orderly way (as in a spiritual or formal automaton [...]) everything that is going to happen to it [...]"(WF: 18–19/GP.IV: 485).

How is a soul capable of acting in this orderly and *machine-like* fashion? In the *Explanation*, Leibniz once again claims that this ability follows from the soul's representative nature:

All of this is only a consequence of the representational nature of the soul which must express what happens, and indeed what will happen, in its body, and, because of the connection or correspondence of all the parts of the world, it must also express in some way what happens in all the others. It might perhaps have been enough to say simply that God, having made corporeal machines, could also easily have made immaterial ones which represent them [...] WF: 84/GP.IV: 523

As the soul functions to represent each of the parts of its mechanical body, its series of perceptions thus unfolds in a manner analogous to the body's mechanical operation. While the soul is not literally composed of mechanical parts, it does represent all the parts of the body, and insofar as it represents the body, its continuous, well-ordered changes mirror those unfolding in the mechanical body.

The two clocks example, and particularly the way that it features in Leibniz's exchange with Bayle, supports the conclusion that Leibniz intended the *New System's* concept of the "spiritual automaton" to convey a theoretical analogy between the soul and a machine. Though the soul is simple and a mechanical automaton complex, the soul is "a most exact immaterial automaton" (WF: 83-84/GP.IV: 522) that moves itself in an orderly, machine-like fashion. Thus, we may conclude that Leibniz's preestablished harmony rests on a substantial analogy between

the soul and a self-moving mechanical device: according to his theory, the soul is a unitary spiritual automaton continuously changing in the orderly fashion of a well-crafted machine.

### **3. Eminent and Metaphysical Mechanisms**

In this section, I examine two instances where Leibniz directly characterizes the activities of immaterial substances in mechanical terms. The first instance is from the letter to Des Bosses of August 19, 1715 in which Leibniz claims that monads act by means of “a certain eminent mechanism” (LB: 349/GP.II: 503). I argue that this sense of “eminent mechanical” activity directly relates to the orderly or machine-like way according to which we have seen immaterial substances act. I draw two conclusions from this analysis: first, qualifying the “mechanism” of monads as “eminent” indicates that monads contain what is mechanical in bodies in a “higher” or “concentrated” form, enabling them to metaphysically found bodily phenomena. Second, “eminent mechanism” qualifies the activity of monads, indicating that this activity unfolds “mechanically,” i.e. in an intelligible fashion. For further support of these conclusions, I also draw attention to a passage where Leibniz argues that God’s choice of the world takes place via a “metaphysical mechanism” as another example of Leibniz’s attribution of “mechanism” to immaterial entities as a way rendering their activities intelligible.

Leibniz draws on a “certain eminent mechanism” in response a question Des Bosses had posed in his letter of July 20, 1715. Des Bosses had asked whether Leibniz’s postulation of monads might be gratuitous insofar as they are said to produce their perceptions spontaneously and without any external physical influence on other monads. Indeed, this potential gratuity suggests a comparison between monads and Scholastic qualities, those obscure and superfluous explanatory principles rejected by modern philosophy:

I add one ancillary point. It seems gratuitous to posit these monads, which have all their perceptions from their own stores [ex propria penu] and without a physical influence of one on another, just as it would be gratuitous to posit some Scholastic quality whose nature it would be to be produced and to produce all the effects, for example, of heat, independently of mechanism and the collision of the rest of the surrounding bodies, etc. This is the kind of quality that modern philosophers usually hiss at. LB: 345–47/GP.II: 501–2

Des Bosses’s comment touches on the presumed spontaneity with which monads produce their perceptions and their lack of any physical influence on other monads: how intelligible are monadic explanations if they are thought to produce their effects in this manner and independently of any external interaction? If the advance of “mechanism” over Scholastic qualities had been precisely in pointing to the real interactions whereby physical effects are produced, how does turning to monads in this way help us to understand natural occurrences? Des Bosses thus suggests that the theory of monads appears just as superfluous as an obscure quality introduced to explain the production of physical effects in bodies independently of any relation to the interactions—the mechanisms and collisions—of those bodies themselves.

