

**The Soul as Spiritual Automaton in  
Leibniz's Synthetic Natural Philosophy.**

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by

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## Abbreviations

### Leibniz

- A** – *Sämtliche Schriften und Briefe*. Edited by Deutsche Akademie der Wissenschaften zu Berlin. Berlin: Akademie Verlag, 1923-. Cited by series number then volume number then page number.
- AC** – *G.W. Leibniz: The Art of Controversies*. Edited by Marcelo Dascal with Quintin Racionero and Adelino Cardoso. Dordrecht: Springer, 2006.
- AG** – *Philosophical Essays*. Translated by Roger Ariew and Daniel Garber. Indianapolis: Hackett, 1989.
- GM** – *Die Mathematischen Schriften*. Edited by C.J. Gerhardt, 7 Volumes. Berlin: 1849-1855. Cited by volume number then page number.
- GP** – *Die Philosophischen Schriften*. Edited by C.J. Gerhardt, 7 Volumes. Berlin: Weidmann, 1875–90. Cited by volume number then page number.
- L** – *Leibniz: Philosophical Papers and Letters*. Edited by Leroy Loemker. Second Edition. Dordrecht: Kluwer, 1989 2nd ed.
- LC** – *The Labyrinth of the Continuum: Writings on the Continuum Problem, 1672-1686*. Translated by Richard T.W. Arthur. The Yale Leibniz. New Haven: Yale, 2002.
- LDB** – *The Leibniz-Des Bosses Correspondence*. Translated by Brandon C. Look and Donald Rutherford. The Yale Leibniz. New Haven: Yale University Press, 2007.
- NE** – *New Essays on Human Understanding*. Edited by Peter Remnant and Jonathan Bennett. Cambridge Texts in the History of Philosophy. Cambridge: Cambridge University Press, 1996.
- T** – *Theodicy* translated E.M. Huggard. La Salle, IL: Open Court, 1985. Cited by paragraph number.
- WF** – Roger S Woolhouse, and Richard Francks. *Leibniz's "New System" and Associated Contemporary Texts*. Oxford: Clarendon Press, 1997.

### Other Sources

- AR** – Aristotle. *The Complete Works of Aristotle* Edited by Jonathan Barnes, 2 Volumes. Princeton: Princeton University Press, 1984.
- AT** - Descartes, René. *Oeuvres de Descartes*, Edited by Charles Adam and Paul Tannery, 12 Volumes. Paris: Vrin, 1964-76.
- CE** – Elisabeth of Bohemia and René Descartes. *The Correspondence between Princess Elisabeth of Bohemia and René Descartes*. Edited and Translated by Lisa Shapiro. Chicago: University of Chicago Press, 2007.
- CPD** – Bayle, Pierre. *Continuation des Pensées diverses, écrites à un docteur de Sorbonne, à l'occasion de la comete qui parut au mois de Decembre 1680 ou Reponse à plusieurs difficultez que Monsieur a proposes à l'Auteur* Rotterdam: Reinier Leers, 1706.
- CSM** – Descartes, Rene. *The Philosophical Writings of Descartes*. Translated by John Cottingham, Robert Stoothoff and Dugald Murdoch. 3 Volumes. Cambridge: Cambridge University Press, 1984.
- DC** – Hobbes, Thomas. *The Collected Works of Thomas Hobbes. Volume I: Concerning Body*. Collected and edited by Sir William Molesworth 12 vols. London: Routledge 1994.
- E** – Spinoza, Benedictus de. *Ethics*. In *The Collected Works of Spinoza Volume I*. Edited by

- Edwin Curley, 408-617. Princeton, NJ: Princeton University Press, 1985. Cited by Book number then proposition number, as well as page number.
- University Press, 1985.
- HL** – *Leviathan*. Edited by Edwin Curley. Indianapolis: Hackett, 1994.
- HS** – Bayle, Pierre. “Memoire communiqué par Mr. Bayle pour servir de reponse à ce qui le peut interesser dans un ouvrage imprimé à Paris sur la distinction du bien & du mal, & au 4. article du 5. tome de la Bibliothèque choisie.” Edited by Basnage de Beauval, 369-96. *Histoire des ouvrages des savants* 20 (August 1704) 369-396.
- PP** – Descartes, René. *Principia Philosophiae*. In *Oeuvres de Descartes*, Edited by Charles Adam and Paul Tannery, 12 Volumes. Volume 8. Paris: Vrin, 1964-76.
- RP** – Bayle, Pierre, *Reponse aux questions d’un provincial tome troisieme*. Rotterdam: Reinier Leers, 1706.
- S** – *The Collected Works of Spinoza Volume I*. Edited by Edwin Curley. Princeton, NJ: Princeton University Press, 1985.
- SL** – Spinoza, Benedictus De. *Letters*. Translated by Samuel Shirley. Indianapolis: Hackett, 1995.
- TIE** – Spinoza, Benedictus de. *Tractatus de emendatione intellectus*. In *The Collected Works of Spinoza Volume I*. Edited by Edwin Curley, 7-45. Princeton, NJ: Princeton University Press, 1985. Cited by paragraph number and page number.
- TIS** – Cudworth, Ralph. *The True Intellectual System of the Universe: The First Part. Wherein All the Reason and Philosophy of Atheism Is Confuted and Its Impossibility Demonstrated. The First Part*. London: Printed for Richard Roytson, 1678.
- W** – Wachter, Johann Georg. *Elucidarius Cabalisticus sive reconditae Hebraeorum philosophiae. brevis & succincta recensio*. Rome (though in fact Halle): 1706.

## **Abstract**

This dissertation is a study of Gottfried Wilhelm Leibniz's repeated characterization of the soul as a "spiritual" or "incorporeal" automaton. Within Leibniz's mature period philosophy of nature, souls play a necessary metaphysical role in providing unity and activity to bodies. I situate Leibniz's use of the term "automaton" within the wider philosophical context of seventeenth and early eighteenth-century Europe and explain why it provides a useful model to capture the operation of the soul. I argue that for Leibniz, souls are like automata in three ways: they act spontaneously according to an internal principle of motion; they act in a way that depends upon their design by God; they move themselves without the need for conscious thought or deliberation. In comparing the soul to a "spiritual automaton," Leibniz combines the traditional notion of an immaterial soul with that of a self-moving mechanical device. I therefore argue that the concept of the soul as a "spiritual automaton" embodies Leibniz's synthetic or conciliatory approach to philosophy, which seeks to harmonize elements from seemingly divergent intellectual positions. Accordingly, I connect Leibniz's development of the concept of the soul as a spiritual automaton to his critical appropriation of elements of the mechanical philosophy of Hobbes and Descartes and his intellectual engagement with Spinoza. Further, I show how Leibniz deploys the concept as a means to resolve philosophical controversies regarding the mode of activity of immaterial substances involving Ralph Cudworth, Jean Le Clerc, Isaac Jaquelot, and Pierre Bayle.

## Introduction

This dissertation is a study of the concept of the *spiritual* or *incorporeal* automaton within the context of Leibniz's metaphysics and philosophy of nature. One of Leibniz's more striking conceptual inventions, the *spiritual automaton* characterizes an immaterial soul that unfolds the total series of its perceptions of the world by virtue of an internal principle of motion. Leibniz employs the term on several occasions beginning in the mid-1690s with reference to both souls as well as to simple substances or monads, using it to illustrate the spontaneous activity that he ascribes to substances.

Leibniz first introduces the notion of the spiritual automaton in the context of his systematic account of nature in the *Système nouveau de la nature et de la communication des substances*. Published in 1695, the *Système nouveau* represents Leibniz's initial attempt to present the principles of his philosophical account of nature to a wider reading public. In particular, Leibniz frames his own position in the text as embodying a solution to the thorny problem of the relationship between soul and body. His system, later called the "system of the preestablished harmony of soul and body," is an alternative to two competing accounts of the interaction of soul and body. Leibniz dubs the first account that of "influence" and the second that of "occasional causes." Leibniz's own position entails that soul and body are two substances whose activities have been prearranged by God to unfold according to their own laws yet in

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harmony with each other. In this way, Leibniz hypothesizes the existence of a “preestablished harmony” between soul and body.

In accounting for the soul in the *Système nouveau*, Leibniz dubs the soul a “spiritual automaton” on analogy with the body. In justifying the possibility of the theory of harmony between soul and body, Leibniz writes:

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?<sup>1</sup>

Leibniz conceives the bodies populating nature as complex self-moving machines or automata. God designs the parts of these bodies to move and interact with each other according to a predetermined course. The soul is likewise an automaton, in the sense that it is a self-moving incorporeal entity. The soul’s activities are predetermined by God and unfold as the result of the actions of a force internal to the soul’s nature.

Leibniz continues to use the notion of the “spiritual” or “incorporeal” automaton in important passages after the *Système nouveau*. For instance, in defending his theory of spontaneity against Pierre Bayle in the *Eclaircissement des difficultés que Monsiuer Bayle a trouvées dans le système nouveau de l’union de l’âme et du corps* (1698), Leibniz claims “one can say that the soul is a most exact immaterial automaton.”<sup>2</sup> Here the spiritual automaton illustrates Leibniz’s claim that the soul is a unitary and simple substance that is nevertheless

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<sup>1</sup> WF 18-19/GP.IV 485.

<sup>2</sup> WF 84

<sup>3</sup> “I compared the soul with a clock [*pendule*, f.] only in respect of the ordered precision of its changes, which is 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 very exact immaterial automaton. 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

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continuously changing according to God's design.<sup>3</sup> In a text that will become known as the *Animadversiones ad Wachteri librum* composed in 1706, Leibniz contrasts his formulation of the concept of the spiritual automaton with Spinoza's version in the *Tractatus de intellectus emendatione*, an early, unfinished work of Spinoza's first published in the *Opera posthuma* of 1677. This comparison serves to frame Leibniz's criticism of Spinoza's accounts of the mind and freedom.<sup>4</sup> The phrase appears twice in the *Essai de la justice de Dieu, la liberté de l'homme et l'origine du mal*, in the *Essais de Théodicée*, Leibniz's book length account of the conformity of faith and reason published in 1710. On the first occasion, Leibniz uses the notion of the spiritual automaton to illustrate the soul's spontaneous activity.<sup>5</sup> On the second, Leibniz uses the spiritual automaton as a tool to refute Pierre Bayle's claim that knowledge is necessary to be the cause of an effect.<sup>6</sup> Against Bayle, the spiritual automaton provides a model of the soul that acts

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<sup>3</sup> "I compared the soul with a clock [*pendule*, f.] only in respect of the ordered precision of its changes, which is 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 very exact immaterial automaton. 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 83-84).

<sup>4</sup> "Spinoza says... that the ancients 'never, so far as I know, conceived of the soul (as we do here) as acting in accordance with certain laws, like some spiritual automata (he meant to say automaton).' The author [Johann Georg Wachter] interprets this as having to do with the soul alone, and not the mind, and holds that the soul acts in accordance with the laws of motion and external causes. *Both are wrong, for I say that the soul acts spontaneously and yet as a spiritual automaton, and that this is also true of the mind.* The soul is no less exempt from the impulses of external things than is the mind, and it is not the case that the soul acts more determinately than does the mind [Emphasis added]" (AG 279).

<sup>5</sup> "All is therefore certain and determined beforehand in man, as everywhere else, and the human soul is a kind of *spiritual automaton*, although contingent actions in general and free action in particular are not on that account necessary with an absolute necessity, which would be truly incompatible with contingency. Thus neither futurity in itself, certain as it is, nor the infallible prevision of God, nor the predetermination either of causes or of God's decrees destroys this contingency and this freedom" (T52/GP.VI 131).

<sup>6</sup> "But we do not form our ideas because we will to do so, they form themselves within us, they form themselves through us, not in consequence of our will, but in accordance with our nature and that of things.... Even so it is easy to believe that the soul is a spiritual automaton still more admirable, and that it is through divine preformation that it produces these beautiful ideas, wherein our will has no part and to which our [365] art cannot attain. 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

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spontaneously yet without the need for conscious knowledge of what it is doing. Finally, Leibniz invokes the notion of an “incorporeal” automaton in *Monadology* ¶18 to explain how the internal perfection and self-sufficiency of substances enables them to produce all of their activities spontaneously.<sup>7</sup>

I examine each of these passages in detail over the course of this dissertation. Chapter One explains the appearance of the spiritual automaton in the *Système nouveau* and the role that it plays within the broader scope of Leibniz’s philosophical account of nature and dynamical theory of forces. This chapter also examines Leibniz’s use of the spiritual automaton in response to Bayle in the *Eclaircissement*. Chapter Three will discuss Leibniz’s first usage of the term in the *Théodicée*, situating it within the context of Leibniz’s criticisms of Descartes’s concept of freedom. Chapter Four compares Leibniz’s use of the spiritual automaton with Spinoza’s, both in the *Animadversiones ad Wachteri librum* as well as in Leibniz’s reading notes to Spinoza’s *Opera posthuma* taken in the winter of 1678. Chapter Five shows the way that the second passage from the *Théodicée* supplements Leibniz’s contribution to the so-called “debate on plastic natures” that had taken place between Jean Le Clerc and Pierre Bayle early in the early years of the eighteenth-century. In the Conclusion, I will treat the term’s final appearance in the *Monadology* and suggest that it may be of help in present-day discussions of Leibniz’s conception of the mind. Looking at these texts together explains the larger philosophical and intellectual contexts within which Leibniz deploys the concept of the spiritual automaton. It also

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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 366).

<sup>7</sup> “One can call all simple substances or created monads entelechies, for they have in themselves a certain perfection [*echousi to enteles*]; they have a sufficiency [*autarkeia*] that makes them the sources of their internal actions, and, so to speak, incorporeal automata” (AG 215/GP.VI 609-10).

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brings into focus the way Leibniz uses the concept to provide distinctive solutions in specific controversies over the nature of freedom and the activity of immaterial principles.

### **The Scholarly Relevance of the Spiritual Automaton**

An investigation of the meaning and function of Leibniz's formulation of the "spiritual automaton" is important for several reasons. There are a few scholarly accounts of Leibniz that acknowledge the importance of the "spiritual automaton" and attempt to provide an account of its wider significance for Leibniz's philosophy as a whole.<sup>8</sup> Yet the idea of the spiritual automaton is often absent from commentaries on Leibniz; when the term "automaton" does come up, it often appears merely in its physical guise, limited to the realm of organic bodies.<sup>9</sup> In recent debates in Anglophone scholarship on Leibniz's conception of substantial spontaneity,

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<sup>8</sup> Michel Serres highlights Leibniz's interest in machines that carry out cognitive as opposed to physical tasks. In this, Serres contrasts Leibniz with Descartes. In doing so he expands the definition of "machine" to apply to any combinatorial grouping of heterogeneous elements. See Michel Serres. *Le Système de Leibniz et ses modèles mathématiques* (Paris: Presses Universitaires de France, 1968). Gilles Deleuze focuses on Spinoza and Leibniz's shared use of the term to highlight their points of overlap and what he takes as their shared opposition to Descartes:

We have seen what are the three principal points established by Spinoza's theory of ideas: the representative content is but an appearance, determined by a deeper expressive content; the form of psychological consciousness is superficial in relation to true logical form; the spiritual automaton, manifested in the concatenation of ideas, is the unity of logical form and expressive content. Now, these three points are also Leibniz's principal theses. Whence his liking for Spinoza's term 'spiritual automaton'...All the differences between Leibniz and Spinoza take away nothing from their agreement on these fundamental principles which, above all else, constitute the Anticartesian revolution. (Gilles Deleuze, *Expressionism in Philosophy: Spinoza* [New York/Cambridge, Mass.: Zone Books, 1990], 153).

Guido Giglioni goes so far as to claim the "spiritual automaton," a spontaneous, immaterial substance is in fact the key concept of Leibniz's corpus in identifying it with the monad:

The notion of a 'spiritual (incorporeal, immaterial) automaton' is a central theme in Leibnizian philosophy; indeed, we can say it is *the* theme par excellence: the monad, substance, is, almost in a literal sense, an automaton: it is the real centre of activity, the source of its inner actions, endowed with self-sufficiency. (Guido Giglioni, "Automata Compared: Boyle, Leibniz and the Debate on the Notion of Life and Mind." *British Journal for the History of Philosophy* 3, no. 2 [1995]: 263).

<sup>9</sup> This is the case in Robert Merrihew Adams, *Leibniz: Determinist, Theist, Idealist* (Oxford: Oxford University Press, 1994). The term "automaton" (not "spiritual automaton") appears once on page 263 in a quotation from Leibniz designating a physical automaton *qua* machine of nature.

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commentators have largely ignored the notion of the “spiritual automaton,” despite the fact that it is one of Leibniz’s key illustrations of the spontaneity of the soul.<sup>10</sup> Further, accounts that do recognize the existence of the spiritual automaton tend to leave the concept underdeveloped. For instance, Justin E.H. Smith notes in his groundbreaking work on the structure of the physical automaton or “machine-of-nature” *Divine Machines, Leibniz and the Life Sciences* that the soul is an automaton on analogy with the body but does not elaborate beyond indicating that this means both soul and body act according to their own laws.<sup>11</sup> Lloyd Strickland comments in his reading guide to the *Monadology*, that Leibniz’s “description of monads as ‘incorporeal automata’ perfectly captures his notion of self-sufficiency” and points out the way that the incorporeal automaton is like a self-moving machine. Strickland does not, however, consider the structure of the spiritual automaton.<sup>12</sup> Richard T.W. Arthur refers to the spiritual automaton in discussing Leibniz’s theories of spontaneity and the dependence of substances on God and claims that Leibniz appreciates Spinoza’s usage of the term. Arthur does not, however, adduce any textual evidence to support his claim.<sup>13</sup> A full accounting of the genesis, nature, and role of the spiritual automaton within Leibniz’s philosophy is therefore needed.

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<sup>10</sup> Donald Rutherford (“Leibniz on Spontaneity,” in *Leibniz: Nature and Freedom*, ed. Donald Rutherford and J. A. Cover, [Oxford: Oxford University Press, 2005]), 156-180) cites Leibniz’s use of the term in his important essay on spontaneity in Leibniz but does not treat the concept systematically. Subsequent commentators on the topic of spontaneity including Martha Brandt Bolton (“Change in the Monad,” in *The Divine Order, the Human Order, and the Order of Nature, Historical Perspectives*, ed. Eric Watkins, [Oxford: Oxford University Press, 2013], 174–94) and Julia Jorati (“Monadic Teleology without Goodness and without God,” *The Leibniz Review* 23 [December 2013]: 43–72; “Three Types of Spontaneity and Teleology in Leibniz,” *Journal of the History of Philosophy* 53, no. 4 [October 2015], 669–98), do not mention the term.

<sup>11</sup> “The soul cannot impose anything upon the bodily machine that the machine is not capable of producing spontaneously. 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.” Justin E. H. Smith, *Divine Machines Leibniz and the Sciences of Life* (Princeton, NJ: Princeton University Press, 2011), 90.

<sup>12</sup> See Lloyd Strickland, *Leibniz’s Monadology: A New Translation and Guide* (Edinburgh: Edinburgh University Press, 2014), 73.

<sup>13</sup> Arthur (*Leibniz* [Cambridge: Polity Press, 2014], 112) claims:

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Analyzing the nature of the soul as “spiritual automaton” also advances our understanding of the corresponding structure of the organic body. In recent years, numerous commentators have investigated Leibniz’s identification of the organic body proper to a corporeal substance as a “natural machine,” that is to say, a machine that remains a machine to the least of its parts.<sup>14</sup> This scholarship has brought attention to Leibniz’s relationship to the life-sciences of his time and deepened our understanding of the meaning of the term “organism” in the seventeenth-century.<sup>15</sup> Refreshing as these approaches are, accounts of the mechanical nature of Leibnizian bodies often analyze their object in isolation from the soul to which they correspond.<sup>16</sup> Although it makes sense, given Leibniz’s metaphysics, to provide an analysis of

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Leibniz was very much taken with [Spinoza’s] conception of the mind or soul as a *spiritual automaton*” upon reading Spinoza’s *Tractatus de intellectus emendatione*. Regarding spontaneity, Arthur writes: “When God elects to create the world, He creates individual substances that are intrinsically active, ‘spiritual automatons’, which spontaneously change from one state to another by this inherent dynamism (161).

Arthur does point out that, *pace* Spinoza, the actions of the Leibnizian spiritual automaton are contingent and do not take place out of necessity (183).

<sup>14</sup> For a few instances where Leibniz defines the organic body in these terms, see AG142/WF 16/GP.IV 482, and *Monadology* ¶64 (AG 221/GP.VI 618). There exists a burgeoning literature on the topic of the structure of the organic body as “natural machine.” For example, see Ohad Nachtomy, Ayelet Shavit, and Justin E.H. Smith, “Leibnizian Organism, Nested Individuals, and Units of Selection,” *Theory in Biosciences* 12, no. 2 (2002): 205–30; Michel Fichant, “Leibniz et les machines de la nature,” *Studia Leibnitiana* 35, no. 1 (2003): 1–28; Francois Duchesneau, “Leibniz versus Stahl on the Way Machines of Nature Operate,” in *Machines of Nature and Corporeal Substances in Leibniz*, ed. Justin E. H. Smith and Ohad Nachtomy (Dordrecht: Springer, 2011), 11–28; Ohad Nachtomy, “Leibniz on Artificial and Natural Machines: Or What It Means to Remain a Machine to the Least of Its Parts,” in *Machines of Nature and Corporeal Substances in Leibniz*, ed. Justin E.H. Smith and Ohad Nachtomy (Dordrecht: Springer, 2011), 61–80; Pauline Phemister, “Monads and Machines,” in *Machines of Nature and Corporeal Substances in Leibniz*, ed. Justin E.H. Smith and Ohad Nachtomy (Dordrecht: Springer, 2011), 39–60; Jeanne Roland, “‘The Organism, or the Machine of Nature’: Some Remarks on the Status of Organism in the Substantial Composition,” in *Machines of Nature and Corporeal Substances in Leibniz* (Dordrecht: Springer, 2011), 145–56; Smith, *Divine Machines*; Philippe Huneman, “Kant vs. Leibniz in the Second Antinomy: Organisms Are Not Infinitely Subtle Machines,” *Kant-Studien* 105, no. 2 (2014): 155–95.

<sup>15</sup> See Tobias Cheung, “From the Organism of a Body to the Body of an Organism: Occurrence and Meaning of the Word ‘Organism’ from the Seventeenth to the Nineteenth Centuries,” *British Journal for the History of Science* 39, no. 3 (2006): 319–39; Justin E.H. Smith, “A Mere Organical Body, Like a Clock; Organic Body and the Problem of Idealism in the Late Leibniz,” *Eighteenth-Century Thought* 4 (2009): 87–109.

<sup>16</sup> This perhaps results from the fact that many of the recent accounts of the structure of Leibnizian bodies are aimed at challenging an orthodox reading of Leibniz as a phenomenalist about

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the structures and motions pertaining to the organic body on its own terms, our understanding of an organic body is incomplete without an account of its corresponding soul. Here, I argue that understanding Leibniz's idea of the "spiritual automaton" enables us to understand more clearly his synthesis of spontaneity and mechanism in the relationship between the soul and its body. That is to say, Leibniz conceived of the immaterial, formal principles upon which he grounded his corporeal machines in terms partially borrowed from mechanism. If our knowledge of Leibniz's account of bodies has been extended as a result of this interest in the nature and structure of natural machines, focusing on the notion of "spiritual automaton" allows us to develop a more adequate understanding of the soul.

Understanding Leibniz's view of the correspondence between the body as "natural machine" and soul as "spiritual automaton" is important, further, for his account of spontaneity and freedom. Specifically, the correspondence highlights the essential connection between mechanism and spontaneity in Leibniz. Although mechanism and spontaneity are often treated as separate issues, the spiritual automaton shows their close connection. Typically, accounts of spontaneity focus on Leibniz's theories of perception, will and intellect, and do not emphasize its connection to Leibniz's views on mechanical causality. In doing so, they tend to leave the "spiritual automaton" unaccounted for.<sup>17</sup> Failure to recognize this relationship leads commentators to downplay the role that developments in natural science and mechanics play in

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bodies. On this reading of Leibniz, bodies are reduced to perceptual phenomena of exclusively spiritual substances. For a canonical phenomenalist interpretation, see Adams, *Leibniz*. For an examination of the structure of bodies from the perspective of the life-sciences that explicitly rejects the phenomenalist interpretation of Leibniz, see Smith, *Divine Machines*.

<sup>17</sup> Examples include the accounts of Sean Greenberg ("Leibniz Against Molinism: Freedom, Indifference, and the Nature of the Will," in *Leibniz: Nature and Freedom*, ed. Donald Rutherford and J. A. Cover, [Oxford: Oxford University Press, 2005], 217-233) and Michael J. Murray ("Spontaneity and Freedom in Leibniz," in *Leibniz: Nature and Freedom*, ed. Donald Rutherford and J. A. Cover [Oxford: Oxford University Press, 2005], 194-216), Bolton ("Change in the Monad"), and Jorati ("Monadic Teleology").

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Leibniz's theory of freedom.<sup>18</sup> I aim to remedy this problem within the literature by emphasizing the fact that Leibniz conceives soul itself in mechanistic terms.<sup>19</sup>

### **The Spiritual Automaton as Exemplar of Leibniz's Synthetic Methodology**

More significantly, I argue that the concept of the "spiritual automaton" is paradigmatic for Leibniz's distinctive philosophical method and approach to the philosophy of nature. Leibniz's mature period account of nature aims to reconcile traditional metaphysical and theological ideas with the modern mechanical philosophy. Leibniz is strongly committed to the natural theological claim that God is required to explain the creation and existence of nature. At the same time, however, Leibniz insists in the *De ipsa natura*, an essay presenting the principles of his philosophy of nature published in the *Acta Eruditorum* in 1698, that any successful theory of nature must provide an account of natural motion in terms of natural entities themselves. Leibniz thereby wants to avoid a form of occasionalism that would collapse all natural or secondary causality into Divine activity. For Leibniz, this means rehabilitating traditional conceptual tools from the Platonic and Aristotelian traditions such as form and matter, activity and passivity, unity and multiplicity, and *entelechy* within a modern mechanical framework.<sup>20</sup> Leibniz thus

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<sup>18</sup> See Greenberg, "Leibniz against Molinism," n.24. Greenberg argues that analyses of Leibniz's theory of spontaneity and the will ought to be divorced from questions of natural science and mechanics. By contrast, Jerome B. Schneewind notes Leibniz's image of the spiritual automaton and suggests that it leads Leibniz to propose a counterfeit form of freedom in *The Invention of Autonomy: A History of Modern Moral Philosophy* (Cambridge: Cambridge University Press, 1998), 241-242. Schneewind follows Kant's claims vis-à-vis Leibniz in the Second *Critique* in making this claim.

<sup>19</sup> On at least one occasion, Leibniz proves willing to attribute a certain sense of mechanism to the activities of souls or monads. For instance, in his letter to the Jesuit Des Bosses of August 19, 1715, Leibniz explains that monads act spontaneously according to "a certain eminent mechanism, so to speak [*mechanismo quodam eminente, ut sic dicam*]" (*LDB*, 349). This is a complex passage, but Leibniz seems to think that characterizing the monad's spontaneity as "mechanical" means that its activities take place according to intelligible reasons as opposed to in an obscure manner.

<sup>20</sup> For an account of Leibniz's metaphysics that foregrounds its Platonic elements, see Christia Mercer, *Leibniz's Metaphysics: Its Origins and Development* (Cambridge: Cambridge University Press, 2002). Daniel Garber ([*Leibniz: Body, Substance, Monad*. Oxford: Oxford University Press, 2009])

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employs an expansive Aristotelian definition of motion as change in general, rejecting the modern mechanical definition that tends to reduce physical motion to changes in the local position of bodies conceived as material masses. He also affirms the Aristotelian definition of a “nature” as an internal principle of motion or change. For instance, as Leibniz writes in *De ipsa natura* ¶3:

Now let us examine a bit more directly what that nature is, that nature which Aristotle not inappropriately called the *principle of motion and rest*; though, having taken the phrase rather broadly, that philosopher seems to me to understand not only local motion or rest in a place, but *change* in general and stasis or persistence. From this it also follows, as I might note in passing, that the definition of motion he gives, though more obscure than it ought to be, is not, however, as silly as it appears to those who understand it as if he wanted only to define local motion.<sup>21</sup>

Leibniz’s natural philosophy thereby extends beyond a modern form of physics narrowly construed as the analysis of the changes in position of material masses to what Leibniz claims are the internal qualitative, perceptual, and appetitive changes in souls. Nature is simultaneously the mechanical “*artificium dei*” as well as an infinite field of spontaneously acting substances, each possessing an internal formal principle of motion.

Leibniz’s attempted reconciliation of such intellectual traditions is of a piece with his explicitly *anti-sectarian* and *synthetic* approach to philosophy. Leibniz believes that the truth does not take sides and is consequently wary of intellectual schools claiming sole and exclusive possession of the truth. Leibniz claims that although there is often truth in the positive claims made by competing philosophical sects, they go wrong when they seek to criticize others. As Leibniz famously puts it to Nicholas Remond in January of 1714, “I have found that most of the

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provides a helpful account of the Aristotelian conceptual apparatus present in Leibniz’s metaphysics. For an examination of both Platonic and Aristotelian themes that Leibniz attempts to reconcile within his metaphysical definition of substance, see Jeffrey McDonough, “Leibniz’s Conciliatory Account of Substance,” *Philosopher’s Imprint* 13, no. 6 (2013): 1–23.

<sup>21</sup> AG 156/GP.IV 504. Aristotle defines nature as a principle of motion and change at *Physics* 3.1, 201b12. See AR 342.

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sects are right in a good part of what they propose, but not so much in what they deny.”<sup>22</sup> Indeed, as Mogens Lærke argues, Leibniz criticizes philosophical schools that think they have an exclusive grasp of or claim to the truth.<sup>23</sup> In developing his own theoretical system, Leibniz therefore seeks to preserve and synthesize the most fruitful ideas from different philosophical theories.

A number of commentators have emphasized Leibniz’s synthetic and conciliatory strategies. In the early 20<sup>th</sup> Century, Dietrich Mahnke forcefully argued that Leibniz’s system sought to enact a “universal-synthesis” bringing together all philosophical viewpoints. Mahnke highlighted this aspect of Leibniz’s philosophy to situate him within a distinctively German intellectual tradition including Kant and Hegel that was opposed to what Mahnke dubbed “learned-onesidedness [Gelehrteneinseitigkeit].”<sup>24</sup> More recently, Christia Mercer has argued that Leibniz’s approach embodies a form of “conciliatory eclecticism” that seeks synthesize the views of disparate philosophical groups in the interest of promoting intellectual peace. In defining her key term, Mercer writes: “I use the somewhat vague designation ‘conciliatory eclecticism’ to refer to any eclecticism that attempts to combine the views of some group of apparently incompatible philosophies into a coherent system.”<sup>25</sup> To illustrate Leibniz’s conciliatory brand of eclecticism, Mercer identifies a number of Platonic and Aristotelian theses present in Leibniz’s early metaphysical projects. Additionally, she suggests that Leibniz adopts a “rhetoric of attraction” by means of which Leibniz gently nudges his interlocutors towards the

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<sup>22</sup> L655/G III 607.

<sup>23</sup> See Mogens Lærke, “The Golden Rule: Leibniz’s Method for Religious Controversies,” in *The Practice of Reason: Leibniz and His Controversies*, ed. Marcelo Dascal (Amsterdam/Philadelphia: John Benjamins, 2010), 297-320.

<sup>24</sup> See Dietrich Mahnke, *Leibniz Als Gegner Der Gelehrteneinseitigkeit* (Stade: A. Pockwitz, 1912); *Leibnizens Synthese von Universalmathematik und Individualmetaphysik*, ed. Edmund Husserl, *Jahrbuch Für Philosophie Und Phänomenologische Forschung* vol. 7 (Halle: Max Niemeyer Verlag, 1925), 305-612.

<sup>25</sup> Mercer, *Leibniz’s Metaphysics*, 28n17.

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truth. Mercer claims that Leibniz's adoption of such a strategy helps to explain what would otherwise appear to be inconsistency between examples of Leibniz's philosophical pronouncements. Rather than resulting from a lack of intellectual discipline or logical rigor, apparent inconsistencies between Leibniz's claims may be understood as the result of Leibniz adjusting the way he presents his views based upon the commitments of his particular interlocutor or wider audience.<sup>26</sup>

Maria Rosa Antognazza also emphasizes Leibniz's conciliatory approach in her recent intellectual biography of Leibniz. Antognazza argues that reconciliation serves as a key to understanding the unity of Leibniz's intellectual and practical pursuits:

Despite the potentially confusing kaleidoscope of his theoretical and practical activities, the breadth, length, and depth of Leibniz's intellectual life converged in a master project which unified most of his apparently miscellaneous endeavours and therefore provides a key to distilling from his innumerable and wide-ranging fragments a central objective consistently if episodically pursued. Throughout his life Leibniz nursed essentially the same dream: the dream of recalling the multiplicity of human knowledge to a logical, metaphysical, and pedagogical unity, centred on the theistic vision of the Christian tradition and aimed at the common good.<sup>27</sup>

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<sup>26</sup> "According to Leibniz, the successful presentation of the truth must have the right mixture of philosophical insight and rhetoric. In proposing a conciliatory position to an Aristotelian, the conciliator would use Aristotelian terminology, ask the interlocutor to consider the underlying similarity between the proposed view and that of the ancient, and then suggest a relation between the proposal and the view of a very different author, say, Descartes. The clever conciliator will be able to engage any sectarian in a similar fashion. If the members of different schools are made to see a plausible and interesting connection between their views, then they will be set to thinking about the new proposal. By such means, some small peace will be forged between the warring camps; at the very least, the intellectual distance between them, and their mutual mistrust will have been diminished. The desired peace could not be forged if too many of the fundamental assumptions are too obvious. They have to be obscure enough so that the reader will discover them only after the right amount of deep thinking. As the careful student of Leibniz's philosophy well knows, his most basic assumptions are often unavailable in his texts. One has to discover them beneath the surface and piece them together from scattered suggestions. Russell famously argued that Leibniz's tendency to hide his real philosophy and to change his terminology was due to his desire for 'cheap popularity.' One of the happy consequences of my interpretation is that it renders such behavior the second part of Leibniz's conciliatory method. His lack of intellectual forthrightness was due to virtue rather than vanity. Leibniz's rhetorical strategy was nothing less than the means to save our souls." Mercer, *Leibniz's Metaphysics*, 56.

<sup>27</sup> Maria Rosa Antognazza, *Leibniz: An Intellectual Biography* (Cambridge: Cambridge University Press, 2009), 6.

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In particular, Antognazza draws attention to Leibniz's project of Church reform, as he worked over the course of his life to reconcile the theological and political claims of divergent Christian sects.

Glenn Hartz claims that Leibniz's anti-sectarian approach leads to a form of *theory-pluralism* with regards to metaphysical hypotheses concerning the real existence of non-mental entities. Hartz suggests that Leibniz is a "theory-pluralist" as a way of addressing the question of whether or not Leibniz was an "idealist" holding that everything is a mind or mind-like, or a "realist" who held that at least one thing was not a mind. According to Hartz, theory-pluralism acknowledges that theories *themselves* are not true; rather there is a truth that theories attempt to explain. Hartz's solution is to argue that although idealism and realism are incompatible *qua* theories, they nonetheless cohabit as competing claims about what is *possibly* true within Leibniz's expansive anti-sectarian philosophical system:

On Theory-Pluralism, [Leibniz is] doing about what one could expect him to do: welcoming in discordant elements because the claims he makes are relativized to the theory in which they have their home. "In the end, there are simple substances alone" is true according to the Idealist theory, but there are simple and composite substances in the Realist one. He can say both, without embarrassment, in the same paragraph because, while stated in the "language of Truth," they are actually truth-claims at home in separate theories which need not, for us in our current condition of ignorance, compete for exclusive allegiance.<sup>28</sup>

In other words, Hartz claims that at times Leibniz argues for and at times against the real existence of non-mind like entities. On Hartz's view, these two incompatible theories both find support within Leibniz's wider theory-pluralistic framework.

Jeffrey McDonough also applies a conciliatory framework to Leibniz's conception of substance in a recent paper. Suggesting that Hartz-style theory pluralism is insufficient to capture

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<sup>28</sup> Glenn A. Hartz, *Leibniz Final System. Monads, Matter, and Animals* (London-New York: Routledge, 2006), 27.

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the nature of Leibniz's approach, McDonough argues that Leibniz seeks a deeper truth that could comprehend both realism and idealism.

Careful attention to Leibniz's metaphysical commitments, the specific nature of his conciliatorism, and the demands of both traditional views of substance suggests that Leibniz need not be read as offering an exclusive defense of corporeal substance realism nor of immaterial substance idealism. Nor need he be read as being deeply torn, at a time or over time, between two radically opposed metaphysical schemes. Instead, he may be seen as characteristically seeking to reconcile two traditionally rival conceptions of substance, as aiming to reveal a deeper, hidden truth that might be embraced by both sides of an age-old dispute.<sup>29</sup>

McDonough's strategy in the paper is to identify theses from Platonic (idealist) and Aristotelian (realist) theories that surface in Leibniz's theory of substance.

Encouraging as these accounts of Leibniz's conciliatory strategies are, they do not, in my view, go far enough. Such accounts tend to analyze the overall themes and motivations of Leibniz's philosophical project or seek to resolve a perceived incompatibility between competing metaphysical theses. With the exception of McDonough, recent accounts stop short of applying the conciliatory or synthetic framework to the development of individual concepts themselves. McDonough's account, however, narrowly restricts its scope to identifying Platonic and Aristotelian elements at work in Leibniz's concept of substance. Though it is necessary to recognize that Leibniz draws on Platonic and Aristotelian themes, we need to understand how Leibniz integrates elements from the Epicurean and mechanical philosophical approaches into the notion of substance as well. When, for example, Leibniz refers to the notion of a simple substance as a "formal atom," why not see him as appropriating the Epicurean insight that at the basis of nature are indivisible atomic elements while rejecting the view that such atoms are

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<sup>29</sup> McDonough, Leibniz's Conciliatory Account, 2.

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*material* in nature?<sup>30</sup> A thorough accounting of Leibniz's conciliatory strategy, as applied to the notion of substance, needs to address its atomist heritage in addition to its Platonic and Aristotelian basis.

In this dissertation, I focus on the concept of the "spiritual automaton" because it embodies and exemplifies the full scope of Leibniz's harmonizing process within the framework of a single concept for the soul. Indeed, the "spiritual automaton" itself fuses together the traditional notion of an incorporeal soul with an image borrowed from the modern mechanical philosophy, namely that of a self-moving machine. In sum, the "spiritual automaton" enables us to grasp the full dimensions of Leibniz's synthesizing strategy at the specific level of the development of concepts and not merely at the more general level of the broad themes in his philosophy.

### **The Spiritual Automaton as Exemplar of Leibniz's Philosophical Rhetoric**

One challenge for interpreting the spiritual automaton is the question of how to address its status as a philosophical figure of speech. Does Leibniz use the term in a literal or figurative sense? What conclusions could we draw in either case? Such questions arise not only because it is an unusual coinage but also because Leibniz himself often qualifies his usage of the term, for instance writing that the soul is "so to speak" a spiritual automaton, thus suggesting that he is using the term in some type of non-literal sense.<sup>31</sup>

It seems clear enough, for instance, that Leibniz does not want to claim that the soul is literally a spiritual automaton in the sense of being a self-moving machine or mechanism. As we

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<sup>30</sup> The mature Leibniz rejected the notion of a *material atom* as conceptually incoherent. Since matter is by definition infinitely divisible, we can never come to the type of indivisible material atoms posited by the Epicureans.

<sup>31</sup> See AG 215/GP.VI 609-10.

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will see, for Leibniz, the soul is by definition something *simple*, that is, something that lacks parts. Given that self-moving mechanical automata are aggregates of functionally integrated parts, the literal identification of the unitary soul with such a mechanical automaton would seem to be off the table. For this reason, I do not argue that Leibniz literally wants to classify the soul as a mechanical automaton.

Even if this literal sense of formally identifying the soul with a self-moving mechanical automaton is to be avoided, there is, however, a quite clearly literal sense according to which the soul is an “automaton.” I show that one of the core features of the Leibnizian notion of the soul is *spontaneity*, that is to say self-motion. Conceiving of a substance, including its incorporeal components as moving themselves spontaneously is one of the key planks of Leibniz’s mature philosophy of nature. Leibniz suggests that his conception of spontaneity has greater intelligibility and hence certainty, *qua* hypothetical explanation of nature than any other competing system — Scholastic, mechanical, occasionalist or otherwise. This is because, on Leibniz’s model, spontaneous activity results from a force that requires no outside impetus in order to spring into action. Thus, Leibniz’s identification of the soul as a self-moving automaton of a spiritual variety is in conformity with his overall view of substances as spontaneously self-moving. We can see the conformity of Leibniz’s use of the term “automaton” with the notion of the immaterial soul in a text entitled *Tabula notionum praeparanda* (1685/6). The *Tabula notionum praeparanda* is one of the texts comprising Leibniz’s project of a *scientia generalis* and consists of a series of definitions. Here, in the context of defining the body of the living thing, Leibniz writes:

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“Corpus vivens est Automaton sui perpetuativum ex naturae instituto, itaque includit nutritionem et facultatem propagativam, sed generaliter vivens est Automaton (seu sponte agens) cum principio unitatis, seu substantia automata.”<sup>32</sup>

In this passage, not only does Leibniz identify the body of a living thing as an automaton, he suggests that there is a more general definition of automaton that involves acting spontaneously [*sponte agens*]. This general definition enables Leibniz to identify the principles of unity proper to a given substance as itself a “substantial automaton.”<sup>33</sup> Thus, not only does Leibniz accept a more general definition of “automaton” that involves spontaneous activity regardless of whether that spontaneous activity happens in a fashion that is literally mechanical, he identifies the principle of unity proper to a given substance as a substantial automaton. In his later system of natural philosophy, the soul will play the role of such a principle of unity. Though the definition of automaton in the *Tabula notionum praeparanda* was composed roughly a decade prior to Leibniz’s first public use of the term “spiritual automaton,”<sup>34</sup> it provides evidence that Leibniz is willing to entertain a more general sense of automaton and apply it to unitary self-movers as well as mechanical aggregates.<sup>35</sup>

The literal sense in which the soul is an automaton notwithstanding, we must nevertheless interpret the way that Leibniz often *qualifies* his conception of the soul as a spiritual automaton.

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<sup>32</sup> A.vi.4 633; “A living body is a self-perpetuating automaton instituted by nature, that is including a nutritive and reproductive faculty, but generally a living thing is an automaton (or something acting spontaneously) with a principle of unity, or automatic substance” (translation mine).

<sup>33</sup> Reading “seu substantia automata” from the original as ablative.

<sup>34</sup> At this point he would have already seen Spinoza’s use of the term in the *Tractatus de intellectus emendation*. See A.vi.4 1758.

<sup>35</sup> As a point of historical interest, the eighteenth-century German philosopher Alexander Baumgarten will define the term *automaton* in a similarly expansive sense, thereby licensing the use of the term *spiritual automaton* to characterize the soul. In paragraph ¶¶704-705 of his *Metaphysica* Baumgarten defines an automaton as something changes itself and applies this to the soul: “Many of my actions, or rather all of them properly so called, and hence the actions of my soul as well, are spontaneous, and so are to be attributed to it as much as spontaneity is to be attributed to my soul. If something changing itself is called an automaton, then the soul would be an automaton.” Alexander Baumgarten, *Metaphysics: A Critical Translation with Kant’s Elucidations, Selected Notes, and Related Materials*, ed. Courtney D. Fugate and John Hymers (London and New York: Bloomsbury, 2013), 251.

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The question is of course especially pressing in view of my claim that Leibniz uses the image in order to understand the soul on analogy with an automaton specifically conceived as a self-moving mechanical device. Leibniz does recognize the utility of figurative language in philosophic settings. As is well-known, Leibniz's philosophical writings are populated by a number of important metaphors. Simple substances are compared to "living mirrors."<sup>36</sup>

Overturning the common image of the tree as representative of the ordering of the sciences, Leibniz likens the sciences to an ocean with no fixed borders or hierarchy.<sup>37</sup> Linguistic signs are likened to currency.<sup>38</sup> From this vantage point, Leibniz's figurative comparison of a metaphysical concept such as the immaterial soul to a mechanical automaton would seem to be consistent with his general willingness to employ analogies and metaphors in key philosophical contexts. Indeed, Donald Rutherford lists the spiritual automaton as a clear example of a philosophical metaphor in Leibniz.<sup>39</sup>

Generally speaking, Leibniz views analogies as heuristic tools. By drawing analogies between different types of phenomena, Leibniz suggests, we are often able to search for and identify hidden causes. Analogies therefore play a key role as part of Leibniz's *ars inveniendi* or art of discovery. Writing about methods of empirical discovery in the *Praefatio ad libellum elementorum physicae* (summer 1678-winter 1678/9), Leibniz likens analogies to the key that helps us begin deciphering a code:

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<sup>36</sup> See, for instance, Leibniz's June 1703 letter to Burchard De Volder (AG 177/GP.II 252). For an account of Leibniz's use of the mirror metaphor, see Cristina Marras, "Mirrors That Mirror Each Other: Metaphor as Key Tool for Conceptualizing the 'Unity-Cum-Plurality,'" in *Einheit in Der Vielheit VIII Internationaler Leibniz-Kongress*, ed. Jürgen Herbst, Herbert Breger, and Sven Erdner, (Hannover: Gottfried-Wilhelm-Leibniz-Gesellschaft, 2006), 556–64.

<sup>37</sup> Cristina Marras, "The Use of Metaphor in Leibniz," in *Leibniz: What Kind of Rationalist?*, ed. Marcelo Dascal (Dordrecht: Springer, 2008), 199–212.

<sup>38</sup> Marcelo Dascal, "Language and Money: A Simile and Its Meaning in 17th Century Philosophy of Language," *Studia Leibnitiana* 8 (1976): 187–218.

<sup>39</sup> Donald Rutherford, "Metaphor and the Language of Philosophy," in *Leibniz et Les Puissances de Langage*, ed. Dominique Berlioz and Frédéric Nef (Paris: J. Vrin, 2005), 271–84.

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"Analogies are useful in guessing at causes and in making predictions. The hypothetical method a posteriori, which proceeds from experiments, rests for the most part upon analogies. For instance, seeing that many terrestrial phenomena agree with magnetic phenomena, some men teach that the earth is a great magnet, that the structure of the earth corresponds to this, and that heavy bodies are drawn to earth as a magnet draws iron... We must guard against the abuse of analogies. Yet they can be of exceedingly great use in making inductions and in setting up aphorisms from inductions by means of which we can also make predictions about matters of which we as yet have little experience. This too is useful in investigating the true causes of things, for it is always easier to discover the cause of a phenomenon which several things have in common. So it is also easier to solve cryptographs when we have found a number of letters in the concealed meaning which are written according to the same key. Then too, the cause of the same phenomenon can be investigated more easily in one subject than in another, as anatomists who dissect different animals well know.<sup>40</sup>

To the degree that analogies capture useful structural similarities between different sets of phenomena, they serve as heuristic devices enabling us to begin to conceptualize a set of phenomena. Though analogies should not be overused or pushed past their limits, we ought to take advantage of them to the degree that they bear fruit in empirical inquiry. Insofar as Leibniz holds that the soul is a metaphysical requisite presupposed in corporeal reality, we might view Leibniz as comparing the soul to a spiritual automaton to help us begin to conceive the way that the soul is causally responsible for a certain set of phenomena within nature.

In my view, Leibniz's "spiritual automaton" incorporates these features of useful analogies and goes beyond them. When Leibniz compares the soul to a mechanical automaton, he is not merely relating the soul to a mechanical device heuristically. Rather, Leibniz points to the soul's direct correspondence with a specific corporeal automaton. Within the context of the mature Leibniz's theory of preestablished harmony, the soul is said to express its body. As commentators have pointed out, Leibniz uses the notion of *expression* to indicate that there is an

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<sup>40</sup> L284/A.vi.4 2000-1.

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isomorphic relation between the structures of two mutually expressing things.<sup>41</sup> Thus, a map is said to express a territory to the degree that the contours of the shapes drawn on the map bear an intelligible relation to the real contours of the territory. Similarly, a model is said to express a machine insofar as the functional relations and motions of its parts are isomorphic to the functional relations and parts of the machine itself.<sup>42</sup> The expressive relation between soul and body ultimately allows the two entities to act both independently *and* in parallel or harmony with one another. Leibniz captures their correspondence with the image of two clocks set to tell the same time; their correspondence depends upon the way that their natures are formed to act in parallel.<sup>43</sup> Thus the particular structural analogy governing the nature of the soul as “spiritual automaton” — namely its analogy to the workings of the bodily or corporeal automaton proper to it — is not merely an extrinsic comparison. The analogy captures the intrinsic nature of both the soul and body as expressly crafted to mutually express one another.

In addition to the *expressive* relation Leibniz posits between the soul and body, we can isolate three conceptual features of the mechanical automaton that Leibniz incorporates in the concept of the soul. First, mechanical automata move themselves spontaneously according to the

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<sup>41</sup> For a classic study on Leibniz’s view of expression, see Mark Kulstad, “Leibniz’s Conception of Expression,” *Studia Leibnitiana* 9 (1977): 55–76. Deleuze, *Expressionism* sees the notion of expression as central to the Leibnizian philosophy and on this ground links Leibniz to Spinoza.

<sup>42</sup> Leibniz provides the example of the machine as well as others in a passage from the essay *Quid sit Idea* of 1677:

That is said to express a thing in which there are relations [*habitudines*] which correspond to the relations of the thing expressed. But there are various kinds of expression; for example, the model of a machine expresses the machine itself, the projective delineation on a plane expresses a solid, speech expresses thoughts and truths, characters express numbers, and an algebraic equation expresses a circle or some other figure. What is common to all these expressions is that we can pass from a consideration of the relations in the expression to knowledge of the corresponding properties of the thing expressed. Hence it is clearly not necessary for that which expresses to be similar to the thing expressed, if only a certain analogy is maintained between the relations (L207).

<sup>43</sup> The analogy of the two clocks is first posed in Simon Foucher’s September 1695 response to the *Système nouveau*. Foucher suggests that on Leibniz’s model the existence of bodies might be superfluous (WF 43/GP.4 488-9). Leibniz adopts the image in his letter of January 3 1696 to Basnage de Beauval (WF 62/GP.4 498-9).

