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The Development of Leibniz's Substance Ontology From 1666-1688

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The Development of Leibniz's Substance Ontology From 1666-1688

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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Leibniz's Conception of Substance from 1666-1688

J. S. Davis

ABSTRACT

Leibniz's early conception of individual substance ontology is one of the most puzzling, and fascinating, within the history of philosophy. It is the purpose of this paper to show that: 1) Leibniz did develop a coherent scheme that embodied his substance ontology, 2) the exposition of his early substance ontology is in *A Specimen of the Discoveries of the Admirable Secrets of Nature in General*, written in 1688 and, 3) the scheme is not sufficiently represented in the *Discourse on Metaphysics*.

Leibniz slowly developed a multifaceted view of substance within the twenty years previous to the writing of the *Discourse*. This view is comprised of the matter/form complex, the predicate-in-subject thesis and, the phenomenal characteristics of material interaction. These three facets can also be viewed as ontological, teleological/epistemological, and phenomenological, respectively. These facets were developed concurrently and are interdependent. The understanding of any facet requires the understanding of all of them.

From the exploration of Leibniz's development of substance ontology, one can understand his presentation of rational theology in the *Discourse*. Leibniz develops the ontology to account for the infinite nature of material division. The unification of material bodies requires explanation. Leibniz has the desire to create a method of deriving *a priori* knowledge of God, the universe, and humanity; he believes his substance ontology creates the firm basis needed to accomplish this task.

The Discourse on Metaphysics does not itself represent the complete scheme Leibniz developed. It shall be shown that *A Specimen of the Discoveries of the Admirable Secrets of Nature in General*, composed in 1688, is a definitive exposition of Leibniz's early substance ontology. *The Discourse on Metaphysics* can be viewed as an exposition of rational theology based upon the ontology Leibniz had developed.

Introduction

Leibniz's early ontology (1666-1688) is based upon the integration of passive matter and active forms. It is not, however, sufficiently represented in the *Discourse on Metaphysics* which is mainly an exposition of Leibniz's rational theology¹. This thesis seeks to answer the following questions within the context of the statement given above: How did Leibniz develop his early substance ontology? When were Leibniz's early formulations of substance completed? How did the development of these early formulations affect each other? What factor is most influential on Leibniz during the development of his early substance ontology? What relation does the early substance ontology have to the rational theology of the *Discourse*? Where is a complete presentation of Leibniz's early substance ontology to be found?

The exploration of Leibniz's early substance ontology involves much more than a simple perusal of the *Discourse on Metaphysics*. Leibniz wrote the *Discourse* as a theological treatise using his ontological formulations as a foundation. The *Discourse*

¹ G. W. Leibniz, "Discourse on Metaphysics" (Discours de Métaphysique), *Philosophical Essays*, Trans. and Ed. Roger Ariew and Daniel Garber, (Indianapolis: Hackett Publishing Company, 1989) 35-68. All citations to this work will be noted as **AG** followed by the page number. G. W. Leibniz, *Philosophical Papers and Letters*, Trans. and Ed. Leroy E. Loemker, 2nd ed. (New York: Humanities Press, 1970) 303-330. All subsequent citations of this work will be noted as **L** followed by the page number. G. W. Leibniz, *The Labyrinth of the Continuum: Writings on the continuum problem, 1672-1686*. Trans. and Ed. Richard T. W. Arthur, (New Haven: Yale University Press, 2001). All subsequent citations to this work will be in text as **A** followed by the page number.

explains the relation between God and humanity. The derivation of the ontological basis, however, is not to be found within the *Discourse*.

Leibniz wrote extensively upon the subject of substance in relation to being and motion. He was trying to solve the problem of the composition of the continuum, as he called it². Leibniz never achieved the goal of publishing a work outlining the exact composition of the continuum. He did, however, compose thousands of unpublished pages through which the development of his ontology of substance can be traced³. One of the goals of this paper is to show that *A Specimen of Discoveries of the Admirable Secrets of Nature in General* (*Specimen inventorium de admirandis naturae generalis arcanis*), composed around 1688, is a coherent explication of his early substance ontology.

What exactly did Leibniz do during the twenty years before the composition of the *Discourse*? Leibniz used reason, modern experimentation, and his extensive network of correspondents to help him define and describe the aspects of substance he envisioned. He studied and worked out his thoughts through his extensive notes, formulating the theories of corporeal and individual substance found in the *Discourse*. The perusal of certain pieces of Leibniz's works from 1666 through 1686 can help explain how he

² G. W. Leibniz, *The Labyrinth of the Continuum: Writings on the continuum problem, 1672-1686*. Trans. and Ed. Richard T. W. Arthur, (New Haven: Yale University Press, 2001). All subsequent citations to this work will be in text as **A** followed by the page number. Leibniz is quoted as describing the continuum: "consist in the discussion of continuity and the indivisibles which appear to be elements there, and where the consideration of the infinite must enter in." (**A** xxiii).

³ Although these pieces were, for the most part, not published during Leibniz's lifetime; they have been subsequently compiled and published: *Gottfried Wilhelm Leibniz: Sämtliche Schriften und Briefe*, 8 vols. Ed. Deutsche Akademie der Wissenschaften, (Berlin: Akademie-Verlag, 1923). *Die Philosophische Schriften von Gottfried Wilhelm Leibniz*, 7 vols. Ed. C. I. Gerhardt, (Berlin: Wiedmann, 1875-90) *Leibnizens Mathematische Schriften*, Ed. C. I. Gerhardt, (Berlin, (vols. 1-2) and Halle, (vols. 3-7): Asher and Schmidt) 1849-63. I will reference the translator when referring to Leibniz's works.

arrived at the view of substance ontology he espoused within the *Discourse on Metaphysics* and subsequently in *A Specimen of Discoveries*⁴.

The changes within Leibniz's works on substance can be viewed as theoretical longhand thinking, or "thinking on paper" as Arthur calls it (xxv). Leibniz will spend twenty years working out an ontology that goes through several instantiations. Arthur notes that the conclusions of the first part of Leibniz's studies are difficult to follow. The formulations are "philosophical experimentation" and quite often conclusions are reversed later (A xxv-xxvi).

The three basic metaphysical tenets developed by Leibniz between 1666 and 1688 are the matter/form complex, the predicate-in-subject thesis, and the phenomenological nature of causal interactions within motive systems⁵. These three strains seem to be separate. They are in fact completely interdependent, as I intend to show in the conclusion. Leibniz starts, in 1666-1672, with the Aristotelian and Cartesian ideas of motion and matter and develops a formulation of reality that yields the metaphysical tenets listed above by the early 1680's. The predicate-in-subject thesis was developed

⁴ Christia Mercer and R. C. Sleigh, Jr., *Metaphysics: The early period to the Discourse*. *The Cambridge Companion to Leibniz*. Ed. Nicholas Jolley, (New York: Cambridge University Press, 1995) 67-123. Mercer notes that of the thousands of unpublished pages Leibniz wrote, he never delineated a coherent explication of his total philosophical system. She claims that any coherent account of Leibnizian philosophy must be 'pieced' together from the fragments and letters. She notes that Leibniz himself advocated the writing of metaphysical treatises in an articulate manner. Therefore, Mercer advocates the view that any student of Leibniz must dig deeply into his work to discover the treasures of philosophy hidden within (70-71). All subsequent citations to this work will be noted as MS followed by the page number.

⁵ The matter/form complex is my label for the basic substantial unit Leibniz described. It is composed of passive matter, as the corporeal receptacle of the soul and perceptive apparatus, and the active form, which is the principle of activity, source of action and motion, and the universal connection of the individual substance. The predicate-in-subject thesis is my notation for the containment theory of truth and substantial existence. The predicate-in-subject thesis defines the individual substance through identification, the list of all predicates pertaining to that subject, and the exposition of all possible 'interactions'. Leibniz came to espouse the thesis that all 'interaction' within the universe is phenomenal. Matter has infinite characteristics and motion is relative, producing the necessity of an underlying reality supporting the phenomena of materially interacting bodies.

during the time he spent in Paris (1672-1676) and blossomed in Hanover (1677-1687). Leibniz's explanations of substance as the matter/form complex become more multifaceted as he studies mathematics under the tutelage of Huygens and is exposed to different thinkers in Paris and Hanover.

Leibniz recognized that an incorporeal source of motion was needed to make substantial existence self-contained. As we shall see, the concept of substance expands past the boundaries of simple Cartesian extension into the realm of phenomenal versus real existence, even into the infinite analysis of being. The Combinatorial Characteristic and the predicate-in-subject thesis are the direct results of the exploration of infinite analysis⁶. The phenomenological character of material interaction grew naturally from these developments during the Hanover period.

Leibniz's development of the unorthodox substance ontology in the *Discourse*, the predicate-in-subject thesis, has puzzled commentators. Mercer recognizes the confusion: "For decades, the core features of the philosophy of the *Discourse on Metaphysics* have baffled scholars" (MS 84). The scheme Leibniz creates is a multifaceted view of the universe. Leibniz often compares his substance ontology to God's view of the universe, a view that takes in all perspectives simultaneously⁷. His ontology is an attempt to explain substance in such a way that it covers all aspects of existence. The ontological basis of substance is the matter/form complex. The teleological and epistemic aspects are exhibited in the predicate-in-subject thesis. The scientific exploration of nature is

⁶ Leibniz called the system that he developed to assign numbers to terms and derive the complete notion of an individual substance the Combinatorial Characteristic. It was developed at the same time as the calculus and Leibniz hoped it would yield the certain scientific basis sought in the 17th century.

⁷ See: the 1669 *Letter to Jacob Thomasius* (L 97,103 note 12), *Discourse on Metaphysics* § 14 (1686) (AG 46-47, L 312), *On the Plenitude of the World* (De plenitudine mundi, March 1676) (A 61), *A Specimen of Discoveries* (1688) (A 309).

grounded in the phenomenological aspects of physical interaction. Any attempt to explore one part, however, necessitates an understanding of the other parts. Therefore, the ontology exhibited in the *Discourse* is not Leibniz's complete system, as shall be proven.

Chapter 1 is an overview of the origins of the early Leibnizian substance ontology in Leipzig and Mainz from 1666-1672. It shows the origin and reason of Leibniz's revival of Aristotelian forms. It also shows the origin of the concept of predicate-in-subject thesis. The early attempt uses algebraic computation to derive attributes. The primacy of motion is exposed as Leibniz discovers problems with Cartesian metaphysics. It also depicts the intentions Leibniz has for theology and substance ontology.

Chapter 2 is an exposition of the pertinent pieces Leibniz composed during his years in Paris (1673-1676). Here the origin and development of the matter/form complex is explained. During this period, Leibniz wrestles with the concepts of mind and form. His expositions about the combination of matter, form, and mind lay the foundation for further research done in Hanover. Leibniz also corresponded in the late Paris period about the formation of the Combinatorial Characteristic.

Chapter 3 explains how Leibniz develops the integrated substance ontology during his time in Hanover (1677-1687). Leibniz attempts to deal with the charges of fatalism and freedom in relation to the predicate-in-subject thesis. Leibniz develops the calculus and continues his work on the Combinatorial Characteristic. He derives the reasons why he believes terms and objects have a direct connection. The exposition shows the completion of the integrated matter/form complex. This integration paves the path to Leibniz's assertions of phenomenal physical interaction. The primacy of infinite analysis

and change within motive systems is proven as the driving factor of the development of phenomenological interaction. Finally, the development of the principle of sufficient reason coupled with the principle of contradiction leads Leibniz to the doctrine of preestablished harmony. A term he applies after 1686.

Chapter 4 is the comparison of the *Discourse on Metaphysics* and Leibniz's previous twenty years of work and the discussion of *A Specimen of Discoveries*. The *Discourse* is discussed article by article to compare those pieces from where he could have pulled the ideas and where they are referenced in the *Specimen*. As shall be shown, Leibniz had completed the development of his early substance ontology. His substance ontology is presented in *A Specimen of Discoveries* in 1688. Leibniz modified some of the formulations from the Hanover period during the composition of the *Discourse* and in pieces composed after the *Specimen*. These changes tend to confuse readers of Leibniz. The thesis that the *Discourse* is rational theology based upon substance ontology will be discussed here.

The appendix will summarize and discuss pieces originally believed to be written in the Hanover period⁸. The pieces are *First Truths*, *On Freedom*, and *On Contingency*⁹. The Deutsche Akademie der Wissenschaften has revised the dates and placed them in the Vienna period starting in 1688; all three are dated in 1689. The claims of *First Truths* parallel the claims found in *The Discourse* and *A Specimen of Discoveries*. The arguments for contingent substances and their possession of free will in *On Freedom* and *On Contingency* were most likely in response to the unfavorable view of the *Discourse*

⁸ I originally used them within the body of the argument. After I had been informed of the new dating, I decided to place them in an appendix.

⁹ Principia Logico-Metaphysica (AG 30-34, L 267-271), De Libertate, Contingentia et Serie Causarum, Providentia (AG 94-98, L 263-266), De Contingentia (AG 28-30)

Leibniz received from Arnauld in late 1686. Arnauld criticized Leibniz's predicate-in-subject formulation of substance. Arnauld probably had not reviewed the complete scheme of ontology Leibniz had used to support the predicate-in-subject thesis.

Chapter One- Leipzig and Mainz: 1668-1672

Leibniz wrote the *Dissertation on the Art of Combinations* (*Dissertatio de arte combinatoria*) in 1666 (L 73-84). It was an indication of the thought process which guided his investigations for the rest of his career. Leibniz wanted to create a discipline through which humanity could know the secrets of the universe; a grand science meant to create a catalogue of all possible knowledge. This discipline was intended to yield certain knowledge about God, the universe, and how humanity fits into God's schema. The theory was sound; however the application was the problem. Leibniz's unfamiliarity with physical phenomena made the application of simple algebraic computation to nature difficult¹⁰. The dream of that grand science, however, was engrained into Leibniz's thought and influenced his investigations of ontology for the rest of his career¹¹.

Leibniz creates the ground work for his multifaceted view in the *Dissertation*. In this piece, he calls God the only substance and the source of all motion: the Prime Mover.

¹⁰ Leibniz had very limited knowledge of physics in 1666. He had not read Galileo until sometime around 1672 (Notes on Galileo's *Two New Sciences*, A 4-8) and Descartes *Principles of Philosophy* in 1675 (Notes on Descartes's *Principles of Philosophy*, A 22-29). Loemker states that Leibniz's early interest in physics was in relation to theological problems (31), and that his inadequate understanding of contemporary mathematics and physics remained until he met Huygens in Paris (139). Ariew and Garber claim that Leibniz had a vague familiarity with the new philosophies investigating ontology and physics before 1672, (viii).

¹¹ The art of combinations is a forerunner of the methods of infinite analysis and epistemic relations Leibniz will develop. Calculus is the method of adding infinitesimals to yield an approximation of measure. The predicate-in-subject thesis will be the terminological application of calculus to reveal the attributes of an object and their relations to external reality. Loemker notes almost the same claim in his introduction to this essay: "The work contains the germ of the plan for a universal characteristic and logical calculus, which was to occupy his thinking for the rest of his life", (73).

The fact that motion needs a *reason* to exist supports the existence of a Prime Mover¹² (L 73). This reason is external to substance and will quickly become a problem. The reason for motion, however, is seen as incorporeal so he does have the basis of motion in the correct place for the development of his metaphysics.

Leibniz has simple metaphysical definitions and idealistic conceptions of how to investigate nature. The continuum is infinite and divisible (L 74). Metaphysics is the science of whole and part. As such, the exploration of nature has to do with being and change. Leibniz holds the location of parts within a body to be absolute: *situs* or order (L 77). Leibniz abandons his belief in absolute location quickly for the position of relative physical attributes. This stance is present in his work for the remainder of his life¹³.