Leibniz responds that Des Bosses’s question is not ancillary and threatens to return them back to where they had started in their discussions almost ten years prior:

You add as an ancillary point: monads that have their modifications from their own stores are posited gratuitously, as heat acting without a mechanism is posited gratuitously. This is not an ancillary point, but a primary one. If you think it is ancillary, we will have to go back to the beginning, as if I had written nothing. LB: 349/GP.II: 503

Leibniz's frustration stems from Des Bosses's inability to recognize that incorporeal principles such as monads are necessary to found corporeal reality. It is not gratuitous to posit monads and spontaneous monadic activity because that activity is the metaphysical basis of the physical world. Leibniz makes three further claims in an attempt to make this point clear: first, unlike obscure or "occult" Scholastic qualities, monadic spontaneity does not take place *mysteriously*, but by means of *a certain eminent mechanism*; second, this "eminent mechanism" founds and concentrates the mechanism of bodies; third, it enables us how to explain how things follow from one another:

Besides, monads draw everything from their own stores, not as the Scholastic heat mysteriously produces its effects, *but by a certain eminent mechanism* [*mechanismo quodam eminente*, my emphasis], so to speak, which is the foundation and a concentration of corporeal mechanism [*qui fundamentum est et concentratio mechanismi corporei*], in such a way that it can be explained how one thing follows from another. LB: 349/GP.II: 503

Thus, whereas Des Bosses had thought that monadic spontaneity was *gratuitous*, Leibniz claims that it is [1] *intelligible*, [2] *essentially related* to the mechanism of bodies as its foundation and concentration, and [3] serves to explain the sequence of things. At the core of each of these theses is Leibniz's claim that monads act "*mechanismo quodam eminente*," or "by means of a certain eminent mechanism" (LB: 349/GP.II: 503). What does Leibniz mean?

Leibniz's use of the term "eminent" in the sense of concentrating and founding in this passage finds echoes elsewhere in his corpus. With respect to immaterial substances and bodies, Leibniz describes the primary substance of an organic body as "preeminent" in relation to subordinate substances composing the body in a letter to Burchard De Volder of June 20, 1703

(LV: 265). In his January 21, 1704 letter to the same correspondent, Leibniz defines substances as things that “are not wholes that contain parts formally, but total things that contain partial things [i.e. bodies] eminently” (LV 289). He also frequently employs the term with respect to God and God’s relationship to created substances. In 1686, Leibniz writes in *Discourse on Metaphysics* ¶35 that “[...] what is good and reasonable in finite minds is found preeminently in Him” (AG: 67/A.vi.4: 1586). In a supplement to his letter of February 15, 1712 to Des Bosses, Leibniz argues that God contains eminently what appears to other monads: “God certainly sees things exactly such as they are according to geometrical truth, although likewise he also knows how each thing appears to every other, and thus he contains in him-self eminently all the other appearances” (LB 233/GP.II: 438). In ¶9 of the 1714 *Principles of Nature and Grace*, Leibniz uses the notion of eminence to explain how God causes or founds the perfections in created substances: “[t]his simple primitive substance must eminently include the perfections contained in the derivative substances which are its effects” (AG: 210/GP.VI: 602). Additionally, in ¶38 of the *Monadology* in the same year, eminent containment allows God to be the source of worldly diversity and change: “[...] the ultimate reason of things must be in a necessary substance in which the diversity of changes is only eminent, as in its source. This is what we call God” (AG: 218/GP.VI: 613). Thus, Leibniz often uses notions of “eminence” and “eminent” containment to capture how a simple and more perfect being – whether an immaterial created substance or God – can serve as the reason and source of the perfections and changes in less perfect beings.<sup>6</sup>