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laws of their mechanical structure; this is analogous to the way that a soul moves itself according to its internal principle of motion. Second, mechanical automata and the final causes they exhibit exist as a product of artificial design. Conceiving of souls as products of God's artifice allows Leibniz to explain the way that the activities of souls harmonize with each other as well as with their bodies according to the hypothesis of preestablished harmony. Third, mechanical automata can act spontaneously yet involuntarily. When applied to the soul, this allows Leibniz to explain how perceptions arise that we did not expressly will or choose. In each case, Leibniz transforms the particular mechanical attribute in question to conform to the nature of the soul as a simple, immaterial entity.

In the course of this dissertation, I elucidate Leibniz's integration of each of these three features of the mechanical automaton into the theory of the soul. Crucially, Leibniz's embrace of all three aspects of the automaton will serve to distinguish his approach from the philosophical alternatives he rejects. In Chapter Three, for instance, I argue that Descartes's account of the animal automaton runs into difficulties because he cannot openly affirm a notion of divine design. Leibniz faces no such difficulty. In Chapter Four, I argue that Spinoza affirms the spontaneity of the automaton while denying notions of design and blind activity. Leibniz, in contrast, affirms spontaneity, design, and blind activity.

### **Methodological Challenges in the Study of Leibniz**

Leibniz's extraordinary intellectual productivity poses a number of challenges to interpretation. Leibniz was a polymath whose efforts ranged over a vast array of projects and topics, both theoretical and practical. Theoretical domains to which Leibniz made substantial contributions include mathematics, physics, natural history and biology, geology, linguistics, historiography,

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civic engineering and theology. Leibniz was interested in the institutional development and promotion of knowledge, founding and participating in scientific societies and journals.<sup>44</sup>

Leibniz's philosophical writings appear in multiple genres: books, short essays and journal articles, and innumerable letters and fragments. Much of Leibniz's corpus remains unpublished in manuscript form, and our understanding of Leibniz's thought continues to grow as new material is released. In view of Leibniz's many projects and genres, it is difficult to extract a set of philosophical propositions that Leibniz may have held in abstraction from his myriad concrete theoretical and practical engagements.

There, is, further, the question of when to take Leibniz at his word. In the early twentieth-century, for instance, a prominent interpretation of Leibniz held that we can distinguish a "real" set of Leibnizian theses from his public pronouncements. Leibniz's supposed core doctrine was based on specific logical doctrines and principles including the complete-concept theory and the principles of reason and non-contradiction. On this view, Leibniz's "real" views are presented in the *Discourse on Metaphysics*, and texts such as the *Monadology* become presentations meant for public consumption.<sup>45</sup> Recent commentators have departed from this line of interpretations in several ways. Some commentators have questioned the view that Leibniz's philosophy results

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<sup>44</sup> For an intellectual biography of Leibniz detailing his array of interests, projects and contributions, see Antognazza, *Leibniz*.

<sup>45</sup> This represents Bertrand Russell's view (*A Critical Exposition of the Philosophy of Leibniz*. 2nd Edition. [London: Allen and Unwin, 1937]). As Russell writes in the Preface to the First Edition: I found myself, after reading most of the standard commentators and most of Leibniz's connected treatises, still completely in the dark as to the grounds which had led him to many of his opinions. Why he thought that monads cannot interact; how he became persuaded of the Identity of Indiscernibles; what he meant by the law of Sufficient Reason – these and many other questions seemed to demand an answer, but to find none. I felt – as many others have felt – that the *Monadology* was a kind of fantastic fairy tale, coherent perhaps, but wholly arbitrary. At this point I read the *Discours de Métaphysique* and the letters to Arnauld. Suddenly a flood of light was thrown on all the inmost recesses of Leibniz's philosophical edifice. I saw how its foundations were laid, and how its superstructure rose out of them. It appeared that this seemingly fantastic system could be deduced from a few simple premises, which, but for the conclusions which Leibniz had drawn from them, many, if not most, philosophers would have been willing to admit (xiii-xiv).

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from a single core or systematic doctrine. Michel Fichant has suggested in *L'Invention Métaphysique*, for instance, that there are at least three “voies” that contribute to the ongoing development of Leibniz’s philosophical thought. He identifies these as relating to theology, physics, and logic, respectively. Each of these “voies” responds to different theoretical exigencies and problems and as such express themselves in subtly different ways in Leibniz’s actual written output.<sup>46</sup>

Another fruitful strategy for approaching Leibniz’s corpus is to adopt an interpretative framework that traces Leibniz’s philosophical development diachronically across time. Daniel Garber’s 2009 book *Body, Substance, Monad*, is the most notable recent example of this trend. Here Garber argues that Leibniz’s metaphysics and natural philosophy moves from an unorthodox form of Hobbesian materialism through a modified form of Aristotelian corporeal substance ontology to an idealistic monadological phenomenalism. Garber stresses that his approach attempts to avoid the trap of reading Leibniz in a way that collapses all of his philosophical views into the rather late doctrine of monads.<sup>47</sup>

To address these challenges, I emphasize the way that the concept of the soul as “spiritual automaton” becomes intelligible as a result of Leibniz’s general synthetic and conciliatory orientation. This orientation leads Leibniz to develop his philosophical views by way of an active engagement with the philosophical and intellectual scene of his day. I therefore draw attention to the wider intellectual context in which Leibniz operated in order to shed light on his formulation

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<sup>46</sup> See Michel Fichant, “L’Invention métaphysique,” In *G.W. Leibniz: Discours de Métaphysique Suivi de Monadologie et Autres Textes*, ed. Michel Fichant (Paris: Gallimard, 2004), 7-140. For another example of this type of approach, also in the Francophone context, see André Robinet, *Architectonique disjonctive, automates systématiques et idéalité transcendentale dans l’œuvre de G.W. Leibniz* (Paris: J. Vrin, 1986). The “theory-pluralism” of Hartz (*Leibniz’s Final System*) likewise belongs to this group of interpretations.

<sup>47</sup> See Garber, *Body, Substance, Monad*. Arthur also adopts a roughly developmental approach in *Leibniz*.

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of the notion of the soul as spiritual automaton. I focus in particular on Leibniz's receptions of Hobbes, Descartes and Spinoza because they serve as important case studies in helping us to reconstruct the philosophical problems that lead Leibniz to develop his particular account of the soul. In addition to reconstructing the problems on the basis of which Leibniz formulated the concept of the spiritual automaton, I show how Leibniz deploys the spiritual automaton as an intellectual tool to combat the occasionalism of Pierre Bayle. Examining the way that Leibniz deploys the concept in a specific philosophical controversy provides us with further insight into his conception of the soul as well as the philosophical problems it was designed to address.

Chapter One features an analysis of Leibniz's introduction of the concept of the spiritual automaton in the *Système nouveau* of 1695. I compare the spiritual automaton with the notion of the living body as a "machine-of-nature" and show how the notion of the spiritual automaton emerges in the context of Leibniz's dynamical theory of forces and the corresponding mature doctrine of substantial spontaneity. The goal of this chapter is to underscore the central conceptual issues related to Leibniz's mature period philosophy of nature in general as well as theory of the soul as spiritual automaton in particular.

Chapter 2 addresses Leibniz's early reception of Hobbes's mechanical philosophy as a precursor of his later appropriation of the automaton for the science of the soul. Although Leibniz rejects reductively materialistic versions of the mechanical philosophy, he is willing to accept the truth of mechanism provided it is grounded in the workings of incorporeal substances such as souls. I argue that although Leibniz criticizes Hobbes's reductively materialistic account of nature, he nonetheless appropriates the key Hobbesian concept of *conatus* to explain the connection between the body and the mind. This provides an early instance of the way that

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Leibniz conceives of the activities of the body as resulting from the continuation of mental motions.

Chapter Three examines Leibniz's philosophical account of automata in light of his reception of Descartes. Descartes famously compared animal bodies to self-moving machines or automata, arguing that animal behavior could be understood on purely mechanical grounds without reference to souls or sensation. Further, Descartes contrasts human freedom with the actions of an automaton, which simply carry out motions dependent upon their initial design. Leibniz accepts the thesis that animals are automata but argues that they also have souls that perceive the world. Further, Leibniz rejects Descartes's conception of freedom, arguing instead that spontaneity and freedom are compatible with the design proper to an automaton. All souls – animal as well as human – are thus spiritual automata that spontaneously carry out the motions God has determined in advance.

Chapter Four contrasts Leibniz's account of the spiritual automaton with the account that he found in Spinoza's *Tractatus de intellectus emendatione*. I examine Leibniz's reading notes taken in early 1678 as well as the *Animadversiones ad Wachteri librum* in 1706. In Spinoza's view, the soul acts as a spiritual automaton when it acts according to the laws of the intellect to reproduce the order of nature. Although Spinoza also conceived of the spiritual automaton as acting spontaneously, Leibniz explicitly opposes Spinoza's account. Leibniz insists that the soul acts as a spiritual automaton in producing all of its perceptions, not just those that are adequate ideas of nature.

Where the first four chapters analyze and explain the development of Leibniz's conception of the spiritual automaton, Chapter Five shows how Leibniz uses the concept to intervene into a specific controversy in the early eighteenth-century. The controversy in question

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is the debate over plastic natures between Pierre Bayle and Jean Le Clerc. When Le Clerc published Ralph Cudworth's *True Intellectual System of the Universe* as part of his *Bibliothèque choisie* in 1703. Bayle accuses Cudworth (and Le Clerc) of unwittingly opening the door to atheism by proposing a theory of incorporeal "plastick nature" capable of organizing matter. Bayle thought it theologically safer to attribute such organization to God alone. I show that the concept of the soul as spiritual automaton gives Leibniz a tool with which to intervene in this debate, and that he uses it to do so in the *Essais de Théodicée*.

## Chapter One

### **Spontaneity and Automata in Leibniz's *Système Nouveau***

Leibniz's first substantive usage of the term "spiritual automaton" is in the *Système nouveau de la nature et de la communication des substances, aussi bien que de l'union qu'il y a entre l'âme et le corps*. Leibniz published the text of the *Système nouveau* in two installments in the French *Journal des Savants* in the summer of 1695. In the *Système nouveau*, Leibniz sought to publicize his views to a wider intellectual public, in this case the French Cartesians.<sup>48</sup> The work represents a milestone within Leibniz's philosophical output: it presents Leibniz's mature natural philosophical synthesis in public for the first time and situates his positions as the culmination

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<sup>48</sup> In describing his 1714 text *Principes de la nature et de la grace, fondés en raison*, Leibniz writes to Nicholas Remond on August 26, 1714:

I had hoped that this brief writing would contribute to making my meditations better understood, by uniting in it what I had published in the journals of Leipzig, Paris, and Holland. In those [pieces published in] Leipzig I adjust myself to the language of the School, whereas in the others I adjust myself more to the style of the Cartesians (AC 446, GP III 624).

For more on the way that Leibniz shapes his views for Cartesian audiences, see Stuart Brown, "Leibniz's New System Strategy," in *Leibniz's "New System" (1695)*, ed. R.S. Woolhouse (Florence: Olshki, 1996) 37–61; Pauline Phemister (*Leibniz and the Natural World: Activity, Passivity, and Corporeal Substances in Leibniz's Philosophy* [Dordrecht, the Netherlands: Springer, 2005], 7–29) suggests that the fact that Leibniz tailored many of his published claims to accord with certain Cartesian assumptions has ultimately led to current interpretations of Leibniz as an "idealist." This is because such "idealist" interpretations of Leibniz rely upon the assumption that Leibniz in fact subscribed to the strong type of mind-body dualism introduced by Descartes. As I argue in Chapter 2, with regards to the modern mechanical philosophers, Leibniz's view of the relation of mind and body is better understood as broadly *Hobbesian* rather than *Cartesian*.

of a long autobiographical development and in relation to competing philosophical systems.

In this chapter, I provide an account of the role that the notion of the “spiritual” automaton plays within the conceptual economy of the *Système nouveau*. The spiritual automaton is connected to Leibniz's theory of substantial spontaneity, according to which a substance produces all of its own states as a result of its action alone. This gives me occasion to show how a focus on the spiritual automaton as an image for the soul can contribute to the ongoing debate about the soul's spontaneous activity.<sup>49</sup> The theory of spontaneity is linked, in turn, with Leibniz's *dynamics* or science of forces, which he had begun developing in the late 1670s as a response to Cartesian physics. Leibniz's dynamics enables him to attribute a notion of active force to substances by means of which they are continuously, and thus spontaneously, springing into motion.

Leibniz justifies his striking claim about the nature of substances by means of a theory of creation according to which God arranges, in advance, for the actions of substances to agree with one another. Thus, even though substances are self-sufficient in the sense that they act by means of their own power alone, they appear to communicate with each other insofar as God has arranged their activities to unfold harmoniously. In the *Système nouveau* itself, Leibniz portrays his theory of agreements as a superior alternative to two other philosophical accounts of substantial interaction. These are the hypotheses of influence and of occasional causes, respectively. Leibniz's theory of agreements will come to be known as the “preestablished harmony” between substances.<sup>50</sup>

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<sup>49</sup> See Rutherford, “Leibniz on Spontaneity”; Bolton, “Change in the Monad”; Jorati, “Monadic Teleology,” “Three Types of Spontaneity.”

<sup>50</sup> One consequence of Leibniz's approach in the *Système nouveau* was thus eventual formalization of what Leibniz called three “systems” of natural philosophy, those of “physical influx,” “occasional causes” and “pre-established harmony.” For accounts of Leibniz's three competing systems, see Eileen O'Neill, “Influxus Physicus,” in *Causation in Early Modern Philosophy*, ed. Steven Nadler

In the context of the theory of spontaneity and pre-established harmony, Leibniz introduces the notion of the “spiritual automaton” as a model illustrating the spontaneous nature of the soul. In the *Système nouveau*, body and soul are conceived of as two substances whose activities and states mutually express one another. Whereas the body is a physico-mechanical automaton made up of an infinite number of mechanical parts, the soul is a “spiritual automaton” that passes through an ordered series of perceptive states. Leibniz holds that while the body as physico-mechanical automaton and the soul as spiritual automaton act independently according to their own laws, their mutual expression produces the semblance of interaction between soul and body. Understanding the conceptual nature and role of the “spiritual automaton” within Leibniz's natural philosophy as a whole thus requires understanding Leibniz's characteristic theory of the spontaneity of a substance and the parallel notion of the corporeal “machine of nature.”

### **1.1 Leibnizian Substances and the Doctrine of Spontaneity**

The theory of substantial spontaneity is one of the cornerstones of Leibniz's mature natural philosophy. According to this doctrine, all substances possess an internal principle of motion by means of which they produce their activities. The activity of an individual substance takes place, moreover, completely independently and without influence from other substances. In the *Système nouveau*, the theory applies both to the local relation of the soul and the body as well as to the global relations pertaining to all substances. Here I situate the theory of spontaneity within the development of Leibniz's natural philosophy, and I examine his autobiographical presentation of

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(State College: Penn State University Press, 1993), 27-55; Marta De Mendonça, “Leibniz's Conception of Natural Explanation,” in *Leibniz: What Kind of Rationalist?* edited by Marcelo Dascal (Dordrecht: Springer, 2008), 183-98.

its emergence. In this way, I highlight the philosophical problems motivating Leibniz to adopt the view that all actions arise spontaneously through the internal nature of individual substances.

The notion that everything that happens to a substance follows from its essence alone can be found in the *Discours de Métaphysique* of 1686.<sup>51</sup> There it is associated with Leibniz's *in esse* notion of truth, according to which a true statement about a substance is one in which the predicate is contained in the complete concept of the substance. On this model, what happens to a substance follows logically and analytically from its concept, which Leibniz conceives as an indefinitely extensible list of predicates involving everything that can be said of a substance over its history. Leibniz refers to such a concept as "complete" in that it details all that can be predicated of the substance in question.<sup>52</sup> As Leibniz writes in ¶8 of the *Discours de*

*Métaphysique*:

Now it is evident that all true predication has some basis in the nature of things and that, when a proposition is not an identity, that is, when the predicate is not explicitly contained in the subject, it must be contained in it virtually. That is what the philosophers call *in-esse*, when they say that the predicate is in the subject. Thus the subject term must always contain the predicate term, so that one who understands perfectly the notion of the subject would also know that the predicate belongs to it... Since this is so, we can say

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<sup>51</sup> Christia Mercer suggests in *Leibniz's Metaphysics* that the theory of spontaneity can be found as early as Leibniz's 1668 theological writings. There it takes the form of what Mercer refers to as "The Principle of Self-Sufficiency" (94-98). In my view, Mercer postulates too great a continuity between the early and late Leibniz. Leibniz's mature doctrine of spontaneity is dependent upon his rehabilitation of substantial forms in the late 1670s.

<sup>52</sup> There is a voluminous literature on the notion of the complete-concept. Bertrand Russell and Louis Couturat both saw it, together with the principle of reason and the logical claim that truth is the inclusion of the predicate within the subject, as comprising the very core of Leibniz's philosophy. See Russell, *A Critical Exposition*; Loius Couturat, "Sur La Métaphysique de Leibniz" *Revue de Métaphysique et de Morale* 10 (1902): 1-25. This interpretation set the tone for much of twentieth-century scholarship in Leibniz. For instance, Stuart Brown follows this line in interpreting the *Système nouveau* in "Leibniz's New System Strategy." Against the Russell-Couturat consensus, Fichant proposes in *L'Invention métaphysique* that the complete concept theory instead figures chiefly within the context of Leibniz's natural theological project, where it satisfies God's need to know every detail of an agent's life in order to be able to properly assign rewards and punishments. For Fichant, this natural theological project is just one of several theoretical threads running through Leibniz's philosophical corpus. For other helpful accounts of the "complete concept," see: Donald Rutherford, *Leibniz and the Rational Order of Nature* (Cambridge: Cambridge University Press, 1995); Garber, *Body, Substance, Monad*, 181-189; Enrico Pasini, "Complete Concepts as Histories," *Studia Leibnitiana* 42, no. 2 (2010): 229-43.

that the nature of an individual substance or of a complete being is to have a notion so complete that it is sufficient to contain and to allow us to deduce from it all the predicates of the subject to which this notion is attributed.<sup>53</sup>

One end that this doctrine fulfilled, in the context of the *Discours*, was the natural theological end of enabling God to justifiably assign rewards and punishments to substances.<sup>54</sup>

Leibniz never published the *Discours*,<sup>55</sup> however, and following the correspondence he carried out with Antoine Arnauld between 1686 and early 1688, in which Arnauld contended that Leibniz's complete-concept notion of substance represented a conception of fatal necessity with regard to the actions of substances God has chosen to create,<sup>56</sup> Leibniz temporarily abandoned his metaphysical ambitions. When Leibniz resumed his attempts to publicize his metaphysical system in the mid-1690s, he instead presents the theory of spontaneous substantial activity in the context of an "emended," i.e. corrected theory of substance. The improved theory relies on an internal active force and does not employ the language of complete concepts. Whereas the *Discours* had emphasized certain logical aspects of the theory of the substance, Leibniz's mid-1690s position more fully integrated the notion of substance with the physical theory of forces. Leibniz had dubbed the theory of physical forces *dynamics*.<sup>57</sup> On this model, Leibniz's

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<sup>53</sup> AG 41/GP.IV 433.

<sup>54</sup> See Fichant, *L'Invention métaphysique*.

<sup>55</sup> The *Discours* was first published along with Leibniz's correspondence with Arnauld in 1646 in a volume edited by Grotefend. A.vi.4 1529.

<sup>56</sup> Arnauld presents this worry in his letter from May 13 1686: "D'où j'ay crû que l'on pourroit inferer, que Dieu a esté libre de créer ou de ne pas créer Adam, mais que supposant qu'il l'ait voulu créer, tout ce qui est arrivé depuis au genre humain a dû et doit arriver par une nécessité fatale." A.ii.2 32. For Leibniz's response, in which he distinguishes between "absolute" and "hypothetical" forms of necessity, see his first letter of June 1686 to Arnauld (A.ii.2 41-53/AG 69-77). For a thorough commentary on the correspondence, see R.C. Sleight, *Leibniz & Arnauld: A Commentary on Their Correspondence* (New Haven: Yale University Press, 1990).

<sup>57</sup> For an account of Leibniz's intellectual activity from 1694-6, see Antognazza, *Leibniz*, 345-354. Antognazza suggests that the dynamical model of substance should be seen as complementary to the *Discours* model:

The way [Leibniz] saw it, the philosophical account he was about to give in the *Système nouveau* was therefore basically in continuity with the account he had presented in 1686 in the *Discours de métaphysique* and defended in his correspondence with Arnauld – and this despite the fact that in

rehabilitated notion of substantial form “consists” in force, and the notion of force itself serves to mediate the metaphysical realm of substances and the phenomenal realm of physico-mechanical bodies.

Leibniz's dynamics sought to explain the existence and movements of bodies by means of metaphysical forces. Leibniz began developing the new science of dynamics proper in 1689. His decision to develop a new science of forces was motivated by the publication of Newton's *Philosophiae naturalis principia mathematica* in 1687 and by Leibniz's own view of the defects of Cartesian physics. These defects included Descartes's formulation of the laws of impact and physical motion, which Leibniz showed to be flawed, as well as Descartes's understanding of bodies as merely passive bits of geometrical extension. Leibniz's dynamics sought to overcome these defects by postulating the existence of metaphysical forces underlying the physical realm of bodily phenomena.<sup>58</sup>

Leibniz first published his metaphysical theory of substance with an integrated notion of force in a 1694 paper entitled *De primae philosophiae emendatione et de notione substantiae* in the *Acta Eruditorum* of Leipzig. The goal of this text is to provide an improved account of metaphysics that could achieve the same level of certainty as mathematics. Leibniz contrasts his notion of substance with what he refers to as the “scholastic” view. Though Leibniz admits the utility of a notion of *substantial form*, he contends that the traditional conception of substantial form must be emended in order to become fully intelligible. Leibniz claims that the scholastic notion of substance ascribes substantial activity to a faculty requiring an external stimulus in order to pass from potentiality to actuality and spring into motion. Leibniz held that the

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the *Système nouveau* there was little trace of the ‘complete concept’ theory central to the explanation of the concept of substance in the *Discours* (349).

<sup>58</sup> For accounts of the development of Leibniz's dynamics in the late 1680s through 1690s, see Michel Fichant, “De la puissance à l'action: la singularité stylistique de la Dynamique,” *Revue de Métaphysique et de Morale* 100, no. 1 (March 1995): 49–81; Garber, *Body, Substance, Monad*, 129–179.

Scholastic hypothesis of a faculty rendered the notion of substance obscure and ineffectual insofar as it does not do enough explanatory work. Leibniz thinks that a proper account of substantial activity must provide an intrinsic reason for how and why the substance acts. The Scholastic model fails because it makes substantial activity ultimately dependent upon an external cause. In contrast, a Leibnizian substance is in constant operation by means of its own internal active force. Leibniz understood this internal force as a type of striving or *conatus*:<sup>59</sup>

Active force differs from the mere power familiar to the Schools, for the active power of faculty of the Scholastics is nothing but a close possibility of acting, which needs an external excitation or a stimulus, as it were, to be transferred into action. Active force, in contrast, contains a certain act or entelechy and is thus midway between the factuality of acting and the act itself and involves a conatus. It is thus carried into action by itself and needs no help but only the removal of an impediment.<sup>60</sup>

Hence, Leibniz claims that the notion of active force whereby a substance acts according to its own nature enables a corrected or emended theory of substance. Instead of spiritual and corporeal substances requiring external influence in order to act, Leibniz holds that they are continually active of their own accord.

The notion of spontaneous activity does raise the problem of how to account for the interactions that do appear to take place between substances. If substances are continuously active on their own, is there a senses according to which they might affect the activities of other substances? In the *De primae philosophiae emendatione* Leibniz claims that when substances do act externally upon other substances, it is merely to limit and determine the active forces of other substances, not to set them in motion directly: "It will be apparent from our meditations that one created substance receives from another created substance, not the force of acting itself, but only the limits and the determination of its own pre-existent striving or power of action."<sup>61</sup> In other

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<sup>59</sup> I will examine Leibniz's borrowing of the term *conatus* from Hobbes in the next chapter.

<sup>60</sup> L 433/GP.IV 469.

<sup>61</sup> L 433/GP.IV 470.

words, Leibniz claims that although substances cannot affect each other in the sense of providing each other with active force directly, there are interactions in the sense of one substance limiting and determining the activities of others. Leibniz does not spell out the nature of such interaction in any detail in the *De primae philosophiae emendatione*, but indicates that he will do so elsewhere.<sup>62</sup>

Leibniz presents a richer account of his theory of force in the *Specimen dynamicum*, the first part of which was published the following year in 1695. Here Leibniz distinguishes active from passive forces. Both active and passive forces are in turn divided into primitive and derivative forms. Leibniz views the primitive forces as the underlying general causes of reality; primitive active force supplies the basic striving and activity exhibited in the world, and primitive passive force [*nisus*] supplies the basic resistance to change. Leibniz associates primitive active force with the soul or substantial form and the primitive passive force with prime matter. Leibniz claims that the active striving and resistance provided by primitive forces is in fact responsible for producing the geometrical extension proper to bodies:

This *nisus* frequently presents itself to the senses and, in my judgment, is understood by reason to be everywhere in matter, even where it is not obvious to sense. But if we should not attribute this *nisus* to God, acting by miracle, then it is certainly necessary that he produce that force in bodies themselves, indeed, that it constitute the innermost nature of bodies, since to act is the mark of substances, and extension means nothing but the continuity or diffusion of an already presupposed striving and reacting (that is, resisting) substance.<sup>63</sup>

Thus, the existence of bodies is metaphysically dependent upon the continual and spontaneous activity of the primitive forces associated with the soul. Indeed, the soul and its primitive forces constitute the inner nature of bodies insofar as bodies are the result of the continuation and repetition of the soul's striving.

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<sup>62</sup> "Not to speak now of other matters, I shall leave the solution of the difficult problem of the mutual action of substances upon each other for the future." L 433/GP.IV 470.

<sup>63</sup> AG 118/GM.VI 235.

Derivative active and passive forces exist as modifications of the primitive forces. In this way, they are intended to help fill in the picture of how substances are thought to interact with one another. Further, insofar as corporeal extension results from the continuation of underlying primitive active and passive forces, Leibniz associates bodies with the derivative forces of action and passion. Thus, derivative forces are relevant when it comes to understanding and explaining the mechanical interactions and local motions of bodies: “By derivative force, namely, that by which bodies actually act on one another or are acted upon by one another, I understand, in this context, only that which is connected to motion (local motion, of course), and which, in turn, tends further to produce local motion.”<sup>64</sup> Derivative active force is the force that bodies exert in acting on others to produce motion while derivative passive force represents what happens when bodies are acted upon in resisting the imposition of motion. Thus, while primitive active and passive forces provide the general metaphysical explanation for the actions and passions exhibited by bodies in nature, derivative active and passive forces, *qua* modifications of primitive forces, enable us to understand the physico-mechanical interactions between concrete bodies in nature.

Leibniz's distinction between primitive and derivative forces further allows him to distinguish between different regimes of causal explanation. On the one hand, the primitive active forces associated with the soul operate according to laws of final causality, or what Leibniz refers to in the *Specimen dynamicum* as the “kingdom of wisdom.” The derivative forces associated with bodies, by contrast operate according to laws of efficient causality, or what Leibniz calls the “kingdom of power”:

In general, we must hold that everything in the world can be explained in two ways: through the *kingdom of power*, that is, through *efficient causes*, and through the *kingdom of wisdom*, that is, through *final causes*, through God, governing bodies for his glory, like

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<sup>64</sup> AG 120/GM.VI 237.

an architect, governing them as machines that follow the *laws of size* or *mathematics*, governing them, indeed, for the use of souls, and through God governing for his glory souls capable of wisdom, governing them as his fellow citizens, members with him of a certain society, governing them like a prince, indeed like a father, through *laws of goodness* or *moral laws*. These two kingdoms everywhere interpenetrate each other without confusing or disturbing their laws, so that the greatest obtains in the kingdom of power at the same time as the best in the kingdom of wisdom [Emphasis original].<sup>65</sup>

Although Leibniz treats the laws of finality governing souls and the laws of efficient causes governing bodies as distinct modes of explanation, he maintains that they are consistent with one another in terms of the results that they produce. Their interpenetration and consistency can be explained through the fact that the forces proper to bodies are derivative of the primitive forces of souls. In this way, Leibniz's dynamics maintains both the distinction between the realm of final and efficient causes and their ultimate agreement and harmony.

Leibniz publishes the *Système nouveau* in the same year as the first part of the *Specimen dynamicum*, providing more detail regarding his theory of substance, including substantial spontaneity and interaction.<sup>66</sup> In the *Système nouveau*, Leibniz integrates the dynamical notion of force from texts such as *De prima philosophiae emendatione* and *Specimen dynamicum* with a new proposal for solving the problem of the union of the soul and body. Rejecting what he calls the "hypothesis of influence" and the "hypothesis of occasional causes," Leibniz will propose what will come to be known as the "preestablished-harmony." The latter hypothesis is able to account for both the spontaneity and interaction of substances insofar as the activities of substances are arranged in advance by God to unfold in concert with each other. Substances act spontaneously according to their own principles of action yet are so designed as to give off the appearance of interaction. The derivative forces of the *Specimen dynamicum* result from the way that primitive forces spontaneously change, even as we can understand derivative forces to be

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<sup>65</sup> AG 126-7/GM.VI 243.

<sup>66</sup> We have several alternate draft versions of the *Système nouveau*. My analysis focuses on the published version as the version Leibniz opted to make public.

expressive of the way that individual substances delimit and determine the activity of other substances.

Leibniz opens the *Système nouveau* with an autobiographical account of his philosophical development. Although we ought not take this autobiographical sketch as a wholly accurate account of his philosophical development, examining it does help to illuminate the way that Leibniz conceives his system at this time. Specifically, what the autobiographical account reveals is that Leibniz thinks of his philosophical system of nature as a response to developments in the new philosophy of the seventeenth-century. Moreover, he explicitly characterizes it as a theoretical framework that synthesizes ideas from diverse intellectual perspectives. In the autobiographical account of the *Système nouveau*, this is evident in the way that Leibniz claims that he developed a notion of incorporeal formal atoms in order to address the metaphysical problems he diagnosed in the new mechanical physics of the seventeenth century. Leibniz presents his own rehabilitation of the notion of substantial form in light of these problems and suggests that it ultimately lead him to the doctrine of substantial spontaneity.

Leibniz begins by claiming that the modern mechanical philosophy had initially saved him from Scholasticism. He had “gone far into the country of the Scholastics, when mathematics and modern authors drew me out again, while I was still quite young.”<sup>67</sup> The explanations of natural phenomena, including those in terms of mathematics, provided by the mechanical philosophy led him to reject the empty Scholastic explanatory doctrines of forms and faculties in favor of mechanical types of explanation.<sup>68</sup> Yet Leibniz claims that he came to realize that the principles of mechanics such as physical extended mass were insufficient and could not adequately account for the laws of nature as we actually experience them:

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<sup>67</sup> WF 11/GP.IV 478.

<sup>68</sup> In the next two chapters, I examine Leibniz's reception of the mechanical philosophies of Hobbes and Descartes respectively.

But afterwards, having tried to go more deeply into the principles of mechanics themselves in order to explain the laws of nature which are known through experience, I realized that the consideration of mere extended mass is insufficient, and that use must also be made of the notion of force, which is perfectly intelligible, though it belongs to the sphere of metaphysics.<sup>69</sup>

Contra Descartes, Leibniz decided that extension itself must be explained. He presents the dynamics or theory of forces as an intelligible means of explaining the existence of extension. Further, the theory of forces is dependent upon a metaphysics of substantial forms: "I found, then, that the nature of substantial forms consists in force, and that from this there follows something analogous to feeling and desire; and that they must therefore be understood along the lines of our notion of soul."<sup>70</sup>

Second, Leibniz situates his views in the *Système nouveau* relative to accounts of nature holding that nature is composed of atoms and void. Leibniz claims that when he had first rejected Aristotle he initially adopted the view that nature was composed of material atoms and void. Seventeenth-century philosophers such as Pierre Gassendi had revived this Epicurean view of nature.<sup>71</sup> For his part, Leibniz names Geraud de Cordemoy in the *Système nouveau* as a Cartesian who turned to atomism after recognizing the inability of geometrical extension to provide any real unity.<sup>72</sup> Early modern atomists, like ancient atomists, turned to atoms to provide an underlying unchanging principle within nature. Atoms were thought to be material elements remaining stable throughout change. Leibniz reports, however, that he soon came to view the concept of an indestructible material atom as incoherent. For Leibniz, matter itself is something completely passive, and hence no reason can be found to account for the supposed unity and indestructibility of material atoms. What this means is that matter is infinitely divisible and one

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<sup>69</sup> WF 11/GP.IV 478.

<sup>70</sup> WF 12/GP.IV 479.

<sup>71</sup> For a thorough account of Epicureanism in the 17th-century, see Catherine Wilson, *Epicureanism at the Origins of Modernity* (Oxford: Oxford University Press, 2008).

<sup>72</sup> For Leibniz's notes on Cordemoy's *Le discernement de la corps et de l'âme* see LC 277.

can never arrive at the indivisible material unities postulated by the atomist.<sup>73</sup> In this way, Leibniz believes that proponents of material atoms beg the question, assuming the existence of material indivisibles that are in fact impossible metaphysical chimeras. Nonetheless, insofar as atoms *qua* indivisible building blocks of nature can play a useful role in undergirding change, Leibniz does endorse a type of atomism, namely one involving a unitary and active immaterial formal atom:

After much meditation I saw that it is impossible to find the principles of a real unity in matter alone, or in what is only passive, since this is nothing but a collection or aggregation of parts ad infinitum. Now a multiplicity can derive its reality only from true unities which come from elsewhere, and which are quite different from points... So, in order to get to these real unities I had to have recourse to a formal atom, since a material thing cannot simultaneously be material and perfectly indivisible, or possessed of a genuine unity.<sup>74</sup>

In other words, Leibniz agrees with the atomists that the bodies that exist depend upon the existence of unitary elements, but he denies that the elements can be material. The true atoms of nature must be immaterial formal atoms.<sup>75</sup>

Thus, Leibniz presents his theory of substantial forms as responding to both the mechanical account of body as extended mass presented by Cartesian philosophers as well as the neo-Epicurean doctrine of atoms and void. Leibniz takes up and transforms both geometrical extension as well as the theory of atoms in his own system. In the case of geometrical extension, Leibniz argues that extension alone is insufficient to account for the existence of bodies. Hence

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<sup>73</sup> In his mature period, Leibniz does suggest that he had a youthful interest in atomism. For a reconstruction of Leibniz's views on atoms in the 1670s, see Richard T.W Arthur, "The Enigma of Leibniz's Atomism," in *Oxford Studies in Early Modern Philosophy Volume 1*, ed. Daniel Garber and Steven M. Nadler (Oxford: Oxford University Press, 2003), 183-227. Arthur argues that the young Leibniz of the 1670s never really believed in identical indivisible material atoms:

[Leibniz's] atoms, far from being devoid of internal complexity, were further divided within by the intestine motions of their parts, and contained within them a mind or soul that is that principles of their activity, and is responsible for their individuation and the accretion and organization of surrounding matter into an organic body (227).

In the next chapter, we will investigate Leibniz view minds and bodies in the early 1670s.

<sup>74</sup> WF 11-12/GP IV 478.

<sup>75</sup> Leibniz will come to call these *formal atoms* or *atoms of substance* monads. At the time of the *Système nouveau* of 1695, however, the term monad had not yet entered into Leibniz's lexicon.

he turns to a theory of forms that can underpin bodily extension. In the case of atoms, Leibniz argues that the proper atoms of nature are not indestructible material atoms but rather immaterial atoms of force or substance. As purely passive, physical extension is unable to account for the resistance and impenetrability exhibited by bodies, and the notion of an indivisible material atom is self-contradictory. Leibniz's position is advantageous in two ways. On the one hand, he is able to conceive of bodies as extended substances, which allows us to analyze their mechanical interactions mathematically. On the other hand, his formal atomism grounds the continuously changing multiplicity of composite bodies in unitary immaterial elements. By treating extension as resulting from forces supplied by substantial forms *qua* formal atoms, Leibniz is therefore able to provide an account of nature that captures the best of both theories while avoiding their respective conceptual shortcomings.

Throughout the mid-1690s texts we have just examined, Leibniz insists that his account of substantial forms as consisting in force is intelligible and free from obscurity. Leibniz's claim that his account of substantial forms is "more intelligible" than the "scholastic" view has several senses. In *De primae philosophiae emendatione*, Leibniz thought the notion of faculties associated with substantial forms failed to explain anything because they required external influence in order to pass over into action. In the *Specimen dynamicum* and *Système nouveau* accounts of substantial forms, the intelligibility of substantial forms and the forces in which they consist depends upon their explanatory force and success. On the one hand, Leibniz holds that the theory of force is required in order to explain the existence of bodies. In this way, substantial forms play a necessary *metaphysical* role in explaining the structure of nature. On the other hand, force plays an explanatory role in physics as well, enabling us to measure and understand the concrete movements and interactions of phenomenal bodies. Thus, the value and intelligibility of

the Leibnizian theory of substantial forms and forces is shown in its ability to explain the structure of natural phenomena at both the metaphysical as well as the physical level.

## **1.2 *Influx, Occasionalism and Preestablished Harmony***

After explaining his reintroduction of substantial forms in the *Système nouveau*, however, Leibniz admits that he still faces the problem of how one substance can produce an effect on another. Insofar as Leibniz's primary aim in the *Système nouveau* is to address Cartesian philosophers, he focuses on the particular difficulties related to the union of the soul and the body, such as how the soul can bring about an effect in the body as a specific case of the general problem of how any two substances can communicate. Leibniz admits that in reflecting upon the question of whether or not substances can communicate with one another, he "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."<sup>76</sup> From a Cartesian point of view, the difficulty is how to explain why, for instance, when my mind *qua* thinking substance wills to move my arm, my arm *qua* extended substance does in fact move (provided my body is healthy and otherwise unimpeded).

For Leibniz in the *Système nouveau*, neither Descartes nor his occasionalist followers provided a satisfactory resolution to the problem of the communication of substances. Leibniz charges Descartes with illicitly believing in a mutual influence of mind and body such that a mind may, for instance, directly change the direction in which its body is moving. Leibniz insists that we simply cannot conceive of an unextended substance such as the mind enacting a change within extended substance. In this way Leibniz rejects what he terms the "system of influence." The occasionalists argued that when I successfully will to move my arm, God intervenes into

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<sup>76</sup> WF 17/GP.IV 483.

matter causing my arm to move in the desired fashion. This occasionalist solution does fare better than the way of influence in Leibniz's eyes. Whereas Leibniz deems the Cartesian solution impossible, he characterizes what he terms the "system of occasional causes" as merely improbable. However, Leibniz does ultimately reject occasionalism by claiming that it illegitimately takes refuge in perpetual miracles. This is because, in order to explain natural events, occasionalism invokes an explanatory cause that is beyond the realm of nature itself. Leibniz rejects such a mode of explanation, arguing as a methodological point that natural philosophical explanations ought to be given in terms of the entities belonging to the domain in question.<sup>77</sup> Hence, Leibniz holds that a natural philosophical explanation involving recourse to a supernatural cause such as God fails in its duty to provide an explanation in terms of the relevant entities, namely created substances within nature. Thus, although Leibniz endorses the occasionalist rejection of any influence between soul and body, he rejects the occasionalist mode of explanation as relying upon a miraculous *deus ex machina*:

To solve problems it is not enough to make use of a general cause and to introduce what is called a *deus ex machina*. For to do this, without giving any other explanation in terms of the order of secondary causes, is really to have recourse to a miracle. In philosophy we must try to show the way in which things are carried out by the divine wisdom by explaining them in accordance with the notion of the subject we are dealing with.<sup>78</sup>

Further, Leibniz thinks that the occasionalist solution is improbable because it would be unworthy of God to create a world that requires perpetual intervention in order to work. Not only would it violate the methodological precept noted above, it would be incredibly inefficient. In Leibniz's view, God would prefer to make a world that doesn't require constant tinkering. For these reasons, Leibniz rejects what he takes to be the two leading contenders for explaining the

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<sup>77</sup> Leibniz also presents this idea in 1698 in *De ipsa natura*. Donald Rutherford ("Natures, Laws, and Miracles: The Roots of Leibniz's Critique of Occasionalism," in *Causation in Early Modern Philosophy*, ed. Steven Nadler [Penn State University Press, 1993], 135-158) presents a detailed account of Leibniz's claim that occasionalism amounts to a perpetual miracle.

<sup>78</sup> WF 17/GP.IV 483-4.

communication between substances. He rejects the idea of any direct influence of one substance on another as impossible, and he rejects the occasionalist model of Divine intervention. The latter mistakenly resorts to miracles and ascribes an inefficient form of creation and activity to God.

Leibniz claims that the problem of the communication of substances leads him to the realization that substances must act *spontaneously*. If substances such as the soul and the body cannot influence each other directly, the only way to explain their activity in a way that satisfies the methodological requirement of providing explanation in terms of the entities in question is to posit a form of spontaneous activity that results from their own internal natures. Leibniz then solves the problem of the communication of substances by integrating the claim that activities must arise spontaneously with an account of Divine creation. In short, God creates substances, designing their activities in advance such that their activities arise spontaneously yet in conformity with the activities of other substances: "This is that 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."<sup>79</sup> In this way, a substance is responsible for everything that happens to it, and what it does is carried out in agreement with what takes place in the rest of the world. Leibniz is also able to argue that his own solution to the problem of the communication of substances does not resort, à la occasionalism, to any form of miracle or supernatural explanation. According to Leibniz, once God creates the world, what happens within it takes place is explicable in terms of the nature of created things.

As for the body that corresponds to the soul, it, too, acts spontaneously. The body moves according to bodily laws of mechanics at the same time as the soul desires that it move:

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<sup>79</sup> WF 17-18/GP.IV 484.

Furthermore, the organized mass in which the point of view of the soul lies is more immediately expressed by it, and is in turn ready, just when the soul desires it, to act of itself according to the laws of the bodily mechanism, without either one interfering with the laws of the other, the animal spirits and the blood having exactly at the right moment the motions which correspond to the passions and perceptions of the soul. It is this mutual relationship, arranged in advance in each substance in the universe, which produces what we call their communication, and which alone constitutes the union of soul and body.<sup>80</sup>

The fact that the body moves in the ways desired by the soul and yet as a result of its own corporeal nature provides Leibniz with his solution to the problem of the union of the soul and the body. Even though soul and body do not affect one another directly, strictly speaking, the fact that their spontaneous motions correspond with each other is, from Leibniz's point of view, sufficient to justify the claim that they are united.

Leibniz's solution regarding the communication of substances differs from occasionalism in that his "system of agreement" does not require God to constantly intervene within nature. Rather, God determines everything that is to happen at a single stroke, and then allows each substance to develop over time according to its nature. Over and above the union of soul and body that serves as the rhetorical focus of the *Système nouveau*, the spontaneous activities of all substances agree with one another such that they constitute a common world. This is despite the fact that substances do not interact directly with one another. Thus, Leibniz provides a solution to the problem of communication of substances that explains substantial activity in terms of the natures of created substances themselves and that does not require God to constantly intervene in an inefficient manner. The theory of spontaneity and agreement therefore serves as the most intelligible answer to the problem of the communication of substances.

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<sup>80</sup> WF 18/GP.IV 484-5.

### 1.3 Body and Soul as Automata in the *Système nouveau*

Leibniz categorizes the relationship between the soul and body in the *Système nouveau* as one of mutual *expression*. With respect to the *communication* that takes place between soul and body, the idea of *expression* guarantees that the motions in the soul correspond to those that take place in the body. As noted above in the Introduction, Leibniz understands expression as a form of analogy between two terms that share a structural isomorphism. Accordingly, as changes take place in one of the terms, there are corresponding and structurally similar changes in the other. Hence the motions that take place in the soul are like the motions unfolding in the body with respect to some relevant structural aspect. In what way, however, are we to understand the relation of mutual expression between the soul and the body in the *Système nouveau*? In other words, how are we to understand the structural isomorphism that exists between the changes taking place in the soul and body respectively?

The answer to this question, I argue, lies in understanding the way that Leibniz conceives of body and soul as self-moving machines or automata. Body and soul represent different types of automata, each with its own form of self-motion. They are mutually expressive insofar as their respective structures *qua* automata correspond to one another. Leibniz identifies the body as a so-called “machine of nature,” i.e. a machine possessing an infinite mechanical structure. The soul, by contrast, is a unitary “spiritual automaton,” whose perceptions arise according to its own internal nature. For every motion carried out by a part of the mechanical structure composing the body, there is a corresponding perception in the soul. Moreover, just as the motions taking place in the body in the present moment imply further motions in the future, Leibniz argues that the soul’s current perceptions imply the perceptions it will have in the future. Comparing the body

and soul as types of automata therefore provides further insight into Leibniz's conception of the communication and mutual expression of substances in the *Système nouveau*.

According to Leibniz in the *Système nouveau*, living bodies are machines engineered by God that are capable of moving themselves.<sup>81</sup> He dubs this particular type of machine a "machine of nature."<sup>82</sup> Machines of nature are distinguished from artificial machines produced by human beings such as clocks or mills by virtue of their structural complexity. Leibniz claims that they possess an infinitely complex structure that renders them different in kind from machines produced by human artifice. Leibniz argues that we ought not doubt God's capacity to construct such machines; if God possesses an infinite intellect, it would be selling Him short to think that he could not produce a machine of infinite complexity. Moreover, recognizing the infinity of God's productions is, according to Leibniz, the only way to sufficiently respect the majesty of nature. Indeed, Leibniz criticizes what he calls "the moderns" for confusing the productions of natural artifice with those of human design, a practice he suggests provides an insufficient respect for nature.<sup>83</sup>

What does it mean for such a machine of nature to have an infinite structure? For one, it means that at any given point the machine has an infinite number of parts. The body has,

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<sup>81</sup> I examine this claim in Descartes in Chapter Three.

<sup>82</sup> The concept of the "machine of nature" has received considerable attention in the literature in recent years. In "Machines de la nature," Fichant focuses on Leibniz's introduction of the concept in the *Système nouveau*. Smith, *Divine Machines* presents the concept within the overall context of Leibniz's engagement with the life sciences. For further information see the references in note 14 above.

<sup>83</sup> On this point, Leibniz claims to distinguish himself from the modern philosophers who had modeled living bodies upon artificial machines. Leibniz writes:

I am as ready as anyone to do justice to the moderns; nevertheless I think they have carried reform too far, among other things in' conflating natural things with artificial ones, through not having sufficiently grand ideas of the majesty of nature. They take the difference between nature's machines and ours to be only that between great and small... I think that this gives an inappropriate and unworthy idea of nature, and that it is only my system which shows the true, and immense distance there is between the least productions and mechanisms of divine wisdom and the greatest masterpieces produced by the skill of a limited mind--a difference which is not merely one of degree, but one of kind (WF 15-16/GP IV 481-2).

I will address this issue in greater detail in Chapter Three.

therefore, an infinite number of organs that play a role within its overall functioning. Moreover, according to Leibniz, for the machine to truly be infinite, each of the parts must be a further machine of nature in turn. The parts are thus machines of nature that are nested within the larger mechanical structure.<sup>84</sup> As Leibniz puts it, a machine-of-nature remains a machine to the least of its parts:

It needs to be recognized, then, that nature's machines have a truly infinite number of organic parts [organes], 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; sometimes extended, sometimes contracted and as it were concentrated, when we think that it is destroyed.<sup>85</sup>

As far down as one goes within the body, one continues to find new organs contributing to the body's overall functioning. The regress is actually infinite: the organic structure of the machine has no bottom level.

Second, the infinite structure means that birth and death do not place real limits upon the existence of the living body. As the quoted passage shows, Leibniz asserts that a machine of nature is not destroyed by natural means. Although a body naturally loses parts of itself over the course of its life, no accident, however violent, can completely disrupt the body's structure. However many parts are removed, the structure in some form or another will inevitably remain. Thus, Leibniz argues that what we experience as the death of the body is in fact a type of contraction; even as some parts of the body are lost, the same structure remains, albeit in a more compact form. Leibniz integrates this view of death with a type of *preformationism* according to which the living body exists in a contracted form prior to its conception and birth. The latter

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<sup>84</sup> For helpful accounts of how to understand the type of infinitely nested structure Leibniz ascribes to machines of nature, as well as how it differs from the mechanical structure exhibited by artificial machines, see Nachtomy, "Leibniz on Artificial and Natural Machines"; Phemister, "Monads and Machines."

<sup>85</sup> WF 16/GP.IV 482.

events are not the emergence of a completely new living form into the world but rather the development and unfolding of a form that had always existed. Here Leibniz adduces evidence for the existence of form in the sub-visible realm provided by microscopes to support the possibility of such preformationist views.<sup>86</sup> The infinite complexity of the structure of the machine of nature thus allows Leibniz to maintain that both birth and death are not the beginning and end of the body's life, but rather points of unfolding and contraction within a larger lifespan.

Third, the infinite structure of the machine of nature allows Leibniz to claim that the machine acts according to the nature of its mechanical structure in a fully spontaneous fashion. This means that even as the body interacts with the rest of the world, it moves according to its own predetermined set of motions. In this sense, the machine of nature is a spontaneously self-moving mechanical automaton that acts in ways that agree both with its soul as well as the rest of the world.

This last point highlights just how far Leibniz is willing to go in claiming that the natural world is *designed* by God. It is not merely the case that God engineers the machines of nature so as to have an infinite material structure. The doctrine of spontaneity requires, in addition, that each of the motions that it will carry out over its endless lifespan has been determined and designed in advance by God to take place at the proper time by means of the laws governing the body alone. God therefore needs to construct the machine in such a way as to determine, in advance, the total series of physical motions that it will carry out over the course of its existence. Given the fact that the structure of the machine is infinitely complex, there is in principle no limit to the number of motions God can assign to it. By these means, God is able to design such motions to correspond both to what is taking place within the soul as well as with what happens

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<sup>86</sup> For more on microscopy in the seventeenth-century and the theoretical developments mediated thereby, see Catherine Wilson, *The Invisible World: Early Modern Philosophy and the Invention of the Microscope* (Princeton, NJ: Princeton University Press, 1995).

outside of the body. The latter is both the moment at which the soul desires it to move as well as when that motion corresponds with the movements taking place outside of the body. In this sense, Leibniz will define nature as the “workmanship of God” [*artificium Dei*]<sup>87</sup> in the essay *De Ipsa Natura* of 1698. This definition captures the way that the world is created according to a divine artifice that dictates the natures of the things of the world as well as every detail of how those natures are to act and to appear to interact with one another.