Leibniz uses the absolute positioning of parts as a gateway to using number and complexions to describe nature¹⁴. The ability to use number and complexion rests upon the assumption of minima¹⁵ (L 78). The assumption of minima shows that Leibniz favored describing material as a unified whole even this early in his career¹⁶. The material bodies are to be explored as parts and wholes (L 73, 76). Leibniz believes that the use of complexions to explore the composition of substances and their attributes

¹² Leibniz uses the idea that if an object is moved, that motion has to be imparted by an external mover. All motion therefore is derived from God as the Prime Mover.

¹³ Leibniz had started exploring the idea of relative motion at the end of his stay in Paris; see *On Motion and Matter* (1672-73) (*De minimo et maximo* A 77+79).

¹⁴ Complexion is the term Leibniz used in reference to the algebraic and permutative operations used to derive the attributes of being in 1666. Complexion is the mathematical function of breaking down a whole to its constituent parts. Leibniz describes it as taking ‘number or totality’ and breaking them down into smaller wholes through analysis: “A *complexion* is the union of a smaller whole within the greater, [...]” (L 78). Leibniz notes that complexion refers more to pure arithmetic than being, however he does intend to use complexions to describe the possible variations within problems pertaining to real applications; e. g. musical notes (see L 79-82).

¹⁵ The whole to be explored is divided into parts assumed to be indivisible so as to allow certain permutative operations relative to the parts to the whole (*situs*) and the parts to the parts (vicinity) (L 78, number 10).

¹⁶ Leibniz, however, would quickly abandon the idea of minima as existents. Minima were fictions hence the concept that bodies could have absolute boundaries collapsed.

would yield the knowledge he seeks¹⁷. The mathematically combined terms remove any terminological barriers within the description of the being.

The complexio thesis is the early form of the mathematical analysis Leibniz will come to advocate. He intends this system to be used within all areas of research¹⁸. The simplicity and reliance upon algebraic computation and permutation ultimately makes the system useless but, its seed is sown within Leibniz's mind. The seed grows into the calculus and the ideas of using infinite analysis in the description of substance: the Combinatorial Characteristic.

Changes begin to emerge in 1669, in the letter he dispatched to his professor Jacob Thomasius (L 93-104). Leibniz is influenced by Descartes, even though he claims to be "...anything but a Cartesian" (L 94). Leibniz's metaphysical views are primarily Aristotelian with threads of Cartesian physics¹⁹. Primary matter is composed of mass (*massa*) and exhibits extension and impenetrability²⁰. The Aristotelian influence is seen in the exhibition of primary matter as undifferentiated bulk; inert material stripped of all

¹⁷ Leibniz believed that the permutation theory would be useful in delineating the species and genus of things and their attributes. Matter is to be explored by the use of complexio to derive the vicinity of parts. Form is to be explored by the use of disposition to derive the *situs* (L 80). Disposition is the arrangement of the parts of an object (L 84, note 12).

¹⁸ Leibniz lists twelve applications of the complexio thesis however, Loemker only translated five (L 81-82). Within the translated text, logic (L 74-75, 81), metaphysics (L 75), physics (L 75), jurisprudence and justice (L 75-76, 81-82), music (L 81-82), nomenclature (L 82), and theology (L 82) are mentioned briefly.

¹⁹ Leibniz did not write his notes on Descartes' *Principles of Philosophy* until he was in Paris. He also remarks to Foucher in his 1675 letter that he has only recently been able to read the actual texts (AG 2, L 152-153). This leaves Leibniz with an indirect knowledge of Cartesian philosophy acquired through the reading of commentaries or correspondence.

²⁰ Loemker states on pg 103, note 8: Leibniz is using mass here to denote extension and impenetrability. 'Mass' here refers to the existence of a piece of matter that has no attributes other than extended being from which the 'mass' can resist collision. The added attribute of inertia, the ability to resist change in motive state, is not applied.

its sensible attributes²¹. The Cartesian influence is seen in the description of matter as filling space as a continuous entity²² (L 95).

The other strong Aristotelian influence seen in this letter is that of the revival of the form, the determining factor of substantial identity (L 94-96). The revival of the form is one of Leibniz's main goals within the development of his ontological scheme²³. In fact, the next 17 years of Leibniz's metaphysical work will focus upon defining the existence of corporeal substance as a matter/form complex. At this point in his career, the combination of matter, forms, and change is the answer to the perplexing quandaries of ontology. Leibniz tries to fit matter into magnitude, form into figure, and change into motion (L 94-95).

Leibniz begins with the two concepts of extension and impenetrability as the basis of being and the essence of matter, respectively. At this stage, Leibniz believes that the body being in space comes before any form associated with the body. Space is the primary extended being; it is the locus of all things. Matter is then viewed as the secondary extended being from which comes impenetrability (L 100).

²¹ Leibniz seems to have read a large amount of Aristotle's philosophy including the *Physics*, *Metaphysics*, and his logical and ethical essays (L 94). The definition of primary matter Leibniz uses is essentially the definition Aristotle gives of matter without form. Aristotle, "Metaphysica" *The Basic Works of Aristotle*, Ed. Richard McKeon, Trans. W. D. Ross, (New York: Random House Publishing, 1941) 1029a 10-26.

²² Rene Descartes, "Principia Philosophiae." *The Philosophical Writings of Descartes*. 2 vols. Eds. John Cottingham, Robert Stoothoff, and Dugald Murdoch. (Cambridge: Cambridge University Press, 1985). Past Masters Intelex: Continental Rationalists: Descartes-Spinoza-Leibniz. 2001. The Philosophical Writings of Descartes (vol.1). University of South Florida Library. Tampa, Fl. 31 Mar. 2006. <<http://pastmasters2000.nlx.com.proxy.usf.edu/>>. Descartes describes, in *Principia Philosophiae* part II- The Principles of Material Things, that matter and space are the same (DV1 PPH ap. 46 p. 227). They are composed of raw extension (DV1 PPH ap. 42 p. 224). That extension has no limit within the universe; it is analogous to the plenum Leibniz will claim exists (DV1 PPH ap. 52 p. 232). Later Leibniz will also claim forms derive their nature from motion (L 96) and that motion is change of place; (L 100), *The Confession of Nature Against Atheists* (Confessio Naturae contra Atheistas, L 111). Descartes says similar things about forms (DV1 PPH ap. 52 p. 232) and motion (DV1 PPH ap. 53 p. 233).

²³ Mercer agrees that Leibniz has followed Aristotle in his exposition of substances within this letter (MS, 75).

Forms provide boundaries within matter because the universe is a plenum; they are not derived from extension²⁴. The concept of figure is equal to the form Leibniz wants to reintroduce; it is the source of a boundary²⁵. As a continuous entity, matter has no figure or shape; it just exists as extended impenetrable being. The division of matter provides the shape of bodies. Motion and the creation of boundaries divide the continuous parts of matter; discrete magnitudes within the plenum (L 96).

Contiguous bodies moving against or around each other destroy continuity and motion is made possible. Through actual motion and change, the form of the body is hidden within the body itself and realized²⁶. The absence of a vacuum within the universe eliminates the necessity for concrete forms of matter; the concept of absolute bodies is removed. Matter simply exists as a contiguous being in need of a form to define its parts (L 96).

Leibniz ties motion to change. Change is “generation, corruption, increase, decrease, alteration, and change of place or motion” (L 96); rather than the simple changes of variation, quality, or quantity seen in 1666 (L 77). Addition and subtraction explain increase and decrease within bodies. The generation of a new substance from the corruption of an old one explains the change of a substance, the substantial form guides

²⁴ Leibniz does not use the term ‘plenum’ here. Leibniz will, however, use the term in later works. A plenum is a space that is filled with pervasive, elastic, fluid material; the matter of the universe is contiguous. In the 16th and 17th centuries it was called the ‘ether’. Current science redefines the contiguous existence as ‘fields of force’. Leibniz choice of a continuous material allows him to render motion ubiquitous through constant interaction. He does not intend to present the idea that the universe is solid throughout.

²⁵ The idea of figure as the source of the boundary of a body prefaces Leibniz’s move to set conatus as the integral concept in material motion. The figure is derived from the motion of a body and Leibniz will adjust the boundary of a body to the infinitesimal tendency toward motion in the Paris period; see below pgs. 17-19.

²⁶ Leibniz offers the example of a column being hidden within a piece of marble. The sculptor removes the extra pieces to expose the form of the column (L 96).

the generation. Since matter is divisible, the ‘subtle’ motion of miniscule parts can explain the alteration of bodies. The identifying qualities of the substance change, and hence the substance itself follows. The substantial form remains in such a change. The form is the indivisible principle that directs the figure and magnitude of the body during change. The form is generated at the last instant of motion, giving the body shape after a change (L 97).

Leibniz recognizes that the Cartesian doctrine of corporeal substance, extension, cannot explain the observations recorded about the activity of matter: motion. Leibniz claims that an immaterial principle has to be added to the description of matter to explain corporeal substance (L 95). With the addition of an incorporeal principle of motion, the body is now a substance, no longer just an accident. God is the supreme incorporeal substance and imparts motion to the bodies He creates (L 99).

Leibniz interconnected the concepts of magnitude, figure and motion within the explanation of how a matter/form complex changes. Change is motive in the macroscopic and microscopic realms. The change is limited by the magnitude and figure of the substantial form: the principle of motion. The matter exhibits motion only in as far as it can change within the limits derived from the form. The substantial form only controls the motion within a substance; it is the internal principle of motion. The Prime Mover, ultimately, introduces any motion transferred from one substance to another. Bodies are moved by a mind as the first principle of motion (L 99).

Leibniz now identifies, in *The Confession of Nature against Atheists* (1669), the incorporeal principle or primary substantial form as the Supreme intelligence of the universe (L 109-113). The mind of God, an outside force, determines that which is not

determined by magnitude, figure and motion (L 112). The piece *On Transubstantiation* (1668) gives Leibniz the perfect opportunity to express these metaphysical characterizations in a real application²⁷.

Leibniz sets out to prove that the bread and wine are actually changed internally into the body and blood of Christ. The change is substantial not apparent. The definition of substance is solidified into one of a self-subsistent being with a principle to act; a *suppositum*²⁸ (L 115). Any action of a substance is an expression of the essence. The essence of a body is the connection with a concurrent mind, either human or Divine. Therefore, the change of essence has to do with the change of the expression of the concurrent mind, not the fundamental being of matter (L 115-116).

Leibniz describes the same ontological components with a different end in mind. He says matter is accidental when taken apart from substantial form; this is his description of appearance (L 118). The form of each body is a principle of action within the body, but it cannot exist without being an idea within the mind of God. As such, it substantiates that body (L 116-118).

Leibniz's first attempts at a metaphysical scheme can be seen in *On Transubstantiation* (1668) and his 1669 letter to Thomasius. He adds the form as the incorporeal principle needed to make motion come from within substance itself. The body becomes substantial where it was accidental before. Matter is still Cartesian. It is

²⁷ Transubstantiation is the act of consecrating the bread and wine in the Catholic mass. The spirit of Jesus Christ is supposed to be taken into the bread and wine thereby making them holy (L 115-119).

²⁸ J. E. McGuire, '*Labyrinthus Continui*': *Leibniz on Substance, Activity, and Matter*, Found in *Essays on Early Modern Philosophers: Gottfried Wilhelm Leibniz Pt. II*, Ed. Vere Chappell, (New York: Garland Publishing, 1992). McGuire supports the idea that Leibniz had integrated the concepts of substance and action as early as 1668 (29).

extended and the qualities of matter arise here. This formulation spawns problems for Leibniz because the description of substance is not self-explanatory²⁹.

The focus of the pieces paraphrased above shows that Leibniz was working toward an idea about the metaphysical description of the universe, although he had not substantially separated from Cartesianism yet. The focus also shows that Leibniz chose how to characterize his ideas in reference to the task at hand³⁰. In the letter to Thomasius, the focus was to prove that Aristotelian and Scholastic metaphysics were compatible. In *On Transubstantiation*, the focus of his exposition is to prove the actual presence of Christ within the host after consecration without any of the phenomenal attributes of the bread and wine being changed.

The analysis of Leibniz's early ontological attempts illustrates that he had the seedlings of the ideas which would culminate in the mid-1680's. The complexion thesis shows that Leibniz was in favor of creating a mathematical descriptive system of the metaphysical bases of being. The revival of the Aristotelian form shows that Leibniz was

²⁹ Mercer recognizes this fact. In her essay, she explains that the source of motion is still outside the substance. The prime mover imparts motion and since the form of matter is derived from motion, the form must ultimately come from God. Leibniz failed in his first attempt to create self-sufficient substantial units (MS 77). Mercer points out that he tried to correct these formulations before moving to Paris. He introduced the idea of active and passive elements in *On the Incarnation of God* (De Incarnatione Dei seu de Unione Hypostatica, Academy ed. 6.2: 577-8) and the crucial point that the active element is the enduring one acting through the passive element (MS 79). Other pieces written before the trip to Paris expose Leibniz's thought about where minds fit into substances. In 1670-71, Leibniz composed essays about motion and matter. In the section of the *New Physical Hypothesis* (Hypothesis physica nova, qua Phaenomenorum Naturae plerorumque causae ab unico quodam universali motu, in globo nostro supposito, neque Tyconicis, neque Copernicanis aspernando, A 338-343) titled *The Theory of Abstract Motion* (Theoria motus abstracti seu Rationes Motuum universales a sensu et Phaenomenis independents), Leibniz lays the basis for his research into infinite quantities and motion. He claims that the continuum is composed of infinite parts in which there are no indivisibles or minima (A 339). Motion is continuous and is propagated to infinity (A 340). In *On Primary Matter* (De elementum materia (?), A 343-344), Leibniz claims that matter acquires motion and forms from a mind (A 343). Matter depends upon motion for existence. Existence depends upon sensation and sensation comes from change: motion. Therefore, universal motion in a plenum allows substance to be known (A 344).

³⁰ Salvatore Russo, "The Concept of Matter in Leibniz", *The Philosophical Review* 47.3 (May, 1938): 275-292. Russo believes that the influence of a problem or field at a particular time was reflected in Leibniz's approach and exposition within his writings (285).

aware that matter and motion needed a principle to connect these aspects within substantial beings. The rejection of the doctrine of extension, as the metaphysical basis of being, will complete the necessary transformation Leibniz requires to fuel his formulations of substance. The contributions to the Catholic Demonstrations (*Demonstrationes Catholicae*) prove that Leibniz was definitely interested in applying metaphysical expositions to matters of faith³¹.

³¹ Loemker composed a superb exposition of Leibniz's theological intentions. He states that Leibniz had intended his metaphysics to support his theology. Leibniz intended the Catholic Demonstrations to be a grand exposé of rational theology. Leibniz never completed this work however; the *Discourse on Metaphysics* can be viewed as an extension of that enterprise (L 49-53).

Chapter Two-Paris: 1672-1676

The time Leibniz spent in Paris was dominated by mathematical exploration, the solidification of the concepts involved in the matter/form complex, and the introduction of the predicate-in-subject thesis. The work in mathematics was undoubtedly due to his involvement with Huygens. Under his tutelage, Leibniz worked vigorously on the concepts of infinite analysis and its relation to substance. This research yielded the infinitesimal calculus and the concept of a universal characteristic. The universal characteristic was meant to use calculus as the mathematical basis for the derivation of the complete notion of an individual substance. The characteristic numbers of each term are used in a calculation. The result of this calculation will be the enumeration of all the attributes of the substance.

The predicate-in-subject thesis came naturally out of these mathematical investigations. The ability to explore infinite quantities using the calculus gave Leibniz the thought of applying the technique to propositional truth statements. As shall be shown, Leibniz believes all reasoning or thought about substances comes from characterization. If the mind uses characters to represent forms, then the characteristic derivation of propositions will yield truth about substantial being. Through forms, substances are represented because forms are the source of the attributes of

undifferentiated material beings. The goal of such an enterprise is to explain the relation of real objects and their qualities to terminological descriptions³².