Note, however, that in the Des Bosses passage, Leibniz is not merely illustrating the sense in which monads concentrate and found what takes place in physical mechanism. While the “eminent mechanism” of monads does in fact carry out this function, Leibniz is also at pains to explain the intelligibility of monadic activity itself, which Des Bosses had called into question

by comparing monads to a Scholastic quality like heat. Indeed, Leibniz's response contrasts this "eminent mechanism" with the obscurity of Scholastic qualities, claiming that by means of "eminent mechanism," "it can be explained how one thing follows from another" (LB: 349/GP.II; 503). Thus, "mechanism" here seems to indicate something *not mysterious* that provides a reason for a changing state of affairs. This sense may indeed be derived from the way that physical mechanisms provide intelligible accounts of changes in bodies, but it could plausibly be extended to the realm of immaterial perceptual change that founds bodily changes. If this account is correct, Leibniz's "eminent mechanism" would therefore name the intelligible process whereby an immaterial monad spontaneously produces its perceptions and the way that the latter found and concentrate what is in corporeal mechanism, thereby explaining the changes taking within physical reality. Not only does Leibniz use the nature and operation of machines to represent and illuminate the nature and operation of immaterial substances, he considers the activities of immaterial substances themselves as "eminently mechanical." "Eminent mechanism" is distinct from something corporeal or material, as it pertains to monads and concentrates and founds the external mechanism of bodies.

Admittedly, Leibniz does not consistently characterize the way that an immaterial substance concentrates bodily mechanism as [eminently] mechanical. In 1710, Leibniz claims in *Theodicy* ¶403, that immaterial substances concentrate what happens mechanically in bodies, just like in the Des Bosses letter five years later. However, in the *Theodicy* passage, Leibniz denies that the operations of souls—divinely preformed spiritual automata—are "mechanical":

The operation of spiritual automata, that is of souls, is not mechanical, but it contains in the highest degree all that is beautiful in mechanism. The movements which are developed in bodies are concentrated in the soul by representation as in an ideal world,

which expresses the laws of the actual world and their consequences, but with this difference from the perfect ideal world which is in God, that most of the perceptions in the other substances are only confused. T: 403/GP.VI: 356

While, conceptually speaking, Leibniz seems to be making the same point in this passage, namely that souls concentrate what happens in bodies, he does so in a way terminologically inconsistent with the letter to Des Bosses. While Leibniz writes to Des Bosses of an “eminent mechanism” by means of which monads concentrate what happens in bodies, in the *Theodicy*, Leibniz claims that souls concentrate what happens in bodies, but do not operate “mechanically.”

We may attempt to resolve this inconsistency in several ways. For one, it is possible that Leibniz simply changed his mind, adopting a more expansive understanding of “mechanical” between composing the *Monadology* and the letter to Des Bosses. It is also possible that Leibniz was willing to speak more loosely in the context of making his point in the letter to Des Bosses, as opposed to in the context of a published book such as the *Theodicy*. In this vein, assuming that the interpretation of the “eminent mechanism” in the Des Bosses passage given here is correct, perhaps Leibniz was simply employing a narrow sense of “mechanical” in the *Theodicy* passage, where “mechanical” designates the efficient causal interactions of extended material bodies, a phenomenon distinct from the perceptual activity of unextended spiritual automata. By contrast, as I have argued, we can extract a broader sense of “mechanism” from the Des Bosses letter, one referring to an intelligible process by means of which one can understand why one thing follows from something else, and which is applicable to immaterial substances and material bodies alike.

Lest one dismiss this broad sense of “mechanism,” however, and write-off the “eminent mechanism” of the Des Bosses letter as anomalous, there is at least one other mature period passage where Leibniz attributes a form of “mechanism” to immaterial processes. In *On the*

*Ultimate Origination of Things* of 1698, Leibniz invokes a “metaphysical mechanism” by which divine mathematics selects the optimal world. Here Leibniz claims that possible things strive for existence in proportion to their degree of reality, and that they do so in a manner analogous to the descent of heavy objects:

From this we can already understand in a wondrous way how a certain Divine Mathematics or Metaphysical Mechanism is used [*Mathesis quaedam Divina seu Mechanismus Metaphysicus exerceatur*] in the very origination of things, and how the determination of a maximum finds a place... For just as all possibles strive with equal right for existence in proportion to their reality, so too all heavy things strive with equal right to descend in proportion to their heaviness, and just as the one case results in the motion which contains as much descent of heavy things as is possible, the other case gives rise to a world in which the greatest number of possibles is produced. AG:

151/GP.VII: 304

For Leibniz, this metaphysically mechanical sorting process, over the course of which the world accommodating the greatest number of possible things emerges, is required to explain the existence of the actual world. Without it, Leibniz maintains there would be no reason for the world’s existence. Indeed, according to Leibniz, “the very existence of the actual series of things shows that we seem not to have spoken without grounds” (AG: 152/GP.VII: 305).<sup>7</sup> Just as the “eminent mechanism” of the Des Bosses passage provides a sufficient reason for monadic change and, by extension, bodily changes, the “metaphysical mechanism” of possibilities striving for existence provides the sufficient reason for God’s selection and creation of the actual world and the entire series of changes that take place within it.

In sum, Leibniz thinks of processes and activities taking place in immaterial substances as obeying a certain type of “eminent” or “metaphysical” mechanism. Leibniz attributes “mechanism” to immaterial substances in this way not in order to indicate the regular motions of functionally organized material parts, but rather the presence of an intelligible process unfolding within the simple immaterial substance that is capable of providing a reason for what happens within nature.

#### **4. Mechanism and Perception in “Leibniz’s Mill”**

In this section, I test my interpretation of “mechanism” in Leibniz against the argument known as Leibniz’s Mill at *Monadology* ¶17 (AG: 215/GP.VI: 609–10).<sup>8</sup> The argument unambiguously distinguishes between the nature of immaterial substances and the structure of physical machines, as Leibniz argues that perceptions are “inexplicable in terms of mechanical reasons” (AG: 215/GP.VI: 609).<sup>9</sup> However, in the course of the mill argument, Leibniz reiterates his characterization of immaterial substances as “automata,” suggesting a reading of the passage according to which while physical mechanisms and machines cannot produce perceptions, their mechanical operations can help explain the manner according to which monads themselves produce perceptions. Thus, on this reading, while the mill argument is meant to show that perception is ontologically distinct from physical machines and their mechanisms, “mechanism” can still help us understand how perceptions unfold.

Leibniz’s Mill has us imagine a machine capable of thinking or perceiving, and then asks us to expand the machine in size such that we can enter it and examine its mechanisms. The

question is whether we can identify anything within the structure of the machine that could account for perception. Leibniz argues that the answer is no, and therefore proposes that in order to explain the existence of perception, we must posit the existence of simple substances:

Moreover, we must confess that the perception, and what depends on it, is inexplicable in terms of mechanical reasons, that is, through shapes and motions. If we imagine that there is a machine whose structure makes it think, sense, and have perceptions, we could conceive it enlarged, keeping the same proportions, so that we could enter into it, as one enters into a mill. Assuming that, when inspecting its interior, we will only find parts that push one another, and we will never find anything to explain a perception. And so, we should seek perception in a simple substance and not in the composite or in the machine.

AG: 215/GP.VI: 609

Leibniz conceives of a mill as an aggregate whose material parts produce effects by means of pushing and pulling. This conception of physical machinery is incompatible with Leibniz's definition of perception in *Monadology* ¶14 as that which "represents a multitude in the unity" (AG: 214/GP.VI: 608; Lodge and Bobro 1998). Leibniz maintains that we cannot, therefore, understand perception "in terms of mechanical reasons" (AG: 215/GP.VI: 609), as no physical mechanism—however sophisticated or subtly engineered—could explain the existence of a perception. Consequently, we should locate perception in immaterial substances or monads that are simple in the sense of being without parts.