Machines of nature satisfy Leibniz's conception of spontaneity because their actions are produced by means of the forces expressed in their mechanical structure. They carry out their activities according to their own laws alone, without any direct input from the outside. These laws, however, are determined in complete detail in order to unfold in precisely the ways that God wants. In other words, they agree with the soul corresponding to the particular body in question and with the rest of the bodies that populate the natural world. Within the natural-philosophical context of Leibniz's *Système nouveau*, God's ends are realized to the degree that he creates a maximally complex and maximally harmonious set of natural machines.

Whereas Leibniz identifies the body as a self-moving “machine of nature,” he likens the soul to a “spiritual or formal automaton.” Leibniz is particularly interested in the type of spontaneity proper to the soul. He insists that it is indeed possible for a substance to act spontaneously provided that it act as a “formal” or “spiritual automaton”:

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?<sup>88</sup>

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<sup>87</sup> AG 156/GP.IV 505.

<sup>88</sup> WF 18-19/GP.IV 485.

The notion of the spiritual automaton provides Leibniz's answer to how the soul can act spontaneously. What, however, about this model allows it to do so? As a model, the spiritual automaton captures the orderly unfolding of the soul's spontaneous activity.

We have seen above how Leibniz solves the problem of the communication of substances without appealing to any account of inter-substance interaction. Any "interaction" between substances is merely apparent for it actually results from the way that God arranges their activities, in advance, to correspond. Conceiving of the soul as an *automaton* allows Leibniz to apply his account of the spontaneity and agreement to the soul. The spiritual automaton is a self-moving entity whose activities unfold according to its initial design. Thus, just as by conceiving of the body as a "machine-of-nature," Leibniz was able to explain the nature of the body as a self-moving mechanical structure whose movements unfold in agreement with the other bodies populating nature, conceiving of the soul as a *spiritual automaton* enables Leibniz to explain the nature of the soul as a self-moving *entelechy* whose movements unfold in agreement with those of the other souls populating the natural world. In this regard, just as God designs the mechanical structure of the body or machine of nature to agree with all other bodies, He arranges the soul's perceptions to likewise agree with the perceptions of other souls.

Though the soul and body express one another, the order according to which each acts is different in kind. Whereas the parts of the body move by virtue of the laws of mechanics and efficient causality, the soul moves by means of the laws of appetite and final causality. Thus, by contrast with the unfolding of a complex physical mechanism, the soul's movement is its passage from one perception to the next. What is crucial, however, is that the two orders – one mechanical and one spiritual – are designed to mutually express one another. For each mechanical motion in the body, there exists a perception in the soul. In this way, the spontaneous

activities of the soul unfold according to an intelligible order imposed by God in such a way for the soul to properly express what is going on both in its body and the rest of the world.

Leibniz characterizes the way that the soul perceives the rest of the world as a type of representation. The soul is able “to express external things which are in relation with its organs.” As the mechanical motions taking place in the organs of the body change, corresponding changes occur in the soul’s perceptions. Given Leibniz’s claim that mechanical motions are propagated to infinity, there is in principle no limit on the number of relations into which the body’s organs can enter. Indeed, the motions taking place in the body are determined by the entire collection of physical movements in the world. Correspondingly, the soul must therefore represent the entirety of the universe from its own point of view, and the soul’s representational power conforms to what happens in the rest of the universe. In this way, the soul contains an infinite number of perceptions at any time, each of which corresponds to one of the infinite parts of the body. For all of this, Leibniz holds that what the soul perceives does not, strictly speaking, depend upon such changes *actually* taking place outside of it. Moreover, the soul produces its representational content in such a spontaneous fashion that its content would be the same even if it were all alone in the world:

This means that since each of these substances accurately represents the whole universe in its own way and from a particular point of view, and since its perceptions or expressions of external things occur in the soul at just the right time in virtue of its own laws, as in a world apart, as if there existed nothing but God and that soul (to use the expression of a certain lofty-minded person, famous for her sanctity),<sup>89</sup> there will be a perfect agreement between all these substances, which produces the same effect as would be observed if they communicated with one another by means of a transmission of species or qualities, such as most ordinary philosophers suppose.<sup>90</sup>

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<sup>89</sup> According to Woolhouse and Francks, the allusion is to St. Teresa of Avila (WF 18 n.49).

<sup>90</sup> WF 18/GP.IV 484.

Although Leibniz does seem to think that the thought of a substance as a “world apart” is a mere fiction and would never actually occur,<sup>91</sup> defining the soul as a *representational* automaton allows Leibniz to claim that the actions of all substances comprising the world agree with one another. It also distinguishes the nature of the soul from the body. Whereas the body is an automaton that moves itself according to its mechanical structure, the soul moves itself by virtue of the structure of its perceptions of the world.<sup>92</sup> From this account of the soul's spontaneity, Leibniz happily concludes that God exists: “There is also here a new and surprisingly clear proof of the existence of God. For this perfect agreement of so many substances which have no communication with one another could come only from their common cause.”<sup>93</sup>

By what means, however, does Leibniz claim that the soul represents successive states of the world in an orderly fashion? Leibniz is not particularly forthcoming in the *Système nouveau* itself. As we have seen above, in characterizing the soul as a “spiritual automaton,” Leibniz writes:

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

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<sup>91</sup> For instance, in his unpublished comments responding to Bayle's paraphrase of this passage in note H of Bayle's *Rorarius* entry, Leibniz writes: “I meant this only as a fiction, which is not compatible with the order of things but which might help make my thought more intelligible... it is clear that this pre-established harmony removes such a fiction: it is metaphysically possible, but it doesn't accord with the facts and their explanation” (WF 76/GP.IV 530).

<sup>92</sup> Though Leibniz does not make this point in the *Système nouveau* directly, this is the crux of his later “mill argument” from paragraph 17 of the *Monadology*, where he claims that one will never find a perception when examining the mechanical parts of a machine such as a mill. There has been much written on this argument. For samples within the specialist literature on Leibniz, see Paul Lodge and Marc Bobro, “Stepping Back Inside Leibniz's Mill,” *The Monist* 91, no. 4 (1998): 553–72; Andreas Blank, “On Interpreting Leibniz's Mill,” in *Interpretation: Ways of Thinking about the Sciences and the Arts*, ed. Peter K. Machamer and Gereon Wolters (Pittsburgh: Pittsburgh University Press, 2010), 111–129; Steward Duncan, “Leibniz's Mill Arguments against Materialism,” *Philosophical Quarterly* 62, no. 247 (April 2012): 250–72; Marleen Rozemond, “Mills Can't Think: Leibniz's Approach to the Mind-Body Problem” *Res Philosophica* 91, no. 1 (2014): 1–28; Paul Lodge, “Leibniz's Mill Argument Against Mechanical Materialism Revisited,” *Ergo* 1, no. 3 (2014): 79–99.

<sup>93</sup> WF 19-20/GP.IV 486.

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?<sup>94</sup>

It seems that Leibniz wants to ascribe the orderly unfolding of the soul's perceptions to the activity of a force. We have seen in that in other texts of the period, Leibniz associates the forces proper to the soul both to a type of striving or *conatus* as well as to the operation of final causes. Leibniz can therefore argue that the soul passes from perception to perception according to the order designed by God by means of a striving that obeys the laws of final causality. In subsequent texts, Leibniz will often characterize perceptions in this vein as involving appetites that lead the soul to future perceptions.<sup>95</sup>

Though this answer may conform to the principles of Leibniz's natural philosophy, many commentators—both in Leibniz's time as well as ours—have found it less than helpful. What does it mean to say that a soul produces its perceptions spontaneously according to the laws of final causality? Here I want to address two important criticisms against Leibniz's theory of spontaneity raised by Pierre Bayle in note H to his *Dictionnaire* entry "Rorarius" (1696). Leibniz's response to both criticisms allows us to understand the way that Leibniz uses the concept of the *spiritual automaton* to illuminate the theory of spontaneity.

The first criticism from Bayle relates to the nature of change in general as it pertains to an immaterial substance. For the mature Leibniz, an immaterial substance such as a soul is simple, that is without parts. In Bayle's view, the soul's simplicity renders any comparison between it and a complex machine incoherent. Further, it should make the type of spontaneous change Leibniz attributes to it impossible. We know that Leibniz claims the soul does not change by virtue of external influence. At the same time, Leibniz's model of the soul lacks any internal

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<sup>94</sup> WF 18-19/GP.IV 485.

<sup>95</sup> See, e.g. GP III 574-575; AG 215/GP.VI 609.

parts that could produce change through interaction. Bayle points out the potential problem the soul's simplicity raises for Leibniz's theory of spontaneity:

Finally, as [Leibniz] supposes, with very good reason, that all souls are simple and indivisible, it is impossible to see how they can be compared to clocks; how, that is, their original constitution can enable them to do different things, as a result of the spontaneous activity they received from their creator. It is obvious that a simple being will always do the same thing, if no outside cause interferes with it; but if it were made up of several parts, like a machine, it could do different things, because at any moment the particular activity of one part could interfere with that of the others. But in a unitary substance, where would you find the cause of any change of activity?<sup>96</sup>

In sum, Bayle argues that absent any external influence, a simple being should always do the same thing and remain fixed in a constant unchanging state. How can the soul act spontaneously, therefore, if it is by nature simple?

In responding to Bayle's claim, Leibniz reaffirms his comparison of the soul to a self-moving machine. He sharpens his comparison, however, by claiming that the soul is not like a machine in terms of possessing a complex set of parts that interact with one another. Rather, Leibniz claims that the soul is like a machine in the sense that its changes unfold in a well-ordered and *regular* fashion. Just as a clock continuously changes in order to measure time, so too the soul continuously changes in order to represent its body and the world. Thus, Leibniz admits that the simplicity of the soul implies that the soul always remains in the same state. It is crucial, however, that the unchanging state of the soul is one of *constant variability* according to God's design:

I find that this objection is worthy of M. Bayle, and it is one of those most deserving of clarification. But I also think that if I had not allowed for it from the outset, my system would not be worth examining. I compared the soul with a clock (pendule, f.) only in respect of the ordered precision of its changes, which is 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 very exact immaterial automaton. 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

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<sup>96</sup> WF 74.

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.<sup>97</sup>

Thus, for Leibniz the spiritual [here “immaterial”] automaton provides a model of the immaterial soul that is both simple and spontaneously active. The soul is like a self-moving machine in the sense that it continuously varies its state according to an order engineered by God.

The second criticism from Bayle concerns the conception of final causality operative in Leibniz's theory of spontaneity. Bayle attacks Leibniz's theory by means of the example of a dog that is peacefully sleeping yet about to be struck by its master's stick. What sense could it possibly make to say that the soul of the dog would spontaneously and of its own nature pass from a state of pleasurable relaxation to one of pain upon being beaten? Bayle writes:

I cannot understand the series of spontaneous internal actions which could make a dog's soul feel pain immediately after having felt pleasure, even if it were all alone in the universe. I can understand why a dog passes immediately from pleasure to pain when, whilst it is very hungry and eating some bread, it is suddenly hit with a stick; but that its soul should be constructed in such a way that it would have felt pain at the moment that it was hit, even if it had not been hit, and even if it had continued to eat the bread without being disturbed or prevented, that is what I cannot understand. I also find the spontaneity of this soul wholly incompatible with its feelings of pain, and in general with all feelings it finds unpleasant.<sup>98</sup>

For our purposes, what is important is Bayle's claim that the theory of spontaneity is incompatible with the existence of any unpleasant feelings. If the soul's continuous and regular changes unfold spontaneously according to laws of final causality it appears incongruous that a substance would ever bring about an unpleasant and hence undesirable state.

In recent English-language commentary on Leibniz's theory of spontaneity, much of the debate has revolved around Bayle's problem of the compatibility of final causality and undesirable states such as pain. Donald Rutherford tries to resolve the problem by distinguishing between “monadic” and “agent” forms of spontaneity. The former applies to souls or monads in

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<sup>97</sup> WF 83-84

<sup>98</sup> WF 74.

general and does not involve any agential desire or decision-making. Rather, souls acting according to “monadic” spontaneity act in ways that realize *God's* ends, and not any state desirable from the perspective of the substance itself. Thus, it doesn't matter if the state to which a substance is moving appears as desirable from the substance's own subjective point of view.<sup>99</sup> Martha Bolton argues that all change within the soul or monad does result from cognitive states incorporating a desire. Bolton relies on Leibniz's notion of a “confused perception” to argue that a monad always acts in ways expressive of desires but that many of these desires, by virtue of being *confused* do not always result in activities that produce any apparent good.<sup>100</sup> Julia Jorati proposes what she calls a form of “neutral-teleology” according to which monads act spontaneously in accordance with their nature but in ways that do not have any essential good-directedness.<sup>101</sup>

In my view, Leibniz's image of the spiritual automaton suggests a solution to the problem. We have seen, for instance, how the image of the automaton immediately provides the soul with a form of final cause in the sense of a being designed by God. In this sense, the soul—and its ordered progression of perceptions—realizes the external purpose of God's design. God chooses each perceptive or representative state of the soul to strive for the next in a way that best realizes his own intentions for the world. This dimension of the nature of the soul represents a challenge to, e.g., the account provided by Jorati in that her account underplays the way that a given substance's nature only exists by virtue of the way that it helps realize goods in the best of all possible worlds.

Second, Leibniz's own response to Bayle indicates that he thinks Bayle's dog counter-example makes the mistake of thinking that all spontaneous activities are consciously chosen or

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<sup>99</sup> See Rutherford, “Leibniz on Spontaneity.”

<sup>100</sup> See Bolton, “Change in the Monad.”

<sup>101</sup> See Jorati, “Monadic Teleology.”

willed. Leibniz's theory of the soul, however, encompasses a wide range of living souls and their states, from the soul of the least sophisticated, unconscious plant to the soul of the rational human being in a state of fully awake and reflective self-awareness. Leibniz contends that even the confused and inchoate strivings characterizing, for instance, the state of the dog's soul prior to being beaten with the stick can unfold according to laws of final causality. What is key is not the voluntary choice of a particular perception but rather the way that perceptions follow, in an orderly fashion, from those that have come before:

There certainly would be an incompatibility if spontaneity and voluntariness were the same thing. Everything voluntary is spontaneous, but there are spontaneous actions which are not chosen, and which consequently are not voluntary. The soul is not able always to give itself pleasant feelings, since the feelings it has are dependent on those it has had.<sup>102</sup>

Leibniz thinks it is compatible with the theory of spontaneity to say that the confused perceptions existing in the dog's soul operate by final causality even as they move towards a future state that appears undesirable from the dog's individual perspective. For Leibniz, substances can desire and spontaneously produce situations that are contrary to one's self-interest. This is because desire may direct the activities of the soul without consciously representing a distinct object or state of affairs. In this way too, the image of the soul as a "spiritual automaton" proves instructive. As much as automata are characterized by their external design, they also do not require conscious deliberation in order to act. Indeed, automata behave *independently* of consciousness or thought. Thus, *contra* Rutherford, characterizing the soul as a spiritual automaton provides theoretical support to Leibniz's claim that souls can operate according to laws of desire and final causality even as they spontaneously produce seemingly undesirable perceptual states. I will examine the nexus of problems relating to confused perception, volition, knowledge and the spiritual automaton in greater detail in Chapters Three and Five.

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<sup>102</sup> WF 81.

#### 1.4 Automata and Souls

Leibniz sought in the *Système nouveau* to provide a coherent theory of substantial spontaneity, or the idea that substances produce all of their actions according to the laws of their nature alone. Leibniz believed that by conceiving of a substance as *spontaneous*, he could provide a metaphysical foundation for the mechanical philosophy of the seventeenth-century without falling into the obscurity of Scholasticism. Leibniz sees the notion of automata designed by God as a model to render such spontaneity intelligible. In accord with the account of the union of soul and body Leibniz defends in the *Système nouveau*, these automata take spiritual as well as corporeal form. Both kinds of automata are designed by God in infinite detail in order to spontaneously unfold a predetermined set of motions. God organizes the total set of such motions, and the mechanical actions of bodies and the perceptions of the soul mutually express one another as well as the rest of the world.

In this chapter, I have clarified the theoretical role of the spiritual automaton in Leibniz's mature natural philosophical synthesis as presented in the *Système nouveau*. There remain, however, a number of outstanding questions as to why, at Leibniz's particular historical juncture, just such a model would be attractive. For instance, why did modern philosophers turn to a mechanical picture of living bodies as machines or automata in the first place, and why would Leibniz follow their lead? Second, and more significantly for our purposes, why would Leibniz see fit to extend such a comparison to the soul? Although the connection may seem evident enough with regard to the idea that both an automaton and the soul are, in Leibniz's view, capable of well-ordered self-motion, the structure and laws of the mechanical and spiritual realms are clearly different. Machines feature a multiplicity of parts interacting according to efficient causal laws, whereas souls are thought to be simple and obey the laws of final causality

and representation. Given these differences, just how are we to understand Leibniz's analogy between the soul and an automaton?

In order to resolve these questions, the following chapters aim to situate Leibniz's views in the *Système nouveau* more firmly within the context of seventeenth-century natural philosophy. The goal will be to present a fuller picture of the theoretical backdrop for Leibniz's introduction of the notion of the spiritual automaton as well as what rhetorical and philosophical problems in particular it—and no other model of the soul proposed by Leibniz—is suited to address.

## Chapter Two

### The Young Leibniz's Critical Appropriation of Hobbes's Conatus

In Leibniz's mature philosophy, the image of the spiritual automaton exemplifies the way that Leibniz uses conceptual tools from the mechanical philosophy – in this case the concept of a self-moving machine or automaton – to illustrate the workings of the mind. It is not, however, the first time that Leibniz adopted mechanical concepts initially used to explain physical interactions to explain the nature of the mind. In the period from 1669-1671, for instance, Leibniz appropriates a Hobbesian notion of conatus conceived of as the infinitesimal beginning of motion. As I will show, Leibniz follows Hobbes in using conatus to explain the connection between mind and body. The key difference is that whereas Hobbes was a materialist who conceived the mind as resulting from the continuation of bodily motion, Leibniz inverts the explanatory order of mind and body, arguing that bodies in fact result from mental activity.

Leibniz's reception of Hobbes dates back to the early 1660s, when Leibniz first read the English philosopher's Latin works *De Cive* and *De Corpore*. Hobbes's writings played a large role in Leibniz's early intellectual development and he writes approvingly of Hobbes's definition

of reasoning as computation in the *Dissertatio de arte combinatoria* of 1666.<sup>103</sup> Leibniz soon came to reject a number of key dimensions of Hobbes's thought. In terms of logic and the philosophy of language, Leibniz rejects Hobbes's view of definition, which he decries as a form of "supernominalism" according to which all definitions are arbitrary and dependent upon human stipulation.<sup>104</sup> Politically speaking, Leibniz claims that Hobbes's views on the genesis of the state are overly dependent upon fear and belied by empirical examples of societies that function in the absence of a strong central authority.<sup>105</sup> In Leibniz's eyes, Hobbes's metaphysics comes to

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<sup>103</sup> Leibniz writes of Hobbes: "*Profundissimus principiorum in omnibus rebus scrutator Th. Hobbes meritò posuit omne opus mentis nostrae esse computationem, sed hac vel summam addendo vel subtrahendo differentiam colligi*" (A.vi.1 194; "Th Hobbes, Investigator of the most profound principles in all things, correctly determined all of the works of our mind to be computation, and this to be either a sum to be added of a difference to be subtracted" [translation mine]). For an account of Leibniz's general relationship to Hobbes, see Philip Beeley, "Leibniz and Hobbes," in *The Bloomsbury Companion to Leibniz*, ed. Brandon C. Look (London: Bloomsbury, 2011), 32-50.

<sup>104</sup> As Leibniz writes in the preface to his 1670 edition of the *De veris principiis et vera ratione philosophandi contra pseudophilosophicos* by Marius Nizolius, comparing Hobbes to Ockham: "So much so that, I believe, Occam himself was not more nominalistic than is Thomas Hobbes now, though I confess that Hobbes seems to me to be a super-nominalist [mihi plusquam Nominalis videtur]. For not content like the nominalists, to reduce universals to names, he says that the truth of things itself consists in names and what is more, that it depends on the human will, because truth allegedly depends on the definitions of terms, and definitions depend on the human will. This is the opinion of a man recognized as among the most profound of our century, and as I said, nothing can be more nominalistic than it" (L128/A.vi.2 428-9).

Here Leibniz adduces the example of arithmetical truths as a counterexample to Hobbes's position. Leibniz later opposes the notion of a *real definition* to Hobbes's account, as a form of definition that captures the objective logical possibility of the *definiendum*. As he writes in the *Meditationes de cognitione, veritate, et ideis*, an important essay published in the *Acta Eruditorum* from 1684:

And so we also have a distinction between nominal definitions, which contain only marks of a thing to be distinguished from other things, and real definitions, from which one establishes that a thing is possible. And with this we give our due to Hobbes, who claimed that truths are arbitrary, since they depend on nominal definitions, without considering the fact that the reality of a definition is not a matter of decision and that not just any notions can be joined to one another... And, indeed, whenever we have adequate knowledge, we also have a priori knowledge of possibility, for having carried an analysis to completion, if no contradiction appears, then certainly the notion is at least possible" (AG 26/A.vi.4 589-590).

<sup>105</sup> In an appendix to a letter to Pierre Coste of May 30 1712 containing Leibniz's thoughts on Shaftesbury's *Characteristicks of Men, Manners, Opinions, Times*, Leibniz cites the social organization of Native American tribes such as the Iroquois and Huron as empirical proof against Hobbes's theory of politics. According to Leibniz, such tribes manage to subsist in the absence of the type of strong centralized leadership advocated for by Hobbes, therefore showing that humans are not compelled to give up their liberty to a government for the sake of their natural good: "ils ont montré par une conduite surprenante que des Peuples entiers peuvent être sans Magistrats et sans querelles, et que par consequent

represent a misguided form of modern Epicureanism that Leibniz claims only holds the existence of corporeal reality and denies divine providence.<sup>106</sup> Ultimately, Leibniz seems disappointed in Hobbes as a philosopher. As he writes damningly in the “Projet et essais pour arriver à quelque certitude pour finir une bonne partie des disputes et pour avancer l’art d’inventer” of the late 1680s, “There is a mixture in Hobbes of an extraordinarily penetrating and strangely weak, almost incontinent mind.”<sup>107</sup>

Despite the mature Leibniz's resistance to Hobbes's naturalistic and materialistic views, his debt to Hobbes when it comes to topics in physics and metaphysics is well known and has been the subject of much scholarly attention in recent decades.<sup>108</sup> Much of this attention has focused on the importance of Hobbes with regards to understanding the development of Leibniz's metaphysics and the corresponding attempts on the part of scholars to generate a useful

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les hommes ne sont ny assés portés par leur bon naturel, ny assés forcés par leur méchancéte à se pourvoir d'un gouvernement et à renoncer à leur liberté” (GP III 424; “they have shown by a surprising conduct that entire peoples can be without magistrates and without conflict, and that consequently men are neither carried by their natural good, nor forced by their malice to provide themselves with a government and to renounce their liberty” [Translation mine])

<sup>106</sup> As Leibniz writes in the “Sentiments de Socrate opposes aux nouveaux stoiciens et epicureens” of 1678-80: “Moreover Epicurus in times past, and Hobbes today, who hold all things to be corporeal, have given enough evidence to show that, on their view, there is no providence” (AG 282/Avi.4). See also T 371/GP.VI 336.

<sup>107</sup> AC 278-9/A.vi.4 967; “Il y a un melange chez Hobbes d'un esprit merveilleusement penetrant, et estrangement foible incontinent à pres.”

<sup>108</sup> For instance, George MacDonald-Ross, (“Leibniz's Debt to Hobbes,” in *Leibniz and the English-Speaking World*, ed. Pauline Phemister and Stuart Brown [Dordrecht: Springer, 2007], 19-33) outlines four important points of similarity between Hobbes and Leibniz. These are, first, their theories of thought as computation; second; the notion of truth as the containment of predicate within the subject; third, the theory of conatus as pertaining both to physical forces as well as being the key to understanding the connection between mind and body; fourth the idea that all bodies perceive. MacDonald Ross claims that the fourth point in particular has gone underappreciated in the literature on Leibniz and Hobbes, and is important, among other reasons for allowing for the distinction between inanimate and animate forms of perception to be drawn on the basis of whether or not a particular perceiver possesses memory. Howard Bernstein examines the way that both Hobbes and the young Leibniz utilize a notion of conatus in physical contexts. See “Conatus, Hobbes, and the Young Leibniz,” *Studies in the History and Philosophy of Science* 11 (1980): 25–37. See also Douglas Jesseph, “Leibniz on the Foundations of the Calculus: The Questions of the Reality of Infinitesimal Magnitudes,” *Perspectives on Science* 6, no. 1&2 (1998): 14-16. For the first study to recognize Leibniz's appropriation of Hobbes's notion of conatus see Ferdinand Tönnies, “Leibniz und Hobbes,” *Philosophische Monatshefte* 23 (1887): 557–73.

periodization of Leibniz's shifting metaphysical views. These accounts tend to identify Hobbes as having a potent influence on the young Leibniz, which is superseded over the course of the 1670s.<sup>109</sup> Nonetheless, several recent accounts of the relationship between Hobbes and Leibniz additionally argue for the continued relevance of Hobbes and Hobbesian materialism into later phases of Leibniz's metaphysics.<sup>110</sup> Of particular note for our purposes is Philip Beeley's

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<sup>109</sup> Ursula Goldenbaum has also shown the significance of Hobbes for Leibniz's early account of the mind in "Indivisibilia Vera -- How Leibniz Came to Love Mathematics. With Appendix: Leibniz's Marginalia in Hobbes' *Opera Philosophica* and *De Corpore*" (in *Infinitesimal Differences: Controversies between Leibniz and His Contemporaries*, ed. Ursula Goldenbaum and Douglas Jesseph [Berlin: Walter de Gruyter, 2008], 53-94). Goldenbaum argues that Leibniz was inspired by the way that Hobbes employed a notion of conatus or endeavour to explain sensation. Goldenbaum bases her reading on an examination of the notes Leibniz took while re-reading Hobbes's *De Corpore* at the beginning of the 1670s, and argues that Leibniz abandons this early Hobbesian project when he begins his intensive study of mathematics, and in particular the mathematics of infinite series, at the beginning of his stay in Paris in 1672-3. The notion of conatus allowed Hobbes, and in turn Leibniz, to offer a conceptual means with which to bridge body and mind. Daniel Garber locates an early phase in Leibniz's philosophical development in which he argues that Leibniz can be understood as a "heterodox Hobbesian." In Garber's tripartite periodization of Leibniz's development according to which Leibniz progressively treats bodies, corporeal substances and monads as the fundamental units of nature, this Hobbesian phase corresponds to part of the phase Garber identifies with "body." According to Garber, Leibniz thinks of minds in this period as supplements to, rather than replacements for, bodies as they are in what Garber calls Leibniz's later "monadological metaphysics:"

In this way, as I read him, Leibniz seeks only to introduce genuine mentality into Hobbes's world without subverting it... this is *not* the monadology, or any anticipation of the monadology. I want to interpret Leibniz's first view of the physical world as a kind of heterodox Hobbesianism, a kind of Hobbesian mechanical philosophy to which Leibniz has added mind, not to *replace* body but to *supplement* it (*Body, Substance, Monad*, 37).

Richard T.W. Arthur also argues on the basis of an examination of the texts of the early 1670s that Leibniz rejects what I will call the conatus model inspired by Hobbes as a result of a more sophisticated engagement with the notion of an infinitesimal as well as the mathematical and physical continua in his Paris period. See *Leibniz*, 77-98. LC provides a helpful resource for engaging with Leibniz's natural philosophical and mathematical views in the 1670s and 80s.

<sup>110</sup> See Catherine Wilson, "Motion, Sensation, and the Infinite: The Lasting Impression of Hobbes on Leibniz," *British Journal for the History of Philosophy* 5, no. 2 (1997): 339-51. Wilson argues that Leibniz's theory of the mind and sensation is broadly Hobbesian, and draws attention to the theory of *petites perceptions* in the *New Essays* as evidence. Wilson thus argues for the recognition of the continued presence of "materialist" views regarding the connection between mind and body even in the mature Leibniz:

My claim is that early in his career Leibniz encountered some extraordinary Hobbesian ideas concerning mind-body relations which were different from the more familiar Descartes-Malebranche two-substance model. Although in exoteric works like the *New System of the Nature and Communication of Substances*, the Descartes-Malebranche model serves as a point of departure for the theory of pre-established harmony, Hobbesian ideas resurface in the *New Essays* (340).

suggestion that the young Leibniz shares with Hobbes an attempt to provide what he calls a “mechanics of mind.” Beeley emphasizes that both philosophers conceive of the causal relationship between the body and mind in terms of the mechanical motions of the body. For Beeley, Hobbes and the young Leibniz both thereby reject a strong dualism between soul and body.<sup>111</sup> In this way, Leibniz's theory of the relation between mind and body appears to have more in common with Hobbes's conception than, for instance than the conceptions we find in contemporaries such as Descartes or Spinoza. Much of the present discussion of the early Leibniz parallels Beeley's account; my interpretation adds to Beeley in suggesting the ways that

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According to Wilson, the Hobbesian-inspired theory of *petite perceptions* allows for a resemblance between bodily motions and mental sensations. To the degree that this represents the continued presence of “materialist” ideas in Leibniz's mature thought, Wilson urges us to understand this particular “materialist” approach to the relation of the mind and body as harmonized with “idealist” or “formalist” views. Stewart Duncan (“Leibniz on Hobbes's Materialism,” *Studies in History and Philosophy of Science* 41 [2010]: 11–18) analyzes the status of critical comments Leibniz makes regarding Hobbesian materialism in the years 1698-1705. Duncan pays particular attention to the way that Leibniz claims Hobbes inferred the non-existence of non-extended things such as forces from our inability to imagine them. In my view, Duncan does not sufficiently recognize the *synthetic* aspects of Leibniz's relation to materialism, according to which Leibniz attempts to preserve and properly situate materialist views within a larger system of Nature.

<sup>111</sup> According to Beeley:

Leibniz and Hobbes start from an almost identical point of view in the question of the nature of mind – one which is diametrically opposed to the doctrine we find in Descartes. To be more precise, they share the aim of providing a mechanistic explanation of the mind and emphasize thereby that their respective approaches result from methodological considerations... Despite proceeding in somewhat different ways, both men effectively develop their theory at the limits of mechanistic physics where they draw on similar conceptual tools in order to explain mental activity... However, deeper significance lies in the fact that within mechanistic physics itself the preconditions are created for a causal explanation of the interaction of mind and body. Thus, the approach in itself ensures that mind and body are situated on one and the same ontological level; the fundamental and substantial difference in Descartes between the *res extensa* and the *res cogitans* is overcome already at the outset (*Leibniz and Hobbes*, 35).

The differences between Descartes and Leibniz on the topic of what Beeley calls the “mechanics of mind” will be the subject of the next chapter. See Beeley, *Leibniz and Hobbes*, 35. We will examine the relation between Leibniz and Descartes in this regard in chapter three. Spinoza and Leibniz will be the subject of Chapter Four.

Leibniz's early account of the mechanics of the mind is echoed in the later model of the spiritual automaton.<sup>112</sup>

I will refer to Leibniz's "mechanical" model of the mind during the early 1670s as a *point-conatus* model. The point-conatus model identifies thought with conatus, or a minimal motion through a point. Leibniz conceives the relation between the body and the mind as one where the extended body results from the continuation of unextended thought. Further, Leibniz uses this account of the mind-body relation to account for the theological doctrine of the immortality of the soul. Since conatus are never fully exhausted, the minds they compose can likewise never disappear or be destroyed through natural means. Thus, Leibniz's critical appropriation of Hobbes's notion of conatus represents Leibniz's willingness to turn Hobbes's own tools against the latter's corporealist view of nature.

How does this particular model of the mind relate to the notion of the soul as "spiritual automaton" that Leibniz presents in texts such as the *Systeme nouveau*? One certainly needs to be wary of importing theoretical concepts and solutions from one period of Leibniz's

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<sup>112</sup> Beeley appears to restrict the later relevance of Hobbes to Leibniz to certain positions on ethics and natural law:

But the significance of Hobbes for Leibniz does not end with his progression to the mature philosophy of monads. Leibniz's later writings on ethics and natural law display a remarkable consistency with those of earlier years and contain much which for all of Leibniz's claims to the contrary is in agreement with the English philosopher ("Leibniz and Hobbes," 34).

In suggesting that features of Leibniz's earlier view in Leibniz's mature period, I follow Arthur's claim in his introduction to *LC*:

Here "we are offered two ways of conceiving mind: that it consists in a point, and that it consists in a harmony of endeavours. I do not think Leibniz saw any oppositions between these characteristics, and there is a sense in which both remain, subtly transformed, characteristics of the simple substances of his later thought. In the *New System* of 1695, for example, simple substances (which are of course unextended) are described as 'metaphysical points' and '*real and animated points*'; and these are characterized not only as involving an 'original activity' (elsewhere described as monadic *conatus*, i.e. endeavour), but by the harmony among their states (LC xxxvi).

Arthur, does indicate an important point of *discontinuity*, however, between Leibniz's early and mature views, namely the idea that he maintains in the early 1670s that minds are located in *indivisible spatial points*.

philosophical activity to another.<sup>113</sup> Indeed, important differences do exist, between the point-conatus account of the mind and the soul as spiritual automaton. Specifically, the point-conatus model of the mind does not feature the key aspects of the mechanical automaton that Leibniz builds into the later concept of the soul. The minds of this early period do not appear to act spontaneously insofar as they instead appear to be affected by an infinite number of motions. Further, though Leibniz will speak of such themes as the harmony existing between minds, God's intelligence and wisdom, and God's choice of particular phenomena, there does not appear to be the robust sense of design by an intelligent creator required for the highly complex design of the later spiritual automaton.<sup>114</sup>

My wager is, despite Leibniz's abandonment of the point-conatus model of the mind, it nonetheless expresses key commitments that Leibniz will maintain through later phases of his philosophy. In this way, it provides crucial theoretical background for understanding the later model of the soul as spiritual automaton. Both models represent examples of Leibniz's adoption of resources from the mechanical philosophy in the context of the science of the soul or mind. Further, as we saw in the *Système nouveau* Leibniz continues to hold that an incorporeal principle is required to provide the reason for bodily motions, and that the mind/soul as incorporeal principle of bodily motion *concentrates* extended bodily motions within a simple unity. These commitments, coupled with Leibniz's later insistence that his system attempts to

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<sup>113</sup> This is the overarching theme of Garber, *Body, Substance, Monad*, which cautions against interpreting Leibniz's early writings in light of the later doctrine of monads.

<sup>114</sup> Arguably, Leibniz does not develop an explicit and thorough-going notion of design argument until later on in the decade when he begins developing a theory of God's choice of which possible world to create as the result of his engagement with the texts published as part of Spinoza's *Opera posthuma*. For more on this point, see Mogens Lærke, "Quod Non Omnia Possibilia Ad Existentiam Perveniant Leibniz's Ontology of Possibility, 1668-1678," *The Leibniz Review* 17 (2007): 1–30. Ohad Nachtomy presents an alternative view in "Remarks on Possibilia in Leibniz, 1672-1676: *Quod Non Omnia Possibilia Ad Intelligentiam Perveniant?*" (*The Leibniz Review* 18 [2008]: 249–57). Lærke addresses Nachtomy's position in "Response to Ohad Nachtomy on Possibilia in Leibniz, 1672-1676" (*The Leibniz Review* 18 [2008]: 259–66).

preserve the truth of materialist claims about nature indicate the relevance of Leibniz's early encounter with Hobbes for his later conception of the soul.

## 2.1 Hobbes's Corporeal Natural Philosophy

For Hobbes, philosophy is a process of reasoning that seeks knowledge of effects through their causes. The means by which we acquire such knowledge is *ratiocination* or *computation*. In using such terminology, Hobbes has a form of arithmetical procedure in mind. Specifically, he holds that all thought proceeds by means of the addition or subtraction of named concepts to or from one another. Consequently, philosophical thought itself takes on the form of such reckoning:

*Philosophy is such knowledge of effects or appearances, as we acquire by true ratiocination from the knowledge we have first of such causes or generations as may be from knowing first their effects...*

*By RATIOCINATION, I mean computation. Now to compute, is either to collect the sum of many things that are added together, or to know what remains when one thing is taken out of another. Ratiocination, therefore, is the same with addition and subtraction; and if any man add multiplication and division, I will not be against it, seeing multiplication is nothing but addition of equals one from another, as often as is possible. So that all ratiocination is comprehended in these two operations of the mind, addition and subtraction.<sup>115</sup>*

Hobbes illustrates the process of thought as computation with the example of coming to recognize a particular object we perceive as a human being. Initially, from a distance, all that I perceive is a *body*; as the body comes closer and I can see it changing position, I add the notion of *animation* to that of *body*; upon perceiving a voice and further signs of rationality, I add the further idea of *rational*. Hobbes concludes:

Lastly, when, by looking fully and distinctly upon it, he conceives all that he has seen as one thing, the idea he has now compounded of his former ideas, which are put together in

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<sup>115</sup> DC 3.

the mind in the same order in which these three single names, *body*, *animated*, *rational*, are in speech compounded into this one name, *body-animated-rational*, or *man*.<sup>116</sup>

Philosophical thought in general proceeds along these lines. For any given object, we need to find the right combination of names requisite for distinguishing it from another type of thing. We accomplish such a philosophical task by means of addition and subtraction of such names.

The first philosophical step is therefore to find the most analytically basic element of nature. Subsequently that element will form the basis for all philosophical reckoning by being that to which we add further ideas. Hobbes develops a philosophical account of nature that admits only of extended bodies. Body serves as the foundational concept upon which all further concepts – from plants to animals to human beings – are based. Hobbes identifies body as the foundational natural philosophical concept by means of a method of privation. In other words, Hobbes attempts to identify the primary philosophical idea by subtracting any ideas connected with particular objects of experience. He thus has us imagine what happens when we remove the ideas of everything that we have experienced from our minds. What remains, according to Hobbes, is a simple image of space as the image of something existing outside of the mind:

If therefore we remember, or have a phantasm of any thing that was in the world before the supposed annihilation of the same; and consider, not that the thing was such or such, but only that it had a being without the mind, we have presently a conception of that we call *space*.<sup>117</sup>

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<sup>116</sup> DC 4.

<sup>117</sup> DC 93. The empty space in question is something Hobbes conceives of as wholly imaginary insofar as it is a mental abstraction. We must posit something like this imaginary space insofar as Hobbes claims that we conceive of the place in which a body exists as remaining the same even as the body moves out of it. In reality, however, not such empty space ever exists. For a comparison of Hobbes's so-called "annihilated world" thought experiment with Descartes's arguments for the *cogito*, see Douglas Jesseph, "Hobbesian Mechanics," in *Oxford Studies in Early Modern Philosophy vol. 3*, ed. Daniel Garber and Steven M. Nadler (Oxford: Oxford University Press, 2006), 126-127. Jesseph points out that whereas Descartes's thought experiment leads him to conclude for the existence of an immaterial mind, Hobbes does not entertain such an option. For a detailed account of Hobbes's conception of empty space in *De Corpore*, as well as a review of various scholarly interpretations, see Edward Slowik, "Hobbes and the Phantasm of Space," *Hobbes Studies* 27 (2014): 61-79.

This space is something that can be filled by various bodies. Though Hobbes acknowledges that this form of empty space is a fiction, it nevertheless allows him to identify space as something distinct from body. For Hobbes, this point is self-evident. It also allows him to avoid the errors of philosophers who too quickly identify empty space itself with bodily extension.<sup>118</sup>

Moving on from empty space outside the mind, Hobbes considers the addition of something to space that we had previously abstracted away. In conformity with the definition of space, this thing that we return must both fill some portion of space as well as be independent of our minds. Hobbes identifies this first space-filling idea as *body*: “The definition, therefore, of *body* may be this, a *body is that, which having no dependence upon our thought, is coincident or coextended with some part of space.*”<sup>119</sup> Simply put, body is something outside of our minds that occupies a portion of space. Since body by definition takes up space, it is essentially extended.

As the first idea we add to that of empty space, body serves as the underlying element of all existing things. Moreover, although the particular accidents or extension of a given body may change, the fact that there is some bodily extension will remain:

And therefore philosophers, who tie themselves to natural reason, suppose that a body can neither be generated nor destroyed, but only that it may appear otherwise than it did to us, that is, under different *species*, and consequently be called by other and other names; so that that which is now called man, may at another time have the name of not-man; but that which is once called body, can never be called not-body.<sup>120</sup>

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<sup>118</sup> “And this is of itself so manifest, that I should not think it needed any explaining at all, but that I find space to be falsely defined by certain philosophers, who infer from thence, one, that the world is infinite... and, another, from the same definition, concludes rashly, that it is impossible even to God himself to create more worlds than one...” (DC 93).

<sup>119</sup> DC 102.

<sup>120</sup> DC.II.8.20.

## Chapter Two: The Young Leibniz's Critical Appropriation of Hobbes's Conatus

In this way, body serves both as the *ur*-concept on the basis of which all other natural phenomena are developed as well as the incorruptible subject of all further accidental determinations.

The foundational role that Hobbes ascribes to body means that incorporeal entities (aside from the fictional account of empty space) have no place whatsoever within the philosophical framework of *De Corpore*. Indeed, all other concepts, from motion to mind, must be derived from body. Hobbes thus writes that philosophy treats that which is generable and composed out of parts, that is to say, bodies:

The *subject* of Philosophy, or the matter it treats of, is every body of which we can conceive any generation, and which we may, by any consideration thereof, compare with other bodies, or which is capable of composition and resolution; that is to say, every body of whose generation or properties we can have any knowledge.<sup>121</sup>

For Hobbes, this necessarily excludes anything incorporeal, ingenerable or simple. Philosophy should not concern itself with such incorporeal entities because their supposed attributes are not subject to conceptual reckoning. Hobbes therefore writes that his philosophy bars any reference to immaterial entities such as God or angels:

Therefore it excludes *Theology*, I mean the doctrine of God, eternal, ingenerable, incomprehensible, and in whom there is nothing neither to divide nor compound, nor any generation to be conceived. It excludes the doctrine of *angels*, and all such things as are thought to be neither bodies nor properties of bodies; there being in them no place neither for composition nor division, nor any capacity of more and less, that is to say, no place for ratiocination."<sup>122</sup>

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<sup>121</sup> DC.I.1.8.

<sup>122</sup> DC.I.1.8. In the *Leviathan*, Hobbes rejects the very notion of an *incorporeal substance* as the result of the combination of incompatible names: "Another [form of insignificant sound is] when men make a name of two names, whose significations are contradictory and inconsistent, as this name, an *incorporeal body*, or (which is all one) an *incorporeal substance*" (HL I.iv.21). Additionally, Hobbes writes in Chapter 12:

But the opinion that such spirits were incorporeal, or immaterial, could never enter into the mind of any man by nature, because though men may put together words of contradictory signification, as *spirit* and *incorporeal*, yet they can never have the imagination of anything answering to them; and therefore, men that by their own meditation arrive to the acknowledgment of one infinite, omnipotent, and eternal God, choose rather to confess he is incomprehensible, and above their understanding, than to define his nature by *spirit incorporeal*, and then confess their definition to

Hobbes's exclusion of incorporeal entities from natural philosophical inquiry implies that as a philosophical category body is self-sufficient. Philosophy can therefore provide an adequate explanation of the nature and existence bodies in terms of body alone and without having to take recourse to the action of incorporeal principles.

## 2.2 Hobbes on Motion

Hobbes introduces the notion of endeavour or conatus to explain the phenomenon of bodily motion. Hobbes defines motion as the change of place that happens when a body leaves one place and enters another.<sup>123</sup> Hobbes develops the notion of conatus to describe what happens when a body begins to move and defines it as the infinitesimally extended beginning of a motion. As a consequence of a conatus's infinitesimal extension, Hobbes will assert that we can envision a motion as taking place in the space of a point.

For Hobbes, motion in general takes the form of local motion in space. Fundamentally, this means that motion happens when one body leaves a place and enters another. Hobbes conceives the body that is carrying out the motion as continuously leaving a series of spaces and entering new ones:

*Motion is a continual relinquishing of one place, and acquiring another... I say a continual relinquishing, because no body, how little soever, can totally and at once go out of its former place into another, so, but that some part of it will be in a part of a place which is common to both, namely, to the relinquished and the acquired places.*<sup>124</sup>

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be unintelligible; or if they give him such a title, it is not *dogmatically*, with intention to make the divine nature understood, but *piously*, to honor him with attributes of significations as remote as they can from the grossness of bodies visible (*HL* I.xii.7).

For an account of Hobbes's argument regarding the signification of "incorporeal substance" that is skeptical of its ability to secure a metaphysical materialism, see Stewart Duncan, "Hobbes, Signification, and Insignificant Names," *Hobbes Studies* 24 (2011): 158-78.

<sup>123</sup> In what follows I will use the term conatus to stand in for all instances of the term endeavour. This is in keeping with Leibniz's own appropriation of the term.

<sup>124</sup> *DC* 109.

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Hobbes clearly rejects the received Aristotelian conception of local motion. According to Aristotle, natural motion results from a body seeking its natural place.<sup>125</sup> Against Aristotle, Hobbes regards bodies as constantly moving from place to place without any determinate destination or *telos* to which the body is moving and at which it would come to rest. Indeed, a significant consequence of Hobbes's theories of conatus and continual motion is that rest is merely apparent. Even a body at apparently at rest is imperceptibly endeavoring to change location. A cup seeming to rest upon a table, for instance, is endeavoring, that is to say beginning, to enter the place of the table.

Further, on Hobbes's account, bodily motion cannot happen spontaneously or by virtue of a reason internal to a given body. That is to say, no reason can be found within the nature of a given body for why it would begin to move on its own:

For suppose that some finite body exist and be at rest, and that all space besides be empty; if now this body begin to be moved, it will certainly be moved some way; seeing therefore there was nothing in that body which did not dispose it to rest, the reason why it is moved this way is in something out of it.<sup>126</sup>

For our purposes, two things are important here. First, this definition precludes the possibility that bodies can be moved by virtue of the activities of incorporeal spirits or, for that matter, God

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<sup>125</sup>For Aristotle, motion in general is that actualization of a potential. As he puts it as *Physics* 3.1, 201a10: "we can now define motion or change as the progress of the realizing of a potentiality, *qua* potentiality." This definition encompasses all manners of change, including qualitative change, quantitative growth and loss, coming-into-being and passing-away and change of place, or locomotion. Aristotle treats natural locomotion as the actualization of a potential insofar as a natural body moves towards its natural place. See for instance *Physics* 4.1 208b9: "Further, the locomotions of the elementary natural bodies – namely, fire, earth, and the like – show not only that place is something, but also that it exerts a certain influence. Each is carried to its own place, it is not hindered, the one up, the other down" (AR 355). In this regard, Hobbes's definition of motion both reduces the scope of motion and provides a different account of locomotion from that of Aristotle. For an account of the way that Hobbes's theory of motion differs from that of Aristotle, see Cees Leijenhorst, *The Mechanisation of Aristotelianism* (Leiden: Brill, 2002), 171-217.

<sup>126</sup>DC 115.

conceived as an immaterial being.<sup>127</sup> This is, of course, consistent with his earlier claim that incorporeal entities have no place within natural philosophy. As we have seen, given Hobbes' corporealist framework, it makes no sense to speak of incorporeal entities in the first place. Second, since, according to Hobbes, bodies cannot set themselves in motion, motion requires the presence of another external body. A body can only be moved by another body and hence motion requires the interaction between multiple bodies.

Hobbes's conatus explains what happens when one body initiates movement in another. Hobbes defines endeavour as a motion through a point, that is to say, as an infinitesimally small motion in which the actual quantity of motion is not considered: "*I define ENDEAVOUR to be motion made in less space and time than can be given; that is, less than can be determined or assigned by exposition or number; that is, motion made through the length of a point, and in an instant or point of time.*"<sup>128</sup> Although Hobbesian conatus takes place in a space and time less than any that is given, it does in fact have an extended magnitude. This follows from the fact that the motion is associated with a particular bodies change of location; since a body by definition has an extension, any motion that it carries out – no matter how small – will itself be extended. The extended magnitude of the length of the point does have an important theoretical upshot. Namely, it enables Hobbes to differentiate the quantities of motion that result from different conatūs. Since conatus has a particular extended magnitude, so too, do the particular motions that result. What is important for Hobbes, however, is that the quantity of extension proper to the conatus is small enough that we can disregard it in the context of our physical analyses.

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<sup>127</sup> In this regard, Hobbes's natural philosophy is opposed to that of Descartes, who held that not only does God supply the force of motion in nature, but also that, though the human mind or soul can influence the direction of bodily motions. On the first point, see CSM.I 240. On the second, see CSM.I: 341-344.

<sup>128</sup> DC 206.

The way that Hobbes defines conatus moreover implies that *conatūs* can persist in a given body indefinitely. Though conatus is thought of as the *beginning* of motion, no motion in the sense of *perceptible* change of place need to occur as a result. Rather, as the beginnings of motion, conatūs do possess extension, but the amount of extension is insignificant enough to be ignored. This enables Hobbes to conclude, as noted above rest is merely apparent; even bodies that are apparently at rest are expressing an imperceptible conatus to enter another place. This state can either persist indefinitely, or until the time that another body impels one or the other of the bodies towards which it is expressing *conatus* from its position.

### 2.3 Hobbes on Sensation and Mental Phenomena

As noted above, Hobbes thought that any talk of entities must ground them in a material subject, that is, a body. Hobbes insists that talk of purely incorporeal beings is empty, for it is impossible to reason regarding something that is not a body. Though we can attempt to define such an entity by means of combining concepts taken to refer to spiritual things, Hobbes claims that we are unable to imagine anything that would actually correspond to such terms. This follows from the technical sense of imagination that Hobbes provides, for instance, in Part IV Chapter 7 of *De Corpore*. There, Hobbes claims that imagination is what happens when a particular material phantasm remains when the object producing the phantasm is no longer present:

“IMAGINATION therefore is nothing else but *sense decaying*, or *weakened*, by the absence of the object.”<sup>129</sup> An image or phantasm is thus a corporeal trace of an object formerly present to our senses. Thus, anything we can imagine must have *at some point* been present to our sense organs and is, ipso facto a material body.

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<sup>129</sup> DC 396.