Leibniz uses rational analysis to explore the corporeality of beings within the universe. He excludes the actuality of minima and maxima from the realm of being³³. Leibniz excludes the concept of minima from space and body. He utilizes the example of a hypotenuse having the same number of indivisible points as the perpendicular of a triangle. The lines are of differing lengths but contain the same number of indivisible points. An infinite number of parallel lines can be drawn in between them; which is absurd. Leibniz utilizes a different example to exclude the concept of minima in time and motion. He demonstrates the ratio of space to time is that of the finite to the infinite. If space is infinitely divisible and space is traversed in motion, then the time spent traversing the space must share the same quality of infinite divisibility to maintain the ratio. Therefore, minima cannot be real constituents, or intelligible attributes, of the universe (A 9-11).

³² Mercer gives an excellent exposition of the developments and problems of Leibniz ontological formulations in this period (MS 93-95). Leibniz strives to create self-sufficient substances that harmonize and synchronize. The mind is the controlling factor within the matter/form complex. As such, the active and passive elements of individual substances are unified. As shall be shown, Leibniz does not account for the complete notion being the complete source of all attributes of a substance; God is still involved as a source of predicated characteristics. Substances are not fully self-sufficient. The extent of the cause/effect relationship as an epistemic tool is not exploited in this period. The predicate-in-subject thesis is just being formulated so Leibniz does not explicate the epistemological uses. Leibniz answers these problems in the Hanover period.

³³ The elimination of absolute quantities is a necessary component of a substantial exposition relying upon incorporeal principles to explain the phenomenal interaction of physical beings. Minima are the smallest indivisible things; i.e. an atom, as it was understood in 1672. The idea Leibniz is trying to exclude in reference to maxima is the idea of a thing that contains everything and cannot be contained within something else. Obviously Leibniz does not intend these proofs to extend through divinity. The examples Leibniz uses here are indicative of the stance he will take about real definitions in the Hanover period. The proofs of possibility carry with them contradictory circumstances. If a contradictory can be derived using the proof of the existence of the object, that object cannot be a real attribute, *On Minimum and Maximum* (A 9-19).

The absurdity of a part equaling the whole excludes the concept of maxima from the realm of existence. Leibniz proves the quantity of numbers and the quantity of squared numbers are equal. Since the squared numbers obviously exclude certain numbers; their quantity is part of the series of all numbers. The quantity of squares is a part of the quantity of numbers, they should be unequal. Every number can be multiplied by itself, however, so for every number there is a square: meaning that the quantities are equal. Therefore, the part is equal to the whole. Leibniz claims that a maximum cannot be a real constituent of the universe (A 13).

Leibniz views matter as being infinitely divisible in itself. He has to know how a substance can resist this quandary of corporeal existence³⁴. Although he excludes the actuality of minima and maxima from the realm of being, he does allow for the existence of infinitely small things. These things are boundaries. The boundary of a body must be infinitely small since it is also the beginning of motion: a conatus³⁵. The conatus allows Leibniz to limit the infinite material aspect of substance by creating a boundary derived from motion. Any body that is not in motion will have a boundary which is indivisible

³⁴ Infinitely divisible matter cannot be delineated or identified physically. The infinite nature of the material generates the inability to define a boundary between bodies.

³⁵ Arthur claims that Leibniz 'inherited' the concept of conatus from Hobbes as a momentary endeavor to move (440-441). The dependence of bodies on conatus for boundaries remains intact until 1676, Arthur claims. After 1676, Leibniz changes the conatus theory, that bodies are held together by infinitesimal tendencies to move, to the coherent theory of the *Specimen* (1688), where bodies cohere with adjacent bodies and therefore retain shape. This happens through the intervening maturations seen in pieces such as the *Pacidius Philalethi* (A 127-221) where Leibniz works out the motion of a body through space (A xxxv-xxxvii). The usual identification of 'conatus' with Spinoza is not established in Arthur's book. Arthur dates Leibniz's notes on Spinoza to early 1676 (40-45, 100-117). Loemker dates another set of Leibniz's notes on Spinoza to 1676 and 1678 (L 167-169, 196-206). Perhaps the exposure to Spinoza motivated Leibniz to change his theory of boundaries.

(A 17, also footnote 9). Leibniz already demonstrated that indivisibles are not real so the existence of a linear static boundary is impossible³⁶.

Changing the status of the boundary of a body from stationary to motive solves the problem of infinite divisibility. The conatus allows for the infinitely small to exist as a change, an endeavor to act. Leibniz assumed the conatus to be an infinitesimal tendency toward motion; the changeable aspect of a material state and the ever existent part of the matter/form complex³⁷. If a body is to be distinguishable, it must have a delineating factor that separates one body from another. Bodies are constantly moving and changing. The conatus has to exist as the delineating factor of one body from another: “Hence it is finally understood that *to be a body* is nothing other than *to move*” (A 17). The only thing Leibniz could use as the connection between infinitesimal change and being was perception (A 15-17).

The beginning of body coexists with the conatus through the motive quality of beings. One problem remains: what is it to be a motive being? The definition of body being motive leads to a circular argument. Motion is a change of place. The definition of a change of place involves the concept of a body moving. One cannot be defined without the other. Leibniz answers this circularity by introducing the mind: to be is to be perceived (A 17).

The mind reenters as the key factor in the matter/form complex. A mind must exist to perceive motive beings and this mind must be separate from all bodies. Hence God enters the explication as the supreme perceiver. The individual minds of substances do

³⁶ Leibniz defines a line as that with length but infinitesimal breadth and depth. He holds the line as an infinitely divisible boundary. Therefore, even though the line has infinitesimal properties, these properties do not remove the possibility of infinite division.

³⁷ Leibniz will make the storage of conatuses infinite within the mind; see below pgs. 26-27.

not contribute to the overall existence of bodies. To be is to be perceived, ultimately by the eternal mind of God (A 17). Therefore, Leibniz is trapped with the fact that substance is still dependent upon the mind of God for its overall existence. Leibniz's formulation of substance will be plagued with externally derived attributes until late in the Hanover period³⁸.

During the time Leibniz is working out the thesis that conatus is integral to the existence of substance; he also is corresponding about how these substances can be *known* as substances. The 1675 letters to Oldenburg and Foucher discuss the method of knowing substance³⁹. He calls this new discipline the Combinatorial Characteristic, a change from the art of complexion seen 9 years earlier (L 166). Such a discipline will provide a way of exploring the problems of universal and infinite qualities. Leibniz still desires to create a method to discover indubitable knowledge of God, the universe, and humanity: “[...] it will only be moral until somebody discovers *a priori* the origin of the world which we see and pursues the question of why things are as they appear back to its foundations in essence” (L 154).

The letter Leibniz sends to Henry Oldenburg in 1675 discusses the importance of the Combinatorial Characteristic. Leibniz explains that there is something within bodies besides extension (L 165). Connected to this is the importance of having the possibility of the existence of an object firmly held within the mind, if the thoughts of the objects are to be used in scientific exploration (L 165-166). The path to stable exploration is the

³⁸ As shall be shown, Leibniz solves the problem of external denominations through the addition of vestiges of the universe held within the complete notion of the individual substance; see *First Truths* (1689) (AG 30-35, L 268), and *A Specimen of Discoveries* (1688) (A 309).

³⁹ Henry Oldenburg was a secretary of the London Royal Society and a frequent correspondent of Leibniz (L 165-166). Simon Foucher was the Canon of Dijon (AG 1-5, L 151-156).

Combinatorial Characteristic. It will yield certain knowledge of God and the mind. The Combinatorial Characteristic can be used to check the soundness of concepts such as infinity, minima and maxima, perfection, and allness. Leibniz believes these concepts should not be used until their truth values can be exposed (**L 166**).

Leibniz's 1675 letter to Foucher goes farther into the explanation of how the Combinatorial Characteristic works without actually mentioning it explicitly. He describes the necessity of proving assertions to understand reality: "But although you do not enter explicitly into an examination of hypothetical propositions, I am still of the opinion that this should be done and that we should admit none without having entirely demonstrated and resolved it into identities" (**L 151-152**). The assertions are hypothetical in that they are posed as a possibility. Leibniz claims any proposition that has extrinsic denominations must be reduced to identical terms. The reduction will reveal the constant cause of the harmony of the universe (**AG 2, L 152**).

Leibniz's explanation of hypothetical propositions leads to the assertion that there are two truths hidden in conjecture: that humans think and that human thought has variation. Leibniz claims that the variation can only come from the existence of beings outside the thinker: "This variety cannot come from that which thinks, since one thing by itself cannot be the cause of the changes occurring in it. For everything remains in the state in which it is, unless there is something which changes it" (**L 153**). Here Leibniz asserts the importance of exploring the possibilities of existence. The exact reason he wanted to create the Combinatorial Characteristic (**AG 2-3, L 152-153**).

All meditations upon existence point to an extrinsic cause of sensation. Existence has the property of being constant. If existential appearances are constant, then there must be

a cause for the consistency. Until the *a priori* origin of this cause is revealed, the enigma of appearances will remain (AG 3-4, L 153-154). Leibniz's formulation of the predicate-in-subject thesis, the cornerstone of the Combinatorial Characteristic, will be incomplete until he has a firm ontological basis upon which to rest the teleological and epistemic claims derived from it.

The extensive notes Leibniz composes in Paris in 1676 explain the genesis of the matter/form complex and all the subsequent derivations. Including the beginnings of why he eventually abandoned the hope of perfect identical knowledge⁴⁰. It is here where Leibniz first creates the ontological basis he needs to support the predicate-in-subject thesis.

Leibniz mentions as a principle of existence the harmony of things: the greatest quantity of essence possible. The principle of harmony leads into the concept of the complete notion of individual substances⁴¹. God exists as the perfect creator of a universe that holds the greatest harmony within the plenitude of beings: the simplest set of substances will yield the greatest amount of harmony and plenitude within the universe. Leibniz uses the principle of harmony as a basis of how and why substances exist⁴². The greatest amount of harmony demands a single creator making a plenum of forms, space, and time. This leaves the maximal room for creation (A 45, L 157).

⁴⁰ The selections are found in (L 157-164), *On the Secrets of the Sublime, or On the Supreme Being* (11 Feb. 1676) (De arcanis sublimium vel De summa rerum, A 44-53), Notes on Science and Metaphysics (18 March 1676, selections) (A 52-59), *On Body, Space and the Continuum* (April 1676) (De veritatibus, de mente, de deo, de universo, A 116-123), and *On the Plenitude of the World* (1684-86) (A 58-63).

⁴¹ The derivation of the principle of harmony reveals the principles of perfection and sufficient reason, the two principles that fuel the predicate-in-subject thesis. As shall be shown, the predicate-in-subject thesis will only work if God's reason for creating individual substances is: to fit them into a harmonious and perfect universe in such a way that everything is harmonized and synchronized.

⁴² These substances are God, humans and, objects however; Leibniz does not make it clear how simple objects are included within this scheme.

From the principal of the plenitude of existence, Leibniz derives that there cannot be any vacuum of forms within the universe. This is accompanied by a corresponding fullness of place and time. Within the physical plenum, however, there is an undetectable metaphysical vacuum. This vacuum allows matter to exist in a discrete (fluid) state, being only contiguous. This fluid state of matter cannot be a continuum, even if space is, for the fluid state is infinitely divisible⁴³.

Matter taken alone can be explained by plurality without continuity since the cement of material existence, motion or mind, prevents the body from actual division (A 45-47, L 157-158). The motion can continue as ordered within the plurality of matter, a contiguous plenum allowing the maximum changes possible. In this way, all forms can hold together the bodies with which they associate.

God is the only self determining being and thus the source of the existence of things⁴⁴. The reason for things is their conforming sensations due to the aggregate of the requisites of these things⁴⁵. God created substances with the vestiges of creation within their being. The collective possession of vestiges of the universe makes uniform perception possible (A 47-49, L 158). “To exist is nothing other than to be harmonious; the mark of existence is organized sensations” (L 158).

Leibniz realized, however, he had to have something within this material remain throughout the changes. If space has infinite parts and is an accidental whole. Therefore,

⁴³ The difference between space and matter is the composition of a continuum. Matter cannot constitute the continuum by itself because the continuum must be indivisible to support existence. Space cannot be a contiguous entity because it can be explained by unity and continuity; hence it is different than matter which is not capable of this type of explanation (A 47, L 158).

⁴⁴ This is not to claim that God is the emanative source, as in the *Discourse* §14, but the existent source as creator. All created beings co-exist in harmony due to the superior workmanship of God (A 47+49, L 158).

⁴⁵ A requisite is the connection necessary to understand two separate things that are connected integrally. The connection is essential if it is necessary to the understanding of the things in question (L 161).

that which remains through the changes of space and all contained within must be eternal (A 53). The mind is the controlling factor within the plenum⁴⁶. The mind endures and communicates with God through the influences of sensation (A 51). Leibniz identifies the form associated with matter as the unchanging subject.

Matter is being changed continually. The enduring factor remains by expressing the active through the passive (A 55). The mind remains as the identity of that particular object and becomes indivisible through that identity (A 57). Identity here is not meant as self-reflexive *per se*, but is meant to represent the object as a complete whole. The identity of an object is the sum total of its attributes in relation to the changes within and without. The mind learns and coheres through its experience with the outside world (A 59).

Leibniz recognizes the importance of change as the defining characteristic of material. The identical nature of the mind associates that particular mind to the portion of matter with which it is related (A 57). The identification of the mind with its particular memories allows the series of existence to be known. The series is the infinite exertion of conatuses from outside the subject creating sensation within the subject. Leibniz says of this series: "Mind attains to a knowledge of truth and the making of propositions when it attains to certain constant and similarly recurring passions" (A 59). The perception is confused. The subject is limited by the duration of the perception combined with the infinite character of the incoming data. A defect of the sense organs causes a loss of some of the data since the body is finite and the information is infinite (L 160). The

⁴⁶ Leibniz here is not sure whether objects have a separate mind or not, but it must be remembered these are notes and not absolute decrees.

mind is the relational connection of the body, as receiver of the perceptions, to the form, as the constant being.

The omniscience of the mind is the result of the creation of the mind as a mirror of the universe. Leibniz intends to characterize the mind as the focus of the universe. The mind receives the marks of existence from the whole universe simultaneously (A 59). In every moment the mind is able to sort out those things which humans, as individual substances, can understand as perceptions. The combination of infinite acts of the mind in the ordering of conscious existence creates perceptions. Perceptions of objects require the mediation of sensation. The perception of forms is immediate: e. g. existence or thought (A 61). God created the mind as the sole existent able to recognize the infinity of perceptions as a point of identity.

Forms differ in structure and complexity because of the relations involved⁴⁷. Forms are conceived *per se* and subjects are conceived through forms. Leibniz uses thought and extension as examples of forms. Thought is a form associated with a thinking subject. Thought has both a subject and an object linked by the relation of the perception to the perceiver. Extension has only the relation of the subject as perceiver. Thought has the added attribute of being able to equate the subject and object within self-consciousness. The status of forms possessing duration *per se* is confused, but Leibniz notes that the being in which forms adhere is an enduring one.

⁴⁷ The notes dated April 1676 in (L 160-161) are incredibly complex. The intricate and sometimes contradictory nature of these claims creates a shroud through which the true meaning of Leibniz's focus must be sought. He is still trying to attribute forms to material existents. The notes outline the beginning of Leibniz's efforts to completely connect the incorporeal and corporeal realms through characterization. He completes this procedure in Hanover and it will be described in chapter 3.

The enduring nature of a subject allows the form to be explored as a part of the subject itself. The exploration comes through the use of characters. The mind uses the abstract reasoning given through linguistic characterization to think about forms. The unification of matter and form within a body creates the truthful relation of these abstract characterizations to incorporeal existents. Leibniz believes this connection is necessary to connect the incorporeal and corporeal (L 160).

The understanding of these relations is confused. Forms are exhibited through sensible objects. The mediation of sensibility comes from the need to understand more than one thing, e. g. a subject and an object, to derive the basis of the infinite character of incoming data. The infinite character of matter bombards the subject with sense data that must be ordered before thought can occur (L 160). Matter receives infinite perceptions as well as exerting infinite conatuses. Therefore, any sensation is of an infinite aggregate (L 161).