Leibniz notably characterizes monads themselves as "incorporeal automata" in the next paragraph, indicating that these substances cause their own perceptions spontaneously: "[o]ne can call all simple substances or created monads entelechies, for they have in themselves a certain perfection; they have a sufficiency that makes them the sources of their internal actions,

and, so to speak, incorporeal automata” (AG: 215/GP.VI: 609-10). Leibniz’s reference to monads as automata here seems to indicate their “sufficiency” with respect to self-motion: monads generate their own perceptions without external input (Strickland 2014, 73).

In reading this passage, should we understand Leibniz to be comparing monads to self-moving *machines*? A non-mechanistic reading of the *Monadology* passage supported by the ontological distinction between monads and machines drawn in Leibniz’s Mill, might suppose that Leibniz is simply underscoring the monad’s *self-motion*, without suggesting any comparison between monads and self-moving *machines* (McDonough 1995: 177–78). As we have seen in the controversies following the publication of the *New System*, however, at that time, both Leibniz and his interlocutors understood the *New System*’s “spiritual automaton” to involve a comparison between the soul and a machine. While we ought not assume a univocal sense of “automaton” across both texts, not least because of the roughly twenty years separating their respective compositions, there is substantial overlap with respect to their treatment of relevant features of immaterial substances and bodies. In the context of the *New System*, souls are “spiritual automata” insofar as they are simple, unitary beings acting spontaneously to produce continuous, ordered change by virtue of their representative nature. While Leibniz characterizes monads in the *Monadology* as “incorporeal automata” specifically in relation to the spontaneous self-sufficiency with which it perceives, monads retain the further attribute that had earlier led Leibniz to compare souls to machines: namely, they are simple beings that continuously change as they represent changes in an external multiplicity (AG: 214-15/GP.VI: 609). Further, in explicating the way that a simple monad represents a multitude in *Monadology* ¶16, just prior to the mill argument in ¶17, Leibniz refers to the difficulty Bayle had raised with respect to the *New System*’s account of the continuous change of simple beings and that had lead Leibniz to clarify

his comparison between the orderly operation of a soul and a machine (AG: 215/GP.VI: 609). Last, but not least, in both the *New System* and *Monadology*, Leibniz characterizes the organic bodies corresponding to immaterial substances as infinitely complex mechanical automata (AG: 221/GP.VI: 618). Although these considerations do not constitute absolutely conclusive evidence that Leibniz intends for the “incorporeal automaton” of the *Monadology* to involve a comparison between monads and self-moving *machines*, the theoretical and terminological overlap between the two texts, together with Leibniz’s invocation of Bayle’s argument, strongly support and lend credence to this conclusion.

If this interpretation of the “incorporeal automaton” is correct, then we are in position to better understand the proper scope and aim of the Mill argument. It remains true that Leibniz uses the Mill to argue that only immaterial substances, and not physical mechanisms or machines, can be responsible for perception. Nevertheless, the characterization of the immaterial monad as an “incorporeal automaton” in the following paragraph supports the conclusion that Leibniz intends to draw on the intelligibility of “mechanism”—as instantiated in the form of self-moving mechanical automata—to understand the manner whereby immaterial substances spontaneously produce their perceptions.

## 5. Conclusion

I have argued that during Leibniz’s mature period, “mechanism” takes on an important sense of an intelligible process capable of providing a sufficient reason explaining a series of changes. Leibniz applies this sense of mechanism outside of the domain of extended material bodies to characterize the spontaneous operation of immaterial substances. Thus, while the body is an infinitely complex machine of nature whose mechanical movements unfold according to divine

preformation, an immaterial substance is a unitary and divinely preformed spiritual automaton on analogy with a self-moving machine whose perceptions found bodily reality and unfold intelligibly according to “a certain eminent mechanism.” Moreover, this account helps us better understand the scope and aims of Leibniz’s mill argument in *Monadology* ¶17: while the argument denies that physical machines and mechanisms can produce perceptions, thereby motivating the postulation of immaterial simple substances, it does not rule out the use of physical machines to understand the manner in which such substances produce perceptions. Indeed, Leibniz seems to do just that at *Monadology* ¶18 by characterizing monads as self-sufficient “incorporeal automata.” While “Leibniz’s Mill” stands as an argument as to why physical machines cannot explain the *existence* of perception, Leibniz nevertheless applies a distinct sense of “mechanism” to immaterial substances in order to clarify and explain the nature of their spontaneous perceptual activities.