Hobbes's explicit rejection of incorporeal entities notwithstanding, he needs to provide *some* philosophical account of mental phenomena such as thinking, remembering, imagining, sensing, and willing. Has he painted himself too far into a corner by denying incorporeal entities outright? Given Hobbes's austere corporealist framework, how are we to understand the nature and existence of the mind? Essentially, Hobbes argues that the science of mind depends upon physics, and hence upon bodies in motion. He characterizes the status of moral philosophy and the motions pertaining to the mind as follows:

After *physics* we must come to *moral philosophy*; in which we are to consider the motions of the mind, namely, *appetite, aversion, love, benevolence, hope, fear, anger, emulation, envy, etc*; what causes they have, and of what they be causes. And the reason why these are to be considered after *physics* is, that they have their causes in sense and imagination, which are the subject of *physical* contemplation.<sup>130</sup>

According to Hobbes, mental phenomena such as sense and imagination result from the motions of bodies. When Hobbes claims that the motions of the mind are caused by sense and imagination, he argues that they are in fact the result of the continuation of physical motions that have entered into the body. Thus, for Hobbes, mental phenomena including emotions and appetites are subordinate to physical phenomena in both an explanatory as well as an ontological sense. On the one hand, for Hobbes, to know something is to know it by means of its causal generation; on the other hand Hobbes wants to treat mentality itself as a species of physical motion.

The key to understanding the causal and ontological relationship between the mental and the physical is the way that the prolongation of physical motion provides the foundation for mental operations. Take the example of sensation, which Hobbes analyzes in Chapter 25 of *De Corpore*. Hobbes begins his account of sensation by indicating that we experience changes and

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<sup>130</sup> DC 72-73. For passages on the conception of thought as complex bodily motion in the *Leviathan*, see Chapters 1-3.

mutations in our perceptions of the world. He argues, based on an earlier proof that all change consists in motion of the internal parts of the thing that is altered that the changes in our perception must likewise result from changes in the internal motions taking place in our sense organs. As phantasms or ideas press upon our sense organs, the motion is transferred or propagated inward through the nerves to the brain and the heart. We could, in turn trace the motion outwards to its object, which Hobbes likens to a fountain:

And thus also the pressure of the uttermost part proceeds from the pressure of some more remote body, and so continually, till we come to that from which, as from its fountain, we derive the phantasm or idea that is made in us by our sense. And this, whatsoever it be, is that we commonly call *the object*. Sense, therefore, in the sentient, can be nothing else but motion in some of the internal parts of the sentient; and the parts so moved are parts of the organs of sense. For the parts of our body, by which we perceive any thing, are those we commonly call the organs of sense.<sup>131</sup>

In this way, Hobbes explicitly ties mental sensation and the images that it provides to the mind to the physical motions of bodies. More specifically, these are the motions taking place within the sense organs as they encounter phantasms from the external world.

Hobbes argues that sense itself happens in the interaction that takes place as motions retained in the organs and moving outward to leave encounter new motions arriving from outside of the body. Phantasms or images are generated in a reaction between motions arriving from the outside and motions already present:

For in all motion which proceeds by perpetual propagation, the first part being moved moves the second, the second the third, and so on to the last, and that to any distance, how great soever. And in what point of time the first or foremost part proceeded to the place of the second, which is thrust on, in the same point of time the last save one proceeded into the place of the last yielding part; which by reaction, in the same instance, if the reaction be strong enough, makes a phantasm; and a phantasm being made, perception is made with it.<sup>132</sup>

At each moment, as new motions seek to enter our body, they meet with resistance from those

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<sup>131</sup> DC 390-1.

<sup>132</sup> DC 392.

motions already present. The reason for the generation of new phantasms and of our changing sensations of the world is therefore located in the interactions of material phantasms within the sense organs.

The fact that phantasms are generated within certain animate bodies is a feature of the physiological structure of those bodies. Animate bodies must be internally complex enough to prolong the motions coming from the outside. As Hobbes puts it in *De Corpore*:

And though by the reaction of bodies inanimate a phantasm might be made, it would nevertheless cease, as soon as ever the object were removed. For unless those bodies had organs, as living creatures have, fit for the retaining of such motion as is made in them, their sense would be such, as that they should never remember the same.<sup>133</sup>

In terms of physiological complexity, Hobbes identifies a number of elements within the perceptual systems that prolong motion. These included the sense organs directly – the eyes, ears, nose, mouth and skin – as well as a network of spirits and membranes, the pia mater, brain, nerves, arteries and heart. These all serve to prolong the motion of phantasms entering into the body. The heart in particular plays a key role in Hobbes's physiology, serving as the fountain of sense from which motions seek to leave the body.

How does Hobbes, however, understand the nature of the motions taking place within the sense organs? Here he relies upon his notion of conatus to conceive what happens in the organs of sense. We have seen above that Hobbes defines the mutual resistance of bodies in terms of conatus: two bodies are thought to be at rest with respect to one another when they express a mutual conatus or endeavour to enter each other's respective place. Hobbes applies this model to the sense organs, postulating motions internal to the organs that resist the motions of phantasms arriving from the external world. The mutations taking place within our sense apparatus are the result of this interaction:

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<sup>133</sup> DC 393.

I have shown (art. 2, Chap15) that all resistance is endeavor opposite to another endeavor, that is to say, reaction. Seeing, therefore, there is in the whole organ, by reason of its own internal natural motion, some resistance or reaction against the motion which is propagated from the object to the innermost part of the organ, there is also in the same organ an endeavor opposite to the endeavor inwards is the last action in the act of sense, then fro the reaction, how little soever the duration of it be, a phantasm or idea hath its being; which, by reason that the endeavor is now outwards, doth always appear as something situate without the organ... Sense *is a phantasm, made by the reaction and endeavour outwards in the organ of sense, caused by an endeavour inwards from the object, remaining for some time more or less.*<sup>134</sup>

For Hobbes, sensation is the result of the mutual interaction of the conatūs outward from the sense organs with the inward endeavour of an external corporeal phantasm. The fact that the external motions provide resistance to the motions endeavoring to leave the body provides us with the impression that the objects we perceive exist outside of us. Though the motions producing such phantasms in fact originate in our bodies, since they are endeavoring to leave we perceive them as existing outside of us.<sup>135</sup> By conceiving of sensation as resultant upon the mutual interaction of infinitesimal conatūs, Hobbes is able to explain how a number of distinct motions coexist in preserved form and interact within the spatial confines of the sense organs. As indicated in the above section, although conatūs are extended in space, for the purposes of natural philosophical explanation, the extension is treated as null, that is to say taking place within a point. In this, the physical conception of conatus as infinitesimal motion through a point provides Hobbes with a conceptual tool capturing the presence of innumerable continued motions along with reactions and resistances within the body.

Conatus also plays a key role in Hobbes's account of the appetites and aversions sentient beings feel toward objects. Sentient creatures are driven by sensations of pleasure and pain

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<sup>134</sup> DC 391.

<sup>135</sup> In *Leviathan*, Hobbes explains the point as follows. Regarding the inward motion of external bodies into the sense organs: "which pressure, by the mediation of nerves and other strings and membranes of the body, continued inwards to the brain and heart, causeth there a resistance, or counter-pressure, or endeavour of the heart to deliver itself; which endeavour, because *outward*, seemeth to be some matter without" (HL 1.4).

deriving from motions continuously entering the body. By contrast with the phantasms of external things, we experience pain and pleasure as internal to the body because they result from motions seeking to enter.<sup>136</sup> According to Hobbes, the body seeks to prolong motions that it perceives as helping while avoiding those that it perceives as harmful:

But if vital motion be helped by motion made by sense, then the parts of the organ will be disposed to guide the spirits in such manner as conduceth most to the preservation and augmentation of that motion, by the help of the nerves. And in animal motion this is the very first endeavour, and found even in in the embryo... And this first endeavour, when it tends towards such things as are known by experience to be pleasant, is called *appetite*, that is, an approaching; and when it shuns what is troublesome, *aversion* or flying from it.<sup>137</sup>

Thus, Hobbes intends his theory of sense to explain not just the particular phantasms that we experience, but also. This in turn explains our behavior and allows Hobbes to give a naturalistic account of human the will that denies any sort of uncaused freedom or liberty. Our decisions are caused by the entire set of proceeding conative appetites and are therefore dependent upon physical necessity.

Intellectual thought and philosophical reasoning result from physical sensation in turn. As we saw above, for Hobbes, reasoning is a process of *computation* whereby we add and subtract predicates to ideas. Though Hobbes fails to provide a fleshed-out theory of the passage from sense to reason, his suggests that the passage from sense to reason takes place as we gradually learn to associate linguistic marks qua names with particular sensations that we have repeatedly experienced.<sup>138</sup> Human beings are capable of building such associations because the nature of

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<sup>136</sup> “And as phantasms seem to be without, by reason of the endeavour outwards, so pleasure and pain, by reason of the endeavour of the organ inwards, seem to be within; namely, there where the first cause of the pleasure or pain is; as when the pain proceeds from a wound, we think the pain and the wound are both in the same place” *DC* 406-7.

<sup>137</sup> *DC* 407.

<sup>138</sup> This aspect of Hobbes's philosophy is notoriously underdeveloped. T.A. Heinrichs contrasts the parallels between what he calls Hobbes's “materialist” account of the mind with his “rationalist” account of language in “Language and Mind in Hobbes,” *Yale French Studies* 49 [1973]: 56–70. In

sense makes memory and the comparison of different phantasms possible. As sense relies upon the *prolongation* of motions in the sense organs, Hobbes claims that it essentially implies *memory*. Only to the degree that we can retain the motions of a particular phantasm beyond the immediate presence of the object that produced it can we be said to sense at all. This in turn allows for the comparison and individuation of particular phantasms:

For by sense, we commonly understand the judgment we make of objects by their phantasms; namely, by comparing and distinguishing those phantasms; which we could never do, if that motion in the organ, by which the phantasm is made, did not remain there for some time, and make the same phantasm return. Wherefore sense, as I here understand it, and which is commonly so called, hath necessarily some memory adhering to it, by which former and later phantasms may be compared together, and distinguished from one another.<sup>139</sup>

The comparing of phantasms made possible by memory in turn allows for the development of conceptual names. This in turn serves as the basis for the forms of reckoning of names that constitutes philosophical reasoning.

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Heinrich's view, these two aspects of Hobbes's philosophy are mutually dependent even as their connection is not fully worked out. Gayne Herney identifies note-making as the specific difference separating human beings from other sentient creatures. By assigning marks to individual perceptions we are able to develop linguistic signs and eventually reasoning. Herney laments, however, that Hobbes never elaborates the particular mechanism whereby humans, and not, for instance, other sentient beings are capable of forming signs:

According to the promise implicit in Hobbes's systematic ideal, it must be some modification of body and/or motion that would supply the needed hypothesis. We would expect this to be a novelty akin to the wonder-provoking fact that the bodies of sentient beings are 'fit for the retaining of such motion as is made in them [by reaction]... for some time (EW.I.393 - DC). The promised key to a corporealist account of mind, of *human mind*, is not, however, forthcoming. At the crucial point of his promised synthesis of man 'from the very first principles of philosophy' (EW.I.73), Hobbes turns to introspection for the necessary hypothesis. 'The only natural peculiarity of man's mind' is a certain modification in the 'direction' or imaginative motion (Gayne Herney "Homo Notans: Marks, Signs, and Imagination in Hobbes's Conception of Human Nature." *Hobbes Studies* 4 [1991]: 72).

Herney notes that our linguistic signs do not bear any form of iconic resemblance with their sources, and are rather connected through arbitrary forms of association. Herney also notes that in *Leviathan*, Hobbes identifies the ability to imagine all the possible effects that can be produced from a given cause as what distinguishes men from beasts.

<sup>139</sup> DC 393.

Ultimately Hobbes builds an account of mental activity using his theory of physical sensation and conatus. In defining imagination as *decayed sense*, Hobbes argues that images and phantasms are themselves motions, albeit motions weakened to an imperceptible magnitude. Indeed, the fact that a conatus can continue indefinitely will play a crucial role in linking Hobbes's account of body with his theory of mental phenomena. The accumulation of such motions in the forms of prolonged conatūs gives rise to mental phenomena such as imagining, willing, and eventually reasoning.

The notion of conatus thus plays a vital role within Hobbes's philosophical framework. It not only helps to explain physical motion in general, but also is the key to Hobbes's conception of the physical basis of sense and intellection. In this way, the notion of conatus serves as a bridge from the general science of body to the particular science of the mental phenomena. According to Hobbes, the phenomena we experience when we sense the world arise through the resistance expressed by conatūs present in our sense organs to conatūs arriving from the outside. On this basis, Hobbes defines the mind itself as a continuation of motions, that is to say, of conatūs. The mind is thus a fully physical entity whose genesis as well as nature is explained by fully corporeal means.

#### **2.4 Leibniz, Materialism and Incorporeal Principles**

Leibniz's early metaphysical writings evince an attempt to provide a metaphysical vision of nature in conformity with the teachings of Christianity as well as the new mechanical philosophy. Thus, Leibniz's engagement with the mechanical metaphysics of a philosopher such as Hobbes seeks to preserve the truth of mechanism — namely its ability to provide an intelligible account of bodily causes and motions—while also allowing for a transcendent,

incorporeal God. Toward this end, Leibniz proposes that a metaphysics founded on corporeality is inadequate in two senses: Hobbes's theory of body neither gives a sufficient explanation of the primary qualities of the physical world including extension, nor is it able to accommodate theological doctrines such as the immortality of the soul.

The young Leibniz's strategy *vis-à-vis* materialism is evident in the *Confessio naturae contra atheistas* (1668), which belongs to the larger project of the *Demonstrationes Catholicae*. Here Leibniz sets out to show that bodies require an incorporeal principle, *contra* corpuscular philosophers in general, and atheistic materialists such as Hobbes in particular. Recalling that, for Hobbes, the idea of a body, that is, something that fills space, is the first positive thing that returns once we abstract from all objects of experience, we can see that Leibniz takes direct aim at Hobbes. Leibniz asks whether bodies, on their own terms, can explain the qualities under which they appear:

Setting aside all prejudices, therefore, and suspending the credit of scripture and history, I set my mind to the anatomy of bodies, to see whether the sensory appearance of bodies can be explained without assuming an incorporeal cause. At the beginning I readily admitted that we must agree with those contemporary philosophers who have revived Democritus and Epicurus and whom Robert Boyle aptly calls corpuscular philosophers, such as Galileo, Bacon, Gassendi, Descartes, Hobbes, and Digby, that in explaining corporeal phenomena, we must not unnecessarily resort to God or to any other incorporeal thing, form, or quality [*Nec Deus intersit, nisi dignus vindice nodus inciderit*] but that so far as can be done, everything should be derived from the nature of body and its primary qualities - magnitude, figure, and motion. *But what if I should demonstrate that the origin of these very primary qualities themselves cannot be found in the essence of body?* Then indeed, I hope, these naturalists will admit that body is not self-sufficient and cannot subsist without an incorporeal principle. I will prove this without obscurity or detours [Emphasis added].<sup>140</sup>

Mechanical philosophers ascribed a number of primary qualities including magnitude, figure, and motion to bodies. Although Leibniz initially was taken with the mechanical way of

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<sup>140</sup> L 110/GP IV 106.

explaining bodies, upon further examination he became skeptical that bodies alone are sufficient to explain the phenomena.

Leibniz will argue that primary qualities cannot be derived from bodies alone. His starting point is the question of what follows, by definition, from a body. Where Hobbes derived motion from the nature of body, characterizing it as an accident of body by means of which a body relinquishes one place and adopts another, Leibniz asks how the motion of a body from one place to another could actually follow from the nature of body. Hobbes's account relies on the claim that bodies are simply entities coincident or coextensive with a portion of space. For Leibniz, however, bodies themselves cannot furnish a *reason* for the existence of particular motions. Leibniz grants that existence in space allows for the *mobility of bodies*, i.e. a capacity for motion, but he denies that it leads to motion *per se*:

Considering the matter more accurately, however, it becomes clear that mobility arises from the nature of a body but that motion itself does not. Since the body is in this space, it can also be in another space equal and similar to the first, that is, it can be moved. For to be able to be in another space than at first is to be able to change space, and to be able to change space is to be movable. For motion is change of space. *Actual motion, however, does not arise from existence-in-space; this involves rather the contrary when a body is left to itself, namely, permanence in the same space, or rest.* Therefore no reason for motion can be found in bodies left to themselves [Emphasis added].<sup>141</sup>

The reason for motion must be either corporeal or incorporeal; from the claim that the ultimate reason for motion cannot be found in bodies, Leibniz thinks that he has ruled out any corporeal reason. Leibniz therefore concludes that the reason for motion is incorporeal. Such a cause would be responsible for actually producing such accidents as motion. Leibniz seems to take his criticism of the mechanical philosophy as a form of *immanent* criticism. In other words, he seems to think that the mechanical philosopher would have to concede that even *on mechanical terms* bodies prove insufficient to account for such phenomena as motion.

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<sup>141</sup> L 111/GP.IV 107.

In the *Confessio*, the incorporeal cause that Leibniz has in mind is God. That is to say, here Leibniz grounds the motions of bodies in the action of a single incorporeal being, in this case God. Leibniz is therefore able to reframe the mechanical philosophy as friendly to theology. Since the mechanical qualities of bodies are insufficient, their natures in turn imply the wisdom and foresight of God:

But since we have demonstrated that bodies cannot have a determinate figure, quantity, or motion, without assuming an incorporeal being, it readily becomes apparent that this incorporeal being is one for all because of the harmony of things among themselves, especially since bodies are moved not individually by this incorporeal being but by each other. But no reason can be given why this incorporeal being chooses one magnitude, figure, and motion rather than another, unless he is intelligent and wise with regard to the beauty of things and powerful with regard to their obedience to his command. Therefore such an incorporeal being will be a mind ruling the whole world, that is, God.<sup>142</sup>

Though Leibniz claims that the bodies move each other, the ultimate reason for their motion is found in God. God plays the role of a single and sole incorporeal principle for all bodily motions. The fact that all bodily motions refers back to the activities of this incorporeal principles explains the harmony exhibited in the world, according to which a multiplicity of phenomena fits together in a coherent way.<sup>143</sup>

## 2.5 Leibniz and Conatus

In the early 1670's Leibniz develops a model of individual created minds to do the work he earlier ascribed exclusively to God. His motivation in developing this model includes a desire to provide a satisfactory account of natural motion that does not risk collapsing bodies into God.

Further, Leibniz looks to prove the immortality of the mind. Following Hobbes, Leibniz defines

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<sup>142</sup> L 112/GP.IV 109.

<sup>143</sup> Generally speaking, Leibniz conceives of harmony as a form of unity in diversity where multiple different things act in concert with one another. We saw above how the mature Leibniz conceived of a "pre-established" harmony according to which substances express each other's actions. For an account of Leibniz's early views of metaphysical harmony that connects them to the Platonist tradition, see Mercer, *Leibniz's Metaphysics*, 206-220.

the mind in terms of a point and its conatus during this period. He even uses Hobbesian language to characterize the nature of his work. Whereas Hobbes entitled his project encompassing *De Corpore*, *De Homine* and *De Cive* the “*Elementa philosophiae*,” Leibniz will describe his project as “*De elementa mente*.”<sup>144</sup> The crucial difference between Leibniz and Hobbes, however, is that where Hobbes had identified the bodily motions as the cause of the mind, Leibniz inverts the order, instead defining mind as the cause of body.<sup>145</sup>

We find evidence of Leibniz's interest in Hobbes's notion of conatus in a letter that Leibniz sent to the English philosopher in 1670 to which Leibniz did not receive a reply. In the letter, Leibniz flatters Hobbes and expresses his appreciation for the principles of Hobbes's philosophy, which Leibniz claims has faced undue criticism as a result of misapplication. To this end, Leibniz suggests that Hobbes's principles of motion would be better received — especially amongst the uneducated — provided he adds a demonstration of the insensible motion of bodies apparently at rest.<sup>146</sup> The letter does contain, however, a number of pointed questions. Leibniz raises several conceptual issues connected to how Hobbes explains coherence of bodies. For instance, he claims that Hobbes had defined cohesion in terms of reaction to an impelling body.

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<sup>144</sup> See, for instance, descriptions of his project found in letters to correspondents including Lambert von Velthuysen (A.ii.1 164) and his future patron Duke Johann Friedrich (A.ii.1 361).

<sup>145</sup> As Arthur puts the point in his introduction to *LC*:

Leibniz appears to have been powerfully persuaded by this idea of the foundational role of endeavours. Unsurprisingly, though, given his project of basing bodies on minds, his interpretation of the significance of this is the inverse of Hobbes's. For if the figures and magnitudes of bodies depend on motion, as he believed he had proved, and motions are composed of endeavours, then all mechanical explanations are insufficient that are not ultimately founded on the mentalistic notion of endeavour (*LC xxxi*).

<sup>146</sup> “Among the theorems which you deduce from them there are many which will remain established. There are some who have abused them, but I believe that in most cases this occurred because the right principles of application were ignored. If one were to apply the general principles of motion - such, for example, as that nothing begins to move unless it is moved by another body, that a body at rest, however large, can be impelled by the slightest motion of a moving body, however small, and others - if one were to apply these by an ill-timed leap to sensible things, he would be derided by the common man unless he had demonstrated in advance, and to minds prepared for it, that for the most part bodies which seem to be at rest are insensibly in motion” (L 105/GP.VII 572).

Leibniz argues that this is absurd because an impelling body does not produce the reaction itself, which is conceived of as a motion outwards by the parts of a body. If this is true, there would be a reaction without impulsion by means of which parts of a body would move outwards:

For if, as you seem somewhere to suggest, reaction is the sole cause of cohesion, there will be a reaction even without an impact, since reaction is motion in opposition to a pushing body, but the impact does not produce the opposition to itself. But reaction is a motion of the parts of a body from its center outward to its circumference. This motion is either unimpeded or impeded. If unimpeded, the parts of the body will move outward and so depart from the body to which they belong, which is contrary to experience. If impeded, the motion of reaction will stop unless it is revived by external help of a kind which you do not generally find here.<sup>147</sup>

Ultimately, he suggests a solution to the problem of the cohesion of bodies by means of conatus. Leibniz proposes that we can understand such cohesion as resulting from the mutual conatūs of the parts of the body to enter one another. When bodies strive to penetrate each other in this way, they have mutually begun to penetrate each other along a common limit. In this they would share one common surface, which Leibniz points out satisfies Aristotle's criterion for forming a single continuous body:

I should think that the conatus of the parts toward each other, or the motion through which they press upon each other, would itself suffice to explain the cohesion of bodies. For bodies which press upon each other are in a conatus to penetrate each other. The conatus is the beginning; the penetration is the union. But when bodies begin to unite, their limits or surfaces are one. Bodies whose surfaces are one, or *τα εσκατα εν*, are according to Aristotle's definition not only contiguous but continuous, and truly one body, movable in one motion.<sup>148</sup>

Leibniz admits that it is difficult to explain the cause of an outward conatus in the parts of a body.<sup>149</sup> In this way, his proposed solution to the problem of cohesion drawing upon conatus and Aristotle's concept of a continuous body is still incomplete. Nevertheless, Leibniz's letter to

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<sup>147</sup> L 106/GP.VII 573

<sup>148</sup> L107. Aristotle's definition of continuous bodies can be found at *Metaphysics* 1068b and *Physics* 231a21. Hobbes himself defines continuous bodies as "any two bodies that have a common part" at *De Corpore* II.8.9 (DC 109).

<sup>149</sup> I do not mention that it can hardly be explained what cause it is that moves any single body to strive [conor] from center to circumference in every sensible point..." (L106).

## Chapter Two: The Young Leibniz's Critical Appropriation of Hobbes's Conatus

Hobbes makes clear that Leibniz thinks that the concept of conatus has the potential to solve thorny metaphysical problems.

Further evidence for Leibniz's interest in Hobbes's notion of conatus occurs in a letter to Oldenburg of September 28, 1670. In the letter, Leibniz indicates his concurrence with Hobbes on the notion of conatus as the beginning of motion and says that *conatus* is, with respect to motion, what a point is to a line: "Conatus enim, rectissime observante Hobbio, est initium motus, seu id in motu, quod in linea punctum."<sup>150</sup> As much as Leibniz agrees with Hobbes, however, he departs from Hobbes in conceiving of a point not as an actual extended part or component of a line, but rather as the *unextended* beginning required in order to conceive a given geometrical line: as he writes that Winter in the *Theoria Motus Abstracti*:

*A point is not that which has no part, nor that whose part is not considered; but that which has no extension, i.e. whose parts are indistant, whose magnitude is inconsiderable, unassignable, is smaller than can be expressed by a ratio to another sensible magnitude unless the ratio is infinite, smaller than any ratio that can be given.*<sup>151</sup>

On Hobbes's account, a conatus does have some quantity of extension. That extension, however, is small enough to be disregarded for a given analysis. In Leibniz's view, by contrast, points and conatūs are really spatially *unextended*. Likewise, a conatus is an *unextended* beginning of motion. For Leibniz, the theoretical upshot is that even though a conatus has a magnitude such that the motion of which it is beginning may be distinguished from other motions it is indivisible into smaller component parts.

The significance of this point for Leibniz's larger metaphysical projects becomes clear when Leibniz begins to identify the incorporeal principles of motion with individual minds.

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<sup>150</sup> A.ii.1 103; "Conatus is thus, as correctly observed by Hobbes, the beginning of motion, or it is in motion, what a point is in a line" [translation mine].

<sup>151</sup> LC 339-40. See Jesseph, "Leibniz on the Foundations of the Calculus," 16. For more on Leibniz's conception of geometrical lines and points and its significance for his early metaphysics, see LC xxxii-xxxvii.

## Chapter Two: The Young Leibniz's Critical Appropriation of Hobbes's Conatus

Bodies depend upon the activities of incorporeal minds and Leibniz argues that acts of thinking consist in conatus or the *unextended* beginning of motion. Thus, with regards to spatial location, minds are located within points, and their thought is expressed as motion. That each act of thinking can be immediately understood as an unextended beginning of a bodily motion, however, leads Leibniz to present a striking conclusion; bodies are nothing but “momentaneous” minds, that is minds whose motions are not preserved in the form of memory. As Leibniz writes, in the *Theoria motus abstracti*, part of the larger *Hypothesis physica nova*:

*No conatus without motion lasts longer than a moment except in minds. For what is conatus in a moment is the motion of a body in time. This opens the door to the true distinction between body and mind, which no one has explained heretofore. For every body is a momentary mind, or one lacking recollection, because it does not retain its own conatus and the other contrary one together for longer than a moment. For two things are necessary for sensing pleasure or pain — action and reaction, opposition and then harmony — and there is no sensation without them. Hence body lacks memory; it lacks the perception of its own actions and passions; it lacks thought. [emphasis mine]<sup>152</sup>*

Recall that for Hobbes, perception was the result of the interactions of conatūs of phantasms seeking to enter the body with those seeking to leave. Memory, as the comparison of different phantasms, was made possible by the continuation and concentration of sensory phantasms. Hobbes explained this continuation by means of the theory of conatus. Both sense perception and memory were, however, *bodily* phenomena. Though Leibniz likewise ascribes perception and memory to the concentration of motions explained by conatus, these phenomena are ultimately *mental*, not bodily. All bodies are dependent upon mental conatus and hence *are* minds in the same sense that for Hobbes all minds are bodies. However, whereas Hobbes had defined the mind as the continuation and preservation of corporeal motions, Leibniz inversely defines body as the *non-continuation of mental motion*, that is to say, as a “momentaneous mind” incapable of sense, memory or thought.

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<sup>152</sup> L 141/GP.IV 230. Leibniz also employs this phrase in his letter to Antoine Arnauld of Nov. 1671 (L 149/GP.I 73).

Writing to his future patron, Duke Johann Friedrich in May 1671, Leibniz develops his account of the mind further. He argues that because minds concentrate conatūs, they are able to carry out a number of operations including thinking, sensing and desiring. Bodies, being merely *momentaneous* minds, are incapable of such activities:

“Demonstrabo enim Mentem in puncto consistere, cogitationem esse conatum seu motum minimum, posse simul in eodem plures conatus esse, quanquam non motus. Mentis ergo cogitare posse, comparare diversa, sentire, voluptate et dolore affici, corpora non posse. Unde sequetur non magis mentem destrui posse, quam punctum. Punctum enim indivisibile est, ergo destrui non potest.”<sup>153</sup>

Importantly, Leibniz argues that immortality also follows from his account of the mind. Leibniz conceives the mind as unextended and indivisible. Thus, it consists in a harmonious concentration of multiple conatūs as unextended parts. Its indivisibility, and the fact that its parts are immediately connected to one another leads Leibniz to conclude that a mind can never properly be destroyed. If a point has an extension – however minimal – it will remain *divisible* in principle. A truly *unextended* point or beginning of motion, by contrast, will be *indivisible* and hence indestructible. Leibniz therefore repurposes and inverts Hobbes's materialist answer to the connection of the bodily and mind to save the immortality of the soul. If minds are located in points, and points are indivisible and hence cannot be destroyed, then minds too cannot be destroyed.<sup>154</sup>

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<sup>153</sup> A.ii.1 181; “I thus demonstrated that mind consists in a point, that thought is conatus or minimal motion, that many conatus can be in the mind at one time, even if not motion. Minds therefore can think, compare diverse things, sense, be affected and suffer, whereas bodies cannot. Thus it follows that no mind can be destroyed any more than a point. For a point is indivisible, and therefore cannot be destroyed (translation mine).”

<sup>154</sup> Leibniz makes a number of similar claims in a letter to Antoine Arnauld of November 1671: From these propositions I reaped a great harvest, not merely in proving the laws of motion, but also in the doctrine of mind. For I demonstrated that the *true locus of our mind is a certain point or center*, and from this I deduced some remarkable conclusions about the imperishable nature of the mind, the impossibility of ceasing from thinking, the impossibility of forgetting, and the true internal difference between motion and thought. Thought consists in conatus, as body consists in motion. Every body can be understood as a momentaneous mind, or mind without recollection. *Every conatus in bodies is indestructible with respect to direction; in mind it is also*

## 2.6 Leibniz's Point-*Conatus* Model of the Mind.

The point-conatus model of the mind that Leibniz develops in the early 1670s provides a fascinating case study in the way that he appropriates tools from the mechanical philosophy while transforming them to serve traditional theological ends. Though Leibniz adopts Hobbes's conception of conatus as the infinitesimal beginning of motion, he transforms it in ways that would have horrified Hobbes. Namely, Leibniz inverts Hobbes's materialism, arguing that bodies are dependent upon incorporeal principles and are in fact minds lacking recollection. This allows Leibniz to preserve what is solid from the mechanical philosophy while integrating it with a traditional natural theological and metaphysical account of nature.

Leibniz's adherence to the point-conatus model of the mind was short-lived. Although Leibniz employs it in writings from 1670-1671, he is actively considering alternatives by the beginning of his stay in Paris in 1672. For instance, as Richard Arthur points out, in a text from Winter 1672-3 entitled *De minimo et maximo*, Leibniz provides a mathematical demonstration

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*indestructible with respect to the degree of velocity. As the body consists in a sequence of motions, so mind consists in a harmony of conatuses. The present motion of a body arises from the composition of preceding contuses; the present conatus of a mind, that is, will, arises from the composition of preceding harmonies into a new one or through pleasure. [Emphasis added] (L 149/GP.1 72-3).*

O. Bradley Bassler argues in "Motion and Mind in the Balance: The Transformation of Philosophy" (*Studia Leibnitiana* 34, no. 2 [2002]): 221–31) that there are important differences between the quoted passages from the *TMA* and the Letter to Arnauld. He points out that in the letter to Arnauld, Leibniz makes the claim that the essence of body consists in motion, a claim he does not make in the *TMA*. Bassler argues that this shift is not only the result of the resolution of a tension present in the *TMA* account but also the result of Leibniz's recognition that in order to account for the difference between space and body the former must be conceived of as immutable whereas the latter must be conceived of as essentially changing and in motion. This may indeed be a significant change but it is not clear whether such a difference would be relevant to the account on offer here, especially insofar as in the Letter to Arnauld Leibniz continues to account for the existence of bodily motion by means of a recourse to the activities of minds conceived as conatus. One point to note in this connection is that we could potentially see Leibniz's definition of body as essentially consisting in motion as an emendation of Hobbes's view, according to which motion was simply an accident of body. This is, moreover, consistent with Leibniz's worry, expressed in his letter to Hobbes, that one would need to prove that bodies that appear to be at rest are in fact in motion (L 105/GP.VII 572).

denying the existence of indivisibles within nature.<sup>155</sup> Though Leibniz maintains that bodies depend upon minds for their existence, minds are no longer indivisible beginnings of motion. The denial of indivisibles anticipates Leibniz's mature period conviction that nature is *actually infinitely divided*.<sup>156</sup> According to this view, and following Leibniz's syncategorematic interpretation of the infinite according to which the infinite is not given all at once in the form of a total collection but rather in the form of a series to which one can always discover further terms, one never reaches any indivisibles, let alone indivisible minds in nature.

Leibniz's Hobbesian-inspired model of the mind and body is thus abandoned well before he conceives the soul and body as two *automata* acting in parallel. Nonetheless, the early point-conatus model anticipates the later theory of automata in a number of important ways. Most significantly, as in the case of the "spiritual automaton," Leibniz enthusiastically repurposes key elements of the mechanical philosophy, namely conatus as the beginning of motion, to account of the nature of the mind. Further, as in the case of the later model, Leibniz conceives of the mind not just as a metaphysical requisite of the body but as an entity whose nature consists in a concentration of bodily motion as well.

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<sup>155</sup> See *LC* 8-19.

<sup>156</sup> Arthur, *Leibniz*, 67. For an examples of the infinite division of nature in the mature period, see AG 155/G VII 308; AG 221/G VI 618. See also Arthur, *Leibniz*, 86-89. For an account of Leibniz's views on the infinite that compares them to those of Galileo, see O. Bradley Bassler "Leibniz on the Indefinite as Infinite," *The Review of Metaphysics* 51, no. 4 (June 1998): 849-74. For an account that focuses on the general relation between on mathematics and the metaphysics of matter in Leibniz, see Samuel Levey, "Leibniz on Mathematics and the Actually Infinite Division of Matter," *The Philosophical Review* 107, no. 1 (January 1998): 49-96.

### Chapter 3

## Leibniz and Descartes on Animals, Freedom, and Automata

Descartes and Leibniz both utilized the concept of an “automaton” or self-moving machine as a model to shed light on the nature of living bodies. Descartes restricts the model to the bodies of living things, whose movements he explained in purely mechanical terms. Human beings, in contrast, act freely, and Descartes specifically opposes human freedom to the automaton’s necessary actions.<sup>157</sup> Leibniz goes beyond Descartes and applies the model to souls as well. Extending the metaphor of the automaton to the soul allows Leibniz to ascribe perceiving souls to animals as well as humans. The same extension also allows him to provide an account of human freedom compatible with divine predetermination of our actions.

Leibniz’s willingness to extend the model of the automaton to the soul reflects two major disagreements with Descartes. First, contra Descartes, Leibniz rehabilitates substantial forms in nature and so re-conceives the relation of the soul and body. Thus even Leibniz’s apparent concurrence with Descartes on treating living bodies as automata actually reflects a crucial difference. Leibniz insists that all bodies receive their unity and activity from a substantial form or soul, and he conceives this soul or substantial form as acting both according to its own laws

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<sup>157</sup> See *PP* I.37

as well as in harmony with the body. In short, Descartes limited the notion of the substantial form to the human soul, but Leibniz, who argues soul or substantial form is required to undergird the existence of bodies, attributes souls to all living things.<sup>158</sup>

Second, Leibniz rejects Descartes's concept of free will as unintelligible. According to Leibniz, Descartes thinks that the will can act in the absence of determination by the intellect.<sup>159</sup> Leibniz conceives freedom as involving the reflective understanding of the motivating reasons by means of which one is inclined to will a certain action spontaneously. Thus freedom is perfectly compatible with rational determination, and Leibniz argues that acting in the absence of motivating determination is an impossible chimera. On these grounds, Leibniz finds human freedom compatible with the automaton's form of spontaneous activity, in which actions unfold according to the law of one's nature established by an artificer. Thus, the soul acts freely as a spiritual automaton when it acts spontaneously and understands the reasons according to which it acts.

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<sup>158</sup> Descartes admits only the human soul as a substantial form. By contrast with other putative substantial forms, the human soul is legitimately a substantial form by virtue of its creation by God: It is inconceivable that a substance should come into existence without being created *de novo* by God; but we see that every day many so-called substantial forms come into existence; and yet the people who think they are substances do not believe that they are created by God; so their view is mistaken. This is confirmed by the example of the soul, which is the true substantial form of man. For the soul is thought to be immediately created by God for no other reason than that it is a substance. Hence, since the other 'forms' are not thought to be created in this way, but merely to emerge from the potentiality of matter, they should not be regarded as substances (AT III 508/CSMK 208).

<sup>159</sup> Descartes's conception of the freedom of the will is complex and appears to develop over time. Tad Schmaltz (*Descartes on Causation*. [Oxford: Oxford University Press, 2008]) claims that Descartes's conception of human freedom evolves after the *Meditations* to involve a form of freedom of indifference compatible with Divine preordination in the *Principia* and ultimately to libertarianism in the *Passions*. By contrast, Thomas M. Lennon ("Descartes's Supposed Libertarianism: Letter to Mesland of Memorandum Concerning Petau?" *Journal of the History of Philosophy* 51, no. 2 (April 2013): 223–48) argues against imputing libertarianism to Descartes. See discussion below.

Descartes's account of the structure and functioning of living bodies has received a great deal of attention in recent scholarship.<sup>160</sup> Dennis Des Chenes has shown how Descartes's account of the animal as automaton follows from the rejection of the vegetative and animal souls of late-Scholastic Aristotelianism.<sup>161</sup> In particular, Des Chenes argues that the identification of living bodies with automata represents Descartes's attempt to explain the activities of living bodies without recourse to teleological or end-oriented forms of explanation. Des Chenes writes in *Spirits and Clocks*:

Cartesian animals are self-moving machines, automata in the usual sense of the word. To call them machines was not new. The novelty was to combine the animal-machine with a new philosophy of nature, in which the actions of agents inferior to humans not only might but must be explained without reference to any "form" but extension or to any qualities but the modes of extension. Descartes had the formidable task of showing that the vegetative and sensitive powers of plants and animals are nothing other than the actions they exhibit by virtue of the "dispositions" of their parts.<sup>162</sup>

Des Chenes's account of Cartesian animal automata begins from Descartes's own explicit rejection of the use of final causes within natural philosophical explanation.<sup>163</sup> Des Chenes's arguments, however, run into difficulties to the degree that Descartes consistently appeals to functional explanations in understanding the workings of the body. A heart, for instance, functions to pump blood. As a result, a number of recent commentators including Allison Simmons, Lisa Shapiro, Deborah Brown, Gary Hatfield and Barnaby R. Hutchins have attempted

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<sup>160</sup> For general accounts of the various roles played by self-moving automata in the period, see Jessica Riskin, "Machines in the Garden," *Republics of Letters* 2, no. 1 (2010): 16–43; "The Restless Clock." In *Early Modern Things: Objects and Their Histories 1500-1800*, edited by Paula Findlen (New York: Routledge, 2013), 84-101. Riskin argues that early-modern automata were initially viewed as embodying vitality and divinity; later accounts of automata – including Descartes's – would instead strip mechanical automata of such features.

<sup>161</sup> See Dennis Des Chenes, *Life's Form* (Ithaca, NY: Cornell University Press, 2000); *Spirits and Clocks: Machine and Organism in Descartes* (Ithaca, NY: Cornell University Press, 2001).

<sup>162</sup> Des Chenes, *Spirits and Clocks*, 13.

<sup>163</sup> For Descartes's rejection of final causes in natural philosophy, see *PP* 1.28: "When dealing with natural things we will, then, never derive any explanations from the purposes which God or nature may have had in view when creating them <and we shall entirely banish from our philosophy the search for final causes>. For we should no be so arrogant as to suppose that we can share in God's plans" (CSM.1 202/AT.VIII 15-16).

to paint a more nuanced picture of Descartes's account of living bodies that balances his official rejection of teleology with an analysis of bodily organs in terms of their functional roles within the overall operation and healthy functioning of the body.<sup>164</sup>

The difficulty of interpreting Descartes's comparison of living bodies to machines is compounded by more general ambiguities related to the status of the philosophical recourse to machines and machine metaphors at the time. As both Dennis Des Chenes and Raphaële Andrault have argued, we should not assume that the term "machine" as used in the context of understanding living beings bears a fixed or determinate meaning.<sup>165</sup> If it remains an open

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<sup>164</sup> Simmons ("Sensible Ends: Latent Teleology in Descartes' Account of Sensation," *Journal of the History of Philosophy* 39, no. 1 [January 2001]: 49–75) claims that Descartes employs teleological explanation when it comes to the functioning of the sense organs. Shapiro ("The Health of the Body-Machine? Or Seventeenth Century Mechanism and the Concept of Health," *Perspectives on Science* 11, no. 4 [Winter 2003]: 421–42) argues that Descartes's concept of the functional health of the body-machine can be understood in mechanical and non-teleological terms. Shapiro nonetheless concludes that Descartes did not overtly offer such a non-teleological concept of form. Hatfield ("Animals," in *Blackwell Companion to Descartes*, ed. Janet Broughton and John Carriero [Oxford: Blackwell, 2008] 404–25) argues that living things exhibit a form of "ends-selection immanent teleology" according to which living forms develop functions according to criteria of fitness. Hatfield thus stresses that such forms of teleology emerge immanently and not in accordance with any external ends imposed by God. Brown ("Cartesian Functional Analysis," *Australasian Journal of Philosophy* 90, no. 1 [2012]: 75–92) goes further and argues that Descartes's account of the functional operation of organs happens without any reference to ends or teleology at all. Hutchins ("Descartes, Corpuscles and Reductionism: Mechanism and Systems in Descartes' Physiology," *The Philosophical Quarterly* 65, no. 261 [2015]: 669–89) rejects reading Descartes as a mechanical *reductionist*. Hutchins shows that in Descartes's own physiological practice, he consistently relies upon higher-level and holistic explanations of physiological phenomena rather than reducing functions to the aggregation of the activities of low-level systems.

<sup>165</sup> "'Machine,' like other concepts in its neighborhood -- nature and art, the organic and the inert, animate and inanimate -- is better thought of as a variable, or a zone of variation impinged on by others, than as an essence." Further,

One must distinguish *mechanism*, or the "mechanical philosophy," a more or less tight-knit bundle of methodological precepts, schemes of explanation, and ontological claims, associated with an ideology of knowledge and control through making; the *machine* as a concept and imaginative scheme for understanding organisms; and *mechanisms*, the components of machines that correspond to the organs of living things (Des Chenes, *Spirits and Clocks*, 68).

Commenting on the concept of the machine in Leibniz, Andrault writes: "From an epistemological point of view, the Leibnizian machine analogy is often traced back, rightly, to a partial adoption of the corpuscular philosophy, of which it is held to be a straightforward consequence: an organic body is a machine insofar as it is, first and foremost, an aggregate of material parts figured and moved in various ways. A well known difference, however, casts doubt on this interpretation: a machine always has some end or other that enables us to explain its functioning. Intelligibility by final causes is required for

question to what degree Descartes's functional analysis of bodily organs incorporates some form of teleology or other, this is perhaps a result of the inherent ambiguity of the machine metaphor in the seventeenth-century.

When it comes to Leibniz, by contrast, I maintain that we can extract a determinate account of the Leibnizian self-moving machine or automaton. This account will help explain his response to the account of animal machines presented by a philosopher like Descartes.<sup>166</sup> In the Introduction, I suggested three key aspects of mechanical automata that make them useful as theoretical models. First, automata enable us to explain the motions proper to self-moving beings through the mechanical dispositions and relations of parts. Internal mechanical organization and structure provide the causal reason for their movements. Second, mechanical automata are able to move-themselves *blindly* or without distinct knowledge of what they do. Third, mechanical automata are *designed*. This third feature of mechanical automata offers a way of accounting for how their structure integrates final causes in the form of external teleology. Contra Descartes, Leibniz explicitly accepts the use of Divine ends in natural

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machines, whereas this is less obviously the case for a mere corpuscular aggregate" ("The Machine Analogy in Medicine: A Comparative Approach to Leibniz and His Contemporaries," in *Machines of Nature and Corporeal Substances in Leibniz*, ed. Justin E.H. Smith and Ohad Nachtomy [Dordrecht: Springer, 2011], 95-96).

<sup>166</sup> Here I disagree with Stephen Gaukroger ("The Problem of Goal-Directed Processes," in *Descartes' Natural Philosophy*, ed. Stephen Gaukroger, John Schuster, and John Sutton [London: Routledge, 2000], 383–400) who argues that Descartes's identification of animals with automata conveys little useful information about their mechanical nature. Gaukroger suggests "automaton" simply means "self-moving thing" during the period. Gaukroger follows the lead of John Cottingham ("A Brute to the Brutes?": Descartes' Treatment of Animals," *Philosophy* 53, no. 206 [October 1978]: 551–59) who highlights Leibniz's characterization of the soul as a "spiritual automaton" in the *Essais de Théodicée* to indicate the way the Leibnizian soul produces its perceptions spontaneously or *ab interno*. Cottingham and Gaukroger use the example of the Leibnizian spiritual automaton as a means of illustrating the general vagueness of the term "automaton" in the seventeenth-century. Gaukroger's claim that "automaton" should not be thought of in strictly physico-mechanical terms is part of his wider attempt to carve out a notion of sentience that could apply to animals and so to resist the standard view that Cartesian animals are unthinking brute-machines. Whether or not Cottingham is correct regarding the sentience (or lack thereof) of Cartesian animal automata, I will show that Leibniz himself took the Cartesian thesis that animals are automata to mean that they are mere mechanisms that do not possess sense and perception.

philosophical contexts. Moreover, when extended to the soul in the form of the *spiritual automaton*, Leibniz's conceptions of spontaneity and freedom (freedom being conceived as spontaneity plus reflection upon the reasons for our actions) imply forms of action, with or without conscious reflection, that unfold according to an internal teleology.

The first part of the present chapter sketches Descartes's respective positions on automata and the nature of human freedom, as Leibniz understood them. I will examine key statements of the Cartesian natural philosophy from texts Leibniz read and commented on, chiefly the *Discours de la méthode*, *Meditationes de prima philosophia* and *Principia philosophiae*. I shall then proceed to outline the way that Leibniz's own "spiritual automaton" enables Leibniz to critically revise Descartes' views regarding animals and freedom.

### 3.1 Cartesian Automata

#### 3.1.a Descartes and Mechanical Physics

Throughout his oeuvre, Descartes rejected Scholastic accounts employing explanatory tools such as substantial forms and souls as fundamentally obscure. Instead, he explained bodily phenomena solely in terms of mechanical explanatory tools and the identification of corporeal reality with geometrical extension. In so doing, Descartes attempted to avoid the types of end or goal-oriented explanation common in the Aristotelian tradition.<sup>167</sup> Here I analyze major elements

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<sup>167</sup> The relation between Descartes' mechanical philosophy and its Scholastic predecessors has received a great deal of attention in recent English-language literature. Scholars have increasingly recognized the importance of developing a nuanced understanding of the relationship of the continuities between Descartes and his forebears even as he claims to break with the past. Roger Ariew investigates Descartes within the context of seventeenth-century French Scholasticism and identifies points of continuity between Descartes and such sources in *Descartes and the Last Scholastics* (Ithaca: Cornell University Press, 1999). Des Chenes focuses on the difference between Descartes' views on living things and those of Late Scholastic authors with whom he was familiar through his education in *Life's Form and Spirits and Clocks*. Gaukroger contextualizes the *Principia philosophiae*, Descartes's natural philosophical textbook within the Scholastic textbook tradition in *Descartes' System of Natural Philosophy* (Cambridge: Cambridge University Press, 2002), 32-63. Schmaltz emphasizes the relevance of Suárez to Descartes' views on causation and interaction in *Descartes on Causation*. Helen Hattab

of Descartes' mechanical philosophy that provide the framework within which Descartes develops an account of living bodies in terms of mechanical automata.

Descartes argues that the physical world ought to be understood on the model of *extended* substance in place of Scholastic forms and qualities. This account provides Descartes with the metaphysical framework with which to ground his conception of bodies in terms of geometrical properties such as figure shape and local motion. In the *Fifth Meditation*, for instance, Descartes identifies the essence of material things with what can be represented geometrically.<sup>168</sup> In the *Principia*, Descartes identifies corporeal substance as a substance really distinct from mental substance at *PP* I.60.<sup>169</sup> Given the framework, Descartes posits extension as the principal attribute of corporeal substance at *PP* 1.53: "Thus extension in length, breadth and depth constitutes the nature of corporeal substance... Everything else which can be attributed to body presupposes extension, and is merely a mode of an extended thing."<sup>170</sup> Thus, in Descartes's ontology, bodies are chiefly characterized as modifications of geometrical extension.

Descartes argues that God is the primary cause of the motion present in extended bodies. For Descartes this means that God initiates motion at creation and maintains the same quantity of motion in the universe. Descartes' God preserves the existence of matter through a form of continuous creation. As Descartes writes at *PP* II.36:

Thus, God imparted various motions to the parts of matter when he first created them, and he now preserves all this matter in the same way, and by the same process by which he originally created it; and it follows from what we have said that this fact alone makes it most reasonable to think that God likewise always preserves the same quantity of motion in matter.<sup>171</sup>

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investigates Descartes' relationship to Scholastic notions of substantial form in *Descartes on Forms and Mechanisms*, (Cambridge: Cambridge University Press, 2009).

<sup>168</sup> CSM.II 44-5/AT.VII 63-65.

<sup>169</sup> CSM.I 213/AT.VIII 28-29.

<sup>170</sup> CSM.I 210/AT.VIII 25.

<sup>171</sup> CSM.I 240/AT.VIII 62.

For Descartes, the fact that the quantity of motion in the universe remains constant follows from God's immutability.<sup>172</sup> Even though the quantity of motion proper to a particular body will change, the sum total of the motion in the entire physical world remains the same.

As indicated above, Descartes rejects the use of final causes and purposes in our analyses of natural phenomena. Descartes's recourse to God as the source of motion accordingly must avoid any ascription of a reason in the sense of purpose or intention for such motion to God. Descartes frames this requirement in terms of intellectual *modesty*. In *PP* II.36, he forbids the natural philosopher to speculate about God's ends, for such speculation would presume to understand God's plan for the world. Instead, Descartes instructs us to focus on what we can know clearly, namely, the efficient causes of things:

*"It is not the final but the efficient causes of created things that we must inquire into. When dealing with natural things we will, then, never derive any explanations from the purposes which God or nature may have had in view when creating them <and we shall entirely banish from our philosophy the search for final causes>. For we should not be so arrogant as to suppose that we can share in God's plans. We should, instead, consider him as the efficient cause of all things; and starting from the divine attributes which by God's will we have some knowledge of, we shall see, with the aid of our God-given natural light, why conclusions should be drawn concerning those effects which are apparent to our senses [Emphasis original]."*<sup>173</sup>

According to Descartes, then, complex natural entities and their organization must be explained by means of mechanical motions and efficient causes and without any end-oriented forms of explanation. Descartes thus sought to move beyond what he took to be obscure Scholastic references to souls and forms.