Leibniz is trying to describe the connection of an incorporeal form with the corporeal complex that exists as a thinking subject. Simple forms are attributes of God and conceived immediately⁴⁸. The thinking subject can understand these forms. The connection of these forms to the object perceived creates confusion. The attributes of matter are mediated by sensibility. At this stage in his developing ontology, Leibniz had to use the mind as the mediating factor to connect the incorporeal and corporeal through linguistic characterization (L 160-161).

Leibniz tries to bring together the mind and the matter/form complex. The mind will characterize forms and so be able to think abstractly about formal existents. The memory

⁴⁸ Leibniz lists being, perception, and extension (L 160).

afforded the mind comes from the storage of conatuses; they are stored in the mind eternally (A 59). The conatuses are exerted from all bodies into all others. The stream of consciousness arises from the mind inter-relating the intake of conatuses and connecting that with the active intellect of the soul (L 160-161).

In this way, Leibniz says every mind has a divine part. It is in synchronicity with all other objects. Through this synchronicity comes sensation. Perceptions are the aggregate of infinite acts (L 161). Only a mind can order an infinite aggregate to yield something which will conform to another person's sensation.

The equation of linguistic characterization and formal existence is the basis of Leibniz's belief in the predicate-in-subject thesis. Any thought about forms is language based. The reflection of the mind is not (L 161). Reasoning then becomes the relation of sense to reflection. Memory consists in the ability of a being to cognize sensation, or sense data, without the external representation. The mind has a sense of itself and this sense is the source of the unity of the body. Leibniz now calls 'identity' the existence of a self-reflexive mind. Self-perception is the act of realizing that the one sensing *is* sensing. In self-perception is found intellectual memory. It is entirely internal and is without characters (L 162).

The identity of a substance bestows the ability to react to that which attempts to divide it. The resistance is sensation. Sensation is the ordering of the infinite influences of external beings (L 162). The sensing mind remains through modification as a source of reflecting sensation. Therefore, this sensing mind cannot be destroyed by external influences (L 161-162). The solidity of the body comes from the enduring mind

connected with it. The mind allows the body to resist division. The various organs of the body may be modified but the mind will remain as the anchor of existence (A 119).

The unity of a body lies in this mental connection. Every mind has vestiges of the divine. The mind creates identity through the connection of its own endurance with external change. Since the mind is embodied, it is limited by the constraints of space and time. God is the absolute affirmative form so all forms can be predicated to God; but not to each other. The limitations of embodiment create the separation of God and creation, the identity separates created beings (L 163).

God is the Immensium which Leibniz defines as the absolute existential basis of reality, the infinite basis of being. The Immensium is the constant within space that resists change. God resists change by being pure intellect and pure action. He is the infinite enduring source of forms and the collection of forms. God is the subject of all forms as the absolute affirmative form. Simple forms are the infinite source of variety within being. Individual substances have within them the characteristics of being derived from the absolute affirmative form. The vestiges of divinity within created substances. The individual mind differs from God through the application of limitation. Individual substances are subject to limits, God is not (L 163).

The universe has a different composition. Space is the unlimited place where things exist and change occurs. Created beings are the changeable existents. Whatever is not unified by the action of a form or mind is an aggregate, it is destructible⁴⁹. The indestructible beings of the universe are active. Any passive being or aggregate can be

⁴⁹ Leibniz has modified his contention that space is a continuum. Universal space is now a being by aggregation; it is composed by the Immensium and superadded bulk to create variation (A 121).

destroyed due to its nature of being acted upon (A 119-121, L 163). Therefore, the reality of the soul is a unity within an aggregate: the body.

By the end of his stay in Paris, Leibniz has laid the basis for his metaphysical scheme. The body is composed of matter, form and, a unifying mind. Matter is the source of perception and sensation as the receiver of conatuses. The form is the source of variation. Through the form, the body is spatiotemporally oriented by the comparison with matter. The mind stores the conatuses as memory to be compared to the identity which endures through the changes. He has also mentioned a grand science that will expose the essential nature of the matter/form complex through the delineation of all the predicates of a subject. The accidental basis of exterior existence will grow into the phenomenological causation of interaction.

Within the ten years since Leibniz's first metaphysical attempt, he has solidified his views on the nature of matter, form and, how they work together to create substance. Matter still retains the character of inert 'stuff' through which the principles of action are to be expressed. The motive quality of matter becomes more important to the separation of substances. To be a substance means that substance must be able to move. Through motion a mind can know that the substance exists. The reason for motion is beginning to be removed from God. The primary material attribute is no longer being in space, it is a being which moves.

The form has progressed from a figure to the incorporeal principle of variation. Forms are now derived from God instead of being exposed from matter through motion. Leibniz has added to the matter/form complex the concept of mind as a controlling factor through which substance can sense and react as an identical unit. Identity is the act of

recognizing that the substance has perception of itself and separate objects. From the identity, a substance can know forms.

Leibniz added to his ontology an exposition of the connection of God and humanity. This is the most important change within the Paris period. Individual substances have vestiges of God within. The substantial mind is a mirror of the universe. The mind is the source of the identity. The identity is the unifying factor that allows the substance to endure through the changes of motion. Within the Hanover period, Leibniz will take all these formulations and mold them into the three metaphysical tenets mentioned in the introduction.

Chapter Three-Hanover: 1677-1687

Leibniz solidified his substance ontology during his time in Hanover. Many pieces, composed in Hanover before the *Discourse*, explain in detail the different aspects of ontology he came to espouse. These pieces are repetitive. The repetition shows that Leibniz was converging upon a coherent theory of ontology. Even though these aspects are taken as separate, they are totally interconnected as to their origins and scope.

The dialogue of 1677 describes the connection between words and things. Leibniz believed in a direct connection between terminology and being. This direct connection allowed him to develop the predicate-in-subject thesis⁵⁰.

Thought is necessary to the exploration of external existence. Characterization is necessary to human thought. Characters are needed to order the abstract thought involved (L 182). The choice of characters is arbitrary, but Leibniz believes the use of characters is consistent throughout all languages⁵¹. Consistent use shows the analogy between characters and things and the relation of different characters to each other when

⁵⁰ *Dialogus* (August 1677) (L 182-185). Sleight focuses upon the conception of the predicate-in-subject thesis during the years in Hanover (MS 107-115). Sleight asks: why Leibniz would use such a theory and what its implications would be in Leibniz's metaphysics. He feigns the first question saying no definitive answer has been given by Leibniz so any concrete answer is probably unreachable (MS 108). Sleight lists the consequences of the predicate-in-subject thesis as the answer to the second question. The complete containment of a subject's predicates, including the entire universal set of relations, allows for the inter-relativity of individual substances (MS 109). The connection of the self-sufficient and causal principles to a substance implies that the substance has a complete concept (MS 110). The added consequence that the individual substance can derive immortal, indestructible and interconnected being from the concept of the matter/form complex will be discussed below.

⁵¹ In the Paris notes, Leibniz claims that characterization is the act of creating the necessary connection of representation between the incorporeal and corporeal. Knowledge and reasoning depend upon this connection because it ensures the ability to link thoughts and perceptions (L 160).

they express the same thing. The consistency of using characters comes from the mind ordering perceptions and sensations. This ordering yields a similar characteristic throughout the various linguistic modes employed (L 183).

Leibniz believes the characterization of reality is the basis of truth, since the same notion is achieved in the application of different characters to the same object. Hence Leibniz believes that linguistic relation is the basis of truth and the predicate-in-subject thesis (L 183). The rule and order in using characters leads to the same result in any language: the relation of characters to objects (L 184).

The matter/form complex is the support for the necessity seen in the characterization of objective existence. If all created beings share the same attributes of existence as matter/form complexes, then they will all perceive objective reality in the same fashion. Even though the choice of characters is arbitrary, the act of characterizing perception is based upon the definite relations of the matter/form complex to the outside world. Leibniz will describe these relations as derived from the observation of phenomenal existence and the awareness of identity⁵².

The fragment titled *Chrysippus's Heap* (March 1678) (*Acervus Chrysippi*) outlines a solution to the problem of change and perception (A 229-231). Objective notions have a real connection when they convey an essence within the object itself: "I call those notions imaginary which are not in the things outside us, but whose essence it is to appear to us" (A 231). Imagination creates doubt because the notion is thought in reference to a particular response within the thinker.

⁵² Leibniz's formulations of identity and phenomena from the Paris period are discussed above on pgs. 22-29.

Leibniz employs the example of poverty here. Poverty is problematic when it is viewed as the possession of money rather than a relation of subjects⁵³. The ideas corresponding to relative notions are problematic because of the focus of the idea. If the idea corresponds to an object of perception (a poor person) in relation to their state (poverty) the problem is the identification of the state objectively. The problem arises in the subject because of the conceptual relations to their subjective experiences. Every person will identify poverty differently. When the thoughts are realigned to describe a real situation, i.e. the inability to purchase certain goods, the difficulty disappears (A 231). Leibniz was attempting to create a way of knowing truth through the analysis of subjects, or substances, rather than relying upon relational properties that define the state of these subjects⁵⁴.

In a 1678 letter to Herman Conring, Leibniz explains his theory of analysis and truth⁵⁵. Applying the basis of characterization to propositional composition, Leibniz develops his notion of demonstration. He claims all propositions, except identities, are demonstrable (L 187) The proposition follows necessarily from certain suppositions: “[...] it will become manifest that the chain of demonstration begins with identical propositions or observations and ends in a conclusion but that the beginning is connected with the conclusion through intervening definitions” (L 187).

⁵³ The state of ‘poverty’ is seen as a relative state involving the possession of a material attribute: money. The problem is how is this state to be applied when quantifying the possession of material. Leibniz suggests that realigning the focus from the possession of money to the state derived from the possession of money will solve the problem of relative states.

⁵⁴ G. MacDonald-Ross, *Past Masters: Leibniz*, (Oxford: Oxford University Press, 1984). Hence, as MacDonald-Ross says, the truth about relations becomes an exposition of the state of affairs rather than the facts about particular pieces of reality. The relations will not correspond to distinct portions of reality but to an exposition of the principle of sufficient reason (54-55).

⁵⁵ Herman Conring was a professor at Helmstädt and a frequent correspondent of Leibniz (L 186-191).

The definition of a compound notion is the analysis of its parts to reveal the definite components. The demonstration depends upon all the subjects and predicates being equally extended within the body of the proof (L 188). The reduction of terms must end at intellect and will in minds, magnitude, figure, situation and change in bodies. These are the suppositions of nature Leibniz holds as true⁵⁶ (L 189).

Leibniz's 1678 letter to Tschirnhaus makes even greater claims of the Combinatorial Characteristic⁵⁷. There he calls the art of combinations the science of forms, relating it to the predicate in subject notion of substance (L 192). Leibniz claims that the Combinatorial Characteristic can yield greater knowledge: "[...] for be its use all our thoughts can be pictured and as it were, fixed, abridged, and ordered; pictured to *others* in teaching them, *fixed* for ourselves in order to remember them; *abridged* so that they may be reduced to a few; *ordered* so that all of them can be present in our thinking" (L 193). The Combinatorial Characteristic leads to the interior of things. The notions produced are more distinct because of the reduction of complex ideas into easily acceptable truth statements⁵⁸. This type of rigorous calculation would eliminate simple errors in metaphysics (L 193).

The creation of definitions is important to combinatorial calculations. Primitive concepts are the most difficult to form because of the identical nature of their subject-predicate relationship. Leibniz holds the criterion of the most perfect definition as the elimination of doubt concerning the possibility of existence. Perfect definitions require

⁵⁶ Note that these bodily suppositions are still engrained in Cartesian principles. Leibniz has not completely made the change from real to phenomenal physical attributes.

⁵⁷ Walter von Tschirnhaus was a mathematician and philosopher Leibniz had collaborated with in Paris (L 192-195).

⁵⁸ Leibniz was intending to convince Tschirnhaus of the usefulness of the Combinatorial Characteristic as a mathematical method of metaphysical speculation. Even though he does not explicitly state this in the letter, Leibniz most likely meant the true nature of substance as the matter/form complex.

the systematic construction of a universal analytic to produce them. A calculus is the operation through characters to solve a problem. Leibniz's Combinatorial Characteristic is the calculus of the properties of things (L 194).

The Combinatorial Characteristic is the numerical basis of the predicate-in-subject thesis for which Leibniz had searched. The hinge of this thesis is the reduction of complex concepts to primary ones, the derivation of identical propositions. The principle of sufficient reason drives Leibniz's hopes here. He claims a real definition has a sufficient reason as well as the affirmation of existence from the truth of the terminological imposition.

Leibniz wanted to give all ideas and notions characteristic numbers. In a 1679 piece introducing the Combinatorial Characteristic, Leibniz discusses how he would do that (*Characteristica Universalis*, L 221-228, AG 5-10). Leibniz reflects upon the *Dissertation* of 1666, claiming that was his first effort to apply numbers to the linguistic characterizations of first principles (L 222-223, AG 7). The possibility of reasoning without the perturbation of emotional involvement is produced by using numbers instead of ideas. Reasons from arguments are compared arithmetically (L 224, AG 8-9). Leibniz believes that the interconnection of the universe demands that all notions have characteristic numbers. Arguments then can be checked for form and soundness so as to draw the correct conclusions (L 225, AG 9-10).

Using the laws of identity and contradiction as suppositions, Leibniz hopes to prove that any proposition can yield *a priori* reasons of truth by reducing the terms in the proposition:

For no matter how often a predicate is truly affirmed of a subject, there must be some real connection between subject and predicate, such that in every proposition whatever, such as *A is B* (or *B* is truly predicated of *A*), it is true that *B* is contained in *A*, or its concept is in some way contained in the concept of *A* itself (L 226)

The demonstration of containment amounts to individual substances having every predicate included in the subject (L 226).

The contingency of such propositions is saved by the fact that nothing happens without a reason. The reason God created individual contingent substances secures the inclination of each particular substance fitting into His divine plan of the universe, the universe He set in motion in a certain manner (L 226). Necessity is the removal of all other possible occurrences, so contingency secures the possibility of contrary occurrences (L 226-227). The reason certain contingent objects exist rather than others is God's free decree in creating them. Hence, Leibniz has created a method of explaining how God controls perfection and plenitude in the universe without making all action fatalistic. The infinite analysis needed to prove contingent statements *a priori* is still within human power, Leibniz hopes. The choices presented to individual substances are inclined without being necessitated.

Leibniz's next step in proving the predicate-in-subject thesis is the ordering of terminology⁵⁹. Primary concepts are known *per se*, but the combination of primary concepts yields some that are extrinsically denominated, i.e. color. These complex concepts cannot be given a nominal definition in which the enumeration of signs or

⁵⁹ *On Universal Synthesis and Analysis, or The Art of Discovery and Judgment* (1679) (De Synthesi et Analysi universali seu Arte inveniendi et judicandi) (L 229-234).

elements is sufficient to distinguish the object from all others⁶⁰. The complexities are reduced through analysis to primitive concepts. If primitive concepts are not realized, the reduction will hopefully yield a concept through which the confusion can be explained (L 230).

The first step in the derivation of primitive concepts is proving possibility. Although names are arbitrary, the result from their ordering and adoption makes names necessary through the real truths arising from the imposition⁶¹. The combination of notions, created from arbitrary nomenclature, has to carry the possibility of existence. A real definition includes the sufficient reason for the existence of an object plus the affirmation of the possibility of that existence through the elimination of contradiction. Leibniz claims that possibility is a requisite of a real definition because contradictory propositions about the object can be demonstrated if the possibility of that existential object is not first demonstrated. The adequacy of knowledge rests upon the perfection of the definition (L 231). A perfect definition is one in which the object is explained identically with “simple primitive notions understood in themselves” (L 231):

Thus any truth whatever can be justified, for the connection of the predicate with the subject is either evident in itself as in identities, or can be explained by an analysis of the terms. This is the only, and the highest, criterion of truth in abstract things, that is, things which do not depend on experience – that it must either be an identity or be reducible to identities (L 232)

⁶⁰ An example is trying to explain the concept of ‘green’ to another person. The concept cannot be expressed unless it is referred to concepts the other person already has and understands.