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<sup>1</sup> I treat Leibniz's mature period as beginning in 1695 with the publication of *New System* and the first part of the *Specimen Dynamicum*. In this period, Leibniz employs several names for immaterial substances, including "soul," "simple substance," "entelechy," and "monad." He also uses "mind" [*esprit*] for the class of immaterial substances possessing rationality including God and human beings (AG 223–24/GP.VI 621). I follow Leibniz's usage in analyzing specific texts, but default to the more neutral "immaterial substance." Though I do not argue for this position directly here, my account aims to support interpretations of Leibniz's metaphysics according to which nature is constituted by corporeal substances possessed of both immaterial souls and real bodies throughout this this period (Phemister 2005; Smith 2011; Arthur 2018), as opposed to the view Leibniz eventually adopts towards a metaphysics solely involving immaterial simple substances, and which bodies are mere phenomena, around 1700 (Garber 2009: 335–49). In terms of understanding perception in "mechanical" terms, my account has precedent, with respect to the young Leibniz, in Beeley, for whom the young Leibniz rejects, like Hobbes, "any radical distinction between the mental and the corporeal sphere" and conceives thinking in terms of an initial physical motion or "conatus" (2011: 35–36). While the mature Leibniz more strongly distinguishes the immaterial from the physical at the ontological level, I argue that he continues to draw on mechanism is for understanding the perceptual operation of immaterial substances.

<sup>2</sup> For a helpful account of the how Leibniz sought to explain physical phenomena mechanically while retaining a metaphysical role for Scholastic forms, see Leduc 2014.

<sup>3</sup> The term does appear once previously in Leibniz's corpus, in his 1678 notes on Spinoza's *Tractatus de intellectus emendatione* (A.vi.4 1758; Noble 2017b). However, in this instance, Leibniz simply remarks on Spinoza's use of the term, and does not use it for his own purposes.

<sup>4</sup> Leibniz first uses the term 'preestablished harmony' in April 1696 (Antognazza 2009, 351).

<sup>5</sup> For an important mature-period discussion of the "law of the series," see Leibniz's letter to De Volder of January 21, 1704 (LV 285–93). Here, characterizing the way that an individual is continuously changing, or "pregnant with the future" (LV 287), Leibniz writes "But all individual things are successive, i.e., subject to a succession... For me, nothing is permanent in those things except the very law that involves the continued succession, which in individual things corresponds to the law that is in the whole universe" (LV 298).

<sup>6</sup> Leibniz's usage of "eminent containment" thus conforms to its use in the tradition to explain how a metaphysically higher being causes the existence and properties of something lower (see, e.g. Aquinas 1948, Part 1 Question 4 Article 2).

<sup>7</sup> For a link between this notion of striving possibles and substantial spontaneity, see Jorati (2017: 73–74).

<sup>8</sup> Versions of the mill argument also appear at AG 192/GP.VI 507, WF 129–30/GP.III 69, and NE 66–67. This argument has helped shape reception of Leibniz's views on the relation between

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physical mechanism and perception from contemporaries like Christian Wolff (Olson 2015) to present-day philosophers of mind (Churchland 1995: 191–95; Dennett 2005: 3–7, 10–12; Landesman 2011).

<sup>9</sup> There is debate, however, about how to understand Leibniz’s justification for the distinction between immaterial substances and physical machines. Lodge and Bobro emphasize Leibniz’s view of perception as “the expression of the many in the one” for why machines cannot perceive (1998). Blank argues that thoughts are connected in a manner distinct from the way that material bodies are (2010). Duncan stresses the inexplicability of thought from matter (2012). For Rozemond, perception is active, and hence cannot be a modification of a passive, physical machine (2014).