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<sup>172</sup> For a general account of the relationship between God's immutability and the laws of motion, see Daniel Garber, *Descartes' Metaphysical Physics* (Chicago: University of Chicago Press, 1992), 263-305.

<sup>173</sup> CSM.I 202/AT.VIII 15-6.

### 3.1.b Living Bodies as Automata in Descartes

Descartes uses the automaton as a specifically mechanical model of the living body.<sup>174</sup> In so doing, he replaces the Scholastic hypothesis of vegetative and sensitive souls to explain phenomena such as nutrition and locomotion in plants and animals. Self-moving mechanical automata were commonplace technological artifacts in the late medieval and early-modern periods and gave the appearance of life and vitality. Decorative automata were especially popular in the form of clocks and waterworks. Important examples of mechanical automata in clocks include the mechanical roosters of the Strasbourg cathedral and the Munich Frauenkirche.<sup>175</sup> Descartes seems to have been inspired by hydrolico-mechanical automata employed in fountains. He mentions fountains such as those at Saint-Germain-en-Laye and at Heidelberg in his early treatise *Le Monde*.<sup>176</sup> Such automata work by means of a number of hidden mechanisms to produce a playful or decorative effect, for instance to spray unsuspecting guests with water.<sup>177</sup> With these automata as a model, Descartes conceived the parts of animals as so many pulleys, pumps, levers and chutes.

Crucially, the mechanical automaton exhibits *self-motion*. For Descartes, the animal was a mechanical “automaton” because its evident “self-motion” was produced by the interactions of

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<sup>174</sup> The Scholastic tradition that Descartes set out to overcome had treated self-moving bodies as animated or ensouled. Indeed, Scholastic natural philosophy had taken self-motion to be a central defining characteristic of animate things as opposed to inanimate things. The Aristotelian tradition explained the formal character, bodily organization, and complex self-motions of living things by means of several different types of souls. Plants possessed a vegetative soul responsible for their growth and nutrition. Animals possessed a vegetative as well as a sensitive soul, the latter being responsible for perception of the environment as well as the local motion of the body. Humans beings had, in addition to both prior types of soul, a rational soul responsible for intellection. For a detailed account of the Scholastic theory of vegetative and animal souls, see Des Chenes, *Life's Form*.

<sup>175</sup> See Riskin, “Machines,” 22.

<sup>176</sup> See Gaukroger, “The Problem of Goal-Directed Processes”; Des Chenes, *Spirits and Clocks*. Gaukroger stresses that what Descartes had in mind were hydraulic statues and mechanical fountains. Gaukroger thus cautions against thinking of Cartesian automata in terms of metal/wood constructions such as clocks.

<sup>177</sup> Riskin, “Machines,” 31.

its functionally integrated mechanical parts, and not by activities associated with either vegetative or sensible souls. In the *Meditations*, Descartes expresses wonder about how some bodies possess the capacity for forms of self-motion such as sensation or thought. These capacities seem incompatible with claim that bodily substance is essentially passive:

As to the body, however, I had no doubts about it, but thought I knew its substance distinctly. If I had tried to describe the mental conception I had of it, I would have expressed it as follows: by a body I understand whatever has a determinable shape and a definable location and can occupy a space in such a way as to exclude any other body; it can be perceived by touch, sight, hearing, taste or smell, and can be moved in various ways, not by itself but by whatever else comes into contact with it. For, according to my judgment, the power of self-movement, like the power of sensation or of thought, was quite foreign to the nature of a body; indeed, it was a source of wonder to me that certain bodies were found to contain faculties of this kind.<sup>178</sup>

By treating animals and their organs as mechanical automata, and so analyzing their bodily dispositions and functions in mechanical terms, Descartes rendered self-moving physical entities intelligible, thus he dispelled his own wonder.

Descartes's machine analogy raises a number of questions regarding complexity and design. The particular models Descartes used were examples of human artifice and less organizationally complex than living bodies. Even though Descartes often used examples of high technical sophistication, such as the fountains at Saint-Germain-en-Laye, *qua* mechanisms, they are, however, of relatively low complexity compared to actual animal machines. Descartes handled this potential difficulty by denying any difference in kind between nature and artifice, natural and artificial machines. He argues that there is only a difference of degree between the types of mechanisms responsible for the movements of artificial machines produced by humans and those responsible for the movements of animals, or living machines.<sup>179</sup> At *PP* IV.203

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<sup>178</sup> CSM.II 17-18/AT.VII 26.

<sup>179</sup> As we saw in Chapter One, Leibniz insists on a difference in kind between artificial machines designed by humans and the so-called "machines of nature" designed by God. We will return to this theme below.

Descartes couches the difference of degree between products of nature and human art, in terms of size and visibility:

For I do not recognize any difference between artifacts and natural bodies except that the operations of artifacts are for the most part performed by mechanisms which are large enough to be easily perceivable by the senses — as indeed must be the case if they are to be capable of being manufactured by human beings. The effects produced in nature, by contrast, almost always depend on structures which are so minute that they completely elude our senses.<sup>180</sup>

According to Descartes, there is no difference in kind between the productions of artifice and of nature. Rather artifice and nature occupy different zones of a continuum of mechanical complexity. The mechanical complexity of interest to Descartes here is, however, measured by the capacities of our sense organs: the complexity proper to natural machines is such that it typically cannot be grasped in full detail by our senses.

Descartes's identification of animals and machines, the natural and the artificial introduces several tensions into his account. These involve the forms of apparent teleology and end-directed activity proper to living things, both at the level of the parts as well as the whole. Given that automata work by means of the functional dispositions of their parts, it would seem that identifying animals as automata comes at the price of reintroducing some notion of final causes or ends into nature. This is because parts of the body such as the heart or the nervous system must be disposed to play a role for the sake of the whole animal. Further, the artificial automata that Descartes uses as models are themselves the product of design, incorporating the ends of the human artificer such as the realization of a pleasing imitation of a human or duck. Indeed, Descartes seems to recognize the essential role of the automaton's designer in *PP* I.37, where he emphasizes that automata work according to an artificer's design. Consequently, he

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<sup>180</sup> CSM.I 288/AT.VIII 326.

argues, we must attribute praise and blame for the automaton's activities to the designer, not to the automaton itself.<sup>181</sup>

While Descartes officially rejected speculations about God's ends, his account of living bodies as automata rests on an uneasy balance. He invokes, on the one hand, functional, systematic accounts of organs and physiological activities based on analogies with artifacts such as pumps, and, on the other, speculative postulations of mechanisms governing the embryological development of organs. Although we might expect the former to involve identifying an end for the sake of which the organ carries out its function, the latter must unfold in purely mechanical, non-teleological terms.<sup>182</sup> Looking at Descartes' discussion of embryology in the unpublished *La description du corps humain* (1648), we find only ad hoc explanations of the way that matter could spontaneously organize itself into such organs and individuals.<sup>183</sup>

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<sup>181</sup> "We do not praise automatons for accurately producing all the movements they were designed to perform, because the production of these movements occurs necessarily. It is the designer who is praised for constructing such carefully-made devices; for in constructing them he acted not out of necessity but freely" (CSM.I 205/AT.VIII 18-9).

<sup>182</sup> Des Chenes, *Spirits and Clocks* concludes that Descartes must admit some form of reasoning from God's ends:

In Descartes' physiology, the operation of the body, though undoubtedly physical, cannot be completely understood except by referring them to ends. Ends cannot be entirely supplanted by dispositions, even in animals. Reference to them can be deferred by fables of imitation. But if the physiology is to escape the confines of fiction, the role of norms in defining the functions of the body must be acknowledged, and with it that of a rational agent, God, whose intentions in creating animals establishes those norms. The ban on the considerate of ends in natural philosophy must be lifted, even if inferences from dispositions to ends are, as Descartes argues in replying to Gassendi, less certain than inferences from effects to causes (140).

Shapiro, "Health" argues in the context of seventeenth-century accounts of health that a machine's structural integrity and hence health is consistent with a lack of teleological end. For an account that argues that Descartes's employment of functional analysis is consistent with his rejection of ends, see Brown, "Cartesian Functional Analysis." For a descriptive account of the way that Descartes relies on systems level analyses in physiology, see Hutchins, "Descartes, Corpuscles and Reductionism."

<sup>183</sup> See, for instance CSM.I 321-4/AT.XI 252-7. Vincent Aucante emphasizes the difficulties that the complexity of living bodies presents to Descartes' mechanical physiology in "Descartes' Experimental Method and the Generation of Animals," in *The Problem of Animal Generation in Early Modern Philosophy*, edited by Justin E. H. Smith (Cambridge: Cambridge University Press, 2006), 65-79. Hatfield reconstructs Cartesian physiology along these lines in "Animals." Leibniz finds Descartes' speculative accounts of the self-organization of matter dubious on account of the gap between Descartes's geometrical theory of matter and the highly complex organic forms exhibited in nature. Our own

In sum, the notions of design and functionality inherent in the very mechanical models employed by Descartes are at odds with Descartes's commitment to mechanical causal explanation. However useful automata are for understanding the self-motion of bodies, they do so at the cost of introducing forms of final causation not officially licensed by Descartes's theory. As we will see, Leibniz, in sharp contrast with Descartes, explicitly embraces considerations of design and finality.

### 3.1.c Why Descartes Thinks the Human Soul Cannot Be an Automaton

Descartes denies that the human soul or mind can be understood on the model of the automaton. This denial reflects Descartes's metaphysical dualism, and Descartes provides several reasons why the human being conceived of as a body and mind cannot be an automaton. These include arguments pertaining to the nature of reason and language, the unitary status of the mind, and free will. In other words, by aligning living bodies with automata, Descartes has systematic reasons to reject identifying the human mind with an automaton. Further, Descartes's refusal to render the human rational soul in terms of automata highlights, the *mindless* and determinate nature of the living automata that populate the Cartesian universe.

In the *Discours*, when describing what the body conceived in terms of a self-moving machine could accomplish on its own, Descartes suggests that it can do everything that happens in our body *involuntarily* or without the aid of direct thought. In other words, he defines the activities of the body-automaton in contrast to activities that result from thinking. He explicitly denies that the body can on its own carry out any activities that depend upon thinking:

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contemporary theories of the self-organization of matter into organic forms notwithstanding, Descartes certainly seems to have bitten off a bit more than he could chew. For an illuminating account of Descartes' use of scientific analogy and hypothesis in articulating unknown and often sub-visible causes see Gideon Manning, "Analogy and Falsification in Descartes' Physics," *Studies in History and Philosophy of Science* 43 (2012): 402–411.

And when I looked to see what functions would occur in such a body I found precisely those which may occur in us without our thinking of them, and hence without any contribution from our soul (that is, from that part of us, distinct from the body, whose nature, as I have said previously, is simply to think). These functions are just the ones in which animals without reason may be said to resemble us. But I could find none of the functions which, depending on thoughts, are the only ones that belong to us as men; though I found all these later on, once I had supposed that God created a rational soul and joined it to this body in a particular way which I described.<sup>184</sup>

Descartes thus denies to the mechanical body such mental activities as thinking, sense perception, willing, and meaningful discourse.<sup>185</sup> These activities take place, according to Descartes, exclusively in mental substance.<sup>186</sup>

In the *Discours*, Descartes provides two related arguments why we can know that mere mechanical automata are different from humans with minds capable of reasoning. The first focuses on the nature of speech. According to Descartes, meaningful spoken discourse provides signs indicating the ideas in the mind of the speaker. To be capable of discourse thus requires having ideas to express. Descartes illustrates this claim by comparing human beings and birds, such as magpies and parrots, capable of uttering phonetic sounds. Although such birds clearly

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<sup>184</sup> CSM.I 134/AT.VIII 46.

<sup>185</sup> Descartes lists the activities of thinking substance in the Second Meditation. A thinking thing “doubts, understands, affirms, denies, is willing, is unwilling, and also imagines and has sensory perceptions” (CSM.II 19/AT.VII 28). A similar list appears in the Third Meditation (CSM.II 24/AT.VII 34).

<sup>186</sup> In the Sixth Meditation, Descartes provides further arguments that aim to dissociate thought from bodily extension. First, Descartes argues that the mind can turn inward, away from the body, and contemplate innate ideas: “when the mind understands, it in some way turns towards itself and inspects one of the ideas which are within it; but when it imagines, it turns towards the body and looks at something in the body which conforms to an idea understood by the mind or perceived by the senses” (CSM.II 51/AT.VII 73). Second, Descartes characterizes the mind as indivisible and *simple*, or without parts. The body, by contrast is divisible:

As for the faculties of willing, of understanding, of sensory perceptions and so on, these cannot be termed parts of the mind, since it is one and the same mind that wills, and understands and has sensory perceptions. By contrast, there is no corporeal or extended thing that I can think of which in my thought I cannot easily divide into parts; and this very fact makes me understand that it is divisible. This one argument would be enough to show me that the mind is completely different from the body, even if I did not already know as much from other considerations (CSM.II 59/AT.VII 86).

possess the physico-mechanical organs requisite to produce what sounds like words, Descartes denies the existence of a parrot mind:

For it is quite remarkable that there are no men so dull-witted or stupid — and this includes even madmen — that they are incapable of arranging various words together and forming an utterance from them in order to make their thoughts understood; whereas there is no other animal, however perfect and well-endowed it may be, that can do the like. This does not happen because they lack the necessary organs, for we see that magpies and parrots can utter words as we do, and yet they cannot speak as we do: that is, they cannot show that they are thinking what they are saying.<sup>187</sup>

Parrots and magpies may utter sounds, but these sounds do not indicate any thoughts present in a mind. The sounds emanating from the beaks of parrots result exclusively from the mechanical motions of the animal's automaton body, and are not related to any mental idea, as they are in even the least lucid of humans. Moreover, even humans incapable of oral speech endeavor to find ways of communicating, a practice that Descartes denies to animals.

Second, Descartes regards the ability to respond to changing situations as a core feature of reason. Human behavior guided by reason thus differs from the automaton's behavior, since the automaton's organs necessarily perform only a single, pre-given function:

For whereas reason is a universal instrument which can be used in all kinds of situations, these [bodily] organs need some particular disposition for each particular action; hence it is for all practical purposes impossible for a machine to have enough different organs to make it act in all the contingencies of life in the way in which our reason makes us act...<sup>188</sup>

For Descartes, reason is a universal instrument in the sense of taking on functions to respond to changing circumstances. Open-ended responsiveness to circumstance is at odds with the type of design Descartes associates with automata and hence he treats reason as incompatible with the nature of automata. In the latter case, each organ comprising the body is characterized by a predetermined set of actions.

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<sup>187</sup> CSM.I 140/AT.VIII 57.

<sup>188</sup> CSM.I 140/AT.VIII 57.

Descartes explicitly contrasts human beings and automata in a passage concerning the wax argument in the Second Meditation. In considering the judgments our mind makes over and above the sensory input of the imagination, Descartes suggests that as far as the imagination is concerned, the human beings we encounter could easily be nothing more than automata. By means of our understanding, however, we judge that they are human beings with an internal life:

But then if I look out of the window and see men crossing the square, as I just happen to have done, I normally say that I see the men themselves, just as I say that I see the wax. Yet do I see any more than hats and coats which could conceal automatons? I *judge* that they are men. And so something which I thought I was seeing with my eyes is in fact grasped solely by the faculty of judgement which is in my mind.<sup>189</sup>

Since we judge human beings to be more than their visible bodies, they cannot, by definition, be automata.

Freedom is the other feature that distinguishes us from automata. In *PP* I.37, Descartes argues that an automaton could not carry out the operations related to freely willing a course of action. The context is Descartes' theory of error. As in the Fourth Meditation, Descartes assigns perception to the intellect and affirmation or denial to the will, and he explains error in terms of the way the will can extend beyond the range of the intellect. When the will affirms or denies something as true in the absence of clear and distinct perception, it errs. Were we only to judge within the limits of clear intellectual perception, we would never "err or sin."<sup>190</sup> As knowers, then, we are responsible for restricting the will within the limits of the intellect. Error thus

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<sup>189</sup> CSM.II 21/AT.VII 32.

<sup>190</sup> As Descartes writes in the Fourth Meditation:

I perceive that the power of willing that I received from God is not, when considered in itself, the cause of my mistakes; for it is both extremely ample and also perfect of its kind. Nor is my power of understanding to blame; for since my understanding comes from God, everything that I understand I undoubtedly understand correctly, and any error here is impossible. So what then is the source of my mistakes? It must simply be this: the scope of the will is wider than that of the intellect; but instead of restricting it within the same limits, I extend its use to matters which I do not understand (CSM.II 40/AT.VII 58).

accrues to our choices, not to God's design. Precisely this responsibility sets us apart from automata:

The extremely broad scope of the will is part of its very nature. And it is a supreme perfection in man that he acts voluntarily, that is, freely; this makes him in a special way the author of his actions and deserving of praise for what he does. We do not praise automatons for accurately producing all the movements they were designed to perform, because the production of these movements occurs necessarily. It is the designer who is praised for constructing such carefully-made devices; for in constructing them he acted not out of necessity but freely. By the same principle, when we embrace the truth, our doing so voluntarily is much more to our credit than would be the case if we could not do otherwise.<sup>191</sup>

For us to be truly free in the sense of being able to make genuinely voluntary decisions our soul cannot function as an automaton in a way that follows deterministically from its design. Further, for Descartes, the fact that our will is not fully determined allows us to earn praise and blame for our volitions.

It should be noted, however, that Descartes's account of freedom in the *Principia* is ambiguous. On the one hand, the automaton passage evidently involves a form of indifference, in the sense that the will is left undetermined by the intellect. In other words, the Cartesian will can choose to affirm or deny a particular truth perceived by the intellect; assenting to intellectual perception is not automatic. The freedom of indifference seems to underwrite the argument that we are not automata because it allows us to will independently of any prior determination, such as intellectual perceptions, or design. Descartes characterizes freedom as an innate common notion, and he appeals to our own first-person experience of indifference as justification.

Recalling the thought experiment supposing that God is a supremely powerful deceiver, he writes at *PP* I.39:

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<sup>191</sup> CSM.I 205/AT.VIII 18-9. Descartes's conception of freedom is notoriously difficult to interpret. As we will see below, Leibniz's comments on the *PP* show that he saw Descartes as advocating the indifference of the will. That is to say, Leibniz thought Descartes's view of freedom entailed the possibility of the will choosing a particular course of action in the absence of or even against motivating reasons supplied by the understanding.

For in spite of that supposition [that God is a deceiver], the freedom which we experienced within us was nonetheless so great as to enable us to abstain from believing whatever was not quite certain or fully examined. And what we saw to be beyond doubt even during the period of that supposition is as self-evident and as transparently clear as anything can be.<sup>192</sup>

Descartes therefore claims that we experience clearly and distinctly – and thus in a way that is certain – that our will is indifferent to determination from the intellect and hence is free.

On the other hand, Descartes limits the freedom of indifference to cases where the intellect does not perceive clearly and distinctly. Descartes also maintains at *PP* 1.43 that when we perceive something clearly and distinctly as true, our will spontaneously assents to it. Here it appears there is no room for indifference:

And even if there were no way of proving this [that God is not a deceiver and hence that our clear and distinct perceptions are true], the minds of all of us have been so moulded by nature that whenever we perceive something clearly, we spontaneously give our assent to it and are quite unable to doubt its truth.<sup>193</sup>

Clearly, the notion of spontaneous assent runs counter to the freedom of indifference. Further, as Tad Schmaltz (2008) has pointed out, this passage echoes Descartes's earlier account of freedom in the *Fourth Meditation*. There, Descartes had argued that in cases of clear and distinct perception such as the knowledge that he exists, the will spontaneously assents in a way that lacks any indifference:

I could not but judge that something which I understood so clearly was true; but this was not because I was compelled so to judge by any external force, but because a great light in the intellect was followed by a great inclination in the will, and thus the spontaneity and freedom of my belief was all the greater in proportion to my lack of indifference.<sup>194</sup>

On the *Fourth Meditation* account, the highest form of freedom of the will is not the freedom of indifference, but rather the spontaneous assent to a clear and distinct perception. It seems in the *Principia* in cases where our intellectual perception of the truth is unclear, our will is indifferent

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<sup>192</sup> CSM.I 206/AT.VIII 20.

<sup>193</sup> CSM.I 207/AT.VIII 21

<sup>194</sup> CSM.II 41/AT.VII 58-9.

and on that account free. At the same time, Descartes holds that in cases of clear and distinct perception our nature determines us to spontaneously assent. Though Descartes does not explicitly associate spontaneous assent with freedom *per se* in *PP* 1.43, the passage does bear a strong resemblance to the passage from the *Meditations* where Descartes had associated spontaneous assent with freedom.<sup>195</sup>

Descartes's account of freedom in the *PP* is further complicated by his insistence that God preordains everything that happens. In other words, Descartes maintains both the proposition that our will is indifferent, *and* the proposition that God ordains everything that happens. Preordination seems to entail a form of determination incompatible with the freedom of indifference, and so Descartes admits that we are unable to fully comprehend how these two claims can be reconciled due to the finite nature of our intellect. His solution to the problem at *PP* I.41 is to argue that we should not doubt our own experience of freedom:

Nonetheless, we have such close awareness of the freedom of indifference which is in us, that there is nothing we can grasp more evidently or more perfectly. And it would be absurd, simply because we do not grasp one thing, which we know must by its very nature be beyond our comprehension to doubt something else of which we have an intimate grasp and which we experience within ourselves.<sup>196</sup>

Princess Elisabeth of Bohemia pushes Descartes on this very point in her letter of November 30, 1645. She claims that the independence of our will is as incompatible with God's power as its dependence on God's power would be incompatible with our freedom. Since Descartes seems to

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<sup>195</sup> In a letter to Mesland of February 9, 1645, Descartes argues that we are more free the less indifferent we are:

But freedom considered in the acts of the will at the moment when they are elicited does not entail any indifference taken in either [the sense where the will is not determined one way or the other] or [the sense in which we are able to positively determine ourselves to one contrary or another]; for what is done cannot remain undone as long as it is being done. It consists simply in ease of operation; and at that point freedom, spontaneity and voluntariness are the same thing. It was in this sense that I wrote that I moved towards something all the more freely when there were more reasons driving me towards it; for it is certain in that case our will moves itself with greater facility and force (CSMK 246/AT.IV 174-5).

<sup>196</sup> CSM.1 206/AT.VIII 20.

hold both in the *Principia*, she is unable to comprehend his account.<sup>197</sup> Descartes responds by means of a thought experiment. He likens God to a king who forbids duels yet nonetheless arranges things such that two quarreling gentlemen run into each other and duel. In this Descartes argues, that though the king has ordained the fight by setting up the right conditions, the two gentlemen nevertheless fight voluntarily and hence freely:

His knowledge, and even his will to determine them there in this manner, do not alter the fact that they fight one another just as voluntarily and just as freely as they would have done if he had known nothing of it, and it was by some other occasion that they had met. They can also justly be punished, since they violated the prohibition.<sup>198</sup>

God likewise preordains what will be present to our senses at any given moment and knows how we will act on those occasions. Nonetheless, Descartes wants to maintain that our actions are still voluntary and free. This is because God does not want our will to be constrained as we choose in the way that God has foreseen. Descartes argues that we can distinguish two wills in the king: the will that duels should be forbidden and the will that two particular gentlemen should fight. Descartes likens this to an “absolute” vs. “relative” will in God. God wills “absolutely” all individual things that happen and “relatively” that human beings obey his laws. The fact that human beings, exemplified by as the dueling gentlemen of the thought experiment, disobey God contradicts only God’s relative will, and so relates to human failing. It has no bearing on the power of God’s absolute will.<sup>199</sup> Descartes’s attempt to reconcile our free will with God’s

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<sup>197</sup> “I confess to you as well that even though I do not understand how the independence of our will is no less contrary to the idea we have of God than its dependence is to its freedom, it is impossible for me to square them, it being as impossible for the will to be at the same time free and attached to the decrees of Providence as for divine power to be both infinite and limited at once. I do not see at all the compatibility between them of which you speak, or how this dependence of the will can have a different nature than its freedom, if you do not take the trouble to teach this to me” (CE 127/AT.IV 336).

<sup>198</sup> CE 130/AT.IV 353.

<sup>199</sup> “As one can distinguish in this king two different degrees of will, the one by which he willed these gentlemen to fight one another, since he made it so they would meet, and the other by which he did not will it, since he prohibited duels, so do the theologians distinguish in God an absolute and independent will by which he wills that all things happen such as they happen, and another

preordination, in sum, hinges on a subtle and potentially incoherent account of the divine will. Though God foresees and wills everything that happens, he does not thereby will that our human will is constrained in its preordained choice. Further, God wills absolutely all that will happen and when human beings sin or disobey God's general decrees, they only disobey God's *relative*, not *absolute* will.

It is unclear if Descartes's account of freedom in the *PP* and correspondence with Elisabeth is ultimately coherent. It is clear, however, that even though Descartes maintains that God preordains everything absolutely, he also wants to ascribe the freedom of indifference to human beings.<sup>200</sup> On this model, our will remains undetermined by and indifferent to the perceptions of the intellect. Thus, our will can thus voluntarily affirm or deny our perceptions in ways that are not dictated by initial design in the manner of an automaton. Whether or not Descartes satisfactorily reconciles this conception of the freedom of indifference with Divine preordination, it is clear that Descartes is unwilling to conceive of the human mind as a kind of "spiritual automaton."

### 3.2 Leibniz's Reception of Descartes

Like Descartes, Leibniz, conceives animals as mechanical automata. But there are fundamental differences between the two philosophers. Most obviously, Leibniz's concept of the animal-machine, namely the "machine-of-nature," explicitly incorporates a form of divine design and exhibits an infinite structure as the mark of its divine maker. Leibniz's willingness to extend the model of the automaton to the soul reflects, moreover, his rejection of two major Cartesian theses. First, Leibniz rejects what he takes to be Descartes's view that animals completely lack

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which is relative, and which is related to the merit or demerit of men, according to which he wills that they obey his laws" (CE 131/AT.IV 354).

<sup>200</sup> For details, see Schmaltz, *Descartes on Causation*, 178-216.

sense. Leibnizian sentient animals need substantial forms or souls. Second, Leibniz read Descartes as advocating freedom of indifference according to which we can freely choose a certain course of action in the absence of or even contrary to any motivating reasons. In arguing for this interpretation of Descartes, Leibniz focuses on passages from Book One of Descartes's *Principia* as well as his letter to Elisabeth, where Descartes attempts – in Leibniz's view unsuccessfully – to reconcile his account of freedom with Divine foreknowledge. Leibniz's own view of freedom is emphatically compatibilist. In other words, Leibnizian freedom is compatible with a form of spontaneity according to which one acts according to the laws of one's nature. Leibniz thereby removes the key distinction Descartes drew between free, voluntary action and spontaneous yet automated activity. Both of these key conceptual moves allow Leibniz to characterize the soul in addition to the body on the model of an *automaton*.

Leibniz criticizes Descartes's identification of geometrical extension with the substance of body as inadequate and argues that something metaphysical is required over and above extension. This follows Leibniz's standard strategy of claiming that mechanism requires a deeper metaphysical foundation. For Leibniz, extension alone cannot account for an extended thing's unity and activity. Only incorporeal principles can provide unity and activity. Leibniz's "rehabilitation" of substantial forms in the late 1670's thus underwrites and qualifies his acceptance of mechanistic explanation.<sup>201</sup> Leibniz's remarks in paragraph 12 of the *Discours de la métaphysique* are succinct:

I believe that anyone who will meditate about the nature of substance, as I have explained it about, will find that the nature of body does not consist merely in extension, that is, in size, shape, and motion, but that we must necessarily recognize in body something related

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<sup>201</sup> For a careful examination of a number of the natural philosophical and physical themes relating to Leibniz's rehabilitation of substantial forms including Leibniz's arguments against identifying bodies with Cartesian extension see Garber, *Body, Substance, Monad*, 55-179.

to souls, something we commonly call substantial form, even though it makes no change in the phenomena, any more than do the souls of animals, if they have any.<sup>202</sup>

Although Leibniz accepts the intelligibility of mechanical analyses of bodies employing extension, he restricts them to the phenomenal level. The mechanical level of phenomena is in turn integrated into a larger metaphysical framework incorporating incorporeal forms and souls as well as their resultant dynamical forces. Mechanical phenomena themselves are ultimately the result of the activities of these incorporeal forms and souls.

As we saw in Chapter 1, Leibniz first presents his conception of the soul as spiritual automaton in his *Système nouveau*, a text prepared for an audience of Francophone Cartesians.<sup>203</sup> Leibniz's language and his presentation of the preestablished harmony between substances address the Cartesian problematic of mind-body relations. Surely the Cartesian audience would have noticed Leibniz's striking, and anti-Cartesian, extension of the figure of the automaton from the living body to the immaterial soul. What then, is the significance of Leibniz's development of a theory of the soul as "spiritual automaton" in relation to Descartes?

### **3.2.a Leibniz on Animals Automata, Souls and Bodies**

Like Descartes, Leibniz had a deep theoretical interest in the nature of animals, and his study of animals encompasses medical-experimental and metaphysical dimensions. As Justin E.H. Smith has recently shown, Leibniz's mature account of the natural world is designed to account for, and is ultimately dependent upon, the active striving of living beings. Such striving, moreover, is responsible for the dynamic forces expressed in physical phenomena. Smith's larger argument is

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<sup>202</sup> AG 44/L 309/AVI.4 1545.

<sup>203</sup> See the analyses of Brown, "Leibniz's New System Strategy"; Roberto Palaia, "The 'New System of the Nature of Substances' in the Philosophical Journals of the Seventeenth Century," in *Leibniz's "New System" (1695)*, ed. R.S. Woolhouse (Florence: Olshki, 1996), 113-22; Phemister, *Leibniz and the Natural World*, 7-29.

that we should understand organic and living phenomena, and not inorganic phenomena, as the fundamental level in Leibniz's ontology.<sup>204</sup> This foundation is evident, for example, in texts such as the *Principes de la nature et de la grâce* of 1714, where Leibniz claims that life is everywhere in nature.<sup>205</sup>

Leibniz's conception of animals differs from Descartes's in three important ways. First, Leibniz ascribes sense and perception, and hence a soul, to living things. As opposed to Descartes's identification of life with mechanical self-motion, in his mature period Leibniz associates life and living beings with perception and desire.<sup>206</sup> Second, whereas Descartes had sought to justify his account that animals are automata by collapsing the distinction between artificial machines and animals conceived as naturally produced machines, Leibniz argues that animal bodies, the so-called "machines-of-nature," are different in kind from artificial machines insofar as that they possess an infinite structure. Third, Leibniz embraces design arguments. Leibniz's claim that living bodies – so-called "machines of nature" – are designed by God seamlessly integrates divine ends into an account of natural phenomena.

In accord with his general critique of Descartes' idea of extended substance, Leibniz insists that the mechanical activities of animals depend upon deeper metaphysical principles. Writing to Ehrenfried Walther von Tschirnhaus<sup>207</sup> in 1684, Leibniz writes in reference to the Cartesian theory of animal automata:

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<sup>204</sup> Smith, *Divine Machines* 1-21.

<sup>205</sup> AG 208/GP.VI 599.

<sup>206</sup> See for instance the November 18 1698 letter to Johann Bernoulli: "But life or the primary entelechy is something more than some simple dead conatus; for I think that it contains perception and appetite, as in an animal, both corresponding to the present state of the organs." AG 169/GM.III 546-7. For a more general account outlining Leibniz's basic views regarding the nature of life as well as how his views relate to themes in the contemporary philosophy of biology, see Ohad Nachtomy, "Leibniz and The Logic of Life," *Studia Leibnitiana* 41, no.1 (2009): 1–20.

<sup>207</sup> Tschirnhaus (1651-1708) was an important German philosopher and friend to both Leibniz and Spinoza. On Leibniz's friendship with Tschirnhaus in Paris in relation to the former's reception of Spinoza, see Mogens Lærke, *Leibniz lecteur de Spinoza: la genèse opposition complexe* (Paris: Honoré

In Holland they are now disputing, loudly and soundly, whether beasts are machines. People are even amusing themselves by ridiculing the Cartesians for imagining that a dog that is clubbed cries in the same way as a bagpipe which is pressed. As for me, though I grant the Cartesians that all external actions of beasts can be explained mechanically, I nevertheless believe that beasts have some knowledge and that there is something in them, not itself extended, which can be called a soul, or if you prefer, a substantial form.<sup>208</sup>

In contrast to Descartes, Leibniz conceives animals as having some form of knowledge or inner life. The animal's awareness of the world results from the presence of a perceiving soul and Leibniz attributes the dynamic striving evident in animal behavior to the soul. Such a soul exists within the animal's extended machine body but is unextended and without parts.

In the later *Système nouveau*, Leibniz continues to ascribe souls to living bodies *qua* machines-of-nature. The soul serves as the form of the body, thereby unifying it as a single thing.

Whatever is real and unitary in the body, and its actions, come from the presence of the soul:

...by means of the soul or form, there is in us a true unity which corresponds to what we call 'I'; this can have no place in artificial machines or in a simple mass of matter, however organized it may be... Yet if there were no true substantial unities there would be nothing substantial or real in such a collection... It is only *atoms of substance*, that is to say real unities absolutely devoid of parts, that can be sources of actions, and the absolute first principles of the composition of things, and as it were the ultimate elements in the analysis of substances.<sup>209</sup>

In this way, a perceiving soul is a *metaphysical* requisite for a living being. For Leibniz, Descartes's account of the animal fails to explain the sensations such as pain that animals evidently feel. Further, Leibniz would argue that Descartes's account fails to explain what makes a living body truly *one* thing.

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Champion, 2008), 361-373. Mark Kulstad analyzes the philosophical relations among the trio in 1675-6 in "Leibniz, Spinoza, and Tschirnhaus: *Metaphysics a Trois*," in *Spinoza: Metaphysical Themes*, ed. Olli Koistinen and J.I. Biro (Oxford: Oxford University Press, 2002), 221-40. For an account of Tschirnhaus's own philosophical positions in relation to subsequent German philosophy, see Martin Schönfeld, "Dogmatic Metaphysics and Tschirnhaus's Methodology," *Journal of the History of Philosophy* 36, no. 1 (January 1998): 57-76.

<sup>208</sup> L 275-6.

<sup>209</sup> WF 16/GP 482.

Despite the *metaphysical* role Leibniz ascribes to souls, he maintains that the presence of souls and substantial forms changes nothing in the phenomena. Everything that takes place within nature happens mechanically, i.e. according to laws of efficient causality. With respect to the perceiving soul, Leibniz thinks that each of the soul's perceptions corresponds to certain motions in the organs of the body. In, for example, a sketch of a book on the elements of natural science in the early 1680s, Leibniz argues that mechanical explanation is relevant to explain the particular perceptions of a given body. He writes that when it comes to the origins of sense and desires, "we should finally have to come to the construction of the organs of the sensing being, that is, to the mechanical principles." In other words, Leibniz continues, "what happens with perception happens nonetheless mechanically, and to the passions of the soul there correspond bodily motions in the organs which always follow mechanical laws."<sup>210</sup> What the soul perceives is expressed in the bodily organs in the sense that there are bodily motions that correspond to what is happening in the soul.<sup>211</sup> Since the soul is a unity, it is able to concentrate everything that happens in the extended parts of its body into one single perception. As we have seen in Chapter One, however, according to the theory of the preestablished harmony, there is no direct causal interaction between what happens perceptually in the soul and what takes place mechanically in the body. Leibniz holds, in sum, that a mechanistic analysis of the body's organs and their motions is sufficient to account for the phenomena we perceive and for empirical science. At the same time, everything that happens within the phenomena is expressed within the perceiving soul.

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<sup>210</sup> L 288.

<sup>211</sup> As we saw in the Introduction, "expression" is a technical term in Leibniz. Expression means that there is an isomorphic relationship between the states of one term and those of the others. For a classic account of expression in Leibniz, see Kulstad, "Leibniz's Conception of Expression." For a more recent account of Leibniz's notion of expression that relates it to perception and perceptual distinctness, see Larry M. Jorgensen, "Leibniz on Perceptual Distinctness, Activity, and Sensation," *Journal of the History of Philosophy* 53, no. 1 (January 2015): 49–77.

Leibniz's conception of living bodies also differs from Descartes's in that Leibniz claims that a living body contains an *actually infinite* number of parts. As we saw in Chapter One, Leibniz holds that the soul spontaneously produces an infinite multitude of perceptions.<sup>212</sup> Given that each perception has corresponding motions in the organs, the organized body corresponding to the soul must be able to carry out an infinite variety of motions over the course of its life. Leibniz's treatment of the infinite structure of the body that corresponds to the soul, a structure we analyzed in Chapter One under the heading of the "machine of nature," reveals his second major criticism of Descartes's account of animals. Descartes had distinguished between the structure of artificial machines and animals *qua* machines produced by nature by virtue of a distinction between the sizes of the relevant mechanisms. Artificial machines have gears and springs large enough to be distinguished by our sense organs and hence are open to manipulation by human artisans; natural machines typically operate by means of mechanisms too subtle for human sense. For Leibniz, Descartes's distinction of scale does not go far enough. In the *Système nouveau*, Leibniz objects that Descartes underestimates God's craftsmanship by modeling nature on human artifice:

I am as ready as anyone to do justice to the moderns; nevertheless I think they have carried reform too far, among other things in conflating natural things with artificial ones, through not having sufficiently grand ideas of the majesty of nature. They take the difference between nature's machines and ours to be only that between great and small.<sup>213</sup>

Were the difference between nature and art cannot merely one of scale or degree, we would have to accept that a human is capable *in principle* of engineering an animal or natural machine. In view of his interest in the way that newly-developed microscopes allowed scientists to witness increasingly subtle portions of nature, Leibniz was well-aware of the inadequacy of Descartes'

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<sup>212</sup> WF 84.

<sup>213</sup> WF 15/GP.IV 481-2.

invocation of the limits of visibility.<sup>214</sup> Leibniz thus demands that the difference between nature and human art be made one of kind, not merely one of degree indexed to current limitations of our senses. To accomplish this, Leibniz argues that the difference between machines of nature produced by God and artificial machines made by humans is the difference between the infinite and the finite:

... it is only my system which shows the true, and immense distance there is between the least productions and mechanisms of divine wisdom and the greatest masterpieces produced by the skill of a limited mind – *a difference which is not merely one of degree, but one of kind. 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; sometimes extended, sometimes contracted and as it were concentrated, when we think that it is destroyed [Emphasis added].<sup>215</sup>

The infinite structure of the machine of nature means that all living bodies have both an infinite number of parts and that they are consequently indestructible by natural means. Only by virtue of rendering the structure of the machine of nature actually infinite, that is to say with a never-ending supply of organs, can we have a proper understanding of the living body.

Despite these criticisms, Leibniz does not simply reject the Cartesian thesis that animals are automata. Responding to Bayle in the early 1700s in a controversy about the hypothesis of preestablished-harmony, for instance, Leibniz claims that his system incorporates and extends the Cartesian automaton thesis: “in fact it is only an extension of its good parts, or of what is

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<sup>214</sup> In the *Système nouveau*, Leibniz specifically mentions important seventeenth-century microscopists including Jan Swammerdam, Marcelo Malpighi and Antoni van Leeuwenhoek. He claims that their research allowed him to realize that generation and death are merely *transformations* in the organic structure of the living body, not true beginnings and endings. Smith (*Divine Machines*, 165-196) examines the way that Leibniz's philosophical account of the preformation of bodies is informed by microscopy.

<sup>215</sup> WE 15-16/GP-IV 482.

solid and reliable in it”<sup>216</sup> The expansion consists in providing a deeper metaphysical foundation via the introduction of entelechies. Leibniz explains “it is not because of its strangeness that a philosopher should object to the theory of automata, but because of its lack of a foundation, since there must be *entelechies* everywhere.”<sup>217</sup> To conceive only human bodies as having substantial forms “is to have a very impoverished idea of the author of nature (who multiplies as far as he can, his *little worlds*, or *indivisible active mirrors*)... it is in fact impossible that they are not everywhere.”<sup>218</sup> Attributing souls and *entelechies* to animals has, in addition, the further advantage of recognizing God’s generosity. It would be unworthy of God to distribute perception only sparingly, reserving it for humans alone. In Leibniz’s response to Bayle, we can understand Leibniz’s view as preserving the mechanical intelligibility of the claim that the animal is an automaton while giving it further support by means of the postulation of souls *qua* entelechies undergirding the phenomena.<sup>219</sup>

Leibniz attributes the Cartesian error of depriving animals of sense and perception to a failure to distinguish between unconscious and conscious perceptions.<sup>220</sup> He writes in a well-known passage from the *Principes de la nature et de la grâce* (1714):

It is good to distinguish between *perception*, which is the internal state of the monad representing external things, and *apperception*, which is *consciousness*, or the reflective knowledge of this internal state, something not given to all souls, nor at all times to a given soul... Because they lack this distinction that the Cartesians have failed, disregarding the perceptions that we do not apperceive, in the same way that people

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<sup>216</sup> The text is known as the *Réponse de M. Leibniz aux reflexions continues dans la seconde édition du Dictionnaire Critique de M. Bayle, article Rorarius, sur le système de l’harmonie préétablie* and was originally published in volume 11 of the *Histoire critique de la République des lettres* in 1716. The present translation is from WF 110.

<sup>217</sup> WF 110

<sup>218</sup> WF 110. See also AG 169/GM.III 546-7.

<sup>219</sup> Chapter Five will examine Leibniz’s debates with Bayle regarding souls and the preestablished harmony in greater depth.

<sup>220</sup> In *PP* 1.9, Descartes writes the following concerning the nature of thought: “By the term ‘thought’, I understand everything which we are aware of as happening within us, in so far as we have awareness of it. Hence, *thinking* is to be identified here not merely with understanding, willing and imagining, but also with sensory awareness” (CSM.1 195/AT.VIII 7).

disregard imperceptible bodies. This is also what leads the same Cartesians to believe that only minds are monads, that there are no souls in beasts, still less other *principles of life*.<sup>221</sup>

For Leibniz, humans as well as animals have innumerable perceptions of which we are not aware. Moreover, Leibniz's working definition of perception in this period – that perception is the expression of the many in the one—is consistent with affirming the existence of perceptions of which we are not reflectively aware. Insofar as the living animal body behaves in such a way as to express what is taking place in the world outside of it, it is clear that the animal perceives the world.

From the standpoint of Leibniz's overall critique of Descartes, ascribing souls to animals has yet further advantages. Just as Leibniz's claim that God would prefer to multiply souls rather than reserve them for humans alone satisfies multiple systematic criteria—in this case, metaphysical plenitude and moral perfection—so too the thesis that animals have souls and sense satisfies multiple criteria. Above and beyond its metaphysical and moral advantages, Leibniz thinks his own theory accords better with common sense and with reason than Descartes's does. Coherence with common sense is in fact a theoretical virtue in Leibniz's eyes:

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<sup>221</sup> AG 208/GP.VI 599. This passage has received extensive treatment in recent literature as a statement of Leibniz's views on the nature of mentality and consciousness. There have been a number of recent studies on Leibniz's notion of consciousness. Simmons; Larry M. Jorgenson argues by means of Leibniz's principle of continuity that consciousness should not be understood as entailing second-order reflective states in Leibniz in "The Principle of Continuity and Leibniz's Theory of Consciousness," *Journal of the History of Philosophy* 47, no. 2 (2009): 223–48. Jorgenson also highlights the constitutive role of memory within conscious states according to Leibniz in "Leibniz on Memory and Consciousness," *British Journal for the History of Philosophy* 19, no. 5 (2011): 887–916. See also Christian Barth, "Leibnizian Conscientia and Its Cartesian Roots," *Studia Leibnitiana* 43, no. 2 (2011): 216–36. For a discussion of consciousness in the context of Leibniz's distinction between humans and animals, see Dominik Perler, "Graduelle oder Kategorialische Unterschiede? Leibniz über das Verhältnis von Tieren und Menschen," in *Leibniz Neu Denken, Studia Leibnitiana Sonderheft 38* Hrsg. Barke Erich, Rolf Wernstedt and Herbert Breger (Stuttgart: Franz Steiner Verlag, 2009), 75–96.

he claimed that the Cartesians placed too much stress on advancing radical or novel opinions.<sup>222</sup> Further, claiming that animals possess souls and are hence able to sense and perceive the world accords satisfies Leibniz's principle of continuity, which holds that natural phenomena exhibit continuous variation. For Leibniz, claiming that animals completely lack feeling institutes a radical difference between animals and human beings. Such a radical difference would represent an inexplicable leap within nature and is therefore incompatible with considerations of continuity. Leibniz thus places humans and animals on a continuum of capacities for perception, conceiving the difference between animals and humans by means of a deeper metaphysical continuity.<sup>223</sup> Ultimately, Leibniz regards Descartes' ontological differentiation as an inexplicable, i.e. arbitrary, differentiation.

Leibniz's conception of the relation between the soul and the body imposes important conditions on the nature of the soul. As we have seen, the soul functions as the ultimate explanatory principle of the mechanical dispositions of the organic body, and for each of the soul's perceptions there is a corresponding arrangement within the mechanical parts of the organic body. In other words, soul and body mutually express one another. This is precisely what he comes to call the preestablished harmony. Given the relationship of mutual expression and analogy between soul and body, it should come as no surprise that Leibniz extends the metaphor of the automaton to that of the soul. If the body is a mechanical automaton, and the soul expresses the body, why not say that the soul acts in the fashion of an automaton just like the body? Where Descartes rejected this analogy as inappropriately modeling the mind on

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<sup>222</sup> For these and related worries that Leibniz had about Descartes' philosophical style, see Mogens Lærke, "Ignorantia Inflat: Leibniz, Huet, and the Critique of the Cartesian Spirit," *The Leibniz Review* 23 (2013): 7–36.

<sup>223</sup> See Perler, "Graduelle oder Kategorialische Unterschiede?" Despite this metaphysical continuity between humans and animals, Leibniz does maintain that rational human beings have a more profound relation to God than animals.

mechanical dispositions, Leibniz models the mechanical motion of the automaton's parts in terms of the production of perceptions according to the soul's law-of-the-series. Where Descartes considered automata as mechanical bodies completely lacking souls, Leibniz thought that even mechanical motion required an ultimate explanation in terms of souls and forms.

### **3.2.b Leibniz on Reason and Freedom**

Leibniz defends his description of the soul as a spiritual automaton on grounds of free will.

Where Descartes held that the open-ended and spontaneous nature of our rationality and willing was incompatible with the nature of an automaton, Leibniz, by contrast, conceives our activity as following a pre-determined course of action. Leibniz maintains that such designed action is perfectly compatible with a rich notion of freedom. Leibniz elaborates his own view against the backdrop of Descartes's arguments against modeling the rational soul as an automaton. He responds clearly to the argument that that human speech provides evidence of an internal life that the sounds produced by animals does not; the argument that human reason allows us to behave in a variety ways impossible to pre-program in a machine; and the argument that only human free will appropriately explains error. Leibniz comments on Descartes's *Principia* and correspondence with Princess Elizabeth of Bohemia. After briefly pointing to passages outlining Leibniz's thoughts on the speech of animals and of the relation between design and behavior, I focus on Leibniz's direct criticism of Descartes's concept of freedom and show why Leibniz opts for an account of freedom in which free action is compatible with being an automaton.

Leibniz does agree with Descartes that only human beings have a true faculty of speech. Although beasts such as apes may have the organs requisite to produce utterances that sound like human speech, they do not endeavor to actually speak. As he writes via Theophile in the *New*

*Essays* regarding monkeys: “as regards organs, those of monkeys are apparently just as well adapted as ours for forming speech, yet they show not the slightest progress in this direction. Hence they must lack something invisible.”<sup>224</sup> Leibniz claims that even though monkeys have all of the requisite organs to produce speech, the sounds they do make are not indicative of the presence of reason.<sup>225</sup> But, for Leibniz, having reason is not a condition sine qua non of having a soul.

Leibniz’s exchanges with Pierre Bayle following the publication of the *Système nouveau* show clearly that Leibniz rejects any limits on God’s ability to construct complex machines. Bayle objected to Leibniz’s preestablished harmony with a thought experiment involving a ship that must navigate its way to port solely by virtue of the predetermined disposition of its parts. Bayle considered the difficulties insurmountable. Leibniz insists the task would pose little difficulty for God and could in principle be accomplished by even a finite mind:

...if he means a faculty of the ship which is explicable by mechanical rules, through a combination of internal agencies and external circumstances, and yet he still rejects the supposition as impossible, then I would ask him to give some reason for doing so. For although, as I shall show below, I have no need of the possibility of anything quite like the ship as M. Bayle appears to understand it, nevertheless I think that if we consider the thing thoroughly, far from there being any difficulty here with regard to God, it would appear that even a finite mind might be clever enough to bring it about.<sup>226</sup>

Just as Descartes’s distinction between nature and artifice had imposed needless limitations upon God, Descartes’s claim that reason is capable of responding to situations in a way barred to an

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<sup>224</sup> NE 274/GP.V 254.

<sup>225</sup> See Smith, *Divine Machines*, 260-262, 266-268.

<sup>226</sup> WF 108/GP.IV 555. Leibniz later recalls this point in the *Preface* to the *Essais de Théodicée*: Also [Bayle] was not yet disposed to believe that God, with all his power over Nature and with all the foreknowledge which he has of the contingencies that may arrive, could have so disposed things that by the laws of mechanics alone a vessel (for instance) should go to its port of destination without being steered during its passage by some intelligent guide. I was surprised to see that limits were placed on the power of God, without the adduction of any proof and without indication that there was any contradiction to be feared on the side of the object or any imperfection on God’s side (T65/GP.IV 41).

automaton underestimated God's capacities for design. In other words, God is certainly capable of designing a machine whose structure responds to the total set of circumstances in which it will find itself over the course of its history. Thus, a machine could produce activities indistinguishable from the sort of contextually sensitive activity Descartes ascribed to reason.

Leibniz also rejects Descartes's account of freedom and the will in *PP* I. As we saw above, Descartes attributes error to the will, claiming that we err when the will oversteps its bounds and affirms or denies something that the intellect insufficiently understands. This is possible because the will has the freedom of indifference and acts independently of determination by the intellect. Leibniz rejects Descartes's arguments for the freedom of indifference, arguing instead that determinations of the will follow from the intellect. Further, Leibniz argues that when we experience our will as indifferent, we are in fact failing to recognize the antecedent causes that work to shape our volition. These two claims will lead Leibniz to argue against Descartes in the *Essais de Théodicée* that the soul is a "spiritual automaton." In other words, Leibniz rejects of Descartes's view of freedom and replaces it with a theory of the soul as spiritual automaton that acts spontaneously in accord with its nature as determined by God.