⁶¹ The concept of the necessity associated with adopting names was first stated in the Dialogue of 1677 (L 184).

This type of knowledge Leibniz calls intuitive. Primary truth for humans is that which is perceived immediately, *a priori*. The *a posteriori* truths must be derived from the two elements of human conception: that humans think and that human thoughts are varied. The mark of contingent truth is the agreement of phenomena within all perceivers. The Combinatorial Characteristic is meant to prove the agreement (L 232).

By using identity and contradiction as guides and reason as a platform, Leibniz believes the Combinatorial Characteristic can be created. Synthesis and analysis both play a role in the Combinatorial Characteristic. Synthesis begins with the principles and creates order from the combination of notions, i.e. tabulated observational sets. Analysis begins with the complex and seeks to reduce it in order to prove the complex notions can be identical and noncontradictory. Both used together can yield an understanding of reality based upon the relations observed within the similarity of phenomena⁶² (L 232-233).

With all of these concepts in hand, Leibniz sets out to create the Combinatorial Characteristic. The 1679 essays included in *Two Studies in the Logical Calculus* is part of this attempt⁶³ (L 235-247). It outlines the system of imposition and enumeration. Categorical propositions of the form relating a subject to a predicate are the basic units. The terms are the subject and predicate. Every term will have a characteristic number, since all relations of concepts are certain and determined like numbers. The characteristic number is to be discovered by the multiplication of the terms yielded by an

⁶² Leibniz is trying to create an epistemic relation that excludes impossible objects. The basis of matter, as contiguous, demands that the principle of identity be as stringent as possible. By excluding non-possibles, Leibniz has created a firm method for the arbitrary naming of objects. Any name will hold truthful relations to the object because the definition of that object proves that it can exist. Any derivation of concepts from this definition will hold the same truthful relations.

⁶³ Loemker included two pieces in his translations on Leibniz's 1679 works about the calculus: the *Elements of Calculus* and *Specimen Calculi universalis*.

analytic reduction (L 235). All terms are given characteristic numbers based upon divisibility and multiplication of complex and primary (identical) concepts, respectively. This discovery rests upon the distinct notion of the term having nominal definitions for all its constituents. The terms can be enumerated only when they are sufficiently defined so as to denote uniqueness (L 236). In this way: “every true categorical proposition, affirmative and universal, signifies nothing but a certain connection between the predicate and the subject [...]” (L 236).

The particular affirmative proposition needs the inclusion of the individual substance to substantiate the relation of the predicate to the subject: the sign of particularity. This is different from the universal affirmative proposition in that the series of definitions perfectly denotes the connection of subject and predicate. Particular affirmations require additional inclusive marks because as the subjects get more specific they will include more predicates; the additional predicates are derived from the identical nature of that particular substance (L 237).

The terms within a propositional relation are either coincident, equal to each other, or relate as genus and species, a relation of part to whole (L 237). The concepts related are ‘inverted’ in that a more specific object has more constituents than a general subject (L 238). The more specific the term analyzed, the greater the calculations needed to derive the characteristic number⁶⁴.

⁶⁴ This situation of the terms in a categorical proposition is similar to the description of the components of metaphysics Leibniz outlined in 1666. The relation of genus to species, or part to whole, denotes the relation of the terms within a definition. In 1666, Leibniz was dealing with the simpler idea that parts and wholes can be explored through simple numerical situations probably based upon his partial understanding of the Cartesian model of corporeality (L 76-78).

Within his development of the Combinatorial Characteristic, Leibniz has tried to substantiate the teleological and epistemic theories of the predicate-in-subject thesis. The predicate-in-subject thesis should produce a complete reason for the existence of an individual substance and the ability to know this complete notion. He based the connection of the object and terms in characterization. Terms become locked into the mind as the mark of an existing thing. The definition of these terms is derived from the analysis of the marks in relation to the complexity of the notion. An identical notion marks the object uniquely. Every identical notion will have the predicate included in the subject. Leibniz noted that any notion must carry the existential possibility of the object in order to assure the reasoning derived from the notion is truthful.

Contingent notions are derivable because their structure allows analysis. Leibniz was aware of the danger of deriving contingent notions. He tries to defuse the danger by stating that even though contingent notions can yield *a priori* reasoning. They are based upon the facts of existence: that humans think and humans have varied thoughts. These notions do not remove the possibility of contrary occurrences. Leibniz hoped that the application of numbers to terminology and the use of the calculus would bear the fruit of a universal methodology of knowing.

At the same time that Leibniz is developing the Combinatorial Characteristic he is also refining his formulations of the matter/form complex. For true infinite analysis, the teleological and epistemic theories of the predicate-in-subject thesis need an ontological basis. The teleological theory needs a basis to support the derivation of the reason God created an individual substance. This reason is included in the complete notion. The direct connection between a thing and the terms which describe it allows the derivation of

this reason from the place a particular thing occupies in God's creation. The knowledge derived from the calculations of a thing's attributes is the epistemic theory. The complete notion includes all knowable things about a substance.

The metaphysical definitions and reflections of 1678-1681 are another compilation of the theories Leibniz had been working upon about substance (A 236-257). The first set of definitions connects mind and body through the activity of exterior objects on the mind. The judgments have the subject/predicate form and yield truth *a priori*. Leibniz equates this truth with the providing a reason why the object exists as it does (A 239). Leibniz tries to show that the phenomena of nature come from the specific composition of substance⁶⁵.

Bodies are resistant extended things; they have magnitude and situation, action and passion. The body is an active thing thereby gaining resistance⁶⁶. It has magnitude and situation from extension. Sensation is the perceived activity of one body upon another body; the organs of the subject receive the information of perception from the external object acting upon it. After an object exerts action on an organ, an image is formed. The image is the continuation of the passion in an organ. The imagination is the perception of an image; this is the separation of the perceiver and the perception⁶⁷. Memory is the perception of perceptions from which judgments are formed, the assignment of truth values to the situation based upon principles (A 237).

⁶⁵ The definitions are the bridge between real substantial existence and phenomenal material existence.

⁶⁶ Resistance is defined as that which reacts to the action of another thing.

⁶⁷ Leibniz's progression toward the independent state of individual substances is shown in the further step of separating the perceiver from the perceived. Leibniz first step was in the Paris notes when he connected the perceiver and perception within thought as a form. The connection is based upon characters and allows the separation of the perceiver and the perceived; see pg. 25.

The first part of these definitions is the unqualified basis of the connection between the body and mind⁶⁸. The body receives information. This information is processed through the sense organs and transmitted to the mind. The act of taking an image and relating it to the identity comes from the form, the comparison of past images to the present one and the ability to predict future states from that comparison. The derivation of truthful relations depends upon the knowledge of identical and clear notions pertaining to exterior objects.

The intellectual first principles of essence are identity and contradiction. Through which the connection of the predicate and the subject is either immediate or mediate. Mediated connections require further analysis for *a priori* proof. The principle of the perfection of the universe is a perfect being creating the maximum amount of essence. The first principles of sensation yield the knowledge of the subject and the outside world, respectively: 1) the perceiver knows they exist and 2) the perceptions are varied. The principles of sensation also create a separation of the perceiver and perceived (A 239).

Leibniz has created the formal basis for the ordering of perception. The suppositions of God's activity secure the reliability of sensation. Mental activity in relation to exterior objects can only travel from the object through the body to the mind. The complete notion of an individual substance will provide the reason and relation of that substance to the individual perceiving. This is the basis of the separation of the perceiver and the perceived.

Opinions are the mark of requisites. The fewer requisites needed the easier the judgment is to form. Change is not presumed because a reason for believing the current

⁶⁸ To qualify these definitions, Leibniz adds the motile attributes of the form; see below pg. 44.

state will change is required for change to be recognized: a statement of the principle of sufficient reason. The reasoning humans use yields the simplest reasons for change. Reasoning is based upon the perception of certain conforming phenomena. Leibniz believes these phenomena have their sources outside the perceiver⁶⁹. Space and time conform across all the phenomena experienced. Humans use space and time to distinguish individuals and aggregates (A 241).

Leibniz applies the principle of sufficient reason to simplify judgment. Reasoning follows the simplest path from the object to the mind. The fewer suppositions needed to create truthful relations and derive a reason for the object's existence, the more believable that exposition will be.

Physical certitude is derived from the analysis of phenomena: "Phenomena which agree with the rest are held to be *true*, whereby *Body, Space, Time, World, Individual* are also adumbrated" (A 241). There is no reason why one individual can doubt the existence of other individuals and objects since the agreement of phenomena resists this type of judgment. The perceived phenomenal agreement of situation and motion allows general space to be known (A 241-243). The perceived phenomenal agreement of successive and simultaneous changes allows general time to be known. Through the differences observed within similar things, using space and time as guides, individuals are distinguished⁷⁰. The world is an aggregate of mutual situation and change that seems to follow from certain laws, i.e. the subordinate maxims of nature (A 243). The

⁶⁹ Within a few years Leibniz will abandon the thesis that phenomena have their sources outside individual substances. He replaces exterior sources with the preestablished harmony through which all perception is internally derived.

⁷⁰ McGuire has an excellent explanation of this: "Hence what appears to perception as a merely *de facto* association of related qualities is anchored in the internal reality of a substance's individual nature" (28).

prediction of world events then rests upon the understanding of how these parts work together to yield true, lawful occurrences⁷¹ (A 245).

From the basis of ordered judgment, Leibniz derives the agreement of phenomena. All individual substances share the attributes of the matter/form complex, so they share the apparatus of sensation and perception. The coherent activity observed and discussed between individuals demonstrates the agreement of exterior existence. All individuals sense the same way, process that data the same way, and judge the phenomena to be true based upon the same formal attributes derived from complete notions. As shall be shown, Leibniz uses this agreement of perception to derive the independence of individual substances⁷².

To the previous definition of body, Leibniz now adds the concept of motion and the necessary motive attribute: the form. Bodies are extended *substances* since they possess a soul. Body then becomes a movable substance, or extended thing capable of action, i.e. local motion. Every body is in motion and every part of every body is in motion. As animate things, every body has sensation, the state of being acted upon, and appetite, the state of acting upon others. Bodies are limited in their range of action because of the action of other bodies from the contiguity of matter. Therefore all bodies are acted upon (A 245).

The substantial form (in non-human bodies) or soul (in humans) is the principle of unity and duration while matter is the principle of multiplicity and change. Both are

⁷¹ Leibniz has created the basis for the derivation of metaphysically non-interacting individual substances; the preestablished harmony.

⁷² Leibniz will begin to reject the interaction of substantial units in *First Truths* (1689), but the disconnection is not complete in this piece. The *Discourse* (1686) and *A Specimen of Discoveries* (1688) have the first true statements of complete non-interacting individual substances; see the *Discourse* § 14 and 15 (AG 46-48, L 311-313) and (A 311).

needed for the actuality of perfection through action. The form requires change to interact with God through His creation and matter requires the unifying force of the substantial form to resist disintegration (A 245).

Body and change allow for place and time, respectively, through the creation of situation and relation. A body is a substance that is interactive with matter as the principle of passion, and form as the principle of action. Sensation is controlled by the matter of the body, the organs of sense. Appetite is controlled by the object acting through the form, creating local motion (A 245). Space and time are full, since a physical vacuum would remove possible essence from existence (A 247). God is not embodied so He can only act; no passion is possible without matter. Therefore, God's action is His imparting divine essence to the individual substances.

The universe is a plenum. The action of one body upon another is propagated to infinity as a result of the contiguous state of matter. The infinite propagation of action comes from the fact that a body has infinite power. The infinite power comes from the additive effect of an infinity of parts exerting their own power. This power is exerted inwards in response to the pressure of surrounding bodies. If the surrounding pressure is removed, the power would cause the body to explode. Therefore, each body exerts pressure on every other body and any action performed by one body will make the adjacent bodies react (A 249).

The actions of the infinite parts of each body are compounded together. The result of compounded actions is a macroscopic active object built from collective microscopic disturbances. The collection of material constituents is unified by the form and multiplied through matter. The matter/form complex expresses unity within a

multiplicity. The division of matter is infinite but equal in relation to the resulting power. The bulk and speeds are unequal in such a way that different parts interact in inverse ratios. The smaller the material object the less power it exerts. The matter moves according to its surroundings, in response to the environment (A 251).

The perturbation of matter propagates conatuses throughout the continuum as well as allowing the information of one body pass to another through this propagation. It is the action of an embodied soul, as purposeful, that separates it from simple created substances. The action of all substances unfolds according to the laws of nature (mechanics) through which they can be known (A 251).

From these suppositions, Leibniz drew conclusions about the phenomenal character of bodies. All the phenomena of nature can equally be explained by final and efficient causes as if one or the other did not exist. The nature of the object can be explained without a reason. The reason for existence can be explained without the nature of the object. Both explanations work equally as well for phenomenal being, but not for real being. Leibniz believes that the principle of sufficient reason requires both final and efficient causes (A 253).

Leibniz needed a set of metaphysical definitions that reflected the certainty of his hopes for the Combinatorial Characteristic. Every revision of the definitions he comprised between 1678 and 1681 shows how the interdependence of the matter/form complex and the predicate-in-subject thesis will form. The basis of his reasoning is his belief in the principles of perfection and sufficient reason proved by the principles of identity and contradiction.

The necessity of action toward perfection requires that all substances have the matter/form complex. For a body to act it must be unified in its purpose: the form is the principle of action. For a body to receive action it must have the ability to change which requires parts: matter is the principle of passion. The action/reaction scenario will follow the laws of mechanics because matter is the path through which an individual substance will exert or receive force⁷³. Matter is a plenum subdivided to infinity. Any action of a substance will be carried throughout the universe in proportion to the strength of the conatus. The infinite character of the material imparts infinite power to the substance which is required for coherence during change and action.

Leibniz had developed the ontological metaphysical basis for substance as well as the teleological and epistemic characteristics of the predicate-in-subject thesis. He claims that the connection between notions and objects lies in revealing the essence of the object. Leibniz believes this can be achieved by the Combinatorial Characteristic. The enumerated notions will yield a mathematically valid form of argumentation.

The one important attribute of the Combinatorial Characteristic Leibniz has left to explain is the relation of the predicate-in-subject thesis to contingent beings. The fatalistic implications of this doctrine must be removed. The exposition of individual substances is useless if that exposition describes them as automatons.

Leibniz presents his early analysis of contingency in a paper from the early 1680's entitled *On Freedom and Possibility*⁷⁴. All truths about contingent things rest upon the principle of perfection. The reason one thing exists must be sought in the relation it holds

⁷³ Leibniz does not use the term 'force' here but the statements are indicative of the stance he will assume: that force is the balancing factor of material and it is conserved within motive systems.

⁷⁴ Editor's title, (AG 19-23). Ariew and Garber set the range for this paper between 1680 and 1682.

to other things. An object's contingent nature removes that reason from its complete notion. Any necessities within contingent truths are held by God alone from His volition. Leibniz defines volition as a conscious endeavor to act. The principle of perfection underlies God's volition as being the general reason for His choice of creation.

The intrinsic attributes of a contingent substance are not qualified to express the reason of creation to created beings. The qualification a created being requires to demonstrate a sufficient reason lies in the relations of a contingent substance to its environment. The qualification is not achievable. It requires the derivation God's reason in choosing to create a particular substance rather than another (**AG 19**).

Leibniz viewed possibility and necessity as the basis of why some things are possible but not actual. Leibniz defines necessity as that which involves a non-possible contrary⁷⁵. The actual existents within the universe were chosen by God because of their essence. They fit into the harmonious universe He created. Their existence does not consist in a non-contradictory nature since their contrary is possible in the mind of God. Therefore, the actuality that a free mind always follows a reason to choose one thing over another, and this choice is forced by that reason, does not eliminate the freedom of the choice (**AG 20**). The reason a being chooses one course of action is included in his or her existence. God chose to create that particular being for the reason of perfection. The most perfect beings will choose in accordance with God's plan of a perfect and harmonious creation.