Leibniz comments on Descartes's account of freedom in *PP* I in an unpublished 1692 commentary.<sup>227</sup> Here Leibniz denies that the will plays any independent epistemic role. In commenting on *PP* I.31 and I.35,<sup>228</sup> Leibniz instead elaborates a theory of knowledge and error

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<sup>227</sup> Leibniz composed this text in the hopes that it could be published. Though this did not happen, Leibniz did send it to prominent critics of Descartes, such as his friend Pierre-Daniel Huet.

<sup>228</sup> Descartes's Article 31 reads:

*Our errors, if considered in relation to God, are merely negations; if considered in relation to ourselves they are privations.* Yet although God is no deceiver, it often happens that we fall into error. In order to investigate the origin and cause of our errors and learn to guard against them, we should realize that they do not depend on our intellect so much as on our will. Moreover, errors are not things, requiring the real concurrence of God for their production. Considered in relation

that depends upon the activities of the intellect alone. Contra Descartes, Leibniz argues that error results not from the will overstepping its bounds but rather from the intellect's failure to attend properly to an object of perception or memory. The paradigm for error is the case of a mistaken calculation: we err when we fail to pay sufficient attention and carry out the procedure incorrectly. In this way, Leibniz claims that error does not stem from the will at all. The will only arises after the fact insofar as we act as a result of our judgment:

To give credence to what is true or false – the former being to know, the latter to err – is nothing but the consciousness or memory of certain perceptions or reasons and so does not depend upon will except insofar as we may be brought by some oblique device to the point where we seem to see what we wish to see, even when we are actually ignorant<sup>229</sup> ... Hence we make judgments not because we will but because something appears. And when it is said that will reaches further than intellect, this is more ingenious than true; to put it bluntly, it is a bit of popular ornamentation. We will only what appears to the intellect.<sup>230</sup>

Leibniz effectively denies the independence of the will with respect to the intellect. Rather, our voluntary actions arise will only on the basis of what the intellect perceives as true.

On this basis, Leibniz proceeds to define free will as the ability to will spontaneously in accord with a reason provided by the intellect. This definition effectively removes Descartes's distinction between humans' freely willed actions and the activities of an automaton. Leibniz

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to God they are merely negations, and considered in relations to ourselves they are privations (CSM.I 203-4/AT.IX 17).

Article 35 reads:

*The scope of the will is wider than that of the intellect, and this is the cause of error.* Moreover, the perception of the intellect extends only to the few objects presented to it, and is always extremely limited. The will, on the other hand, can in a certain sense be called infinite. The will, on the other hand, can in a certain sense be called infinite, since we observe without exception that its scope extends to anything that can possibly be an object of any other will – even the immeasurable will of God. So it is easy for us to extend our will beyond what we clearly perceive; and when we do this it is no wonder that we may happen to go wrong (CSM.I 204-5/AT.IX 18).

<sup>229</sup> Earlier in his commentary on *PP* 1.6, Leibniz had claimed that we do not will to perceive an object in a certain way, for instance to have something taste sweet as opposed to bitter. The will can affect what we perceive, however, insofar as we will to attend to certain reasons, as in focusing on the particular reasons that we want to believe. By these means, Leibniz suggests that we may come to believe, over time, what we want to believe. See L 384-5/GP.IV 356-7.

<sup>230</sup> L 387/GP.IV 361.

comments on Descartes's distinction between free will and deterministic design in *PP* I.37, arguing that freedom is compatible with acting according to a reason. Commenting on *PP* I.39, Leibniz specifically identifies free activity according to a reason with *voluntary* activity:

Article 37: The highest perfection of man consists not merely in that he acts freely but still more in that he acts with reason. Better, *these are both the same thing*, for the less anyone's use of reason is disturbed by the impulsion of the affections, the freer one is...  
Article 39: To ask whether our will is endowed with freedom is the same as to ask whether our will is endowed with will. *Free and voluntary signify the same thing*. For freedom is the same as spontaneity with reason, and to will is to be brought to act through a reason perceived by the intellect. But the purer this reason is, and the less mixed up it is with the impact of base and confused perceptions, the freer is the act [Emphasis added].<sup>231</sup>

For Leibniz, we act freely, that is to say voluntarily, when we act—spontaneously by means of our own nature—with an understanding of the reasons why such an action is desirable. The better we understand the reasons, that is to say the more distinctly we perceive them, the more free the activity. By contrast, we lack freedom insofar as we only perceive the reasons for our actions confusedly and hence act involuntarily. In the latter case, we experience a lack of control and feel ourselves to be the patient with respect to a set of external causes. Nevertheless, contra Descartes, Leibniz thinks our involuntary and non-free acts are spontaneous. Metaphysically speaking, both free and involuntary actions arise as a result of our nature alone.<sup>232</sup>

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<sup>231</sup> L 388-389/GP.IV 362-3.

<sup>232</sup> The gap between the metaphysical doctrine of the spontaneity of substances and the experience of ourselves as agents and patients leads Donald Rutherford to distinguish between what he calls “monadic” and “agent” forms of spontaneity in Leibniz. Monadic spontaneity corresponds to the metaphysical doctrine that all actions follow from the nature of a substance. Agent spontaneity, by contrast, corresponds to the question of whether we experience ourselves as an agent producing an effect as opposed to the passive recipient of external causes:

Leibniz's considered view, therefore, is that the notion of spontaneity must be understood in two distinct senses, corresponding to what I have called ‘monadic spontaneity’ and ‘agent spontaneity.’ The doctrine of monadic spontaneity articulates a basic metaphysical truth: any substance is self-determining in the production of all its own states. At the same time, Leibniz allows that, among those states, we can distinguish those in which a substance operates as an agent promoting change in the world, relative to its own perspective and that of other substances (including God), and those in which it operates as the passive recipient of the effects of external

At first glance, Leibniz's positive account of freedom here might appear to repeat Descartes's model of spontaneous assent to clear and distinct perceptions in the *Fourth Meditation* and *PP* I.43. Like Descartes, Leibniz seems to suggest that the more clearly and distinctly the intellect perceives the truth, the more spontaneously and freely the will assents to it.<sup>233</sup> Crucially, however, when Leibniz comments on *PP* I.43, 45 and 46, he rejects Descartes's standard of clear and distinct perception to achieve certainty. Thus, while Descartes had relied upon clear and distinct perception in arguing for spontaneous assent, Leibniz counters that Descartes's standards of certainty are arbitrary and lack sufficient formal justification. By contrast, Leibniz suggests that we only ought to accept what has been proved by means of a valid argument. This means that we should affirm judgments that are based on principles already demonstrated as well as arguments employing valid logical form:

I have elsewhere called attention to the fact that there is not much use in the celebrated rule that *only what is clear and distinct shall be approved*, unless better marks of clearness and distinctness are offered than those of Descartes. Preferable are the rules of Aristotle and the geometricians, namely, that with the exception of principles, that is, of first truths or hypotheses, we are to admit nothing unless proved by a valid argument [*nisi legitimo argumento probatum*].<sup>234</sup>

Leibniz suggests that valid arguments avoid material fallacies such as assuming something not derived from principles and possess a valid formal structure. As instances of valid formal

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causes, relative to its own perspective and that of other substances (including God) (Rutherford, *Leibniz on Spontaneity*, 160-1).

For Rutherford, our free, agent-spontaneous acts correspond to appetites that *represent* certain future states as good and hence desirable from their own perspective. The appetitions proper to monadic spontaneity lack this form of desire and rather produce change according to what God takes to be the best state of the universe. For an alternative account that claims all perceptions – even those that are confused – express desire for the good, see Bolton, “Change in the Monad.”

<sup>233</sup> Leibniz's identification of freedom and volition, and their mutual definition as spontaneity with a reason is also practically indistinguishable from Descartes's account of free will in the letter to Mesland. In that letter, Descartes claims “and at that point freedom, spontaneity and voluntariness are the same thing. It was in this sense that I wrote that I moved towards something all the more freely when there were more reasons driving me towards it” (CSMK 246/AT.IV 175). To my knowledge, Leibniz was not aware of the letter to Mesland.

<sup>234</sup> L 389/GP.IV 363.

structure, Leibniz cites common syllogistic form, arithmetical and algebraic demonstration, as well as more probabilistic forms of argumentation such as judicial processes. In this regard, Leibniz accepts a range of valid argumentative forms and maintains that legitimate judgments may be certain or probable. Leibniz's affirmation of probabilistic modes of reasoning suggests that he would to accept as legitimate certain free and spontaneous judgments made in the absence of complete demonstrative certainty.<sup>235</sup> Thus, a more considered analysis of Leibniz's account of the will and judgment in the 1692 commentary reveals that he thoroughly rejects Descartes's views in the *PP*.

Leibniz criticizes Descartes's account of freedom and the will in greater detail in the *Essais de Théodicée* published in 1710. Leibniz's *Theodicée* account builds on his earlier criticisms in the commentary of 1692 by introducing the notion of the spiritual automaton. In the earlier commentary on the *PP*, Leibniz removed the distinction between free will and deterministic design. Although the removal of this distinction opened up the door for a notion of spontaneous and free action on the model of the spiritual automaton, the latter term is absent from the commentary. To combat Cartesian indifference in the *Théodicée*, however, Leibniz explicitly characterizes human soul as a spiritual automaton whose actions are determined in advance.

In the *Essais de Théodicée*, Leibniz portrays the Cartesian freedom of indifference as both metaphysically impossible and practically undesirable. For instance, in the *Discours Préliminaire*, Leibniz discusses *PP* I.41. Considering the difficulties of reconciling our lived experience of free will with God's predetermination of what will happen, Leibniz asserts that

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<sup>235</sup> For a historically important account of Descartes and Leibniz that frames their divergence through their different standards of truth and philosophical truth, see Yvon Belaval, *Leibniz Critique de Descartes*, (Paris: Gallimard, 1960), 23-83. Belaval associates Descartes with *intuitionism* and Leibniz with *formalism*.

Descartes believed in a form of completely undetermined or indifferent form of freedom:

“Further, M. Descartes demands a form of freedom which is not needed, by his insistence that the actions of the will of man are altogether undetermined, a thing which never happens.”<sup>236</sup>

Why does Leibniz hold that the freedom of indifference is impossible? Further, what does he make of Descartes’s pivotal claim that we *experience* ourselves as possessing the freedom of indifference? Leibniz answers these questions using the concept of the spiritual automaton in ¶46-52 of the *Essai de la justice de Dieu, et de la liberté de l’homme, dans l’origine du mal*. Leibniz begins by acknowledging a qualified form of indifference in the sense that our actions are not absolutely or logically necessary. He denies, however, that we could ever be indifferent in the sense of not being disposed to one choice as opposed to another. For Leibniz, we cannot be indifferent in this sense because our perceptions result from innumerable movements taking place both inside and outside of our bodies. Since our will follows from our perceptions, these motions play a key role in providing motivating reasons for our will. Given the infinite complexity of the world and its motions, Leibniz argues that there will always be a motion disposing us to move in one way as opposed to another. He writes in ¶46:

There is therefore a freedom of contingency or, in a way, of indifference, provided that by 'indifference' is understood that nothing necessitates us to one course or the other; but there is never any *indifference of equipoise*, that is, where all is completely even on [149] both sides, without any inclination towards either. Innumerable great and small movements, internal and external, co-operate with us, for the most part unperceived by

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<sup>236</sup> T 112/GP.VI 89. Leibniz also characterizes the freedom of indifference as impossible and useless in the *Nouveaux essais* of 1704, this time in the context of rejecting Locke’s view of liberty. Leibniz’s representative Théophile responds to his Lockean interlocutor Philalethes’s claim that liberty is the power we have either to do or not do a particular action as follows:

If that were all that people meant by freedom when they ask if the will or choice is free, then the question would be truly absurd. But we shall soon see what they are really asking, and indeed I have already touched on it. It is true, but for another reason, that what they are asking for — many of them at least — is after all absurd and impossible: that is, an utterly imaginary and futile freedom of equilibrium, which would not be of use to them even if it were possible that they should have, i.e. could have the freedom to will contrary to all the impressions which may come from the understanding — which would destroy true liberty, and reason with it, and would bring us down below the beasts NE 180/GP.V 165.

us... All that we have just said agrees entirely also with the maxims of the philosophers, who teach that a cause cannot act without having a disposition towards action. It is this disposition which contains a predetermination, whether the doer have received it from without, or have had it in consequence of his own antecedent character.<sup>237</sup>

The upshot of Leibniz's argument is that we may be unaware of the reasons motivating us to act in particular ways, but our actions are nevertheless motivated by reasons. Although in many cases I am aware of why I want to carry out a certain activity, in many others I am not. This could be because I am not paying conscious attention to what I am doing with my body or because I am unaware of the almost indistinguishable motions motivating me to take a drink of water, for instance. In all of these cases, Leibniz insists that there nonetheless exist reasons for our actions in the states of the world as a whole.

For Leibniz, this metaphysical argument vacates Descartes's argument for the freedom of indifference from experience. Descartes claims that we experience the indifference of our will *clearly and distinctly* in *PP* 1.39 and *PP* 1.41. Leibniz replies that the fact that we *feel* that our will is indifferent does not mean that it actually *is* indifferent. Leibniz argues straightforwardly in ¶150 that we are determined by causes that we do not recognize:

Hence it is that the reason M. Descartes has advanced to prove the independence of our free actions, by what he terms an intense inward sensation, has no force. We cannot properly speaking be sensible of our independence, and we are not aware always of the causes, often imperceptible, whereon our resolution depends. It is as though the magnetic needle took pleasure in turning towards the north: for it would think that it was turning independently of any other cause, not being aware of the imperceptible movements of the magnetic matter.<sup>238</sup>

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<sup>237</sup> T 148-9/GP.VI 128. See also the passage at T 310/GP.VI 296-7:

I therefore admit indifference only in the one sense, implying the same as contingency, or non-necessity. But, as I have declared more than once, I do not admit an indifference of equipoise, and I do not think that one ever chooses when one is absolutely indifferent. Such a choice would be, as it were, mere chance, without determining reason, whether apparent or hidden. But such a chance, such an absolute and actual fortuity, is a chimera which never occurs in nature.

<sup>238</sup> T 150/GP.VI 130.

The fact that we may feel our will is free from determination does not mean that our will is in fact undetermined. In ¶51, Leibniz describes the way that our will is shaped, without our recognizing it, by a host of perceptions and thoughts. Here Leibniz echoes the earlier claim from his 1692 commentary on the *PP* that individual volitions are not the objects of free choice.

Instead, they result from a chain of antecedent reasons and passions:

As for *volition* itself, to say that it is an object of free will is incorrect. We will to act, strictly speaking, and we do not will to will; else we could still say that we will to have the will to will, and that would go on to infinity. Besides, we do not always follow the latest judgement of practical understanding when we resolve to will; but we always follow, in our willing, the result of all the inclinations that come from the direction both of reasons and passions, and this often happens without an express judgement of the understanding.<sup>239</sup>

Provocatively, this passage seems to suggest that our actions do not even follow from an explicit formulation of the will. Even if I explicitly judge it best to eat something healthy, I may nevertheless end up eating something that is bad for me. This would result from the totality of antecedent inclinations, habits and judgments I have made spontaneously over the course of my life. These unconscious perceptions can produce an appetite that trumps the explicit judgment of the understanding as to what is in my best interest.

Leibniz's critique of Descartes in these passages culminates in *T* ¶52's declaration that the soul is a type of spiritual automaton. According to Leibniz, God created this world after surveying all the possible worlds and choosing this one as the best. God knows all of our actions in advance because He has actualized the world exactly how it existed, *qua possible*, in His mind.<sup>240</sup> For Leibniz, however, our status as a spiritual automaton does not imply that our actions

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<sup>239</sup> *T* 151/GP.VI 130. For a reading of this passage in terms of Scholastic accounts of akrasia and moral necessitation, see Murray, "Spontaneity and Freedom in Leibniz," 204-205.

<sup>240</sup> Leibniz differentiates his own views from the Molinist tradition of middle knowledge by means of the theory of possible worlds. Molinism posits a so-called "middle knowledge" in God between the knowledge of possibles and that of actual events. This middle knowledge would allow God to know what someone would freely do under certain circumstances. God then dispenses grace accordingly. For

are not spontaneous, contingent, or free. Since the activities we carry out result from our nature, they are spontaneous. These spontaneous activities are contingent because God could have created a different possible world with a different set of substances and events. And, to the degree that we can reflect upon and understand why we choose certain actions, we are free:

All is therefore certain and determined beforehand in man, as everywhere else, and the human soul is a kind of *spiritual automaton*, although contingent actions in general and free action in particular are not on that account necessary with an absolute necessity, which would be truly incompatible with contingency... Since, moreover, God's decree consists solely in the resolution he forms, after having compared all possible worlds, to choose that one which is the best, and bring it into existence together with all that this

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Leibniz, the problem is there is nothing that could give God knowledge of such a contingent act other than God's knowledge of the very causes He had preordained leading up to such an act. In other words, the only way that God could know how someone would freely act is by virtue of the causes God used to determine how that person would act in advance. In other words, middle knowledge, just like the freedom of indifference, fails to actually explain anything:

A simple contingent and free act has nothing in itself to yield a principle of certainty, unless one look upon it as predetermined by the decrees of God, and by the causes that are dependent upon them. Consequently the difficulty existing in actual free actions will exist also in conditional free actions, that is to say, God will know them only under the condition of their causes and of his decrees, which are the first causes of things: and it will not be possible to separate such actions from those causes so as to know a contingent event in a way that is independent of the knowledge of its causes. Therefore all must of necessity be traced back to the predetermination of God's decrees, and this mediate knowledge (so it will be said) will offer no remedy (*T* 146/GP.VI 125).

By contrast, on Leibniz's theory of possible worlds, God can have separate knowledge of contingent future possibles *and* the actual series causes that he has preordained. He first knows all future contingent events and free actions by surveying all the possible world He could create, and then preordains the actual set of events by creating this world:

I resort to my principle of an infinitude of possible worlds, represented in the region of eternal verities, that is, in the object of the divine intelligence, where all conditional futurities must be comprised. For the case of the siege of Keilah forms part of a possible world, *which differs from ours only in all that is connected with this hypothesis*, and the idea of this possible world represents that which would happen in this case. Thus we have a principle for the certain knowledge of contingent futurities, whether they happen actually or must happen in a certain case. For in the region of the possibles they are represented as they are, namely, as free contingencies. Therefore neither the foreknowledge of contingent futurities nor the foundation for the certainty of this foreknowledge should cause us perplexity or seem to prejudice freedom. And though it were true and possible that contingent futurities consisting in free actions of reasonable creatures were entirely independent of the decrees of God and of external causes, there would [147] still be means of foreseeing them; for God would see them as they are in the region of the possibles, before he decrees to admit them into existence. (*T* 146-7/GP.VI 126).

For a recent account of Leibniz's account of freedom in relation to Molinism, see Greenberg, "Leibniz Against Molinism." Greenberg's account falls short, however, in distinguishing too sharply between the Leibnizian intellect and will and in not noting the way that Leibniz uses the theory of possible worlds to provide an alternative to the theory of middle knowledge.

world contains, by means of the all-powerful word *Fiat*, it is plain to see that this decree changes nothing in the constitution of things: God leaves them just as they were in the state of mere possibility, that is, changing nothing either in their essence or nature, or even in their accidents, which are represented perfectly already in the idea of this possible world.<sup>241</sup>

Leibniz sees the notion of the spiritual automaton as resolving the tension between our freedom and God's preordination. Having rejected Cartesian freedom of indifference as metaphysically untenable, Leibniz proposes a soul whose spontaneous and free actions follow from the nature that God knows prior to creation.<sup>242</sup> Where Descartes's emphasis on the freedom of indifference led him to differentiate the mind from an automaton, Leibniz's conception of spontaneous activity and freedom is fully compatible with the soul being a "spiritual automaton."

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<sup>241</sup> *T* 151/GP.VI 131.

<sup>242</sup> Leibniz also responds to Descartes's thought experiment of the Prince. Leibniz argues that God could willingly set up the conditions under which two men will quarrel provided that there is a further reason why this is for the best. In other words, Leibniz argues that God wills things such as sin on the condition that they contribute to the overall perfection of the world. In this, Leibniz claims that there is a key disanalogy between a prince and God. Whereas a prince would make the decision to allow the two to quarrel as a result of having to compromise in face of worldly conditions, God's decision would result from his perfection and ability to set up the total series of worldly events. Whereas the prince's acts result of limitation, God's arise from an unlimited perfection. As he writes in *T* ¶165:

M. Descartes' comparison is therefore not satisfactory; but it may be made so. One must make some change in the facts, inventing some reason to oblige the prince to cause or permit the two enemies to meet. They must, for instance, be together in the army or in other obligatory functions, a circumstance the prince himself cannot hinder without endangering his State... In this case, therefore, one may say that the prince does not will the duel: he knows of it, but he permits it notwithstanding, for he prefers permitting the sin of others to committing one himself. Thus this corrected comparison may serve, provided that one observe the difference between God and the prince. The prince is forced into this permission by his powerlessness; a more powerful monarch would have no need of all these considerations; but God, who has power to do all that is possible, only permits sin because it is absolutely impossible to anyone at all to do better. The prince's action is peradventure not free from sorrow and regret. This regret is due to his imperfection, of which he is sensible; therein lies displeasure. God is incapable of such a feeling and finds, moreover, no cause therefor; he is infinitely conscious of his own perfection, and it may even be said that the imperfection in creatures taken individually changes for him into perfection in relation to the whole, and that it is an added glory for the Creator. What more can one wish, when one possesses a boundless wisdom and when one is as powerful as one is wise; when one can do all and when one has the best? (*T* 226/GP.VI 208).

### III. Leibnizian Automata

As we have seen, Descartes employed the figure of the mechanical automaton as a model by which to understand living bodies and animals. Like self-moving machines, animals possess self-motion by means of the mechanical dispositions of their parts and not through any form of sense perception or knowledge. This feature of Descartes's mechanical physiology is of a piece with his general rejection of the obscure principles of the Scholastic tradition. However, Descartes pays a high price for his model of the animal-automaton. Not only does it strip animals of sense perception entirely, it simultaneously tacitly incorporates and explicitly disavows end-oriented explanation.

Descartes develops his account of human rationality and freedom in contrast with the living body of the mechanical automaton. Automata act according to their nature and carry out a predetermined set of operations. Descartes claims that human beings are not automata for two reasons. First, human reason allows us to make vocal utterances that are responsive to context. Second, we possess the so-called "freedom of indifference," meaning that our will does not simply follow the dictates of the intellect. Our volitions cannot be understood as a simple consequence of our nature and hence we are not automata.

Leibniz accepts, in a qualified way, the thesis that animals are automata. He agrees with Descartes that the operations of organized bodies can be understood in mechanical terms, but he rejects Descartes's denial of animal sensation and perception. For Leibniz, Descartes' denial not only contradicts received opinion, but it violates the rational principles by means of which Leibniz thinks God created the world. In line with his rehabilitation of substantial forms, then, Leibniz attributes sense and perception by means of a soul to animals. The animal soul is conceived, on analogy with the body, as an automaton designed by God that acts spontaneously

### Chapter Three: Leibniz and Descartes on Animals, Freedom, and Automata

according to its nature qua immaterial *entelechy*. Moreover, Leibniz's concept of freedom is consistent with the notion of an automaton since he views of freedom as compatible with acting spontaneously according to one's own nature. Thus, Leibniz maintains, *contra* Descartes, that "all is therefore certain and determined beforehand in man, as everywhere else, and the human soul is a kind of *spiritual automaton*..."<sup>243</sup>

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<sup>243</sup> T 151/GP.VI 131.

## Chapter Four

### The Soul as Spiritual Automaton in Leibniz and Spinoza

Leibniz was not alone in utilizing the notion of a self-moving mechanical automaton to illustrate the activities of the soul. Importantly, the image also appears in a passage from the *Tractatus de intellectus emendatione*, an early and unfinished work of Spinoza. Previous chapters have situated Leibniz's adoption of the notion of the soul as "spiritual automaton" within the context of his mature philosophy of nature as well as his reception of the mechanical philosophy of Hobbes and Descartes. In this chapter I examine the divergent ways Leibniz and Spinoza each formulate the spiritual automaton. Comparing the two philosophers on the topic of the spiritual automaton sheds light both on Leibniz's interpretation of Spinoza as well as on the general way that concepts from the mechanical philosophy informed the science of the mind within the seventeenth-century.

For each philosopher, the "spiritual automaton" provides an image of the nature and the workings of the soul. It exhibits their different conceptions of the soul and its relation to the body, and each thinker employs different conceptual features of the mechanical automaton in illuminating the nature of the soul. Spinoza emphasizes the spontaneous activity of the soul in producing true ideas of nature. When the soul acts as a spiritual automaton, it operates by means

of the laws of its nature to deduce true ideas of nature. Spinoza contrasts the “spiritual automaton” with a “mindless” automaton dominated by imaginative and confused ideas. This contrast between the “spiritual” and “mindless” automaton indicates that the “spiritual automaton” in Spinoza acts in a way that it is in full possession of its mental powers. The spiritual automaton thus represents the proper operation of the mind as it forges intellectual tools for itself in order to come closer to its highest good, namely, knowledge of the union of the mind with nature.<sup>244</sup> It therefore plays a crucial role within Spinoza’s ethical project in the *TIE*.

Leibniz emphasizes design in addition to spontaneity. As we have seen, Leibniz argues, by way of his theory of preestablished harmony, that God creates the soul such that it spontaneously produces its perceptions in harmony with all other created substances. The notion of design inherent within the notion of the mechanical automaton enables Leibniz’s claim that God creates the substances populating the world such that their activities unfold in harmony with one another. In Leibniz’s view, the workings of the soul as spiritual automaton extend even to the soul’s confused perceptions of the world. For Leibniz, the “spiritual automaton” relates chiefly to the soul’s metaphysical role in actively and spontaneously producing perceptions of the world. In sum, the two philosophers use the same image to very different ends.

The term “spiritual automaton” has received significant attention with regards to the role it plays in each philosopher individually.<sup>245</sup> Despite the rich and literature investigating what has

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<sup>244</sup> *TIE* ¶13/S 10-11

<sup>245</sup> For Spinoza, Wim Klever discusses the concept in terms of the philosophy of science in “Quasi Aliquod Automa Spirituale” in *Proceedings of the First International Congress on Spinoza: Spinoza Nel 350 Anniversario Della Nascita, Urbino 4-8 Ottobre 1982*, ed. E. Giancotti (Naples: Bibliopolis, 1985): 249–57. Deleuze, *Expressionism* emphasizes the spiritual automaton’s significance as a way to understand Spinoza’s view that our ideas express God’s intellect. Lia Levy, *L’automate spirituel: la naissance de la subjectivité modern d’après l’Ethique de Spinoza* (Assen, Pays-Bas: Van Gorcum, 2000) and Daniel Schneider, “A Spiritual Automaton: Spinoza, Reason, and the Letters to Blyenbergh” *Society and Politics* 7, no. 2 (November 14, 2013): 160–177 discuss the spiritual automaton in the context of Spinoza’s critique of philosophical skepticism. Syliane Malinowski-Charles argues that

been called the “*opposition complexe*” between Spinoza and Leibniz,<sup>246</sup> little has been done to show how their differing accounts of the “spiritual automaton” shed light on their overall philosophical differences.<sup>247</sup> This remains a pressing task given the tendency on the part of

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the spiritual automaton illuminates the passage from the second to the third kind of knowing in Spinoza in “The Circle of Adequate Knowledge: Notes on Reason and Intuition in Spinoza,” In *Oxford Studies in Early Modern Philosophy vol. 1*, ed. Steven M. Nadler and Daniel Garber (Oxford: Clarendon Press, 2003), 139-63. Most recently Eugene Marshall highlights the term to illustrate Spinoza’s theory of adequate knowledge in *The Spiritual Automaton: Spinoza’s Science of the Mind* (Oxford: Oxford University Press, 2013). Marshall does not examine the term in its context in the *TIE*, focusing instead on the theory of adequate ideas in the *Ethics*. For Leibniz, Serres compares Leibniz’s notion of the automaton with that of Descartes and highlights Leibniz’s interest in machines that carry out cognitive processes in *Le Système de Leibniz*, 490-511; Giglioni contrasts Leibniz’s concept of the spiritual automaton with Boyle’s views on automata in “Automata Compared,” 249-78. Hide Ishiguro suggests that the term is essentially opaque in “Unity Without Simplicity: Leibniz on Organisms,” *The Monist* 81, no. 4 (1998): 534–52. Roger Woolhouse reads the term in the context of Leibniz’s theory of preestablished harmony and critiques Descartes’s account of mind-body interaction in the *Passions of the Soul* in *Starting with Leibniz* (London, Continuum: 2010). Strickland claims that the image as used in ¶18 of the *Monadology* “perfectly captures [Leibniz’s] notion of self-sufficiency” (*Leibniz’s Monadology*, 73)

<sup>246</sup> Notable studies on the topic include Ludwig Stein, *Leibniz Und Spinoza: Ein Beitrag Zur Entwicklungsgeschichte Der Leibnizschen Philosophie* (Berlin: G. Reimer, 1890); Georges Friedmann, *Leibniz et Spinoza* (Paris: Gallimard, 1946); Alan Hart, “Leibniz on Spinoza’s Concept of Substance,” *Studia Leibnitiana* 14, no. 1 (1982): 73-86; Adams, *Leibniz*, 9-23; Mark Kulstad, “Exploring Middle Ground on the Question, Was Leibniz’s Conception of God Ever Spinozistic?” *American Catholic Philosophical Quarterly* 76 (2002): 671-690; Kulstad, “Metaphysics à Trois,” 221-240; Ursula Goldenbaum, “Why Shouldn’t Leibniz Have Studied Spinoza?” *The Leibniz Review* 17 (2007): 107–38 Lærke, *Leibniz Lecteur*; the essays in *Spinoza/Leibniz Rencontres, Controverses, Réceptions* ed. Raphaële Andrault, Mogens Lærke, and Pierre-Francois Moreau (Paris: Presses de l’Université Paris-Sorbonne, 2014). Goldenbaum, *Why Shouldn’t* and Lærke, *Leibniz Lecteur* are of particular help with regards to the historiographical question of how commentators have approached the relationship between Leibniz and Spinoza. The notion of an “*opposition complexe*” between the two philosophers comes from the title of Lærke, *Leibniz Lecteur*.

<sup>247</sup> Marshall, *The Spiritual Automaton* points out that Leibniz also employs the concept but does not analyze the Leibnizian version (4 n.9). Vittorio Morfino points out Leibniz’s contrast of his own concept with that of Spinoza, but does not provide an in-depth treatment of the topic in “Transparence ou opacité de la mémoire: la rencontre de Leibniz avec le Spinoza de Wachter,” in *Spinoza/Leibniz: Rencontres, controverses, réceptions*, ed. Raphaële Andrault, Mogens Lærke, and Pierre-Francois Moreau (Paris: Presses de l’Université Paris-Sorbonne, 2014), 271–301. Deleuze suggests that Spinoza and Leibniz’s shared employment of the term indicates that they share three fundamentally Anti-Cartesian theses regarding mentality and ideas:

"We have seen what are the three principal points established by Spinoza's theory of ideas: the representative content is but an appearance, determined by a deeper expressive content; the form of psychological consciousness is superficial in relation to true logical form; the spiritual automaton, manifested in the concatenation of ideas, is the unity of logical form and expressive content. Now, these three points are also Leibniz's principal theses. Whence his liking for Spinoza's term 'spiritual automaton...' All the differences between Leibniz and Spinoza take away

commentators to claim that Leibniz appreciated Spinoza's formulation and in fact borrowed the term from Spinoza.<sup>248</sup>

Whether Leibniz consciously appropriates the term from Spinoza or not, he comments on Spinoza's usage in the *TIE* on two occasions. The first is during his reading of Spinoza's *Opera Posthuma* in early 1678<sup>249</sup> and the second is in the 1709 text known as *Animadversiones ad Wachteri librum*.<sup>250</sup> Leibniz himself first uses the term in his own philosophical writing in the *Système nouveau* of 1695, at which time there is no evidence that Leibniz was consciously thinking of Spinoza. It does seem more plausible that he had Spinoza in mind when he employs the term in texts such as the *Essais de Théodicée*<sup>251</sup> of 1710 and *Monadology*<sup>252</sup> of 1714 given

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nothing from their agreement on these fundamental principles which, above all else, constitute the Anticartesian revolution" (Deleuze, *Expressionism*, 153).

Arthur (Leibniz, 183) suggests that Leibniz saw his version as differing from Spinoza insofar as the actions of the Leibnizian automaton do not take place of necessity.

<sup>248</sup> Deleuze suggests that Leibniz's likes Spinoza's term (*Expressionism*, 153). Recently Richard T.W. Arthur writes of Leibniz's reading of Spinoza's *Opera Posthuma*: "Although dismissive of Spinoza's identification of the mind with the idea of the body, Leibniz was very much taken with his conception of the mind or soul as a *spiritual automaton*" (Arthur, *Leibniz*, 112).

<sup>249</sup> For Leibniz's notes on Spinoza's *TIE* see A.VI.4 #336.2. He annotates the passage on the spiritual automaton at A.vi.4 1757-8.

<sup>250</sup> An English translation can be found as "Comments on Spinoza's Philosophy" at AG 272-281. The *Animadversiones* was first published with the title *Refutation inédite de Spinoza* by Foucher de Careil in 1862. For more on the nature and context of this work, including the interpretive pitfalls it presents, see Lærke, *Leibniz Lector*, 923-972. For an analysis of Leibniz's criticisms of Spinoza in the *Animadversiones*, see Morfino, *Transparence*.

<sup>251</sup> Leibniz uses the term on two occasions in the *Essais de Théodicée*. The first is at *T* ¶52 in relation to freedom: "All is therefore certain and determined beforehand in man, as everywhere else, and the human soul is a kind of *spiritual automaton*, although contingent actions in general and free action in particular are not on that account necessary with an absolute necessity, which would be truly incompatible with contingency. Thus neither futurities in itself, certain as it is, nor the infallible prevision of God, nor the predetermination either of causes or of God's decrees destroys this contingency and this freedom." The second is at *T* ¶403 and illustrates the nature of our will, the way that the world is preformed by God and the preestablished harmony between soul and body: "The foetus forms itself in the animal, and a thousand other wonders of nature are produced by a certain *instinct* that God has placed there, that is by virtue of *divine preformation*, which has made these admirable automata, adapted to produce mechanically such beautiful effects. Even so it is easy to believe that the soul is a spiritual automaton still more admirable, and that it is through divine preformation that it produces these beautiful ideas, wherein our will has no part and to which our art cannot attain." In *Monadology* ¶18, Leibniz uses the image of an incorporeal automaton to illustrate the soul's spontaneity: "One can call all simple substances or created

that they were both composed after the 1709 commentary in the *Animadeversiones*. Even if Leibniz had Spinoza in mind in those texts, however, the passages contain no explicit reference to the Dutch philosopher and it is clear that Leibniz conceives of the concept in different terms than Spinoza.<sup>253</sup>

I first I examine Spinoza's employment of the term "spiritual automaton" in the *TIE*. Although the *TIE* was unfinished and Spinoza's thought undergoes considerable subsequent development, we can nonetheless extract an interpretation of the meaning of the "spiritual automaton" immanent to the text of the *TIE* based on *TIE* ¶48, where Spinoza likens skeptics to mindless automata.<sup>254</sup> The latter's knowledge is overly determined by imaginative and confused ideas arising from chance bodily encounters. By contrast, when the soul operates as a "spiritual automaton," it deduces true ideas of nature from a given true idea. Spinoza thus distinguishes between the active productivity of the intellect and the passive receptivity of the imagination,

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monads entelechies, for they have in themselves a certain perfection; they have a sufficiency that make them the sources of their internal actions, and, so to speak, incorporeal automata" (AG 215).

<sup>252</sup> "One can call all simple substances or created monads entelechies, for they have in themselves a certain perfection; they have a sufficiency that make them the sources of their internal actions, and, so to speak, incorporeal automata" (AG 215/GP.VI 609-610).

<sup>253</sup> Friedmann's conclusion in *Leibniz et Spinoza* that Leibniz's employment of the term is more the result of Leibniz's syncretic tendency to appropriate useful tools from competing philosophical theories and less evidence of a direct theoretical influence seems reasonable:

On saisit là, sur le vif, le genre d'emprunts formels que le syncrétisme leibnizien est capable d'effectuer. Une expression lui plait: c'est-a-dire qu'elle lui semble capable de servir son système, en l'enrichissant d'une image heureuse. Il en 'profite', la fait sienne, l'intègre dans un monde de pensées tout différent de celui où elle se logeait chez son créateur. Il serait parfaitement vain de chercher sous une opération de ce genre une influence doctrinale (Friedmann *Leibniz et Spinoza*, 199-200; "One grasps there, on the spot, the type of formal borrowing that the Leibnizian syncretism is capable of effectuating. An expression pleases him: that is to say that it appears to him to be capable of serving his system, enriching it by means of an excellent image. He thereby profits, makes it his own, integrates it into a world of thought completely different from that in which it was lodged by its creator. Searching for a form of doctrinal influence in an operation of this type would be completely in vain" [translation mine]).

Friedmann addresses the question of whether or not Leibniz was influenced by Spinoza's usage of the term. He concludes that, given the different ways according to which both philosophers conceive of the "spiritual automaton" that there is no evidence of an "influence doctrinale" (Friedmann, *Leibniz et Spinoza*, 200).

<sup>254</sup> S 22.

## Chapter Four: The Soul as Spiritual Automaton in Leibniz and Spinoza

associating the “spiritual automaton” with the former. Spinoza’s contrast emphasizes two divergent senses of the mechanical automaton: on the one hand, spontaneous self-motion, and on the other hand, mindless activity. Though Spinoza does not utilize the image of the automaton in the later *Ethics*, its role in the *TIE* overlaps with the theory of adequate ideas in the second book of the *Ethics*.<sup>255</sup> Akin to how the adequate ideas of the *Ethics* give us tools to produce further true ideas of Nature, the spiritual automaton of the *TIE* designates a particular mode of functioning of the soul, namely a rational one in which it follows, according to a deductive demonstrative order, a chain of reasoning beginning from true ideas and definitions.

I then analyze the “spiritual automaton” in Leibniz by examining his comments on Spinoza’s use of the term, first in his comments on Spinoza’s *Opera Posthuma* in 1678 and second in his *Animadversiones ad Wachteri Librum* of 1709. For Leibniz, the soul is responsible for the unity and activity of a substance. Its actions and are designed by God in advance. Instead of the soul itself *being* an idea as in Spinoza, the Leibnizian soul *has* ideas. In the *Animadversiones*, Leibniz develops, against Spinoza, the notion of the spiritual automaton as spontaneously producing all of its perceptions independently from all external influence. Although Leibniz admits several senses according to which a soul can be passive, as when we are able understand something that happens in it more easily through external causes or reasons, or when discussing the way that certain thoughts arise involuntarily,<sup>256</sup> it is nevertheless the case that the soul is fundamentally responsible for its perceptions.

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<sup>255</sup> See Marshall, *The Spiritual Automaton* for an interpretation that connects Spinoza’s theory of adequate ideas with the image of the “spiritual automaton.”

<sup>256</sup> Leibniz’s conception of involuntary thoughts or perceptions will be a major theme in Chapter Five. As an example, Leibniz writes, through his representative Theophile in the *New Essays*:

“A further point: involuntary thoughts come to us partly from without, through objects affecting our senses, and partly from within, as a result of the (often undetectable) traces left behind by earlier perceptions, which continue to operate and mingle with new ones. We are passive in this respect; and even when we are awake we are visited by images — which I take to

#### 4.1 The Spiritual Automaton in the *Tractatus de intellectus emendatione*

The spiritual automaton plays a role within the ethical project of Spinoza's TIE by providing a model of the mind according to which the human can attain its highest good, namely knowledge of the union of the mind with nature. Spinoza uses the concept of the spiritual automaton to express the nature of the soul insofar as the intellect produces true ideas and acts in ways conducive to the attainment of that good. He contrasts this with a type of "mindless automaton" that is overly determined by confused ideas stemming from contingent bodily encounters. The spiritual automaton is not a model for the nature of the soul in general, but rather the nature of the soul if and when it operates successfully to reproduce the order of nature by means of the laws of intellection. The spiritual automaton thus serves methodological and ethical goals for Spinoza: it represents the mind when it successfully produces knowledge of nature, thereby attaining the mind's highest good.

The *TIE* begins with an autobiographical account of Spinoza's decision to seek the true good. Spinoza reports that he has decided to reject wealth, sensual pleasure and fame as merely limited forms of good. Instead, he affirms that the true good is "knowledge of the union that the mind has with the whole of nature."<sup>257</sup> He suggests that this is the only type of good that can provide stable and lasting happiness, especially when one is able to work towards it in the company of other like-minded individuals.

With the objective of securing knowledge of the mind's union with nature in place, Spinoza proceeds to outline the method by means of which he thinks we can achieve such

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include representations not only of shapes but also of sounds and other sensible qualities — which come to us unbidden, as in dreams. In German they are called *fliegende Gedanken*, meaning 'flying thoughts'; they are not within our power, and they are sometimes full of irrationalities which provide upright people with moments of moral unease, and provide much work for casuists and directors of consciences" (NE 177).

<sup>257</sup> *TIE* ¶13/S 11.

knowledge. The goal is to guide the intellect in the production of tools for the understanding of nature by means of clear and distinct ideas. Spinoza introduces the notion of the spiritual automaton at the conclusion of his account of the first part of the method, namely the way to distinguishing true from false ideas.<sup>258</sup>

In order to distinguish true and false ideas Spinoza insists that we seek criteria for true ideas within the ideas themselves. He opposes an approach which would seek certainty in identifying, by means of another idea, why the idea in question is true. According to Spinoza, this approach fails to recognize that an idea and its object are two distinct entities and that consequently the idea itself can be taken as the object of a further idea. Spinoza reasons that because we can take the idea as the object of a further idea, the requirement for reflexive knowledge would lead to an infinite regress, thus making certainty unachievable. On this model, in order to truly know when we are in possession of a true idea, we would have to have an idea of the idea, then an idea of the idea of the idea, and so on. By contrast Spinoza claims that certainty is a feeling immanent to a true idea itself.

From this it is clear that certainty is nothing but the objective essence itself, i.e., the mode by which we are aware of the formal essence is certainty itself. And from this, again, it is clear that, for the certainty of the truth, no other sign is needed than having a true idea. For as we have shown, in order for me to know, it is not necessary to know that I know. From which, once more, it is clear that no one can know what the highest certainty is unless he has an adequate idea or objective essence of some thing. For certainty and an objective essence are the same thing.”<sup>259</sup>

According to Spinoza, then, a true idea is its own sign and our certainty simply is the possession of the true idea itself.

One could be forgiven for being suspicious regarding Spinoza’s claim that a true idea provides its own certainty. Indeed, it is precisely the realization that one’s naive and immature

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<sup>258</sup> *TIE* ¶49/S 22-23.

<sup>259</sup> *TIE* ¶35/S 18.

certainties can turn out to be false that motivated Descartes's own attempt to determine what could guarantee the veracity of our ideas.<sup>260</sup> Spinoza explicitly rejects such skepticism, however, insisting both that we have a true idea,<sup>261</sup> and that we can use it as a guide to investigate nature in a way that would dissolve all skeptical worries. Spinoza invites those who might remain skeptical of his non-Cartesian method to follow his reasoning. He is confident that the properly ordered investigation of nature will show detractors *that* we possess a true idea of Nature:

If, by chance, someone should ask why I did [not] immediately, before anything else, display the truths of Nature in that order — for does not the truth make itself manifest? — I reply to him [...] and at the same time I warn him not to try to reject these things as false because of Paradoxes that occur here and there; he should first deign to consider the order in which we prove them, and then he will become certain that we have reached the truth; and this was the reason why I have put these things first.<sup>262</sup>

If one begins with the true idea of God or Nature one will not experience the type of skeptical doubt related by philosophers such as Descartes.

In order to distinguish between true and false ideas, Spinoza reflects on the *sources* of our ideas. He distinguishes four possible sources: reports or things heard, sensory experience, inferences from the nature of one thing to another and deductions that follow immediately from the essence of a thing.<sup>263</sup> The first two arise from encounters with external bodies whereas the latter two arise from the powers of the intellect. Spinoza argues that in order for the mind to have true ideas, that is ideas that it perceives clearly and distinctly, it must not derive them from the first two sources, both of which result fortuitous or chance encounters with bodies in the

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<sup>260</sup> For instance, consider how Descartes opens the *First Meditation*: “Some years ago I was struck by the large number of falsehoods that I had accepted as true in my childhood, and by the highly doubtful nature of the whole edifice that I had subsequently based on them. I realized that it was necessary, once in the course of my life, to demolish everything completely and start again right from the foundations if I wanted to establish anything at all in the sciences that was stable and likely to last.” CSM-II 11.

<sup>261</sup> “A true idea (for we have a true idea) is something different from its object” (*TIE* ¶33/S 17).

<sup>262</sup> *TIE* ¶46/S 21-22.

<sup>263</sup> He gives this list at *TIE* ¶19/S 12-13.

surrounding environment. These perceptions are the source of much of what is useful in life but they can also give rise to false ideas. This is because the impressions they provide do not supply us with a clear and distinct knowledge of their cause:

In this way, then, we have distinguished between a true idea and other perceptions, and shown that the fictitious, the false, and the other ideas have their origin in the imagination, i.e., in certain sensations that are fortuitous, and (as it were) disconnected; since they do not arise from the very power of the mind, but from external causes, as the body (whether waking or dreaming) receives various motions...<sup>264</sup>

Thus, the key to the first part of the method is, for Spinoza, the recognition that the impressions of the world we receive through the imagination are the source of false ideas and that true ideas arise from the intellect's own powers. True ideas arise by virtue of deducing the consequences from given clear and distinct ideas in the mind.<sup>265</sup> The upshot of the distinction between false ideas stemming from the imagination and true ideas generated by the intellect is that, by means of the true ideas, the intellect is able to bear, objectively, the formal character of nature

“The aim, then, is to have clear and distinct ideas, i.e., such as have been made from the pure mind, and not from fortuitous motions of the body. And then, so that all ideas may be led back to one, we shall strive to connect and order them so that our mind, as far as possible, reproduces [referat] objectively the formal character of nature, both as to the whole and as to the parts”<sup>266</sup>

Spinoza illustrates his distinction between the imagination and the intellect by means of contrasting types of automata. First, Spinoza discusses skeptics who insist that we lack a true idea of nature. He writes: “If so, then either he will speak contrary to his own consciousness, or we shall confess that there are men whose minds also are completely blinded, either from birth, or from prejudices, i.e., because of some external chance [*aliquo externo casu*]. For they are not

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<sup>264</sup> *TIE* ¶84/S 36-7.

<sup>265</sup> Strictly speaking, Spinoza claims that the knowledge we gain by means of the third source, though true, is inadequate. We cannot err by its means but neither can we gain the desired knowledge of the mind's union with nature: “Concerning the third, on the other hand, we can, in a sense, say that we have an idea of the thing, and that we can also make inferences without danger of error. But still, it will not through itself be the means of our reaching our perfection.” *TIE* ¶28/S 16.

<sup>266</sup> *TIE* ¶91/S 38.

even aware of themselves.”<sup>267</sup> For Spinoza, this form of skepticism is the result of a mind dominated by ideas from the first two sources. Such minds lack clear and distinct knowledge of what causes their ideas and consequently their various movements. Importantly for our purposes, Spinoza likens such skeptics to “automata, completely lacking a mind,”<sup>268</sup> playing on the notion of a machine that moves itself without thought or volition. This type of skeptic is dominated by its imaginative encounters with external bodies and hence moves itself without understanding the true causes of its various motions.

Spinoza does not invoke the term automaton to claim that the skeptic lacks any sort of internal life or consciousness.<sup>269</sup> They do in fact have an internal life, only one that is characterized, according to Spinoza, by excessive number of imaginative ideas. What is characteristic of the skeptic is a lack of adequate *self-knowledge*, as evidenced by Spinoza’s claim that they either speak contrary to their own consciousness or are completely blinded by prejudice. It is instructive to compare this passage with the Scholium to EIIP29. There Spinoza claims that to the degree that we are determined externally by fortuitous encounters, we only have a confused knowledge of ourselves and our bodies.<sup>270</sup> This is because imaginative ideas do not provide clear and distinct knowledge of their causes and, for Spinoza, knowledge in general

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<sup>267</sup> *TIE* ¶47/S 22.

<sup>268</sup> *TIE* ¶48/S 22.

<sup>269</sup> In this way his usage differs from that of Descartes in the *Second Meditation*. For Descartes, self-moving machines could serve as images of counterfeit human beings insofar as they are capable of mimicking the external motions of our bodies even as they lack our internal mental life. For instance, Descartes writes in the *Second Meditation*: “But then if I look out of the window and see men crossing the square, as I just happen to have done, I normally say that I see the men themselves, just as I say that I see the wax. Yet do I see any more than hats and coats which could conceal automatons? I *judge* that they are men” (CSM.II 21/AT.VII 32).

<sup>270</sup> “I say expressly that the Mind has, not an adequate, but only a confused knowledge, or itself, of its own Body, and of external bodies, so long as it perceives things from the common order of nature, i.e., so long as it is determined externally, from fortuitous encounters with things, to regard this or that, and not so long as it is determined internally, from the fact that it regards a number of things at once, to understand their agreements, differences and oppositions” (EIIP29Schol.).

entails knowing the cause.<sup>271</sup> Thus, to the degree that the skeptic-automaton acts mindlessly, it is because they are determined to act by external causes in such a way that they fail to adequately understand what is causing them to act. In this way, the skeptic is mindless: her actions are dictated by contingent bodily encounters and not mindfully by means of a self-knowledge of the causes of her own nature.<sup>272</sup>

Spinoza introduces an alternative form of automaton in explaining what happens when the intellect deduces true ideas by means of its own power. To the degree that we are able to correct or emend the influence of imaginative ideas and produce true ideas by means of the power of the intellect, we do so as what Spinoza refers to as a “spiritual automaton.” In this case, the automaton is “spiritual” rather than “completely lacking a mind” because it determines itself by the laws of the intellect, and is not externally determined by contingent encounters. This allows it to act as an automaton in the sense of acting spontaneously by virtue of its own powers and according to its own laws. Thus, when the soul functions as a spiritual automaton, it does not act in a mindless fashion, but rather moves itself spontaneously as a thinking thing possessing a clear and distinct idea of its own causes as a part of nature.

The claim that when we act this way we do so as spiritual automaton depends on three commitments regarding true ideas. First, Spinoza argues that *simple* ideas are necessarily true. For Spinoza in the *TIE*, truth is not determined by the external correspondence of a thought with an object in the world. Rather, truth pertains to the intrinsic form of an idea as produced by the

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<sup>271</sup> As we will see, Spinoza makes this point when formulating the concept of the spiritual automaton in *TIE* ¶85/S 37. Spinoza also makes this point regarding definitions at *TIE* ¶96/S 39-40.

<sup>272</sup> On this interpretation, Spinoza’s invocation of “mindless automata” has much in common with Pascal’s claim in the *Pensées* that we are more automaton than intellect. See Blaise Pascal, *Pensées*, ed. and trans. Roger Ariew (Indianapolis: Hackett, 2004), 202. Pascal’s point is that our bodily behavior and comportment is more constitutive of what we think than rational argumentation about, e.g. the existence of God. Spinoza and Pascal differ, however, in that Spinoza is confident about mind’s ability to access truth by means of its rational powers, thereby correcting or emending the influence of external bodily encounters.

intellect. An idea is true provided we only affirm of a thing that which belongs to its concept. In other words, I may have a true idea of a unicorn even though no such creature exists in the world provided I think only of a horse with one horn.<sup>273</sup> If an idea is simple, it has nothing extraneous added to it and hence cannot be false:

So falsity consists only in this: that something is affirmed of a thing that is not contained in the concept we have formed of the thing, as motion or rest of the semicircle. From this it follows that simple thoughts cannot but be true... Whatever they contain of affirmation matches their concept, and does not extend itself beyond [the concept]. So we may form simple ideas at will, without fear of error.<sup>274</sup>

Second, a true idea represents the causal genesis of its object, showing how it arises within nature. Thus, Spinoza claims in the context of a discussion of proper definition in the second part of the method, that the true definition of a circle explains its essence by defining a circle as follows: “it is the figure that is described by any line of which one end is fixed and the other movable.”<sup>275</sup> Third, a true idea recreates within the mind the formal nature of its object. What this means is that ideas interact with other ideas in the same way as their objects interact in reality:

Moreover, the idea is objectively in the same way as its object is really... those things that do interact with other things (as everything that exists in Nature does) will be understood, and their objective essence will also have the same interaction, i.e., other ideas will be deduced from them, and these again will interact with other ideas...<sup>276</sup>

Together, Spinoza claims that these characteristics allow the mind to successfully bear or reproduce the order of nature. If we are able to develop simple ideas that represent the genesis of

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<sup>273</sup> For more on Spinoza’s early views on truth, see *Cogitata Metaphysica* 1.6 (in *The Collected Works of Spinoza*, ed. Edwin Curley [Princeton, Princeton University Press, 1985], 299-346). Here Spinoza insists that truth is found in true ideas and should only be attributed to things metaphorically. He writes of the conception of truth employed by philosophers: “So an idea is called true when it shows us the thing as it is in itself, and false when it shows us the thing otherwise than it really is” (S312). Regarding the properties of a true idea, Spinoza claims the following: “(1) that it is clear and distinct, and (2) that it removes all doubt, *or* in a word, that it is certain” (S313). Thanks to Julie R. Klein for bringing this passage to my attention.

<sup>274</sup> *TIE* ¶72/S 32.

<sup>275</sup> *TIE* ¶96/S 40.

<sup>276</sup> *TIE* ¶41/S 20.

their objects, Spinoza thinks that we thereby recreate the formal reality of nature within our minds objectively and without interference from the confused ideas of the imagination:

We have shown that a true idea is simple, or composed of simple ideas; that it shows how and why something is, or has been done; and that its objective effects proceed in the soul according to the formal nature of its object. This is the same as what the ancients said, i.e., that true knowledge proceeds from cause to effect — except that so far as I know they never conceived the soul (as we do here) as acting according to certain laws, like a spiritual automaton...<sup>277</sup>

Spinoza thus characterizes our different ways of using the intellect manners of knowing by means of divergent senses of automaton. In the first, Spinoza employs the image of an automaton in the sense of a being that moves and acts without thought. This amounts to a critique of the skeptic-automaton who is moved by external encounters and the imagination rather than by adequate self-knowledge of the intellectual operations of the mind. In the second, Spinoza relies on the sense of automaton as a being that moves itself spontaneously or as a result of its own nature. For Spinoza, this form of self-motion requires self-understanding: to move oneself according to the laws of one's nature, one must have knowledge of one's determining causes. From there one can act to bear objectively in one's mind the formal character of nature. Thus, within the framework of the *TIE*, these two particular senses of "automaton" as on the one hand mindless and on the other hand spontaneous are mutually exclusive. For Spinoza in the *TIE*, being an automaton completely lacking a mind implies subjugation to external encounters whereas acting as a spiritual automaton entails spontaneity and internal self-determination according to the laws of the intellect.

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<sup>277</sup> *TIE* ¶85/S 37.

## 4.2 Leibniz's Reading of Spinoza on the Spiritual Automaton

Leibniz comments on Spinoza's spiritual automaton in marginal notes taken while reading Spinoza's *Opera Posthuma* in 1678 and later in the *Animadversiones ad Wachteri librum*, a 1709 commentary and critique of Johann Georg Wachter's *Elucidarius Cabalisticus sive Reconditae Hebraeorum Philosophiae brevis & succincta recensio* (1706).<sup>278</sup> Wachter argued that Spinoza's philosophy reflected Jewish Cabalism and sought to defend both against the charge of pantheism.<sup>279</sup> Leibniz's commentary, unpublished in his lifetime,<sup>280</sup> suggests that Spinoza perverted the Cabala, which itself, properly understood, was compatible with Christianity and true religion.<sup>281</sup> An examination of these two passages reveals that Leibniz explicitly conceived the nature of the spiritual automaton in different terms than Spinoza. Leibniz argues that all of the soul's perceptions – from those that are confused or arise “mindlessly” to those that happen freely – arise spontaneously as a result of the soul's nature as a spiritual automaton. These differences reflect the mature Leibniz's broader view of nature as the “workmanship of God” created and designed by God to the smallest detail.

### 4.2.a Leibniz and Spinoza's *Opera Posthuma*

Leibniz first read the *TIE* at the beginning of 1678, just after it was published in Spinoza's *Opera Posthuma*. By the time Leibniz read the *Opera Posthuma* he was already acquainted with a

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<sup>278</sup> Although published in 1706, according to Lærke, the work was circulated in 1702-3. See Lærke, *Leibniz Lector*, 938

<sup>279</sup> Interestingly, the position Wachter takes in the *Elucidarius* is at odds with his earlier *Spinozismus im Juedenthumb* of 1699. In the earlier book, Wachter had argued that both Spinoza as well as the Cabalism from which Wachter claimed Spinoza's philosophy derived were pantheistic.

<sup>280</sup> The *Animadversiones* was first published as *Réfutation Inédite de Spinoza* by Alexandre Foucher de Careil in 1854 (Paris: 1854).

<sup>281</sup> Leibniz was well-connected to the tradition of Christian Kabbalism, which sought to incorporate Jewish and Christian thought, often for the sake of alchemical ends. Leibniz counted important representatives of the Christian Kabbalist tradition including Christian Knorr von Rosenroth and Francis Mercury van Helmont among his friends and correspondents. For more on the relation between Leibniz and Cabalism (Christian and otherwise), see Allison Coudert, *Leibniz and the Kabbalah* (Dordrecht: Kluwer, 1995); Lærke, *Leibniz Lector*, 923-972.

number of Spinoza's ideas. Leibniz first learned of Spinoza as a radical Cartesian and author of a commentary on Descartes' *PP*.<sup>282</sup> Leibniz also read the infamous *Tractatus Theologico-Politicus* at least twice by the early 1670s.<sup>283</sup> Moreover, Leibniz had corresponded with Spinoza himself, discussed the Spinoza's philosophy with members of the Spinoza circle,<sup>284</sup> and indeed met the Dutch philosopher in the flesh in late 1676.<sup>285</sup> The young Leibniz was therefore quite interested in understanding Spinoza's philosophical work and influence.<sup>286</sup> As Leibniz writes to Tschirnhaus in May of 1678, however, he indicates that he was disappointed with the *TIE* itself.<sup>287</sup>

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<sup>282</sup> For instance, Spinoza appears on the list of Cartesian philosophers that Leibniz compiled in his April 20/30 1669 to his teacher Jacob Thomasius (L94). According to Lærke, it is unclear when Leibniz in fact read Spinoza's commentary. Though Lærke claims Leibniz likely had access to a copy between 1669 and 1671, he suggest that Leibniz may not have read it prior to 1677. See Lærke, *Leibniz Lecteur*, 76-78.

<sup>283</sup> For an account of Leibniz's interest in and multiple readings of the *TTP* see Lærke, *Leibniz Lecteur*, 91-357.

<sup>284</sup> Kulstad ("*Metaphysics à Trois*") argues that not only did Leibniz experiment with certain Spinozistic views in 1676 at the tail-end of the his stay in Paris, but that his views of Spinoza were marked by those of their mutual friend Ehrenfried Walther von Tschirnhaus. Letters 82 and 83 of Spinoza's works feature brief exchange between Tschirnhaus and Spinoza outlining the former's worries regarding Spinoza's concept of extension. See SL 353-356.

<sup>285</sup> For a thorough accounting of Leibniz's engagement with Spinoza's work, including in the 1670s, see Lærke, *Leibniz Lecteur*.

<sup>286</sup> Spinoza's friend Schuller writes to Leibniz in January 1678 (A.iii.1 314) that a copy of the newly published *Opera Posthuma* is en route to him in Hannover. By mid-February, Leibniz had written to both Justel (A.ii.1 592) Placcius (A.ii.1 593) regarding claims made by Spinoza in the *Ethics*.

<sup>287</sup> "You will have learned that the posthumous works of Spinoza have appeared. There is among them a fragment On the Improvement of the Intellect, but he stopped just where I most expected something" (L 194/GM.IV 461). For a general accounting of Leibniz's reading of the *TIE* in 1678, see Mogens Lærke "Leibniz on Spinoza's *Tractatus de Intellectus Emendatione*," in *The Young Spinoza: A Metaphysician in the Making*, ed. Yitzhak Y. Melamed (Oxford: Oxford University Press, 2014), 106–20. On the basis of Leibniz's marginal notes, Lærke argues that Leibniz read the *TIE* after the *Ethics* (thus not in the order that Spinoza composed the two works) and hoped that the *TIE* could provide illumination regarding Spinoza's views of thought and the divine intellect. Lærke concludes that Leibniz's reading of the *TIE* was less than helpful in this regard and compounded Leibniz's mistaken impression that Spinoza wanted to assimilate the divine intellect to Neo-platonic accounts of the Aristotelian agent intellect:

The story about Leibniz's reading of the *TIE* is in many respects a sad one. It yields nothing but confusion and disappointment: Spinoza's confusion about his own position in this early text; Leibniz's confusion about Spinoza's position and his disappointment when the *TIE* breaks off just when there seemed to be light at the end of the tunnel; the ensuing general confusion in Leibniz's texts about Spinoza's metaphysics of thought; the general confusion about Spinoza's philosophy

Leibniz marked and annotated much of his copy of Spinoza's *Opera Posthuma* when he received a copy in early 1678. Additionally, he excerpted and commented on a number of passages, including from the *TIE*, copying them out for his own use. *TIE* §85 (S 37) is among the copied texts and annotated. In copying this passage, Leibniz paraphrases Spinoza writing: "Veteres non considerarunt, velut nos, *animam secundum certas leges* agere, ad instar automati spiritualis."<sup>288</sup> In his paraphrase, Leibniz changes Spinoza's "et quasi aliquod automa spirituale" to "ad instar automati spiritualis," changing Spinoza's nominative formulation to a genitive.<sup>289</sup> Instead of acting like a spiritual automaton, Leibniz writes that the soul acts on the model of a spiritual automaton. More significantly, Leibniz also adds as a comment: "Operationes secundum quas fiunt imaginationes contingunt *secundum alias plane leges* quam intellectiones, et anima *circa imaginationem* habet tantum *rationem patientis*."<sup>290</sup> Leibniz's comment is suggestive with regard to his own position, as it indicates that he thinks that imaginative experience can also be described as taking place according to intelligible laws. Spinoza's *TIE* account of imagination tends to treat the imagination as resulting from random and disconnected encounters, or *experientia vaga*. Such imaginative encounters therefore cannot furnish any true ideas about Nature or our connection to it. For Leibniz, however, such experience can be described as happening according to the laws and nature of the soul. These laws of the imagination, however, are not the laws of the soul's activity like those of true intellection. In this

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in later commentaries that Leibniz's confused analysis contributed to create; our disappointment that the great Hanoverian philosopher could go so wrong; our disappointment with Spinoza that he did not explain himself more clearly so as to preclude such disastrous misinterpretation. (Lærke, "Leibniz on Spinoza's *Tractatus*," 119-120).

<sup>288</sup> A.vi.4 1758; "The ancients did not consider, as do we, the soul to act according to certain laws, on the model of a spiritual automaton [translation mine]." The notes that Leibniz takes upon his initial reading of the OP as well as excerpted passages can be found at A.vi.4 1705-1764.

<sup>289</sup> As we will see, in commenting on this passage later on in his life, Leibniz will claim that Spinoza's text contains an error and that he meant to write "automaton" instead of "automa." (AG 279).

<sup>290</sup> A.vi.4 1758; "The operations according to which imaginations are made clearly follow other laws than intellections, and concerning the imagination the soul has only the manner of the patient" (Translation mine).

case, they are the laws of the soul's passivity. Though it is not altogether clear whether Leibniz views his comment as a paraphrase restating Spinoza's account or as a critical revision, it is clear that whereas Spinoza himself did not view the imagination as acting according to intelligible laws, Leibniz not only wants to characterize the imagination as acting according to laws, but he treats such laws as belonging to the soul itself.

Looked at the larger context of Leibniz's concerns at the time, what stands out about *TIE* paragraph 85 is Spinoza's claim that the soul follows *acts* according to certain laws. In his reading of the *Opera Posthuma*, including the Spinoza's later *Ethics*, Leibniz is concerned, with Spinoza's claim that the human mind is both an idea as well as something that acts. For Leibniz, an idea is not something that can act, and thus Leibniz regards the *TIE* picture of mental activity as incompatible with *Ethics* IIP11-13, where Spinoza demonstrates that the mind is an idea whose object is the body. For instance, when Spinoza writes in EIIP2

Whatever happens in the object of the idea constituting the human Mind must be perceived by the human Mind, or there will necessarily be an idea of that thing in the Mind; i.e. If the object of the idea constituting a human mind is a body, nothing can happen in that body which is not perceived by the Mind,<sup>291</sup>

Leibniz writes the following comment in the margin: "Ideae non agunt. Mens agit. Totus mundus revera est objectum cujusque mentis, totus mundus quodammodo a quavis mente percipitur. Mundus unus et tamen mentes diversae. Mens igitur fit non per ideam corporis, sed quia variis modis Deus mundum intuetur ut ego urbem."<sup>292</sup> In fact Leibniz has two major objections to Spinoza's view of the mind at this time. First, he regards Spinoza's claim in the *Ethics* that the mind is constituted by an idea, even an idea of the body as a whole, as a category mistake. On

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<sup>291</sup> S 456-457.

<sup>292</sup> A.vi.4 1713; "Ideas do not act. The mind acts. In reality the whole world is the object of each mind, the whole world is perceived in a certain way by any mind. The world is one and yet minds are diverse. The mind therefore does not exist as the idea of the body, but because God intuits the world in various modes as I intuit a city" [translation mine].

Leibniz's account, not only are ideas incapable of acting, they are not actual *things* at all but rather only dispositions in the mind or soul to think certain things.<sup>293</sup> Second, even if the mind could be conceived of as an idea, Spinoza's claim that the object of the idea constituting the mind is the body is, furthermore, excessively limited. For Leibniz, if the mind truly comes from God, its object must be the world as a whole, insofar as each mind provides a unique perspective through which God perceives the world. From this perspective, it seems plausible that Leibniz would interpret Spinoza's claim in the *TIE* that the soul – *qua* idea of the body -- *acts* as unacceptable in light of his reading of the Spinoza's later *Ethics*.

Returning to Leibniz's comment on paragraph 85 of the *TIE*, it seems plausible that Leibniz would think that Spinoza's account does not sufficiently account for the substantial nature of the soul. Although Spinoza does claim that the soul acts, as we have seen, Leibniz is skeptical regarding Spinoza's view of the soul in the *Ethics*, arguing that the Spinozist soul as "idea of the body" could not act or itself be the subject of ideas – whether intellectual or imaginative. Given Leibniz's own stated commitments to the nature of the soul or mind as a point of view from which God intuits the world, it should come as no surprise that Leibniz would treat the soul's imaginative ideas as themselves expressing, in an intelligible fashion, the laws according to which the soul is affected.

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<sup>293</sup> For instance, Leibniz writes in *Quid sit Idea*, dated by the *Akademie* edition from Autumn 1677, which would be just prior to his reading of the *Opera Posthuma*: "Idea enim nobis non in quodam cogitandi actu, sed facultate consistit, et ideam rei habere dicimur, etsi de ea non cogitemus, modo data occasione de ea cogitare possumus" (A.vi.4 1370; "An idea consists, not in a certain act of thinking, but rather a faculty, and we are said to have an idea of something, even if we do not think of that thing, if we can think of it when given occasion to do so" [translation mine]). Later on in the *Animadversiones ad Wachteri Librum* of 1709, when commenting upon Spinoza, Leibniz writes:

Ideas are purely abstract things, like numbers and shapes, and cannot act. Ideas are abstract and universal: the idea of any animal is a possibility, and it is a mockery to call souls immortal because ideas are eternal, as if the soul of a globe is to be called eternal because the idea of a spherical body is eternal. The soul is not an idea, but the source of innumerable ideas (AG 277).

#### 4.2.b Leibniz and the *Animadversiones ad Wachteri librum*

Leibniz returns to *TIE* ¶85 in his *Animadversiones ad Wachteri librum* of 1709. The *Animadversiones* presents Leibniz's commentary on Wachter's Cabalistic account of Spinoza provided in the *Elucidarius Cabalisticus*.<sup>294</sup> It represents, moreover, an important part of Leibniz's contribution to a controversy over the meaning of Spinoza's text in the *TIE*.<sup>295</sup> Both Wachter and Leibniz take Spinoza's formulation of the "spiritual automaton" to mean that the soul is determined externally by bodies. This gives Wachter occasion to propose a distinction between the mind and the soul and to associate the mind with the freely acting part of the human that lives on after the dissolution of the body. Leibniz rejects Wachter's distinction between soul and mind as a mistaken interpretation of Spinoza's text. Leibniz also claims that the soul acts spontaneously, thereby rejecting the account of the soul as externally determined that he ascribes to Spinoza. Leibniz own stated view in the *Animadversiones* thus lies midway between Spinoza's position as constructed by Wachter and Wachter's account of the mind: the soul and mind<sup>296</sup> both act spontaneously yet according to determinate laws.

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<sup>294</sup> It was, nonetheless, first published with the title *Refutation Inédite de Spinoza*. According to Lærke, who warns that the text must be read in the context of 19<sup>th</sup> century French spiritualism, this is because the editor, Foucher de Careil, had an interest in defending Leibniz of the charge of Spinozism. For more, see Lærke, *Leibniz Lector*, 923-924.

<sup>295</sup> Taking controversy in the sense of a debate over the meaning of a text. For an account of such controversies as well as a defense of focusing on controversies as the object of research in the history of philosophy, see Mogens Lærke, "The Anthropological Analogy and the Constitution of Historical Perspectivism" in *Philosophy and Its History: Aims and Methods in the Study of Early Modern Philosophy*, ed. Mogens Lærke, Justin E. H. Smith, and Eric Schliesser (Oxford: Oxford University Press, 2013) 7–29; *Les Lumières de Leibniz: Controverses Avec Huet, Bayle, Regis et More* (Paris: Classiques Garnier, 2015), 11-46.

<sup>296</sup> In this section I switch between soul and mind when appropriate. The difficulty lies in the fact that each philosopher uses the terms differently. In using the term "spiritual automaton" in the *TIE*, Spinoza uses the word "soul" ["animam"]; however in the *Ethics* he typically speaks of the "human mind" ["mens humana"]. Wachter distinguishes between the soul and mind as separate entities; whereas the soul is connected with the body and does not live on beyond it, the mind is something higher that exists after the dissolution of the body. For Leibniz, as we saw in chapter three, the mind is a special case within the more general category of souls. Whereas all living things have souls, humans have minds are capable of apperception, that is to say the reflective perception of perception.

Wachter makes two significant claims about the Spinoza's account of the spiritual automaton. First, Wachter argues that the soul acts as a spiritual machine, yet *not according to the powers of the mind*.<sup>297</sup> In denying that the soul acts "according to the powers of the mind," as Spinoza himself appears to think, Wachter attributes to Spinoza the view that the operations of the soul happen independently of the mind and are determined by external causes and things sensed. This is significant because Wachter will go on to distinguish the soul from the mind, the latter of which transcends material nature and lives on after the death of the body. Second, Wachter argues that, despite Spinoza's claim to expound a novel view, in fact his view is shared by many others, both ancient and recent. This claim goes hand-in-hand with Wachter's overall position that Spinoza derived his philosophical positions from Cabalistic sources. Wachter writes:

[Spinoza] statuit enim [animam] esse machinam quandam Spiritualem, secundum certas motus leges omnia agentem, ejusq; operationes non à mentis potentia; meliore illa hominis parte, sed à causis externis earumq; impulsibus proficisci, id est, à fortuitis & solutis sensationibus, unde corpus *ait* vel somniando vel vigilando varios accipere motus, eosq; imaginationi communicatos, ad corpus redire, illudq; secundum varias imaginationis ideas variis modis ad agendum determinare. Et quamvis ipse putet, neminem ante se ita sensisse, addendo, *veteres nunquam, quod sciam, conceperunt, uti nos hic, animam secundum certas leges agentem, & quasi aliquod automa Spirituale: Hoc tamen putando fallitur, quia hanc sententiam cum multis antiquis & recentioribus, praecipue vero Cabalaeis, habet communem.*<sup>298</sup>

Wachter's gloss runs into several difficulties when compared with Spinoza's actual text. Quite clearly, Wachter fails to recognize how Spinoza's distinction between intellection and

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<sup>297</sup> "*operationes non a mentis potentia*" (W59).

<sup>298</sup> W59; "[Spinoza] claimed that indeed this to be a certain spiritual machine, all of whose acts follow according to certain laws of motion; of these, the operations do not follow by the power of the mind or the better part of the human, but by external causes; of these arising from impulses, that is, by fortuitous & unbound sensations, whence the body, whether sleeping or on guard accepts various motions, and these communicated by the imagination, are related to the body; and the body is determined to action by imaginative ideas of various modes. And although [Spinoza] himself judges, that no one sensed this before him, adding, *the ancients never conceived, so far as I know, the soul (as we do here) as acting according to certain laws, like a spiritual automaton: judging in this way is mistaken, however, because this opinion has much in common with many ancients and more recent authors, especially the Cabalists*" (translation mine).

imagination pertains to the soul. Wachter assimilates the operations of the soul to the random encounters the body has with the external world, i.e. what Spinoza had identified as the realm of the imagination (*TIE* ¶¶82-83/S 36). But Spinoza distinguishes imagination and intellect on precisely this ground: the order of the intellect is the reproduction of the causal order of nature in the mind, not the order of *experientia vaga*. Wachter thus appears to get Spinoza's position from the *TIE* backwards. Second, Wachter's distinction between the soul and mind effectively denies that the *mind* — “*meliore illa hominis parte*” — is an automaton acting according to certain laws. He isolates the mind as a part of the human that is free precisely insofar as it is not determined by laws. Moreover, unlike the soul, the mind is not essentially related to the corporeal world.<sup>299</sup> That Wachter's reading downplays Spinoza's claim to novelty is relatively trivial in view of these major interpretive errors. More charitably, we could call them translations of Spinoza's ideas into Wachter's own philosophical framework.

In the *Animadversiones as Wachteri librum*, Leibniz reprises his earlier criticism of Spinoza's characterization of the mind as the “idea of the body.” For Leibniz in the *Animadversiones*, a corporeal substance is composed of a soul and a body. The body, however, is characterized as an organized mass composed of other substances. Even though the soul's perceptions of the world change, the soul itself remains numerically the same over time. Moreover, the substance as a whole remains the numerically same substance even as the organized mass of the body changes as it gains or loses substances *qua* parts:

A corporeal substance has a soul and an organic body, that is, a mass composed of other substances. It is true that the same substance thinks and has extended mass joined to it; but it hardly consists of extended mass since any of those things could be taken away, leaving the substance intact.<sup>300</sup>

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<sup>299</sup> For instance, in paragraph XVII, Wachter distinguishes the mind, which is the “*pars rationis, aeterna & immortalis hominis pars*” from the soul, which he associates with the imagination and the senses and “*quibus actualis existentia mentis in corpore mensuratur*” (W 58).

<sup>300</sup> AG 255.

## Chapter Four: The Soul as Spiritual Automaton in Leibniz and Spinoza

Leibniz draws the conclusion that the soul cannot be the idea of the body. Since ideas are determined by the nature of their object, and the object of the idea of the body is the continuously changing organic mass of a substance, if the soul were truly the idea of the body, it too would continuously change.

Whereas Leibniz claims that the soul must be a substance capable of action, ideas are, by contrast, abstractions that are themselves incapable of acting. Further, an idea is determined by the nature of that of which it is an idea. Thus, in Leibniz's view, if the soul truly was the idea of the body, Leibniz claims, then it could not maintain its identity over time and would become a numerically different soul each time the parts of the body change. Writing in the *Animadversiones* in reference to EIIP13S, Leibniz claims:

But it is completely alien to every sort of reason that a soul should be an idea. Ideas are purely abstract things, like numbers and shapes, and cannot act. Ideas are abstract and universal: the idea of any animal is a possibility, and it is a mockery to call souls immortal because ideas are eternal, as if the soul of a globe is to be called eternal because the idea of a spherical body is eternal. The soul is not an idea, but the source of innumerable ideas. For, over and above a present idea, the soul has something active, that is, the production of new ideas. But, according to Spinoza, at any given moment, a soul will be different, since, when the body changes, the idea of the body is different. Hence, we shouldn't be surprised if he takes creatures for vanishing modifications. Therefore, the soul is something vital, that is, something that contains active force.<sup>301</sup>

For Leibniz, the soul must be something ontologically distinct from an idea. Not only is the soul something active, in this way differing from an abstraction such as an idea, it is eo ipso a substance that remains itself over time.

When Leibniz comments on the "spiritual automaton" passage from the *TIE*, he picks up on Wachter's imposition of a distinction between soul and mind. Further, Leibniz rejects both Spinoza's view of the spiritual automaton as well as Wachter's interpretation thereof. Leibniz writes:

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<sup>301</sup> AG 277.

Spinoza says... that the ancients 'never, so far as I know, conceived of the soul (as we do here) as acting in accordance with certain laws, like some spiritual automata (he meant to say automaton).'<sup>302</sup> The author [Wachter] interprets this as having to do with the soul alone, and not the mind, and holds that the soul acts in accordance with the laws of motion and external causes. *Both are wrong, for I say that the soul acts spontaneously and yet as a spiritual automaton, and that this is also true of the mind.* The soul is no less exempt from the impulses of external things than is the mind, and it is not the case that the soul acts more determinately than does the mind [Emphasis added].<sup>303</sup>

Leibniz seems to think that the laws according to which Spinoza claims that soul acts cannot be immanent to the nature of the soul. This would follow, in Leibniz's view, from Spinoza's claim that the soul is the idea of the body; if, once again, the soul is conceived of as an idea, it is not something active in the first place. Thus, even though Spinoza's view in the TIE is that when the soul operates as a spiritual automaton, it acts according to its nature and the laws of the intellect, Leibniz contends that it is not active at all and is instead determined by external laws. Against Wachter, Leibniz contends that the mind and soul both operate as spiritual automata. Although Leibniz doesn't define the mind directly in this passage, for the mature Leibniz, minds are a particular class of souls capable of reflecting upon their perceptions. Minds are thus rational souls. Leibniz is therefore claiming in the *Animadversiones* that the entire range of perceptive activity, from the confused sensation to reflective conscious reasoning takes place according to the model of the spiritual automaton.

Leibniz connects his own theory of the spiritual automaton to God's design and creation of the world. Here he offers a version of the pre-established harmony, contending that what happens in bodies takes place through "laws of power" whereas what happens in souls takes place through "the laws of the good." Further, Leibniz argues that in creating and conserving the world God takes all substances into consideration:

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<sup>302</sup> AG 279.

<sup>303</sup> AG 279.

Just as in bodies everything happens through motions in accordance with the laws of power, so too, in the soul everything happens through effort, that is, through desires in accordance with the laws of the good. The two kingdoms are in agreement. However, it is true that there are certain things in the soul that can only be explained in an adequate way through external things, and to that extent the soul depends upon external things; this happens not through a physical influx, but, so to speak, through a moral influx, insofar as, in creating the mind, God took things other than the mind itself into consideration to a greater extent. For, in creating and conserving each and every thing, God takes all other things into consideration.<sup>304</sup>

In this passage, Leibniz develops the notion of the spiritual automaton and its connection to the doctrine of preestablished harmony in two significant ways. First, he contrasts the laws of the soul/mind with those of the body. Bodily motions happen according to laws of power, whereas motions of the soul take place through desires according with the laws of the good. Second, he outlines a sense in which it makes sense to talk of souls depending on external things. The soul can be said to depend on external things to the degree that we can explain our actions in terms of what is happening outside of us. To this extent only, we can say that the soul is passive.

Nevertheless, he emphasizes that this passivity is really only inscribed into the way that God, in deciding to create this world, has taken into consideration the way that each substance will fit with others.

In emphasizing God's design of nature and of the soul as a spontaneously acting substance, Leibniz also rejects Spinoza's ethical theory. As we saw above, according to Spinoza, the notion of the soul as a spiritual automaton exemplified the soul on its journey towards its highest good, namely the mind's union with nature. The soul's highest good, according to Spinoza, thus involves recognizing that the mind is a part of the larger causal order of nature. In the *Animadversiones*, Leibniz rejects Spinoza's ethical framework, contending that it would ask us to love a God who produces both good and evil according to necessity. Leibniz contends that it is better for the mind to understand that god has created everything for the best:

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<sup>304</sup> AG 279.

Spinoza thinks that the mind can greatly be strengthened if it understands that what happens, happens necessarily. But the mind of the sufferer is not rendered content through this compulsion, nor does it feel its evils any the less on that account. The soul is happy if it understands that good follows from evil, and that what happens is the best for us, if we have wisdom...

From these things we can also understand that what Spinoza says about the intellectual love of God (*Ethics* part 4, prop. 28) is only a sop to the masses, since there is nothing capable of being loved in a God who necessarily produces all good and bad indiscriminately. True love of God is grounded not in necessity but in goodness.<sup>305</sup>

For Leibniz, the notion of the soul as spiritual automaton thus also has an ethical role.

Understanding that the soul is like a spiritual automaton enables the recognition that one's perceptions have been ordered by God not only to harmonize the activities of other substances, but that they also happen for the best. This includes even confused or imaginative perceptions. Whereas Spinoza had treated confused perceptions as *experientia vaga*, Leibniz incorporates them into the very laws governing the nature of the soul.

#### **4.2.c Leibniz *contra* Spinoza on the Spiritual Automaton**

In the *TIE*, Spinoza uses the concept of the spiritual automaton plays a role within the larger project of gaining true knowledge of nature. This is fundamentally an ethical project of accessing the highest Good in human life. When the soul is working as a spiritual automaton, it acts spontaneously to produce clear and distinct ideas of nature. He contrasts the workings of the “spiritual automaton” to what takes place when humans are instead defined by an excess of imaginative ideas of nature; here, human beings too act like automata, only in this case according to the fashion of automata “completely lacking a mind.” In incorporating the notion of the mechanical automaton with the soul in the image of the spiritual automaton, Spinoza thus emphasizes the way that the automaton moves itself according to its own power.

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<sup>305</sup> AG 280-1.

## Chapter Four: The Soul as Spiritual Automaton in Leibniz and Spinoza

For Leibniz, the soul as spiritual automaton functions within the larger theory of the preestablished harmony between substances. It provides a model of a spontaneously acting soul that produces its own perceptions independently from yet in agreement with the activities of all other substances. This leads Leibniz to reject Spinoza's account of the soul as the "idea of the body" in his reading of the *Opera Posthuma* as well as the account of Spinoza's view of the soul as externally determined by the body formulated in the controversy with Wachter. Leibniz highlights the notion of design, showing the way that God's ends can be incorporated directly into the nature and structure of substances within nature. Leibniz therefore develops his own account of the spiritual automaton in the context of a philosophical theory of substantial spontaneity in a world created and designed by God. In importing the notion of the mechanical automaton to that of the soul, Leibniz emphasizes not just the automaton's capacity for self-motion, but also the fact of its design.

The differences between Spinoza and Leibniz's respective approaches to the spiritual automaton illustrate the diverse ways that the image of the mechanical automaton proved helpful in to illustrating the workings of the soul in the seventeenth-century. Whereas Spinoza rejects notions of creation and design as "the sanctuary of ignorance," Leibniz happily affirms them as being metaphysically necessary and practically beneficial. Even in the context of such divergent philosophical approaches, the mechanical automaton serves as a useful model for the operations of the soul. Metaphysically speaking, it illustrates Spinoza's account of the mind's unity with a necessarily unfolding nature as well as Leibniz's account of independently created and spontaneously acting substances. Practically speaking, it provides Spinoza with a model of the mind's activity as it pursues its highest good while giving Leibniz another tool to convince others that everything happens for the best according to God's design.

## Chapter Five

### **Plastic Natures, Activity without Knowledge, and the Spiritual Automaton**

Until this point I have focused on historical and contextual reasons why Leibniz would craft the notion of the spiritual automaton as a model for the soul. In this chapter I show how Leibniz deploys the concept to account for the status of natural causes and the problem of sin. By closely analyzing a pivotal passage from the *Essais de Théodicée*, ¶¶399-403 of the *Essai de la Justice de Dieu, Et de la Liberte de L'Homme, Dans L'Origine du Mal*, I will show that the Leibnizian spiritual automaton shows the soul as spontaneously producing its own actions yet lacking distinct knowledge of its own operation. The soul's simultaneous agency and ignorance enables Leibniz to combat competing philosophical systems such as the Platonism of Cambridge philosopher Ralph Cudworth as well as the post-Cartesian occasionalism of Pierre Bayle.

The *Essais de Théodicée* (1710), which offers an exhaustive defense of the conformity of faith and reason against Pierre Bayle's insistence on their incompatibility, was the only book that Leibniz published during his lifetime. Leibniz rejects Bayle's occasionalist account of nature, arguing that occasionalism renders creatures merely the passive instruments of God's causal activity. Were this to be the case, God, in Leibniz's view, would be the author of sin.

Occasionalism would thus destroy religion by making it appear irrational to love God. To avoid such a result, Leibniz argues that creatures are active secondary causes and so can be held responsible for their activities. In Leibniz's own account, the model of the spiritual automaton illustrates the spontaneous nature of the soul's actions.<sup>306</sup>

To illuminate the significance of ¶¶399-403 of the *Essai de la Justice de Dieu, Et de la Liberte de L'Homme, Dans L'Origine du Mal*, I situate Leibniz's views within the larger context of ongoing debates between Bayle and the Jean Le Clerc. I suggest that these paragraphs supplement Leibniz's contribution to the debate between Bayle and Le Clerc over plastic natures. Le Clerc recreated lengthy passages from Ralph Cudworth's 1678 opus *The True Intellectual System of the Universe* (1678) as part of his *Bibliothèque choisie* in 1703. Le Clerc thereby expressed his endorsement of Cudworth's view of nature. Bayle subsequently produced criticisms of Cudworth in his *Continuation des pensées divers* (1704), and several exchanges between Le Clerc and Bayle followed. The principal philosophical topic of the debate between is how to understand creaturely activity in light of theological commitments regarding God's omnipotence. Le Clerc supports Cudworth's claim that living bodies are organized by the activity of immaterial plastic natures. Cudworth developed this claim in a long digression to book three of the *TIS*. Bayle rejects the theory of immaterial plastic natures and proposes a form of occasionalism according to which God causes all natural phenomena directly.<sup>307</sup> At Le Clerc's

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<sup>306</sup> For accounts of Leibniz's broader theory of spontaneity in the *Essais de Théodicée*, as well as how the question relates to the preestablished harmony between soul and body in that work, see Francois Duchesneau, "Autonomie des âmes et devenir des corps dans Les Essais de Théodicée," in *Lectures et interpretations des Essais de théodicée de G.W. Leibniz*, ed. Paul Rateau, *Studia Leibnitiana Sonderheft* 40 (Stuttgart: Franz Steiner Verlag, 2011), 97–116; Enrico Pasini, "La doctrine de la spontanéité dans la Théodicée," in *Lectures et interpretations des Essais de théodicée de G.W. Leibniz*, ed. Paul Rateau, *Studia Leibnitiana Sonderheft* 40 (Stuttgart: Franz Steiner Verlag, 2011), 155–74.

<sup>307</sup> For a helpful account of the debate over plastic natures, see Susan Rosa, "Ralph Cudworth in the *République Des Lettres*: The Controversy about Plastick Nature and the Reputation of Pierre Bayle," *Studies in Eighteenth-Century Culture* 23 (1994): 147–60.

urging, Leibniz himself weighed in on the controversy during 1705, publishing the *Considerations sur les principes de vie, et sur les natures plastiques, par l'Auteur du Système de l'Harmonie préétablie* in the Dutch journal *Histoire des ouvrages des savants*. Here Leibniz presents the preestablished harmony as an alternative to the theory of plastic natures and occasionalism. God preestablishes the organic structure of bodies in such a way as to enable them to act without any need for the direction of immaterial principles. Although Leibniz does not explicitly mention these earlier debates in the relevant passages of the *T*, Leibniz's argumentation in ¶¶399-403 both parallels and supplements the argumentative strategy he used in the earlier *Considerations*. Thus it seems that the earlier debate is not far from the *Essais de Théodicée*, which introduces the spiritual automaton in ¶403.

The debate over plastic natures between Le Clerc and Bayle, and Leibniz's involvement in it, has been a subject of recent interest to Leibniz scholars.<sup>308</sup> The upshot of this interest has been to show how Leibniz's contributions in the *Considerations* shed important light on his mature views regarding organism and organic structure. In 1705, Leibniz characterizes organic living bodies as infinitely complex mechanisms preformed by God, even going so far as to refer to them as “material plastic natures.” This model of the living body provides an alternative to Cudworth's account of the organization of living bodies by means of the labor of immaterial plastic natures.<sup>309</sup> What Leibniz's account in the *Considerations* leaves out, however, is a

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<sup>308</sup> See, e.g. Justin E.H. Smith and Pauline Phemister, “Leibniz and the Cambridge Platonists: The Debate over Plastic Natures,” in *Leibniz and the English-Speaking World*, ed. Pauline Phemister and Stuart Brown (Dordrecht: Springer, 2007), 95–110; Smith, *Divine Machines*, 127-135; Francois Duchesneau, “Bayle et Leibniz critiques des natures plastiques,” in *Leibniz et Bayle: Confrontation et dialogue*, ed. Christian Leduc, Paul Rateau, and Jean-Luc Solère, *Studia Leibnitiana Sonderheft 43*, (Stuttgart: Franz Steiner Verlag, 2015), 247–67; Stefano Di Bella, “La nature en question: Leibniz, Bayle; et la querelle des natures plastiques,” in *Leibniz et Bayle: Confrontation et dialogue*, edited by Christian Leduc, Paul Rateau, and Jean-Luc Solère, *Studia Leibnitiana Sonderheft 43*, (Stuttgart: Franz Steiner Verlag, 2015), 219-245.

<sup>309</sup> For instance, as Smith writes:

corresponding account of the soul that could ground and harmonize with the actions of organic bodies conceived as material plastic natures. On my reading, the notion of the soul as “spiritual automaton” acting according to a form of “divine preformation” in *T* ¶403 effectively supplements the *Considerations* account. Such a reading is supported by the crucial textual fact that *T* ¶¶399-403 explicitly aims to refute one of Bayle’s criticisms of Le Clerc. Connecting the theory of “material plastic natures” Leibniz develops in the *Considerations* with the notion of the spiritual automaton of *T* ¶403 highlights the theoretical utility of the concept of the spiritual automaton, as it provides Leibniz with a model of the immaterial soul compatible with that of the “material plastic nature” as well as capable of solving the problems posed by Bayle.

### 5.1 Cudworth and Plastic Natures

Jean Le Clerc supported Ralph Cudworth’s theory of plastic natures as a metaphysical and theological explanation of the emergence of living, organized bodies in nature, and he therefore translated and published portions of Cudworth’s *True Intellectual System of the Universe*. Pierre Bayle, in contrast, criticized Cudworth on the ground that his theory of plastic natures in fact leaves room for atheism. The two philosophers’ debate hinges on how to provide an account of the actions of creatures that does not open the door for atheism. In the next two sections, I outline Cudworth and Bayle’s respective positions regarding the theory of plastic natures. I focus on the

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It is in terms of this infinite composition that Leibniz will ultimately dare to propose that he can account for the self-motion of animal bodies by appeal to their “vegetative structure” alone (as he puts it in the controversy with G. E. Stahl), which is to say to the “material plastic nature” of organic bodies (as he puts it to Ralph Cudworth). This will be what enables Leibniz to remain, by his own lights, a mechanist, and to reject vitalist theories of animal growth, development, and motion such as those of Cudworth and Stahl, while at the same time radically modifying earlier notions of what could qualify as “mechanism.” (Smith, *Divine Machines*, 60).

issues most relevant to our examination of Leibniz. My goal is to provide the background for understanding Leibniz's own contribution to the debate in the *Considerations*.

Cudworth's *True Intellectual System of the Universe* aims to refute what he views as philosophical atheisms. Fundamentally, these philosophical atheisms claim that matter is sufficient to produce the phenomena of life and perception. In Cudworth's view, atheism does not just pertain to the rejection of immaterial principles by modern mechanical philosophers such as Hobbes, and he identifies a number of ancient philosophical traditions as fundamentally atheistic as well.<sup>310</sup> What all forms of atheism share, according to Cudworth, is the transfer of divine properties such as life and intelligence to matter. The view that life arises from and returns to matter is the guiding principle of all forms of atheism, no matter how different their particular details:

And here have we set down, the agreement of all the Atheistick Forms, (however differing so much from one another) in this One General Principle, viz, That all Animality, Conscious Life and Understanding, is Generated out of Senseless [sic] Matter, and Corruptible [sic] again into it."<sup>311</sup>

If the key commitment of the atheist is that life arises from matter, the philosopher who wishes to avoid atheism must maintain the essentially inert nature of matter while providing an immaterial explanation of the phenomenon of life.

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<sup>310</sup> Cudworth distinguishes Democritean atheistic atomism, hylozoical theories of living matter, cosmoplastic conceptions of a vegetative world-soul and Anaximandrian materialism. According to Cudworth, the Democritean hypothesis combines physical atomism with the thesis that all that exists is body see: Chapter 2 (*TIS* 57-99). Hylozoism ascribes life directly to matter in order to derive physiological and spiritual phenomena. The hylozoists "derive all things in the whole universe, not only sensitive, but also rational souls, together with the artificial frame of animals, from the life of matter" (*TIS* 62). Cudworth associates hylozoism with the Greek philosopher Strato of Lampsacus, and views his own identification and analysis of hylozoism as one of the chief innovations of the *True Intellectual System*. Cudworth identifies the cosmoplastic atheism as a system that postulates one vegetal or plantal soul for the whole world. In this it differs from hylozoism, which had postulated a different plastic nature for each portion of matter. See *TIS* 132. Anaximandrian materialism postulates infinite matter and resembles the Democritean hypothesis insofar as they both derive "all things alike, from dead and stupid matter fortuitously moved." It differs from Democriteanism, however, insofar as it utilizes a theory of "qualities and forms rather than "atoms and figures." See *TIS* 112.

<sup>311</sup> *TIS* Preface.

In contrast to the various atheisms, Cudworth invokes Plato's insistence that nature does not happen fortuitously and Aristotle's recognition of final causality in nature. It is axiomatic for Cudworth that the regularities present in nature, including the complexity of living forms, could not emerge by fortuitously. In Cudworth's view, supposing that the order present in nature could emerge through chance or mechanical necessity is irrational and ignores the clear artifice and design present in material organization. Further, Cudworth insists that mechanical causality could never explain certain vital processes such as respiration. Cudworth also denies, however, that matter could become organized by means of some verbal order of God alone. It is important for Cudworth that matter cannot shape itself on the command of an entity standing outside the material realm; indeed, he likens this to expecting a stone not to fall simply because I order it not to. Instead, some agency belonging to the natural world itself must be responsible for shaping matter:

And therefore besides the divine will and pleasure, there must needs be some other immediate agent and executioner provided, for the producing of every effect; since not so much as a stone, or other heavy body, could at any time fall downward, merely by the force of a verbal law, without any other efficient cause; but either God himself must immediately impel it, or else there must be some other subordinate cause in nature for that motion. Wherefore the divine law and command, by which the things of nature are administered, must be conceived to the real appointment of some energetic, effectual and operative cause for the production of every effect.<sup>312</sup>

To this end, Cudworth develops the theory of immaterial "plastic natures." Plastic natures play the role of an intermediary between God and matter and are appointed to produce natural regularity and order within matter.

Since plastic natures produce order according to God's will, they are responsible for the presence of final causality within nature. Cudworth writes that plastic natures act "regularly and

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<sup>312</sup> TIS 147.

artificially for ends,<sup>313</sup> but not in a way that is dependent on necessity or compulsion. Final causality is required because Cudworth claims the regularity and organization exhibited by living bodies simply could not have emerged fortuitously. Plastic natures are responsible for such ends, and Cudworth claims to follow Aristotle in affirming that the plastic natures produce organization in an immediate fashion. Human artifice “cannot act upon the matter otherwise than from without and at a distance,”<sup>314</sup> but plastic natures effect matter immanently:

So that the meaning of this philosopher [Aristotle] is, that nature is to be conceived as art acting not from without and at a distance, but immediately upon the thing itself which is formed by it. And thus we have the first general conception of the plastic nature, that it is art itself, acting immediately on the matter as an inward principle.<sup>315</sup>

Because plastic natures are immanently embedded in matter, nature is able to design complex and highly organized living forms. In this way, nature’s artifice is superior to human artifice.

Cudworth’s claim that plastic natures act for the sake of ends nonetheless generates a deep tension in his system, for he also insists that plastic natures lack intelligence and consequently do not know what it is that they do. Plastic natures are able to organize matter despite their lack of intelligence, according to Cudworth, because they operate in accord with the divine will. In other words, Cudworth claims that God directs plastic natures as his unknowing instruments. To explain this point, Cudworth likens the relationship between God and the plastic natures to that of an architect directing manual laborers. The architect has certain end goals in mind and these ends determine the action of the laborers. Although the laborers are the direct means whereby such ends are realized within matter, the laborers do not know the ultimate reasons behind their activities. Cudworth writes that Nature is, in this regard, the servant of God’s art and wisdom:

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<sup>313</sup> *TIS* 151.

<sup>314</sup> *TIS* 156.

<sup>315</sup> *TIS* 155.

... though [nature] act artificially for the sake of ends, yet itself doth neither intend those ends, nor understand the reason of that it doth. Nature is not master of that consummate art and wisdom, according to which it acts, but only a servant to it, and a drudging executioner of the dictates of it.<sup>316</sup>

Plastic natures are thus ignorant of the material organization they produce. If nature's art is higher than human art in virtue of its immanent connection with matter, it is nonetheless lower than human artifice in the sense that it knows not what it does. The plastic nature serves merely to mediate between God's will and the organization exhibited by matter.

For all of nature's order and regularity, imperfection is nevertheless present by way of deformities and other "monstrous" productions of nature. The fact that plastic natures lack intelligence provides Cudworth with the means to explain these "errors" of nature. That is to say, Cudworth attributes the existence of deformities and other "monstrous" productions of nature through the limitations of the plastic natures. For Cudworth, had God had done everything immediately on his own, there would be no imperfections present in the world. Responding to proponents of the idea that God organizes nature directly, Cudworth observes that their

opinion is further confuted by that slow and gradual process, that is in the generations of things, which would seem to be but a vain and idle pomp, or a trifling formality, if the agent were omnipotent: as also by those *αμαρτηματα* (as Aristotle calls them) those errors and bumbles, which are committed, when the matter is inept and contumacious; which argue the agent not to be irresistible, and that nature is such a thing, as is not altogether incapable (as well as human art) of being sometimes frustrated and disappointed, by the indisposition of matter. Whereas an omnipotent agent, as it could dispatch its work in a moment, so it would always do it infallibly and irresistibly; no ineptitude or stubbornness of matter being ever able to hinder such a one, or make him bungle or fumble in any thing.<sup>317</sup>

If God caused all natural phenomena directly, Cudworth thinks that we would have no explanation for the irregularities and deformities present in nature. The existence of irregularities is therefore a difficulty for those inclined to the view that God is the sole cause of the

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<sup>316</sup> *TIS* 156.

<sup>317</sup> *TIS* 150.

phenomena. On Cudworth's model, imperfections result from the fact that plastic natures are not themselves omnipotent or infallible and hence they cannot overcome all of the resistance provided by matter. The drudging labor carried out by plastic nature does not always perfectly instantiate God's ends.

## 5.2 Bayle's Critique of Plastic Natures

Pierre Bayle was skeptical of the value of Cudworth's system of nature and harshly criticized Le Clerc for endorsing it. In his *Continuation des pensées diverses, écrites à un docteur de Sorbonne, à l'occasion de la comete qui parut au mois de Decembre 1680* of 1705,<sup>318</sup> Bayle argued that the theory of plastic natures opens the door to a host of unwanted, ultimately atheistic, consequences. Bayle therefore enacts what has been dubbed a "Stratonic retorsion" against Cudworth's theory of plastic natures, arguing that the theory falls prey to the very atheistic philosophy Cudworth wanted to combat.<sup>319</sup> Against Cudworth's critique of mechanism as leading to atheism, Bayle claims that mechanism is in fact the system that best leads to theistic conclusions. For Bayle, because mechanism removes any agency or immaterial entities from nature, it preserves God's exclusive role in producing natural motion.

Bayle attacks the theory of plastic natures for ascribing agency to created things, charging that this ascription allows us to imagine that motive force may not be completely foreign to matter. Thus, even if Cudworth argues that God is the ultimate source of motive force, the very idea that God can give motive force to created intermediaries suggests the possibility of created things having motive force independently of God. Rather than refuting atheism, Bayle argues that Cudworth's theory therefore opens the door to it, and makes a definitive refutation of

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<sup>318</sup> Bayle published the original *Pensées Diverses* in 1683.