God has infinite choices from which to choose that which will be. His creation is that of an infinite universe with the greatest possible essence and perfection. Within this

⁷⁵ 1675 Letter to Foucher (**AG 1, L 152**).

perfection, all the individuals will contain the sum total of the possible operations for that substance including the vestiges of the universe. These are necessary for the correct action/reaction scenario of all possible configurations of the infinite individual substantial aggregate (the world). Having vestiges of the universe contained within its notion, the individual substance will choose the appropriate action or reaction in every possible situation without knowing that *exact* choice is appropriate. The choice is of free will but harmonized within the infinite possibilities of the universe. Even though some choices may appear contrary to the greater good, they are not because all choices harmonize and work within the balance of the universe.

The reason any choice or existence is contingent is because an individual substance will choose according to the immediate situation or aggregate of surrounding substances⁷⁶. The particular configuration of the surrounding substances can never be presupposed to the degree that the external influence of other beings can be calculated. Necessity cannot drive action because the necessary requires a contradiction and a contradictory state of events cannot be derived from an infinite set of possibilities⁷⁷.

Leibniz works on what is real and what is phenomenal based upon his metaphysical reflections. One such attempt is *Wonders Concerning the Nature of Corporeal Substance*

⁷⁶ The situation is affected by the conatuses received from the whole universe but these influences are infinitely small compared to the immediate influence.

⁷⁷ Bertrand Russell, *A Critical Exposition of the Philosophy of Leibniz*, (London: George Allen & Unwin LTD., 1937). Russell claims that Leibniz never discusses the necessary (23). Leibniz's discussion of the necessary extends over the possibility of another state of being. The actuality of the state is included but also its possibility in the mind of God. Russell denies the existence of necessity as the impossibility of a contradictory. Necessity is an attribute of God that is derived from His definition. Since all created creatures are contingent, necessary states of being are not applicable. Contingency relies on the temporal series of existence. For Leibniz it seems that a contingent fact is one that becomes valid or invalid through change and does not carry the possibility of contradiction. Time is a subject which Leibniz did not explain well in his formulations on substance; (A lxxxvii-lxxxviii). If temporality is removed, as it is when dealing with God, then contingency cannot be applied. God has non-contingent (certain) knowledge of the entire series of any and all substances.

(Mira de natura substantiae corporeae, 29 March 1683, A 262-265). In this piece he will try to show why extension and motion are not distinct concepts. With the realization about the infinite analysis of contingent truth, Leibniz wants to separate the matter/form complex and the nature of the phenomena of interaction. He will then be able to determine what attributes belong to reality and what attributes belong to phenomena. There are no definite shapes, as Leibniz proved, and hence no definite motions⁷⁸. The power within the substantial object is real since it can be known (A 263). The matter/form complex is this real substantial object. It is the coexistence of the principles of passion and action. It is the coexistence of the limited and unlimited. The former bestows distinct cognition and irresistible power and the latter confused cognition and diffused action. The unlimited within substances is the vestige of God within, hence the confusion of the infinite in relation to the limited. Extension and motion are phenomenal because neither belongs to the substance of the body. Extension and motion support the propagation of the outward appearances of causal relationships. Extension and motion are contingent factors of existence based upon the reality of the principles of passion and action: matter and form. As such, they cannot be known with certainty. Substances are delineated by the possession of a substantial form or primary entelechy (A 265).

Leibniz believes he has dealt with the problematic nature of contingency *On Freedom and Possibility*. The reason that contingent things exist, and this includes all things except God, is: “[...] *that whatever is more perfect or has more reason is true*” (AG 19).

⁷⁸ *Space and Motion Are Really Relations* (Spatium et motus revera relations, 1677, A 224-227), *Motion Is Something Relative* (Motum esse quiddam respectivum, 1677, A 228), *There Is No Perfect Shape in Bodies* (Materiam et motum esse phaenomena tantum, 1686, A 296-299), also the phenomenal nature of the body is demonstrated in: *There Is No Such Thing as One Body* (Nullum datur unum corpus, 1678-79, A 256-259) and *A Body Is Not a Substance* (Corpus non est substantia, 1678-79, A 258-261). These proofs depend upon the fact that matter is infinitely divisible and therefore cannot produce an absolute delineation between subjects.

Leibniz will claim in the *Discourse* § 1 that God acts perfectly (AG 35, L 302-303). To create a perfect universe that has free will, god must allow for imperfection to exist. God's expression of perfection in creation is the reason one being exists rather than another. God chooses the being most adequately designed to fulfill His divine plan.

The existence of contingent things rests upon the volition of God. He is aware of the consequences of His actions through the isolated knowledge of complete concepts. Created creatures must search for the reason behind contingent things outside the complete concept of that thing. If the complete concept of contingent things had the reason for existence included, its contrary would be contradictory and not a possible thing. All existence would be necessary and therefore individual things could not act freely.

Leibniz introduces the concept of hypothetical necessity. He views the concepts of possibility and necessity as a duality of existence. A subject either contains one or the other. The equivocation of these terms has caused the confusion attributed to his theories of truth and the predicate-in-subject thesis⁷⁹. The hypothetical necessity of a thing depends upon if it is the instantiation of the possible thing that will create the greatest harmony and perfection. Leibniz believes that it is certain God will create substances by choosing from the plethora of possible substances. Certainty is not equated with necessity. For if these two concepts were equated, then any possible not created would not even be a possible thing because the certain thing created would be necessary. It follows from the concept of hypothetical necessity that contingent truth allows God to exhibit pure possibility within the cognition of substances. Unfortunately for Leibniz,

⁷⁹ See footnote 76 for example.

this thesis also makes empirical knowledge the only possible way to know contingent truth.

The necessity God expresses for the universe is based on certain knowledge not within the scope of human cognition. The necessity is settled within the harmony and perfection of creation as a whole. The parts must yield to God's decree of perfection but do not have to carry necessity as an attribute. The necessity is hypothetical in that the contingent parts of substantial existence secure freedom. God chose the particular substances because they will be *inclined* to choose according to the harmonious plan. God has decreed the maximum harmony and perfection within the universe and created every substance with the necessary components to follow this decree. Leibniz expresses this concept after the *Discourse in First Truths*:

For certainly it is already true now that a future predicate will be a predicate in the future, so it is contained in the concept of the thing. Therefore there is contained in the perfect individual concept [of any individual substance], considered as merely possible concepts and setting aside the divine decree to create them, everything that will happen to them, whether necessarily or freely. And all this is known by God. Thus it is obvious that God elects from an infinity of possible individuals those whom he judges best suited to the supreme and secret ends of his wisdom. (L 268)

Free choice is derived from the infinitely infinite possibilities of existence created within a matrix of perfection and harmony. Perfection is a balance that flows throughout all

substances by action/reaction scenarios. These scenarios allow the predicates to unfold freely within the subjects while helping maintain the maximum perfection.

Leibniz does not believe that historical accounts of substances are completely necessary, hence he uses them as examples. These series are necessary, however, even to humans because *they have already occurred*, in so far as the history is correct. The questioning of historical reasoning is moot in relation to the choices made because their perfection has unfolded. As Leibniz says repeatedly: the question is not why this substance performed such an action but why did God decree that the substance in question exist at all, since He knew that action would occur if He created that substance.

Leibniz turns to the *thought* of substance in a piece called *On the Present World*⁸⁰ (*De mundo praesenti*, March 1684-Spring 1686, A 282-297). Leibniz will work on the connection of the mind and the matter/form complex in this piece. All of the considerations within this piece, Leibniz says, are required to prevent humans from assigning a system to the world where none exists⁸¹ (A 295). A thinkable is either an entity, that which has affirmatives or positive attributes. Or a non-entity, that which only can have negative predication. A real entity has the added attribute of being judged as having agreeing perceptible qualities. The entities are based upon conforming perceptions and these perceptions withstand empirical examination. A being has correspondence to existence through its coherent activity. An entity in itself has a principle of unity, a substantial form (A 283).

⁸⁰ G. H. R. Parkinson, *The Concept of Substance in Leibniz's "De mundo praesenti"*, *Studia Leibnitiana: Zeitschrift fuer Geschichte der Philosophie und der Wissenschaften* 33.1 (2001) 55-67. This paper also gives an excellent exposition of the concepts in *On the Present World*.

⁸¹ Catherine Wilson, *Leibniz's Metaphysics: A historical and comparative study*, (New Jersey: Princeton University Press, 1989). It is interesting to note Wilson claims that Leibniz had no proper system; a fact Leibniz would have supported because a 'system' imposes false conclusions (3).

Entities are substances or accidents. Accidents, which are aggregates or attributes, can be given a concrete term with which the accident can be predicated of a substance or another accident (A 283). A substance can only be identically predicated. Substance contains potentially everything that can be thought about it as a subject. This is the complete concept of the substance. A complete concept is the mark of an individual substance and this makes it unique (A 285).

Every substance operates either on itself or through its parts. The mind is reflexive in its action whereas the body acts and reacts within its various parts. Within the focus of action lies the difference between spiritual and corporeal substances. Minds operate on themselves through thought and reflection. However, a mind is connected to a body in created substances: it is embodied⁸². As embodied, the mind is united with the matter/form complex (A 285). This is the basis Leibniz attributes to minds as the operative connection between the matter/form complex and the predicate-in-subject thesis.

Corporeal substances operate through their various parts called matter and form. Matter is the primitive force of resistance, i.e. impenetrability. Form is the primitive force of action, i.e. motion (A 285). The form has a kind of cognition which is an expression of external things in relation to itself. The expression is joined to the reaction of appetite (conatus) whereby it becomes unified⁸³. Therefore, any unified body must necessarily have an incorporeal principle attached: the form. Leibniz assigns substantial forms to all animate creatures. Thereby he leaves inanimate objects as aggregates. The

⁸² God is the only mind that is separate from matter entirely and therefore cannot be limited; *Metaphysical Reflections* (A 247).

⁸³ The sensation of exterior things allows the body to resist division; *On Body, Space, and the Continuum* (A 117-119, L 162).

defining factor of a substance versus an aggregate is the unifying force of a form. He also does not define clearly the state of mind of lower creatures (A 287).

Bodies have species which are the differentiae of matter. The determining factors of bulk with which the form has associated (A 287). The universe is a plenum with time and place (space) being the receptacles for bodies (A 289). These factors include fluidity and firmness. Bodies have degrees of both, but no body is perfectly fluid or firm (A 291).

God created matter in such a way that it is infinitely divisible. Hence, there are no vacuums in creation and the motive qualities of matter are omnipresent. The forces of motion are in balance with the resistance of matter. Perfect fluidity would yield unordered motion and perfect firmness would not allow motion to be dissimilar, motion would be undetectable (A 291). The firmness and fluidity are the reasons bodies resist separation and exhibit elasticity in response to the forces of motion (A 293).

The concepts pertaining to the fluidity and firmness of bodies are explored in the piece *There is no Perfect Shape in Bodies* (Dans les corps il n'y a point de figure parfaite, April-October 1686, A 296-299). Bodies have no exact shape. The actual divisibility of matter makes a boundary impossible to assign. For an object in motion changes situation and it is impossible to delineate its beginning and end (A 297). Shape can be assigned to a body at rest, but that body would lose its identity due to the loss of the motion. Motion is the source of the separation of bodies by creating the pressure that delineates one thing

from another. The conatus gives the body the ability to change and therefore its essence, but the conatus requires something else to create motion: a form⁸⁴ (A 299).

Leibniz continues the connection of force and change in *Motion is Not Something Absolute* (Motum non esse absolutum quiddam, 1686, A 333+335). Motion is a relation of elastic changes in a body in response to the overall motion of the system, motion is conserved. Motion is a relation and relative to the system. Hence, the perceptive basis of motive objects, space and time, are relations also. The subject of motion or change cannot be determined through direct observation. These observations would yield absolute space and time. The reality underlying these relations is the force of action, the principles of action and being acted upon: the matter/form complex⁸⁵ (A 333).

During his time in Hanover, Leibniz connected the elements of his early substance ontology. The predicate-in-subject thesis was completed even though Leibniz realized that its applicability was not as broad as he hoped. The matter/form complex was

⁸⁴ Arthur claims that the denial of perfect solids and liquids opened up the possibility for Leibniz to explain motion and matter as the results of the inclusion of substantial forms (A lxxv). The rejection of the ontology of perfect solids and liquids left Leibniz with a plenum being filled with a spectrum of differentially resistant material bodies. The difference in resistance is the result of the differing internal motions of each body. Leibniz explains the internal motions through the possession of a substantial form; the principle of action and motion within the individual substance. The discovery of the balance of forces within motile systems allowed Leibniz to ascribe all motion to the incorporeal principle. Leibniz also wrote the Dialogue *Pacidius to Philalethes* (Pacidius Philalethi, 29 Oct.-10 Nov. 1676, A 127-221) through which he discussed and proved the fact that the boundaries of matter cannot be definitely assigned.

⁸⁵ Catherine Wilson claims that Leibniz has not laid groundwork for the preestablished harmony or the relativity of motion (Wilson 77-78). Obviously, the several pieces discussed previously disprove this claim. Leibniz had created a basis for the harmony of mind and body as early as 1681 in *On the Origin of Souls and Minds* (Origo animarum et mentium, A 261). A solidification of the thesis comes in 1684 when Leibniz claims that the mind reflects as an embodied being in *On the Present World* (A 285).

To see Leibniz's work on relative motion, Wilson should have looked at pieces like *Space and Motion are Really Relations* (A 224-228) and *Motion is Something Relative* (A 229). The claim that Leibniz still treats space as substantial is ill founded (Wilson 78). The Paris notes from April 1676 are quite clear. Leibniz says space is an entity by aggregation and all aggregates can be destroyed; hence an aggregate cannot be substantial (A 119-121). There is no reason to believe Leibniz changed this view back to substantial space.

described as the complete ontological basis of the individual substance. The phenomenal nature of physical interaction is the derivative of the matter/form complex.

The matter/form complex is described as the real being of an individual substance. The matter is a variable fluid entity composed of undifferentiated bulk that exhibits impenetrability. It is the receptacle for the form and the source of the perceptive data a substance receives. The forces of action and resistance are the essence of a body. The essence of a body existing as force rather than motion can be viewed as a modification of Leibniz earlier formulation. The forces of action and passion are responsible for the motive qualities of a substance. Any physical changes can be derived from the fluid material because it exhibits elasticity. The internal motions of the constituent parts of a substance allow it to act and react as if there is a transference of motion or force.

The form is the unifying power within the body. This is a change from the Paris period in which Leibniz attributed unifying power to mind or motion. Leibniz has added the form as an enduring factor. It is the expression of the universe within the individual substance. The substantial power of unity is in the form. It is the expression of the immanent operations of the individual substance. The form is the source of all possible action/reaction scenarios in which a substance can participate. Taken together, the matter and form create a substantial unit that exhibits the outwards appearances commonly observed. The form has the vestiges of the divine within and can direct the substance to act in sympathy and harmony with all other created substances.

The mind has a different role since it no longer acts as the sole unifying factor within a substance. The mind is the source of the identity of the substance. The identity is derived from the comparison of the enduring parts of the substance to the changes

perceived. Leibniz explains this procedure better during the Hanover period. The mind takes in the sense data and retains it. The retention allows the mind to analyze the differences in the situations based upon the agreement of perceived phenomena. The same basis of the matter/form complex is within each substance so the agreement allows for the sharing of experience.

In the Paris period, forms were to be explored through the mind. The sensation of exterior objects provides the data needed to explore reality. By 1686, Leibniz claims that all substances are independent. Being independent, substances derive all sensation from within. Any exploration of exterior being falls within the realm of phenomena. Extension and motion are phenomenal aspects of corporeal existence based upon the matter/form complex. The laws of corporeal nature govern the activities of phenomena. The laws of perception govern the activities of the incorporeal. Leibniz has separated the two realms.