<sup>319</sup> For a detailed account of Bayle's "Stratonic retorsion" against Cudworth, see Di Bella, "La nature en question."

atheism impossible. Plastic natures lead us to imagine that God is not necessary to explain the existence of motive force in nature:

Vous ne sauriez croire le tort qu'ils font à la bonne cause sans que ce soit aucunement leur intention. Rien n'est plus embarrassant pour les athées que de se trouver réduits à donner la formation des animaux, à une cause qui n'ait point l'idée de ce qu'elle fait, & qui exécute régulièrement un plan sans savoir les loix qu'elle exécute. La forme plastique de Mr. Cudworth, & le principe vital de Mr. Grew sont cependant dans la même cas, & ainsi ils otent à cette objection contre les athées toute sa force. Car si Dieu a pu donner une semblable vertu plastique, c'est une marque qu'il ne repugne point à la nature des choses qu'il y ait de tels agents, ils peuvent donc exister d'eux-mêmes, conclura-t-on. Vous comprendrez ceci par une comparaison. Si la matière peut recevoir de Dieu la force motrice, il y a une compatibilité naturelle entre la matière & la force motrice. On peut donc supposer également & que la matière existe par elle-même, & que la vertu motrice lui est propre essentiellement. Ceux qui supposent comme la plupart des Cartesiens que la matière est incapable d'être investie de la force de se mouvoir, & que Dieu seul peut produire le mouvement, sont beaucoup plus en état de démonter les athées.<sup>320</sup>

Any step toward bridging the intrinsic character of matter with motive force undercuts the theist's best argument, namely the essential incompatibility of matter and force.

Bayle provides an immanent criticism of the theory of plastic natures as well. In an earlier essay published in the August 1704 edition of the *Histoire des ouvrages des savants* Bayle charges that the way Cudworth characterizes plastic natures as the instruments of God is ultimately incoherent. With this argument, it becomes clear that Bayle's main worry is the way that the theory of plastic natures attempts to balance that claim that the organization of matter

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<sup>320</sup> CPD, 9; You do not believe the damage that they do to the cause of good without this being in the least your intention. Nothing is more embarrassing to the atheists than to find themselves reduced to giving the formation of animals to a cause which would not have any idea of what it does, and which executes a plan methodically without knowing the laws that it executes. The plastic form of Mr. Cudworth, and the vital principles of Mr. Grew are however in the same boat, and thus they remove all of the force from this objection against the atheists. For if God had been able to give a plastic power of this type, this is a mark that he does not refuse at all that in the nature of things, that there could be such agents, and one would therefore conclude that they could therefore exist of themselves. You will understand this by means of a comparison. If matter can receive motive force from God there is a natural compatibility between matter and motive force. One can therefore suppose equally that matter exists of its own and that motive force is essentially proper to it. Those who suppose, with the majority of Cartesians, that matter is incapable of being invested with the force of moving itself, and that God alone can produce movement, are in a much better position to take down the atheists (translation mine).

requires an intelligent cause—namely God—with the claim that plastic natures themselves do not know what it is that they do.<sup>321</sup> In other words, how are the plastic natures supposed to implement God’s design if they do not actually know what it is that they are doing? If they do not themselves have the desired ends in view, how can they select and organize the means whereby those ends are realized? As Bayle puts his concern:

La doctrine generale & dominante... que la production des plantes, & des animaux, &c. depend des facultes actives de la Natures, mais que Dieu est la premiere & la souveraine cause, & pour prouver qu’il y a un Dieu auteur du monde on a principalement fair valoir la symmetrie & la subordination, l’ordre & la beauté des parties de l’univers. Cela suppose manifestement ce principe, qu’un être qui ne conoit point ce qu’il fait, ni le plan qu’il doit remplir, ni le but où il doit tendre, ne sauroit rien faire de regulier. On n’a pas laissé de dire que l’ame des plantes, cause de toute leur vegetation, ne conoit aucune chose, & qu l’ame des bêtes, cause de leur generation, ne conoit point ce qu’il faut faire pour organiser un corps. On a donc établi ces deux choses en même tems; 1. que le monde est l’ouvrage d’une cause intelligente, puis qu’il contient des parties si proportionnées entre elles. 2. Que les arbres, leurs, fruits, leurs fleurs, les membres des animaux sont l’ouvrage d’une cause qui ne confit point ce qu’elle fait, quoi qu’on voie tant de proportions & tant de subordinations entre leurs parties; on a dis-je, établi en même tems ces deux choses sans apprehender aucune chicane de la part des Philosophes Naturalistes.<sup>322</sup>

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<sup>321</sup> The argument “quod nescis” figures in several important occasionalist philosophers from the seventeenth-century. It plays a central role, for instance, in the work of the Flemish philosopher Arnold Geulincx. See Geulincx, *Metaphysics*, trans. Martin Wilson (Cambridgshire: Christoffel Press, 1999), 34-36. It also appears, albeit in a subsidiary role in Malebranche’s, *Recherche de la Verité*. See Nicholas Malebranche, *The Search After Truth*, transl. Thomas M Lennon and Paul J Olscamp, Cambridge Texts in the History of Philosophy (Cambridge: Cambridge University Press, 1997), 450.

<sup>322</sup> HS 383-384; The general and dominant doctrine... that the production of plants, and of animals, etc, depends on active faculties of natures, but that God is the premier and sovereign cause, and in order to prove that there is a God outside of the world one has principally made use of the symmetry and subordination, the order and beauty of the parts of the universe. Manifestly, this supposes the principle that a being which does not at all know that which it does – neither the plan that it must fulfill, nor the end toward which it must tend – would not know how to make anything exhibiting regularity. One should not let it be said that the soul of plants, the cause of all their vegetation does not know anything, and that the soul of animals, the cause of their generation, does not know what it must do in order to organize a body. One has therefore established two things at the same time: 1. That the world is the work of an intelligent cause, and thus that it contains parts so well proportioned to one another. 2. That trees, their fruits, their flowers, the parts of animals are the work of a cause which does not preserve at all that which it does, although one observes so much proportion and so many subordinations between their parts. I say that one has established at the same time these two things without apprehending any challenge from the Natural Philosophers (translation mine).

## Chapter Five: Plastic Natures, Activity without Knowledge, and the Spiritual Automaton

Bayle argues that there is an inconsistency between Cudworth's claim that material organization can only be the product of God's design, on the one hand, and his claim that the secondary causes by means of which such organization is realized have no idea what it is that they are doing on the other. Further, Bayle insists that it would be naïve to think that an atheist wouldn't take advantage of the evident inconsistency. It is therefore safer, Bayle suggests, to do away with the notion of active secondary causes in general.

Le Clerc does try to defend the theory of plastic natures from Bayle's criticism by classifying plastic natures as God's instruments. We have seen, for instance, Cudworth's comparison of plastic natures to laborers carrying out the design of an architect. Even though such laborers are themselves active, they only act insofar as they carry out God's instructions and do not understand the overall designs of the architect. On this score, Bayle points out that we can distinguish between two types of instrument. On the one hand there are instruments that understand and actively carry out their instructions, or what Bayle calls "moral" instruments. On the other, there are completely passive instruments, or what Bayle calls "physical" instruments. An example of the latter type of instrument would be a key by means of which we open a door. The problem is that Cudworth seems to want plastic natures to be both active instruments in terms of their faculty for producing organization and passive in terms of their lack of know-how. Bayle insists that the ability to unknowingly produce organization within matter is tantamount to saying that such organization could have arisen without intelligence. If plastic natures truly do not know how it is they act to bring about organization in the world, there is, for Bayle, no intelligible way for them to transfer the design in God's mind to matter:

*Si elle est conduite comme une plume qui sans savoir ni A ni B, fert a écrire tout ce qu'on veut, il n'y a plus de difficulté, mais si elle est gouvernée comme les ouvriers d'un Ingenieur, toute la difficulté demeure. Ces ouvriers-là s'ils n'avoient aucune idée ni de mortier, ni de pierre, ni de muraille, & que neanmoins ils executassent le plan de*

l'Ingenieur qui les eut placez en un certain lieu, & qui auroit l'oeil sur leur travail afin de le redresser en cas de besoin, seroient aussi admirable que des ouvrieries que feroient la même chose sans qu'aucun Ingenieur en eut le plan, car à moins que les idées de l'Ingenieur ne se communiquent à ses ouvriers, ils n'en retirent pas plus de secours que si elles n'existoient dans aucune tête. Enfin un Stratonicien pourroit parler ainsi à Mr. Cudworth; Dieu, selon vous, a pu donner aux creatures une faculté de produire d'excellens ouvrages separée de toute connaissance.<sup>323</sup>

Thus Bayle finds the plastic nature of Cudworth and Le Clerc incoherent. If organization implies design, the design must be present in its cause in the form of knowledge. Because plastic natures do not understand the instructions they are said to receive from God, the theory cannot effectively refute atheism. Bayle concludes that it would be much safer to admit the Cartesian/occasionalist position that organization arises in matter as a result of God's activity alone.

### 5.3 Leibniz and the Debate on Plastic Natures

At the urging of Le Clerc, Leibniz responded in print to the debate over plastic natures in the *Considerations sur les principes de Vie, et sur les natures plastiques, par l'Auteur du Système de l'Harmonie préétablie* (1705).<sup>324</sup> In the *Considerations*, Leibniz agrees with Cudworth and Le

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<sup>323</sup> HS 389; "If it is conducted as a pen which knows neither A nor B, which is used to write whatever one wants, there would be no more difficulty, but if it is governed like laborers by an engineer, the whole difficulty remains. If these laborers had no idea, neither of mortar, nor of stone, nor of a wall, and they nevertheless could execute the plan of an engineer who had placed them in a certain place, and who kept watch on their work in order to correct if needed, it would be as admirable as those workers who would do the same thing without any engineer who had the plan, for unless the ideas of the engineer are communicated to his laborers, they draw from them no more help than if the ideas were to exist in no head at all. In the end a Stratonist would thus say to Mr. Cudworth: 'God, according to you, had been able to give to creatures a faculty of producing excellent works separately from all knowledge' [My translation. Thanks to John Garner for help translating this passage].

<sup>324</sup> Leibniz also comments on plastic natures debate in the course of his correspondence with Damaris Masham, Cudworth's daughter. Masham asks Leibniz in her letter of October 20 1705 if he had seen the exchange between Le Clerc and Bayle regarding plastic natures (GP.III 370-373). In his response, Leibniz indicates that matter can act according to ends without the intervention of God and without intelligence providing that God endows it in advance with the proper structure:

Clerc that there must be active and immaterial principles within nature, but he provides an alternative account of the relation of such principles to matter. Leibniz maintains that, instead of intervening directly into matter, the activities of souls unfold in parallel to those of bodies. This parallel activity takes place by means of God's preestablished harmony. According to Leibniz, the hypothesis of preestablished harmony is superior to Cudworth's views because it provides a more intelligible account of a nature that unfolds by means of immanent vital principles. In addition, preestablished harmony simultaneously proves the existence of God, and thereby refutes Bayle and atheism.

In the *Considerations*, Leibniz affirms the existence of vital principles associated with all organized or living bodies within nature. In this regard, he agrees with Cudworth and Le Clerc. Leibniz differentiates himself from Cudworth and Le Clerc with the claim that such vital principles do not change the motion of matter. In this, Leibniz lumps Cudworth together with Scholastic philosophers and other who he claims held such a view of the influence of the soul on the body:

My opinion on vital principles, however, is in certain respects different from what has previously been taught. One of these respects is that it has always been thought that vital principles change the course of motion in bodies, or at least that they provide God with the occasion for changing it. My system, instead, holds that this course is not at all changed within the order of nature, God having preestablished it as it should be. The Peripatetics believed that souls have an influence on bodies and that according to their will or appetite, they give certain impressions to the body. The celebrated authors who by their vital principles and plastic natures have occasioned the present controversy have

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Et comme vous touchés le même sujet dans vostre letter, je vous diray, Madame, qu'à mon avis la matiere, quoyque destituée de connoissance, peut agir d'une maniere proper à obtenir une fin, sansqu'il soit besoin pour cela de luy applique une direction particuliere de Dieu ou de quelque intelligence Durant l'action; car on peut concevoir que Dieu luy a donné d'abord une structure propre à produire dans le temps des actions conformes à la raison (GP.III 374; "And as you touched on the same subject in your letter, I say to you, Madam, that in my opinion matter, however destitute of consciousness, can act in a manner proper to obtain an end, without there being any need of their applying a particular direction of God or of some intelligence during the action; for one can conceive that God has given to it in advance a structure able to produce in time actions that conform with reason" [translation mine]).

been of the same opinion, although they are not Peripatetics.<sup>325</sup>

Leibniz criticizes the theory of plastic natures for postulating an influence of the immaterial soul upon the material body. In calling attention to the theory of preestablished harmony between mind and body, Leibniz is pointing to his earlier critique in the *Système nouveau* of the theory of influence. There, Leibniz argued that the idea of the soul exerting influence on the body is unintelligible and offered his own hypothesis of preestablished harmony as the correct theory. In the *Considerations*, Leibniz repeats this maneuver, here taking the theory of plastic natures as the specific hypothesis of influence in question.

In place of the claim that the motions of matter are directed by immaterial vital principles, Leibniz argues that the mechanical motions of bodies are organized in advance by God. Leibniz presents this point as an enhancement of Cudworth's theory. God organizes matter by designing bodies according to what Leibniz calls divine preformation. The mechanical structure in place within matter is not fortuitous as the organization of matter exhibits God's ends. In this regard, Leibniz claims that he neither wants nor needs Cudworth's immaterial plastic natures. Rather, it is sufficient to claim that God has designed *material* plastic natures responsible for organization and movements of bodies:

I strengthen this opinion of Cudworth's with the consideration that if matter is arranged by divine wisdom, it must be essentially organized throughout and that there must thus be machines in the parts of the natural machine into infinity, so many enveloping structures and so many organic bodies enveloped, one within the other, that one can never produce any organic body entirely anew and without any preformation, nor any more destroy entirely an animal which already exists. So I have no need to resort, as does Cudworth, to certain immaterial plastic natures, though I recall that Julius Scaliger and other Peripatetics, as well as certain adherents of Van Helmont's doctrine of the archeus believed that the soul makes its own body. To this I can say *non mi bisogna, e non me basta*, because this preformation and this infinitely complex organism provide me with material plastic natures that meet the need.<sup>326</sup>

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<sup>325</sup> L586-7/GP.VI 540.

<sup>326</sup> L 589/GP.VI 544.

Leibniz argues, in short, that material plastic natures, fashioned by means of “divine preformation,” generate the organization of matter that Cudworth ascribed to immaterial plastic natures. Moreover, the material plastic natures are explicable in mechanical terms.

Leibniz’s claims that his theory of material plastic natures avoids the atheistic consequences Bayle imputes to Cudworth. Insofar as Leibniz’s theory of vital principles and material plastic natures relies upon a harmony preestablished by God, he can present it as, *contra* the atheist, a direct and immediate proof of the existence of God. The proof assumes that a general cause is required to harmonize the activities of vital principles and organized bodies.<sup>327</sup> By contrast with Bayle’s occasionalism, however, although God determines the activities of created souls and bodies things in advance, said activities unfold naturally by virtue of forces within nature. In other words, natural activity requires no further intervention by God. Here Leibniz repeats his argument (seen in the *Système nouveau* and *De ipsa natura*) that the occasionalist requires constant supernatural intervention and so takes refuge in perpetual miracles:

Therefore souls or vital principles, according to my system, change nothing in the ordinary course of bodies and do not even give God the occasion for doing so. The souls follow their laws, which consist in a definite development of perceptions according to goods and evils, and the bodies follow theirs, which consist in the laws of motion; nevertheless, these two beings of entirely different kind meet together and correspond to each other like two clocks perfectly regulated to the same time. It is this that I call the theory of preestablished harmony, which excludes every concept of miracle from purely natural actions and makes things run their course regulated in an intelligible manner. Instead of this, the common system [of influence] has recourse to absolutely inexplicable influences, while in the system of occasional causes God is compelled at every moment, by a kind of general law and as if by compact, to change the natural

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<sup>327</sup> As Leibniz claims in the *Considerations*:

This system of preestablished harmony furnishes a new proof, hitherto unknown, of the existence of God, since it is very clear that the agreement of so many substances, none of which exerts an influence upon another, can only come from a general cause upon which all of them depend and that this cause must have infinite power and wisdom to preestablish all these agreements. Even Mr. Bayle has expressed his judgment that no other hypothesis has ever given so much help to our knowledge of the divine wisdom (L 587/GP.VI 541).

course of the thoughts of the soul to adapt them to the impressions of the body and to interfere with the natural course of bodily movements in accordance with the volitions of the soul. This can only be explained by a perpetual miracle, whereas I explain the whole intelligently by the natures which God has established in things.<sup>328</sup>

For Leibniz, a miracle is, by definition, an exception the laws of nature. Hence, a miracle cannot be explained in natural terms. To argue that the occasionalist resorts to a theory of perpetual miracles is, therefore, to argue that the occasionalist gives up on natural explanation altogether and ends up resorting to purely supernatural causes. According to Leibniz, a philosophy of nature should, by contrast, provide an account of the phenomena in terms of the natural entities in question and not an external *deus ex machina*. Leibniz's own theory of preestablished harmony and material plastic natures avoids this by postulating a fully natural explanation of physical phenomena.

In the *Considerations*, Leibniz therefore avoids both Cudworth's theory of immaterial plastic natures and Bayle's occasionalism. His overall strategy is to show that the preestablished harmony does a better job of explaining natural change than Cudworth's theory of immaterial plastic natures. According to Leibniz, it is both unintelligible and superfluous to posit that plastic natures organize matter. Rather, the notion of a *material* plastic nature designed by God in advance is sufficient to account for natural order and regularity. At the same time, the theory of material plastic natures is superior to Bayle's occasionalism because it does not resort to saying that nature is the result of God's perpetual miraculous intervention. Instead, the design proper to material plastic natures provides a fully natural and mechanical account of the phenomena as well as a direct proof of God's existence.

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<sup>328</sup> L 587/GP.VI 540-541.

#### **5.4 The Spiritual Automaton and Unknowing Activity in the *Essais de Théodicée***

Leibniz's material plastic natures provide a neat solution to the debate over plastic natures.

Material plastic natures provide a natural explanation for change in a way that immediately proves the existence of God. They allow Leibniz to argue that souls do not need to change the motions already taking place within matter and forestall Bayle's accusations of atheism.

Leibniz's contribution to the debate on plastic natures in the *Considerations* ignores, however, the crucial epistemic dimension of Bayle's polemic against plastic natures, the so-called argument "quod nescis." As indicated above, Bayle attacked Cudworth's claim that plastic natures know not what they do. For Bayle, this is inconsistent with Cudworth's insistence that material organization requires an intelligent cause. If a cause must have knowledge of the intended effect, then plastic natures cannot be true causes. Bayle wields this argument to motivate the occasionalist conclusion that God is the sole cause of natural phenomena because, even on Cudworth's own terms, God alone has knowledge of how matter should be organized. What are we to make of Leibniz's silence on this topic in the *Considerations*? Is Bayle's claim that a cause must have knowledge of that which it produces a problem that Leibniz needs to address?

If one poses the question of knowledge strictly at the level of matter, Leibniz's theory of material plastic natures is sufficient to account for natural organization. For Leibniz, God organizes matter directly and then allows it to unfold mechanically according to its preestablished structure. In this way, the organic forms that matter realizes over the course of history are already implicated in this initial design. For this reason, in Leibniz's theory, there is no need for an immaterial intermediary that would impose God's ends onto brute matter, and hence entities such as Cudworth's immaterial plastic natures are superfluous. There simply is no

problem of the natural transfer of an intelligent design to matter. As a result, Bayle's concern for the question of whether or not immaterial plastic natures *know* what they are doing does not arise in the context of Leibniz's theory of material plastic natures in the *Considerations*.

The story does not end here, however. By the time of the *Essais de Théodicée* five years after the *Considerations* Leibniz realizes that the "quod nescis" argument threatens the spontaneity of the soul at the heart of the preestablished harmony. Indeed, in *T* ¶¶399-403, Leibniz devotes attention to Bayle's argument in the *Reponse aux questions d'un provincial* (1706) that the soul does not act because it does not know how to bring about its ideas.<sup>329</sup> Here the question of whether a cause needs knowledge of its effect does not apply merely to the way that an immaterial entity might organize brute matter, but also to the way that a soul produces its own perceptions and ideas. According to Leibniz's theory of spontaneity, the soul produces its perceptions of the world without any external influence. In order to truly produce a perception, is it therefore necessary for the soul to have distinct or conscious *knowledge* of how to produce a

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<sup>329</sup> It is not clear exactly when Leibniz recognizes this threat. As shown above, Leibniz does not address the argument "quod nescis" in the text of the *Considerations*. Bayle had raised the problem of the connection between knowledge and force in 1702 in his commentary on Leibniz in Note L to his *Dictionnaire* entry on Rorarius: "Can a blind force modify itself so appropriately as a consequence of an impression communicated to it thirty or forty years before, when it has not been renewed since, when it is left all by itself, and without ever having had any knowledge of its instructions?" (WF 88). In an unpublished note on this passage, Leibniz suggests that a *mechanical* preformation akin to the material plastic nature of the *Considerations* is sufficient as a response to Bayle's question:

It seems that M. Bayle has got confused, and thinks that the ship or the human body is to be given some kind of 'faculty or virtue' or other, capable of adjusting itself to accidents or to thoughts without having any knowledge of them, and indeed without any intelligible reason. He has good reason to reject such a faculty as impossible; but no one ever suggested such a thing. The automaton which acted as a servant would need only a structure which made it perform its functions in accordance with mechanical rules. It wouldn't modify or change itself to fit in with the thoughts of the master. It would follow out its course, and by that alone would fit in exactly with the wishes of the person its maker intended it to serve (WF 98/GP.IV 537).

In other words, Leibniz reads this as an issue pertaining to the *mechanical* and not to the *spiritual* realm. He does not seem worried, therefore, that Bayle has in mind the question of whether or not the soul can cause its own ideas even while lacking knowledge of how to do so. In the *Théodicée*, Leibniz addresses Bayle's claim that our souls do not act in the *Reponse aux Questions d'un Provincial*. This is a text that Bayle published in 1706, thus after the composition of the *Considerations*. In light of this fact, it seems plausible that Leibniz did not recognize the question of whether or not the soul can cause its own ideas this as a potential worry until he was working on the *Théodicée*.

perception? This problem is compounded because, as Leibniz admits, even though souls do not change the movement of matter by way of *physical influence*, they nonetheless play the role of *metaphysical principle* underlying material reality and express what is taking place in bodies. In other words, Leibniz's theory of mechanical preformation and material plastic natures cannot be divorced from an adequate theory of spontaneous spiritual activity. In this regard, Leibniz must provide an account of spiritual activity that addresses Bayle's worry.

Leibniz counters Bayle's quod nescis argument from the *Reponse* with the conception of the soul as a spiritual automaton. In other words, the spiritual automaton serves to explain the way that perceptions arise spontaneously yet without the need for deliberation. Physical automata are machines that carry out their operations without the need for conscious deliberation. Their organization results from the intelligence of their engineer. In conceiving of the soul as a spiritual automaton, Leibniz likewise argues that the soul produces its perceptions without needing to consciously think about what it is doing. Further, analogous to the way that God designs the material plastic nature of the *Considerations*, Leibniz claims that the spiritual automaton's perceptions unfold according to *divine preformation*. Though the soul spontaneously carries out its activities, it does so without distinct knowledge of what it does and in a way that reflects God's initial design.

¶¶399-403 quotes extensive passages from Bayle's *Reponse* in which Bayle defends himself against criticisms raised by Isaac Jaquelot in 1705.<sup>330</sup> Jaquelot defended a strong conception of free will. Against Bayle, Jaquelot argued that we have a distinct idea that we are

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<sup>330</sup> Isaac Jaquelot was a French court Chaplain in Berlin with whom Leibniz corresponded beginning in 1703. In 1705, Jaquelot published the book *Conformité de la foi avec la raison; ou Defense de la Religion, contre les principales Difficultez répandues dans le Dictionnaire Historique & Critique de Mr. Bayle* (Amsterdam: Henry Desordes & Daniel Pain, 1705). Bayle addresses Jaquelot's criticisms in the *CPD*. For Leibniz's exchanges with Jaquelot on the topic of the preestablished harmony, see WF 171-201

the free cause of our ideas and bodily movements on analogy with our knowledge that we exist. We know clearly and distinctly that we exist even though we know we are ultimately dependent upon God; in the same way, we know we are the cause of our actions even though they are ultimately dependent upon God as well. In a passage from the *Conformité* that Bayle quotes the in the *Reponse*, Jaquelot writes:

“Je demande si nous n’avons pas une idée distincte de nôtre existence; quand nous disons *je pense, donc je suis*; cependant nous n’eixstons pas par nous mêmes. Il n’est donc pas plus difficile de conclurre, je connois & je sens clairement & distinctement que je fais ce que je veux dans l’étendue de ma sphère d’activité, donc je suis libre; quoique je sois dans la dependance de mon Créateur, pour agir, comme pour exister.”<sup>331</sup>

For Jaquelot, we clearly and distinctly experience ourselves as free agents in a variety of ways. For instance, we voluntarily move our arms and call up memories of elephants at will.<sup>332</sup> Even though our existence is ultimately dependent upon God, can this prevent us from being the true cause of these activities in conformity with our experience?

Bayle reverses Jaquelot’s claim by suggesting that we can easily draw a different conclusion. Instead of concluding that that we are free *despite* being dependent upon God, we could conclude that we are *not* free because we are dependent upon God. In other words, just as our existence is dependent upon God, through reflection we could discover that our actions are likewise dependent:

“Disons aussi que le sentiment clair & net que nous avons des actes de nôtre volonté, ne nous peut pas faire discerner si nous nous les donnons nous-mêmes, ou si nous les recevons de la même cause que nous donne l’existence. Il faut recourir à la reflexion, or à la meditation afin de faire ce discernement. Or je mets en fait que par des meditations purement philosophiques on ne peut jamais parvenir à une certitude bien fondée que nous sommes la cause efficiente de nos volitions, car toute personne que examinera bien les

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<sup>331</sup> CPD 760/Jaquelot, *Conformité* 234; I ask if we do not have a distinct idea of our existence; when we say ‘*I think, therefore I am*’; however we do not exist through ourselves. It is therefore not much more difficult to conclude, I think and I sense clearly and distinctly that I do what I wish in the extension of my sphere of activity, therefore I am free; even though I am dependent on my Creator in order to act just as in order to exist (translation mine).

<sup>332</sup> Jaquelot provides these examples in an appendix to the *Conformité*. See WF 185

choses, connaîtra évidemment que si nous n'étions qu'un sujet passif à l'égard de la volonté, nous aurions les mêmes sentimens d'expérience que nous avons lors que nous crions être libres."<sup>333</sup>

Bayle counters Jaquelot's conviction that we are free in much the same way that Leibniz had rejected Descartes's view of the freedom of indifference. Our own experience or sense of ourselves as free is not sufficient to provide certainty that this is the case. Indeed, as Bayle suggests, it is plausible to think that we could have a clear and distinct sense of being the free whether or not our actions are free.

For Leibniz, these arguments from Jaquelot and Bayle are significant because they raise the theological question of whether or not God is the author of sin. Leibniz wants to maintain that substances are true secondary efficient causes of their accidents because if they are not God alone would be responsible for producing evil.<sup>334</sup> This result would destroy piety and is hence unacceptable. Against Bayle, then, Leibniz maintains that God creates natural substances and that these substances actively produce their own accidents. In characterizing Bayle's arguments against Jaquelot, Leibniz writes:

The force of these proofs, which he [Bayle] praises, must not be so great as he thinks, for if it were they would prove too much. They would make God the author of sin. I admit that the soul cannot stir the organs by a physical influence; for I think that the body must have been so formed beforehand that it would do in time and place that which responds to the volitions of the soul, although it be true nevertheless that the soul is the principle of the operation. But if it be said that the soul does not produce its thoughts, its sensations,

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<sup>333</sup> *CPD* 762-3; Let us also say that the clear and distinct sentiment that we have of acting from our will, does not allow us to discern if we give these acts to ourselves, or if we receive them from the same cause that gives us existence. It must be a matter of reflection, or of meditation in order to discern this. For I assume [?] that by purely philosophical meditations one can never come to well-founded certainty that we are the efficient cause of our volitions, for everyone who would examine things closely, will recognize evidently, that if we were nothing but a passive subject with regard to the will, we would have the same sentiments of experience as we have when we think ourselves to be free (translation mine).

<sup>334</sup> See for instance *T* ¶392/GP.VI 348-350.:

God is the one principal cause of pure and absolute realities, or of perfections. "Causae secundae agunt in virtute primae." But when one comprises limitations and privations under the term realities one may say that the second causes co-operate in the production of that which is limited; otherwise God would be the cause of sin, and even the sole cause.

its feelings of pain and of pleasure, that is something for which I see no reason. In my system every simple substance (that is, every true substance) must be the true immediate cause of all its actions and inward passions; and, speaking strictly in a metaphysical sense, it has none other than those which it produces. Those who hold a different opinion, and who make God the sole agent, are needlessly becoming involved in expressions whence they will only with difficulty extricate themselves without offence against religion; moreover, they unquestionably offend against reason.<sup>335</sup>

The problem here is clearly not the problem of whether or not souls exert an influence on bodies. Leibniz quickly dismisses this problem by referring to his familiar argument that the body is preformed by God to act in ways that correspond to the soul's volitions. Rather, what is at stake is whether the soul is truly responsible for its own immanent activity in a way that could render it responsible for sin.

To address the problem of the soul's internal activities, Leibniz begins by laying out what he calls "foundation" of Bayle's argument in *T*¶401. Just as Bayle had argued that Cudworth's immaterial plastic natures could not be the cause of material organization because they lack knowledge of how to design matter, Bayle argues in the *Reponse* that the soul does not know how to bring about its own thoughts, ideas and volitions. Bayle argues that we typically acknowledge that in order to carry out a physical task we need to have knowledge of how to bring it about. Why should producing our mental ideas be any different? Leibniz quotes a series of examples Bayle provides as illustration. For instance, Bayle claims that when sewing we acknowledge that we need to know how to produce the proper stitches in order to actually sew them, and that we should admit the same thing as pertains to ideas such as mental portraits of objects:

Yet where is the man who knows not on the one hand that he is in absolute ignorance as to how ideas are made, and on the other hand, that he could not sew two stitches if he were ignorant of how to sew? Is the sewing of two stitches in itself a work more difficult than the painting in one's mind of a rose, the very first time one's eyes rest upon it, and although one has never learnt this kind of painting? Does it not appear on the contrary

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<sup>335</sup> *T*¶400/GP.VI 353-4.

that this mental portrait is in itself a work more difficult than tracing on canvas the shape of a flower, a thing we cannot do without having learnt it?<sup>336</sup>

Though we have and experience mental images, Bayle thinks that upon reflection, we should acknowledge that we are not their efficient cause. Just as we do not know how to sew until are taught, we would not know how to produce the image of a rose on our own. Bayle argues the same point with regard to memories. We commonly try to remember particular ideas in vain only to have those very ideas come to us later on unbidden:

We have the experience every day that the ideas we would fain recall do not come, and that they appear of themselves when we are no longer thinking of them. If that does not prevent us from thinking that we are their efficient cause, what reliance shall one place on the proof of feeling, which to M. Jaquelot appears so conclusive?<sup>337</sup>

Since we do not seem to understand the process whereby memories arise, why should we assume that they result from our activity? Bayle thus argues that we should admit that we are not the efficient cause of our memories. Our will fares no better than our memory. Bayle points out that we often will emotional responses that we are unable to realize. Even though we desire to react in a particular way and to experience a particular emotional state we are unable to do so:

Does our authority over our ideas more often fall short than our authority over our volitions? If we were to count up carefully, we should find in the course of our life more velleities than volitions, that is, more evidences of the servitude of our will than of its dominion. How many times does one and the same man not experience an inability to do a certain act of will (for example, an act of love for a man who had just injured him; an act of scorn for a fine sonnet that he had composed; an act of hatred for a mistress; an act of approval of an absurd epigram).<sup>338</sup>

Bayle takes the fact that we are often unable to bring about a desired emotion and reaction as evidence that we do not in fact *know* how to bring about the reaction in question. Therefore, we should admit that we are not ultimately responsible for our volitions.

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<sup>336</sup> T ¶401/GP.VI 354.

<sup>337</sup> RP 767-8/T 401/GP.VI 355. Bayle is alluding to Jaquelot's claim (following Descartes) that we experience our soul's activity.

<sup>338</sup> RP 768/T ¶401/GP.VI 355.

The examples from Bayle that Leibniz quotes in T ¶401 all highlight the degree to which our mental life is opaque, mysterious and beyond our control. How could we fabricate a mental image without being taught how to do so first? How do memories arise if we cannot call up particular memories at will? Why do our actions often run counter to our desires? The conclusion we must draw, according to Bayle, is that we do not know how these mental processes take place and that consequently we are not their efficient cause:

To put together in few words the whole force of what I have just said to you, I will observe that it is evident to all those who go deeply into things, that the true efficient cause of an effect must know the effect, and be aware also of the way in which it must be produced. That is not necessary when one is only the instrument of the cause, or only the passive subject of its action; but one cannot conceive of it as not necessary to a true agent.... What is one to conclude from that, save that the soul cannot be the efficient cause of its volitions, any more than of its ideas, and of the motion of the spirits which cause our arms to move?<sup>339</sup>

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<sup>339</sup> RP 1706 768-9/T ¶402/GP.VI 355-6. In the passage from the *Reponse*, Bayle also draws attention to our sense that we are the efficient causes of the motion of our limbs. He points out that we lack knowledge of the mechanisms involved in something like the motion of our arm. Thus we should resist thinking that we could be the efficient cause of such a motion:

We are all convinced that a key would be of no use to us for opening a chest if we were ignorant as to how to use the key, and yet we imagine that our soul is the efficient cause of the movement of our arms, despite that it knows neither where the nerves are which must be used for this movement, nor whence to obtain the animal spirits that are to flow into these nerves (RP 767; Nous sommes tous convaincus qu'une clef ne servirois de rien à ouvrir un coffre si nous ignorions comment il faut l'employer, & cependant nous nous figurons que nôtre ame est la cause efficiente du mouvement de nos bras, quoi qu'elle ne sache ni où sont les nerfs qui doivent servir à ce mouvement, ni où il faut prendre les esprits animaux qui doivent couler dans ces nerfs.)

As opposed to the examples of mental images, memories and volitions, the example of moving our arms seems to be a question of soul-body causation as opposed to the question of whether the soul can cause anything within itself. We are familiar with Leibniz's response: the soul need not influence the arm's motion because the arm is raised by virtue of "material plastic nature" preestablished by God. As an aside, our lack of knowledge regarding the motions requisite to move our arms is a favorite example of post-Cartesian occasionalists. It appears, for instance, in the work of Nicholas Malebranche. Malebranche writes in sections 6.2.3 of the *Recherche de la Verité*:

"For how could we move our arms? To move them, it is necessary to have animal spirits, to send them through certain nerves toward certain muscles in order to inflate and contract them, for it is thus that the arm attached to them is moved; or, according to the opinion of some others, it is still not known how that happens. And we see that men who do not know that they have spirits, nerves, and muscles move their arms, and even move them with more skill and ease than those who know anatomy best. Therefore, men will to move their arms, and only God is able and knows how to move them. If a man cannot turn a tower upside down, at least he knows what must be done to do so; but there is no man who knows what must be done to move one of his fingers by means of animal spirits. How, then, could men move their arms?" (Malebranche, *Search*, 450).

For Bayle, there is a clear upshot to the argument that if we do not know to bring about our ideas that we cannot be their cause. Namely, the conclusion that we are not the cause of our own ideas, should lead to the further acknowledgement that we receive our ideas passively.

In the realm of physical bodies, Leibniz denies the premise that one has to be aware how an effect is brought about in order to be a true cause. Although Leibniz acknowledges that end-directed activities such as Bayle's example of sewing require awareness of the means by which they are accomplished, he denies that sewing is paradigmatic for physical events. Innumerable events take place within nature without deliberation on the part of their natural causes:

That is indeed a strange way of reasoning! What necessity is there for one always to be aware how that which is done is done? Are salts, metals, plants, animals and a thousand other animate or inanimate bodies aware how that which they do is done, and need they be aware? Must a drop of oil or of fat understand geometry in order to become round on the surface of water? Sewing stitches is another matter: one acts for an end, one must be aware of the means... The foetus forms itself in the animal, and a thousand other wonders of nature are produced by a certain *instinct* that God has placed there, that is by virtue of *divine preformation*, which has made these admirable automata, adapted to produce mechanically such beautiful effects<sup>340</sup>

Leibniz's argument is that such activities are indeed carried out by bodies according to a divine preformation organized by God. Leibniz is, in short, perfectly happy to accept unknowing physical agents, corporeal automata that act i.e. blindly and spontaneously according to their design preestablished by God. Bayle might respond by pointing out that insofar as bodies carry out complex activities, they require some degree of organization and guidance. The only difference between Leibniz's system and occasionalism would be that Leibniz has God organize everything in advance. In this sense, why not admit that physical causes are merely the instruments of God? For Leibniz, the crucial difference between his system and occasionalism remains the fact that these actions follow from the nature and structure of the creatures

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<sup>340</sup> T ¶403/GP.VI 356.

themselves. In other words, God does not need to intervene miraculously to make the drop of oil round on the surface of water. Further, since roundness on the surface of the water follows intelligibly from the nature and structure of the oil, Leibniz holds that the drop of oil is the legitimate efficient cause (if not the exclusive metaphysical requisite) of the round shape on the surface of the water.

Leibniz extends this reasoning to the ideas that arise in the soul. He claims that we can be the cause of ideas even when we do not know how they are produced. Leibniz does so even while acknowledging that we often do not will the particular ideas that we have. Further, Leibniz grants that we are not even fully aware or conscious of the ideas that we do have. This would be impossible for our finite minds insofar as we have, on the theory of the preestablished harmony, an infinite number of ideas. Since the soul must represent everything taking place within the bodily automaton or machine of nature corresponding to it, and that machine has an infinite number of parts, the soul must concentrate an infinite number of bodily motions into unitary but confused perceptions. As Leibniz writes in a remarkable passage, in spite of all of this our ideas still arise in consequence of our natures, and hence we remain the spontaneous causes of our own ideas:

But we do not form our ideas because we will to do so, they form themselves within us, they form themselves through us, not in consequence of our will, but in accordance with our nature and that of things. ... Even so it is easy to believe that the soul is a spiritual automaton still more admirable, and that it is through divine preformation that it produces these beautiful ideas, wherein our will has no part and to which our [365] art cannot attain. 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.<sup>341</sup>

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<sup>341</sup> T ¶403/GP.VI 366.

Just as material plastic natures and corporeal automata are organized in advance by a form of divine preformation, so too are the actions of souls as spiritual automata. Insofar as God organizes the ideas and perceptions of the soul in advance to unfold in a particular manner, the nature of the soul itself can produce its ideas spontaneously and yet without awareness or distinct knowledge of what it is doing. In this manner it is, as Leibniz puts it, “easy to believe that the soul is a spiritual automaton.”

What, however, constitutes the “mechanism” by means of which the soul passes from one perception to the next? Within the spiritual realm, the notion of the automaton does not, of course, rely upon the material organization of parts; rather, it relies upon the internal relations of perceptions themselves. Perceptions pass one to the next according to an ordered rule encoded within the nature of a substance:

For it is plain that every simple substance embraces the whole universe in its confused perceptions or sensations, and that the succession of these perceptions is regulated by the particular nature of this substance, but in a manner which always expresses all the nature in the universe; and every present perception leads to a new perception, just as every movement that it represents leads to another movement. But it is impossible that the soul can know clearly its whole nature, and perceive how this innumerable number of small perceptions, piled up or rather concentrated together, shapes itself there: to that end it must needs know completely the whole universe which is embraced by them, that is, it must needs be a God.<sup>342</sup>

Here the spiritual automaton moves from perception to perception analogously to the way that a physical movement produces further motions. In other words, just as individual motions bring about subsequent future motions, each present perception—whether conscious or not—implies the future perceptions that will arise within the soul.<sup>343</sup> Perceptions pass one into the next according to their own internal structure, thereby giving birth to the future in an organized and

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<sup>342</sup> T ¶403/GP.VI 356-7.

<sup>343</sup> In this spirit, Leibniz will characterize the present as being “pregnant with the future” [“gros de l’avenir”] in ¶13 of the *Principes de la Nature et de la Grace* (AG 211/GP.VI 604) and ¶22 of the *Monadology* (AG 216/GP.VI 610), both of 1714.

predetermined way. Thus, the soul can spontaneously act even without distinctly knowing the means or even the ends in question. In this way, Leibniz utilizes the notion of design inherent in the concept of an automaton to shed on the particular way that the confused perceptions of the soul move one to the next according to a plan preestablished by God. Since perceptions and ideas arise from the nature of the soul itself, Leibniz concludes that the soul is their efficient cause and God cannot be counted as the author of sin.

### **5.5 Occasionalism, Preestablished Harmony and the Spiritual Automaton**

The key to Leibniz's scheme is that the actions of souls, just like bodies, can be organized to unfold according to divine preformation. In this regard, the notion of the automaton serves as a crucial analogy: just as God sets up physical automata to behave according to their preestablished mechanical structure and organization, so too can he set up souls to act according to a preestablished order. By virtue of designating souls as automata, Leibniz is thus able to analogize the workings of the soul to a machine, therefore enabling him to transfer a notion of preformation and consequently a form of unknowing activity to the soul. Just as Leibniz had rejected the theory of immaterial plastic natures by ascribing preformation to bodies in the *Considerations*, in the *Essais de Théodicée* he circumvents Bayle's requirement that the soul know how it produces its perceptions by ascribing to it its own type of divine preformation.

Leibniz's strategy admittedly hinges on the claim that it makes a difference whether God guides nature in advance or in medias res. To an occasionalist such as Bayle, this difference does not make a difference; in each case, body and soul are instruments that passively receive the influence of the divine will. For Leibniz, however, each option reveals a wholly different vision of nature. The occasionalist vision of nature depends upon God's continuous intervention

## Chapter Five: Plastic Natures, Activity without Knowledge, and the Spiritual Automaton

*because* the natures of created things provide no natural reason why change should happen. In this sense any causal event is by definition miraculous. Leibniz's preestablished harmony, with its material plastic natures and spontaneously acting substances allows us to understand natural change and development in terms of the native structures of natural things themselves. In this regard, the image of the soul as "spiritual automaton" enables Leibniz to stake out his positions conclusively *vis-à-vis* the debate on plastic natures: whereas immaterial plastic natures are unnecessary given God's preformation of bodies *qua* material plastic natures, souls need not know how it is that they spontaneously produce their perceptions by virtue of the divine preformation that renders them "spiritual automata."

## Conclusion

When one considers Leibniz's corpus as a whole, it is clear that the spiritual automaton appears on but a handful of occasions. The argument of this dissertation is, however, that Leibniz's conception of the soul as a spiritual automaton is more than a mere curiosity or offhand metaphor. As a conceptual fusion of the spiritual and the mechanical, the spiritual automaton represents a paradigmatic instance of Leibniz's synthetic metaphysical strategy. In this way, the spiritual automaton exhibits the way that Leibniz incorporates elements of self-moving mechanical devices into his vision of the immaterial soul. Further, Leibniz deploys the spiritual automaton at important textual loci to illuminate fundamental metaphysical and natural philosophical doctrines including those of spontaneity and preestablished harmony. Further, Leibniz explicitly wields the spiritual automaton as a tool to differentiate his distinctive picture of nature from that of contemporaneous rivals such as Descartes, Spinoza, and Bayle. Thus, the spiritual automaton is a sophisticated philosophical concept that exemplifies from Leibniz's explicit philosophical methodology and efficiently expresses crucial Leibnizian doctrines.

As I have shown, Leibniz first integrates the spiritual automaton into his philosophical system in ¶15 of the *Système nouveau* in 1695. If we examine the appearances of the spiritual automaton collectively, it appears that Leibniz uses the term in a consistent fashion throughout his career. Each time Leibniz presents the spiritual automaton, he uses it to illustrate the spontaneous operation of substances. Not only does Leibniz introduce the spiritual automaton in

## Conclusion

the *Système nouveau* in this context, but its subsequent appearances likewise develop themes specifically related to spontaneity. These themes include the process according to which the soul – a simple, unitary substance – produces its perceptions of the world;<sup>344</sup> God’s harmonious preestablishment of the activities of created substances;<sup>345</sup> the connection between spontaneity and freedom;<sup>346</sup> and the fact that a substance can spontaneously act without possessing distinct knowledge of what it does.<sup>347</sup> In other words, Leibniz’s use of the spiritual automaton remains thematically uniform.

At the same time, Leibniz deploys the notion of the spiritual automaton within multiple different theoretical contexts and controversies over the course of his mature period. In this sense, it is plausible that the concept undergoes development as Leibniz addresses new criticisms and problems. Leibniz’s *Auseinandersetzung* with Pierre Bayle could serve as evidence for this type of dynamic. Leibniz initially presents the spiritual automaton in the NS to illustrate the spontaneity of the soul with regards to the preestablished harmony and the relation between soul and body. In Leibniz’s 1698 response to Bayle, however, it is a question of whether or not a *simple* being can change. Though Leibniz claims to have anticipated all criticisms of his system of nature in advance, we do not necessarily have reason to believe Leibniz foresaw Bayle’s complaints regarding simplicity in note H to the *Dictionnaire* entry on *Rorarius*. Leibniz’s invocation of the spiritual automaton in 1698 could, therefore, represent a dialectical development whereby Leibniz realizes that the spiritual automaton provides a neat and tidy ad hoc solution to Bayle’s criticisms regarding simplicity and change. The same could be true of the spiritual automaton’s appearance in the *Animadversiones ad Wachteri librum* as well as in the

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<sup>344</sup> WF 83-84.

<sup>345</sup> WF 18-19/GP.IV 485.

<sup>346</sup> T 52/GP.VI 131.

<sup>347</sup> T 403/GP.VI 365.

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passages on freedom in the *Essais de Théodicée*, which emerge from Leibniz's renewed engagement with Spinoza and Descartes, respectively. As indicated above, these passages all serve to illustrate the doctrine of spontaneity and hence are compatible with ¶15 of the *Système nouveau*. There is no conclusive evidence, however, that Leibniz had such applications in mind for the spiritual automaton as of 1695. From this perspective, the spiritual automaton may represent a flexible image of the soul that Leibniz can adapt as needed.

There remains one important passage in which Leibniz invokes the spiritual automaton. This is *Monadology* ¶18. The *Monadology* represents Leibniz's 1714 presentation of the principles of his philosophy and for better or worse is often perceived as Leibniz's quintessential philosophical work.<sup>348</sup> The fact that Leibniz invokes the spiritual [in this case "incorporeal"] automaton in ¶18 is therefore not without inherent interest. Leibniz claims in ¶18 that: "One 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 [Automates incorporels]."<sup>349</sup> As is evident, Leibniz's use of the incorporeal automaton in the ¶18 is consistent with his general association of the spiritual automaton with the doctrine of spontaneity. In the *Monadology*, the monad is like an incorporeal automaton in the way that it produces its perceptions from its own stores.

What is of special interest with regards to this passage is, however, its position relative to Leibniz's famous mill example in ¶17. Here Leibniz provides a thought experiment; what if you could enter into a machine such as a mill and examine its inner workings? In the midst of the

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<sup>348</sup> What has come to be called the *Monadology* was initially composed as an elucidation of Leibniz's principles for French courtier Nicholas Remond. Leibniz never sent a draft to Remond, however. For more on the composition, publication history, and status of the text in Leibniz's mind, see Antognazza, *Leibniz*, 500-502.

<sup>349</sup> AG 215/GP.VI 609-610.

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physical mechanisms at work in the mill, would you ever be able to find anything to explain the existence of a perception? Leibniz's answer is an emphatic no:

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 the simple substance and not in the composite or in the machine.<sup>350</sup>

As the outcome of this thought experiment, Leibniz draws the conclusion that perceptions can only be explained as the internal actions of *simple* substances, that is, monads or so-called “incorporeal automata.”

Commentators generally interpret *Monadology* ¶17 as the canonical statement of Leibniz's conviction that machines cannot think. Since physical mechanisms cannot explain or produce a perception, it is inconceivable that they can produce mental processes.<sup>351</sup> “Leibniz's mill” has even received a good deal of attention from recent philosophers of mind as an important historical precursor to contemporary anti-materialist concepts of the mind.<sup>352</sup> What is easily lost in the anti-mechanical tenor of accounts of ¶17, however, is the fact that Leibniz characterizes the immaterial monad itself as an “incorporeal automaton” *in the very next*

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<sup>350</sup> AG 215/GP.VI 609.

<sup>351</sup> In the secondary literature on Leibniz there is disagreement about *why* Leibniz thought the mill thought experiment proves that mechanical reasons cannot explain perception. Lodge and Bobro argue that it is because of Leibniz's conviction in the *Monadology* that perception is “the expression of the many in the one,” and hence that a perceiving being must be simple and without parts “Stepping Back inside Leibniz's Mill”. Given that a machine such as a mill functions by virtue of the movements and dispositions of its parts, it would follow that nothing in the workings of a machine such as a mill could explain the existence of a perception. Blank suggests that the answer is that Leibniz thinks thoughts are connected in a unified way that parts of matter are not in “Leibniz's Mill.” Rozemond argues that for Leibniz the crucial point is that minds are active whereas matter is passive in “Mills Can't Think.”

<sup>352</sup> For representative examples see John Searle, *Intentionality*. (Cambridge: Cambridge University Press, 1983), 267-268; Paul M. Churchland, *The Engine of Reason, the Seat of the Soul: A Philosophical Journey into the Brain* (Cambridge MA: MIT Press, 1995), 191-195; Daniel Dennett, *Sweet Dreams: Philosophical Obstacles to a Science of Consciousness* (Cambridge MA: MIT Press, 2005), 3-7, 10-12.

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*paragraph.* In other words, even as Leibniz denies that the pushing and pulling of the parts of a machine could produce perception and thought, he explicitly compares the internal and spontaneous perceptual activities of the monad to the operation of a self-moving machine. Those who enter into Leibniz's mill are surely correct that, for the Leibniz of the *Monadology*, the monad is a simple immaterial substance and not a complex mechanical device. Readers of Leibniz should not, however, overlook the way that machines themselves as well as conceptual tools appropriated from the mechanical philosophy of the seventeenth-century inform and give shape to Leibniz's concept of immaterial substance and its spontaneous activity.

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