The string Leibniz uses to sew together matter, form, mind, and phenomena is the predicate-in-subject thesis. Leibniz only identified his hopes and projections for the predicate-in-subject thesis in the Paris period. The complete notion of an individual substance is held within the form and expressed through matter. The mind uses the notion of itself to derive identity and compare itself with other notions. The reason (teleological) for another substance can be known (epistemic) through the application of the predicate-in-subject thesis. The complete notion of a substance holds the facts about the contingent nature of that substance within the form. The complete notion also holds all the facts about the universe needed to allow a substance to exist independent of all other substances. Its existence would be derived from within and from the interaction

with God. God placed these types of notions within substances to secure conformance to His divine plan. The next chapter will explore how Leibniz used these formulations of substance ontology to compose the *Discourse on Metaphysics*.

Chapter Four: The *Discourse on Metaphysics* and *A Specimen of Discoveries*

The *Discourse on Metaphysics* is an inadequate description of Leibniz's early substance ontology, but Leibniz is not writing about ontology. The *Discourse* is an exposition of spiritual and corporeal principles in reference to what he views as possible reconciling factors between the factions of the Christian churches⁸⁶. Leibniz was very interested in this enterprise and always had the idea of using his work in other areas for such purposes.

The metaphysics Leibniz exposed in the *Discourse on Metaphysics* comes from the previous twenty years of trial and error. Leibniz formulated his views through the efforts of explaining the incorporeal basis of motion, the infinite character of matter, and the terminological constants of substantial existence. Leibniz was attempting to formulate the most complete definition of substance possible. Three of the areas he explored in relation to his metaphysics were spiritual (incorporeal), physical (material), and epistemic (mind)⁸⁷. In the years previous to the *Discourse*, Leibniz had developed an intricate,

⁸⁶ Leroy, E Loemker, "A Note on the Origin and Problem of Leibniz's *Discourse* of 1686", *Journal of the History of Ideas*. Vol.8 (October, 1947): 451-452. Leibniz composed the *Discourse* and sent a summary of the articles to Antoine Arnauld for review. Loemker defends the thesis that Leibniz wrote the *Discourse* with the intention that he would contribute to the reunification of the Catholic and Protestant churches.

⁸⁷ Loemker suggests that the stance Leibniz takes is epistemic in relation to the predicate-in-subject formulation of substance. The predicate-in-subject thesis is not only an existential exposition of an individual substance it is also the epistemic relation between substances (41). Hereafter this paper will be referred to as "A Note on the Origin" and page number.

integrated scheme encompassing all three aspects. He presents his scheme in *A Specimen of Discoveries* in 1688.

The *Discourse*, however, misrepresents the scheme by leaving the physical aspects unjustified while focusing on the spiritual and its relation to the mental. While being a partial synopsis of his ontological work, the *Discourse* is an inadequate exposition of his substance ontology from this period. The inadequacy of the *Discourse* in relation to Leibniz's substance ontology is the reason why commentators have been troubled with the content. Its subject matter is almost entirely theological⁸⁸. As such, its focus does not lend itself towards an exposition of Leibniz's ontological principles but towards the beliefs he held about individual substances and their relation to God. These views are derived from his previous work.

The *Discourse* has many hidden references to Leibniz's previous works on substantial existence in that he drew heavily on those works to draft it. Due to its focus, these references direct themselves to the defense of the thesis that God's existence is the source of all things. The exploration of the relation of humanity to God will illuminate substantial existence. The subject matter of the *Discourse* lacks the important demonstrative proofs he provided in those earlier works. A comprehensive understanding of Leibniz's early substance ontology is required to understand the rational theology of the *Discourse*. Leibniz provides the completed, coherent scheme two years later in the *Specimen*. As we shall see, Leibniz leaves himself open to attack on many

⁸⁸ Stuart Brown, *Leibniz*, (Minneapolis: University of Minnesota Press, 1984). Brown agrees that the *Discourse* was written in the format of a contemporary theological treatise. He says that if the *Discourse* was conceived piece by piece, then it was being organized by Leibniz prior to the composition (95-96). Loemker also supports this opinion. In "A Note on the Origin" he claims that the *Discourse* may have been written as a preface to the *Catholic Demonstrations* (452).

fronts in this piece. An exposition of the *Discourse* will focus on these weaknesses in relation to his earlier works⁸⁹.

Article 1 deals with God and perfection (AG 35, L 302-303). Obviously Leibniz wants to establish the primacy of perfection as a principle of God's existence. His formulations of substance rely upon the fact that God has created everything to yield the maximum amount of perfection in the universe⁹⁰. Leibniz brings in the principle of contradiction as a test for perfection: that which can be demonstrated as contradictory cannot be perfect. Infinity has several contradictory concepts with which it is associated⁹¹. Leibniz ascribes infinite attributes to God's knowledge and power. God is therefore outside the realm of human understanding. Since He is the source of the infinite characteristics of substance, He understands and cognizes the implications alone. This fact is important to Leibniz because it alone saves contingent created substances from fatalism.

Article 2 introduces the principle of sufficient reason, in relation to perfection, to explain God's creation and how it relates to itself, i.e. the created (AG 36, L 304).

⁸⁹ Wilson has scathing criticisms of Leibniz's substance ontology as presented within the *Discourse*. These criticisms are based upon the obvious fact that she looked at the *Discourse* as a complete metaphysical treatise and not a fundamental theological exposition. The delineation of the three separate 'semi-systems' of metaphysics shows that Wilson did not choose to view the *Discourse* as such. These three 'semi-systems' do exist but are not as incoherent as Wilson suggests (79-82).

Metaphysics A, B and C, as Wilson calls them, are the descriptions of individual substances using the predicate-in-subject thesis found in articles eight and thirteen (88-98), the matter/form complex described in article seventeen (98-104), and the phenomenal aspects of physical interaction exposed in articles nine, fourteen, and fifteen (104-110). Wilson's contention that these are separate and isolated formulations of substance is totally incorrect. She seems to think that Leibniz was describing these aspects of ontology as responses to individual problems. Leibniz's early substance ontology was created to answer the questions of the labyrinth of the continuum (see footnote 2) and support a possible reunification of the sundered Christian churches on rational grounds. Leibniz spent many years formulating his views about individual substances. The scheme he created is multifaceted; no part can be taken separate from the rest without the misunderstanding of Leibniz's intentions.

⁹⁰ See *On the Secrets of the Sublime* (1676) (A 45), *Metaphysical Reflections* (1678-1681) (A 239), and also *A Specimen of Discoveries* (1688) (A 303-305).

⁹¹ See *On Minimum and Maximum* (1672-73) (A 8-19).

Leibniz cites the fact that God reflected upon creation. He found it good and this proves the reasoning and effort God exerted during creation. If God reflected upon His work, Leibniz claims, humans should also reflect upon it to discover the teleological basis of creation: “His works must therefore carry his mark in themselves” (L 304). Individual substances were created to be images of God and the whole universe⁹². As images, individual substances rely upon the limited abilities granted them to discover the true nature of creation. God created individual substances to understand the complexity and beauty of His creation⁹³.

Leibniz uses the principles of contradiction and perfection to derive conclusions about creation. Article 3 states that creation is the best of the best (AG 36-37, L 304-305). Leibniz claims that perfection, and he assumes God is absolutely perfect, cannot admit of imperfection: “[...] to act with less perfection than one could have is to act imperfectly” (L 304). If God were to act with less perfection than possible, then that act would be contradictory and against reason. Leibniz also finds fault in the view that a less perfect creation is equivalent to a more perfect creation.

Imperfection exists in creation. God created it this way to allow for growth, balance, and discovery. These are all derived from change. Imperfection creates the impetus to achieve. The most perfect creation allows imperfect, limited creatures to attain as much divinity as possible. God knows the whole of an infinite series and would not create a

⁹² See *On the Secrets of the Sublime* (1676) (A 49), *Notes on Science and Metaphysics* (1676) (A 55), *On the Plenitude of the World* (1676) (A 59-61), *Wonders Concerning the Nature of Corporeal Substance* (1683) (A 265), *A Specimen of Discoveries* (1688) (A 309, 321), and *On Freedom* (1689) (AG 95, L 264).

⁹³ The concept that God created substances as intellectual mirrors of the universe, thereby having creatures that are able to understand creation, is found in *On the Secrets of the Sublime* (1676) (A 49, L 158).

less perfect series without reason. Humans do not have access to infinite knowledge and therefore will judge incorrectly about creation from a hubristic standpoint.

Leibniz paraphrases an argument from *On Freedom and Possibility* (1680-82) in the last paragraph of article three (**AG 20, L 305**). Leibniz claims that the thesis of God creating a universe less perfect than possible is false. The thesis was championed by Leibniz's contemporaries. Leibniz believes that it removes reason from God's decrees in the hope of safeguarding His freedom⁹⁴. Leibniz believes removing reason from God's decrees does the opposite. If God chooses to create one substance rather than another, then without reason the choice is arbitrary and not perfect, i. e. not praiseworthy. Leibniz holds that the greatest perfection requires a reason and that reason is what ensures God's free acts.

From God's freedom, Leibniz turns to human freedom and action in article 4 (**AG 37-38, L 305**). Human existence is temporally linear. The perception and understanding of existence depends upon the human will and intellect. Humans must use their limited resources to follow the will of God. Leibniz is referring to the richness of existence and the ability of humans to know in what this consists.

The formulations of substance Leibniz describes are the ways through which humans, as limited beings, can work toward the goal of perfection. Leibniz realizes that he is going to introduce a concept connecting the past, present, and future. The predicate-in-subject thesis will give humanity a way of deriving certain knowledge, albeit incomplete, of history and scientific endeavors. The acceptance of God's creation coupled with the

⁹⁴ Leibniz does not mention the contemporaries; he just notes them as 'moderns' (**AG 37, L 305**).

active participation of humanity will satisfy His wishes. God requires that individual substances follow the laws of their own natures.

Article 5 is an exposition of how humans, as created, limited beings, may know existence and its Author (**AG** 38-39, **L** 305-306). Leibniz sums up articles 1-4 in the first paragraph. Leibniz assumes the principles of perfection and contradiction allow humans to hold perception as true and to know that absolute knowledge of perception is unattainable. Only God knows the totality of infinite and contingent series (**AG** 38, **L** 305).

Leibniz uses examples from everyday experience to describe the basis upon which God draws to create. God's perfection tends toward elegance in construction, efficiency in composition, abundance within the unfolding of growth from the raw materials, simplicity in the works and reasons for these works. Through combining these attributes, existence is parsimonious and can be known as such. These attributes of God's existence are imparted into creation. He is the source of simple forms⁹⁵. The balance of existence rests upon God's free decrees to create a universe most rich, least complex, and intelligible to human minds.

Leibniz is referencing the *Metaphysical Reflections* (1678-81), especially the intellectual principles of existence, in outlining the concept of perfection (**A** 239). He holds perfection as the amount of essence within a subject, God is pure essence. Leibniz uses the examples of the architect and geometer in reference to parsimonious creation. Balance is a key component in Leibniz metaphysical theories within creation, action, and existence.

⁹⁵ Leibniz claims that God is the source of all simple forms in the Paris notes (1676) (**L** 160).

Article 6 uses the attributes Leibniz has derived from God's perfection to equate the parsimonious with the thinkable (**AG 39, L 306**). Leibniz also deals with thinkables in *Chrysippus's Heap* (1678) and *On the Present World* (1684-1686). The former piece describes the way in which context molds the perception of existence. Error in judgment comes from the incorrect context of perception. The perceived thing is acting or being acted upon. It is judged by observing the changes. Error enters the judgment when the perceiver allows the perception of change to carry more importance than the relations of subjects involved (**A 231**). The latter piece carries the relations of subjects into the realm of the mind. The thinkable is an entity that carries its own possibility in its notion. Irregularity is the perception of an occurrence that is believed to be outside the natural order. If any occurrence is to be perceivable, it must be part of the order God has created (**A 283**).

Taken together, the context of an entity will yield a judgment of reality in conformity with the regularity of God's creation. The irregular is not a thinkable. Its possibility arises from the error in perception and context. Leibniz defines volition as a conscious endeavor to act⁹⁶. God's volitions result in creation. Therefore, creation must follow the reasoning God chose to create: perfection. Any failure to recognize the coherence of God's creation is deemed outside the order.

In article 7, Leibniz connects the universal laws of perfection and reason to the contingencies of substance (**AG 40, L 306-307**). Humans derive the laws of nature from experience. God is not subject to human restrictions even though He does follow the universal laws He created. Since imperfection exists as an impetus to achieve, so

⁹⁶ See *On Freedom and Possibility* (1680-82) (**AG 19**).

perfection will exist in all creation. God obviously desires the good, but creatures with free will have a choice of action. Humans have the choice whether to pursue or reject perfection.

The existence of free will necessitates the existence of balance in creation. Perfection requires that actions chosen by substances will tend toward goodness overall. God allows the existence of sin within the series of existence to serve the greater outcome. Leibniz cites the conservation of force as an example of a subordinate maxim⁹⁷. God can choose to act in violation of this maxim in preference to the principle of perfection, which rules all of creation. Article sixteen repeats these assertions (AG 48-49, L 313-314).

Leibniz now introduces his predicate-in-subject thesis in article 8 as a formulation of substance to *distinguish God's actions from substantial action* (AG 40-41, L 307-308). Substances have both activity and passivity. God is only active because nothing can act upon God because passivity is the state of being acted upon⁹⁸. Perception is the passive state of substances that allows the information of distinguishing characteristics to be detected⁹⁹. If freely active substances are going to detect information from each other, then the substances must possess an intelligible method of exhibition *and* knowledge. Leibniz's method of information exchange is the predicate-in-subject thesis.

God does not need the predicate-in-subject method since all predication is known to Him *a priori*, including the complete teleological and ontological bases of that individual

⁹⁷ *A Brief Demonstration of the Notable Error of Descartes and Others Concerning a Natural Law* (Brevis Demonstratio Erroris memorabilis Cartesii et aliorum circa Legem Naturalem, 1686 L 296-302), § 17, *Discourse on Metaphysics* (AG 49-50, L 314-315).

⁹⁸ See *Metaphysical Definitions and Reflections* (1678-81) (A 247).

⁹⁹ When one substance 'interacts' with another, the attributes of one are detected by the other through the possession of the vestiges of the universe within. The vestiges carry the impressions of other substances and are detected by the perceiver through passive sensations; *Metaphysical Definitions and Reflections* (1678-81) (A 237, 245); see also *A Specimen of Discoveries* (1688) (A 321).

being. Humans, however, do not have this ability to know *a priori* the predicates of an individual subject. The predicates attributed to an individual subject identify it. Leibniz calls this state nominal¹⁰⁰. The nature of the definition of a substance is to identify all the predicates attributed to that subject alone. Leibniz will use this claim to show that all possible future states of an individual substance are derivable. These derivations, however, are beyond human abilities. Therefore, humans must accept that the future is certain from God's perspective but humans cannot know the future with necessity.

Leibniz claims that the complete notion of a substance includes all its predicates. Leibniz places this notion within the soul so it is not subject to space and time¹⁰¹. As such, the notion can hold all attributes (past, present, and future) and be connected to the universe through the fact that a complete notion must take into account the entirety of creation. Substantial action can only be in response to the limited, *a posteriori* knowledge of the complete substantial notions involved. The difference in God's action is that He creates without sensation and what he creates is complete¹⁰² (AG 41, L 308).

¹⁰⁰ Leibniz characterized a nominal definition as one which enumerates the predicates attributed to the subjects to distinguish sufficiently that subject from all others (L 230, see also *Meditations on Knowledge, Truth, and Ideas* (Meditationes de Cognitione, Veritate et Ideis) Acta Eruditorum. Nov. 1684, AG 24, L 292)

¹⁰¹ Leibniz is clear in *A Specimen of Discoveries* (1688). Space and time are not things but relations of things. These relations arise from the expression of the soul. The soul uses the relations of space and time to detect motion and change. Motion and change relate to the substance through the activities of the soul. Motion is the phenomenal representation of the exertion of motive force. Motive force is real, comes from the soul, and can be assigned to a particular body as an attribute, or predicate (A 315). Change is the expression of different predicates from the same substance; the "consideration of time" (A 313 L3)

¹⁰² Wilson's contention that Leibniz has created a fatalistic account of human action is justified (92-93). However, Leibniz has tried to correct this error in his previous works (*On Freedom and Possibility* (1680-82) and *On Contingency* (1689)), in a letter to Arnauld in May 1686 subsequent to the sending of the *Discourse* (AG 69-77), and in *On Freedom* (1689). In the 1686 letter to Arnauld, Leibniz tries to point out the necessity of considering the entirety of creation when viewing the problem of Adam's sin. God created that particular Adam to fit into the harmony and perfection He foresaw within the universe. To suggest that God had to interfere with Adam at any point is to suggest that God acts less than perfectly.

Wilson suggests that the principle of the harmony of existence cannot save Leibniz from the fatalism inherent in the *Discourse* (94-95). However, it is just that and the principle of sufficient reason that Leibniz uses to create the predicate-in-subject thesis. If God does not follow these two principles during the

Leibniz expands on the predicate-in-subject formulation of substances in article 9 (AG 41-42, L 308). The substantial notion entails a substance's entire corporeal existence, but substances cannot know the complete notion. The substance must imitate God. Substances imitate the infinite character of God because God created them in His image. As an image of God, the substance expresses the entire universe throughout all of time. Substances have real distinguishing characteristics and are indivisible and immortal. The instantiation of the spiritual limits the substance within corporeal boundaries while allowing the unique expression of that particular substance.

Leibniz draws on the previous twenty years of exposition within article 9. Leibniz held the view that the substantial form is the defining factor of a substance in 1668, *On Transubstantiation* (L 117-118), and 1669 in his letter to Thomasius (L 94). The form is the source of the complete notion of an individual substance. The substantial form is the incorporeal principle of individuation. Within the Paris notes, Leibniz derives the immortality of the soul from action (1676) (A 121, L 163). A substance will exist as long as it acts. The last paragraph of *First Truths* (1680-86?) is an almost exact mirror image of what Leibniz says here about the immortality of substances¹⁰³. *First Truths* is the piece where Leibniz seems to have proven all the claims in article 9. The mirror-like expression of individual substances is mentioned in *Conspectus for a Little Book on the Elements of Physics* (1678-79) (*Conspectus libelli elementorum physicae*, A 235) and

creation of substances, then the complete notion of an individual will not operate as Leibniz has described. Individual substances are created to work in concert with the universe. The fatalism is offset by the substance's inability to know how their life is to unfold. Leibniz's predicate-in-subject thesis simply states that an individual substance possesses all its attributes from the moment it is created as an embodied soul. Wilson is correct to criticize Leibniz for his descriptions of the predicate-in-subject thesis within the *Discourse*, but he has worked elsewhere to supplement the descriptions.

¹⁰³ See *First Truths* (1689), (AG 32, 34), (L 268, 270); See also *A Specimen of Discoveries* (1688) (A 315).

again in *A Specimen of Discoveries* (1688) in relation to the creation of substances as images of God (A 321).

Article 10 elaborates on how to view the incorporeal or substantial form (AG 42-43, L 308-309). The form is necessary to complete philosophical and theological analyses, but it is not to be used in describing the nature of corporeal interaction: “[...] something whose knowledge is so necessary in metaphysics that, I hold, without it one cannot properly know the first principles or elevate our minds sufficiently well to the knowledge of incorporeal natures and the wonders of God” (AG 43). The simplicity and perfection of creation allows humans to explore corporeal interaction using the simple laws of nature, the subordinate maxims. The discussion of incorporeal being is to be used in relation to the subject of basic principles¹⁰⁴. Incorporeal existence pertains to the substance in itself and cannot be used to explain phenomenal interaction.

Leibniz began discussing substantial forms as early as 1669 in his letter to Thomasius. Form was equated with figure as the demarcation of body. The concept of forms grows from simple boundaries into the incorporeal principle of action seen within his ontology from the Paris period (1676) onward¹⁰⁵. The fact that forms cannot be used to explain corporeal phenomena is derived in *A Specimen of Discoveries* (1688). The laws of perception govern the activity of forms and these are not equal to the laws of motion. The laws of motion are the governing factor of corporeality, the subordinate maxims (A 321).

¹⁰⁴ Leibniz first suggests the idea of the separation of physical and metaphysical inquiries in the *Metaphysical Reflections* (1678-81) (A 251-253) and in *On the Present World* (1684-86) (A 293-295); See also *A Specimen of Discoveries* (1688), (A 321).

¹⁰⁵ Leibniz cites the soul as the acting entity which endures (A 121, L 163)

Article 11 is an introduction to the appropriate places to use explanations of incorporeal being given in article 12 (AG 43, L 309). Interestingly enough, the last sentence in article 11 seems to allude to the development of his Combinatorial Characteristic¹⁰⁶. The clarification and summarization of the works of the scholastics would fall under the scope of this enterprise.

Article 12 is the introduction to the concept of extension and its derivatives as phenomenal (AG 44, L 309-310). Leibniz claims that the principle of identity is derived from the substantial form. The notion of a soul is superadded to matter (body) to create the stable basis of existence Leibniz needs to advance his theory of metaphysics, especially his rational theology. Matter has several phenomenal aspects, including size, shape, and motion. These are phenomenal because they cannot sustain the activity substances exhibit (AG 44, L 308).

Leibniz recognizes that extension cannot account for all the activities of matter. Leibniz first believes that form is the principle of motion and this form is mind, ultimately the mind of God as the Prime Mover¹⁰⁷. The boundary of material beings cannot be derived from extension due to the infinite nature of matter¹⁰⁸. Motion is relative and cannot be assigned to a particular body¹⁰⁹. Matter and motion are

¹⁰⁶ Leibniz possibly commits a fallacy of the appeal to authority in article 11. He appeals to the previous work he has done but fails to provide documentation or proof. Although he did actually spend twenty years studying physics, infinite modalities, geometry, his contemporaries' and predecessor's works, he never made public the bulk of these studies. Any contemporary reader would find it difficult, if not impossible, to accept the totality of Leibniz's formulations within this piece without first reading his previous works; the basis for all the claims made in the *Discourse*. It has been suggested that the discoveries Leibniz refers to here were transmitted by word of mouth within the social and intellectual circles of the day. And of course, the *Discourse* was never published so Leibniz did not have to cite sources.

¹⁰⁷ See *On Transubstantiation* (1668) (L 112).

¹⁰⁸ See *On Minimum and Maximum* (1672-73) (A 11-13).

¹⁰⁹ See *Space and Motion Are Really Relations* (1677) (A 225-227), *Motion is Something Relative* (1677) (A 229).

phenomenal since their definitions yield contradictory hypotheses¹¹⁰. And by combining these attributes, Leibniz discovers that motive force is the reality of bodily motion¹¹¹.

Intelligent souls have the ability not only to remember their own existence and the relations through which they know the separation of themselves and nature, but also the reflection of God, which is the identity that imparts all these abilities¹¹² (AG 44, L 309).

The line of reasoning Leibniz follows in article 13 is inadequate to secure human freedom (AG 44-46, L 310-311). The freedom Leibniz assigns humans in this article is only hypothetical. The possibility of choosing a contrary action exists, however Leibniz claims that by hypothesis that action is impossible¹¹³. The contingency of the action is related to the logical necessity of the proposition and not the actual possibility of the action. He removes the actual possibility here by saying that action is impossible *ex hypothesi* (AG 45, L 310).

Leibniz skips over a possible solution to the difficulty pertaining to logical necessity rather than actual possibility. The actuality of future being, whether necessary or contingent cannot be used as an argument for logic. Only God knows *a priori* and definitively what the future holds. Humans are limited in their scope of knowledge and understanding. The limits of human knowledge secure human freedom by assuring the

¹¹⁰ See *Matter and Motion Are Only Phenomena* (1678-79) (A 257).

¹¹¹ Leibniz equates the substantial form with the primitive force of acting. The equation of action and motive force comes later in the *Specimen*: see *On the Present World* (1684-86) (A 285-287); see also *A Specimen of Discoveries* (1688) (A 315).

¹¹² Leibniz claims in § 12, that the principle of identity cannot be equated with extension. His expositions in the 1680's do not explicitly define 'identity'. Leibniz seems to equate the concept of an individual with an identity. A mind associated with the matter/form complex derives its identity from the complete concept. The complete concept is held within the matter/form complex and reflects the unity that acts and is acted upon. The individual substance has its identity from existence as a consciously, continuous entity in itself; see *Metaphysical Reflections* (1679-81) (A 237-249), *On the Present World* (1684-86) (A 283-287), and *A Specimen of Discoveries* (1688) (A 317-321).

¹¹³ The claim that by hypothesis the contrary of a certain action is impossible sounds relatively familiar to the definition of necessity in Leibniz's 1675 letter to Foucher. There the definition of necessity is the impossibility of a contrary state of affairs (AG 1, L 152).

possibility of choice. If a person cannot know what is to be done, that person will always have the possibility of choosing the contrary. Leibniz, however, has locked in the series of events by saying that even though the possibilities of different outcomes exist, those outcomes cannot be actualized due to the complete notion of the substance.

The difference in connections is not satisfactory to preserve free human action. The contingent nature of human choice based upon possibility cannot impart freedom if that nature removes the possibility of possible actions *ex hypothesi*. If God creates each individual substance with a set of actions already preset to occur, that individual substance has no freedom. Even if those actions are not necessary by the principle of contradiction (AG 45-46, L 311).

The series of events within the existence of an individual substance is determined by the principle of sufficient reason. Leibniz claims, however, that *a priori* proofs solidify the series without necessity. Leibniz seems to believe here that freedom and necessity are opposed. Free actions have possibility and necessary ones do not. If it is impossible through the hypothesis of a subject to choose a possible action, then that choice is no longer a possibility. Hence it is necessary and contrary to what Leibniz claims (AG 46, L 311).

Since God is omniscient. He knows what happens to every individual substance *in Toto* and in this way God has certain knowledge of its existence. However, can humans as limited beings with no possible way of understanding omniscience, an infinite concept transcending space and time, call God's knowledge of the total concept of an individual substance determination? What if God's knowledge of human existence is what we view

as free due to our limitations? An example of a determination which does not limit freedom of choice *innately* will help clarify this subject.

An extremely small percentage of humans will venture into outer space within the next 50 years. The present state of technology will not allow the bounds of space to be breached by more than roughly 50-100 individuals out of the 10 billion projected individuals existing within the next half century. Humans are determined in that they cannot choose where to go except within the bounds of earthly confines. All other choices of travel are free.

If infinite choices are possible for a human, then the pre-established harmony of God cannot limit our freedom. Humans have the power to choose freely. Choice is only limited by human existence in that humans can react only to certain situations (which only occur once) with one choice: that of the most perfect and harmonious choice available to the human in reference to the situation presented. God chose the individual substance that would choose the correct course of action. The limited abilities of a human do not allow for perception and appetite to reach beyond the knowledge and judgments possessed.

All future predicates are contained in the subject but these predicates do not determine the subject into a course of action. The principle of action is the form. It determines the correct action based upon the perception and sensation of the surrounding substances in the present situation. Some of the predicates are contingent since the notion of the substance is contingent, as well as the individual substance itself.

The predicate-in-subject notion of an individual substance does not create contradictory circumstances when the contrary predicate is applied. Either is a possible

choice. As such, any future predicate will be included in the subject as a function of the action or passion of the matter/form complex in relation to the data received from what seems to be real: the phenomenal nature of substantial existence as materially interacting objects. Hence the operation of substances is *spontaneous* and independent from the metaphysical viewpoint¹¹⁴.

Now that Leibniz has introduced the predicate-in-subject thesis, he will focus upon the results of this notion of substantial being in article 14 (**AG** 46-47, **L** 311-312). The individual substance is continually emanated by God. This claim about individual substances will change in *First Truths*. There Leibniz says that individual substances are created in such a way that God does not have to act after creation (**AG** 33, **L** 269). The matter/form complex is created in such a way that all the possible phenomenal interactions are preprogrammed in all substances to create concomitance. Concomitance is the reason individual substances can exist with only God and still perceive the universe. All phenomena can be derived from the complete notion having the entire universe included (**A** 313-315).

Another change in *First Truths* is the amount of interaction between individual substances. In *First Truths*, Leibniz says that individual substances exert physical interaction upon each other to explain the change of denominations observed (**AG** 33, **L** 269). All interaction is internally derived in the individual substances of the *Discourse*. The theory of concomitance allows for this lack of interaction because all interconnection is mediated through the substantial connection with God, even though Leibniz does not mention this theory in the *Discourse* (**AG** 47, **L** 312).

¹¹⁴ The idea of internally derived spontaneous action and passion is discussed in *A Specimen of Discoveries* (1688) (**A** 311). Below, the idea is related to the *Discourse* § 14 (**AG** 46-47, **L** 311-312).

The change in *First Truths* can also be seen in *A Specimen of Discoveries* (A 309-315). Here Leibniz expands upon what is stated in the *Discourse* in article 14. The description of the systemic activity, however, is more complete in *A Specimen of Discoveries*. The actions and passions are deemed spontaneous. They arise from within the substance itself. Individual substances do not interact with anything except God. However, bodies do move from the motion of the elastic elements within the substances, in response to the existence of another body (A 311). The expression of an individual substance that is deemed a cause is actually the substance with the higher distinction.

The complete notion held by each individual substance reflects the entire universe. The independence given to individual substances through creation allows them to operate without corporeal interaction. The constant connection between God and the entire universe imparts agreement among the substances within. The complete internal notion of the individual substance is the only source of sensation and perception. The notion must pertain to the incorporeal being because it has to be the source of all existential occurrences (AG 47, L 312). *A Specimen of Discoveries* claims the exact opposite: “...there is no need for a kind of perpetual and special operation of God in the process which brings about the agreement, *nor should one introduce some real influence which is quite inexplicable*” (A 315, my emphasis)¹¹⁵.

¹¹⁵ It is noteworthy that Wilson did not even mention these contradictions within her book; they seem to lend credibility to her thesis that Leibniz committed a major mistake in espousing the phenomenal nature of physical interaction coupled with the predicate-in-subject thesis and the matter/form complex. The fact remains, however, that a set of self-sustaining individual substances created to exist in perfect synchronization through the superior workmanship of God, follows from the matter/form complex possessing a perfect notion within. The individual substance is pre-programmed with all possible action/reaction scenarios and each substance is inclined to carry out these scenarios according to their particular reflective perspective of the universe. The relations of physical material are supposed to mimic the order God bestowed upon the universe; the relations are law-like and can be studied and predicted.

Article 15 is a short explanation of how action and reaction come about within independent individual substances (**AG** 48, **L** 312-313). Action is the state where a substance increases its expression of perfection, passion is the opposite. The interdependent nature of substances in reference to perfection reveals itself as the phenomenal interaction of common perception. All changes affect all substances however. The source of any change is to be found within the substance itself. Leibniz equates the action and passion of humans as pleasure and pain, respectively¹¹⁶.

God created the pre-established harmony to allow the highest possible perfection. It occurs since the perfection goes to those that act and from those that do not. The sum total of the infinite interactions of all substances yields the perfection, but the harmony comes from the balance of all substances acting and reacting. Any particular action or substance analyzed will admit of determination because the added counterbalance of the rest of the universe is removed. To view freedom, the whole must be viewed. All future predicates are contained in the subject as the notion of the individual subject. If humans have an infinite number of possible interactions with other substances, then the path of any individual will still serve the pre-established harmony. The balance of all substances will follow perfection. Each substance is chosen to be able to make the correct free choice relative to the configuration of the universe presented in accordance with harmonious perfection.

Articles 17 and 18 paraphrase the famous demonstration against Descartes, and the conservation of force (**AG** 49-51, **L** 313-315). Leibniz derives the conservation of force

¹¹⁶ Leibniz also mentions pleasure and pain in the *Conspectus* (1678-79). Pleasure is the perception of one's own success. The success is tied to a conatus. The satisfaction of a conatus results in pleasure; the denial of a conatus results in pain. The conatus Leibniz is referring to may be equated with volition and not motion.

from a simple experiment (**AG 50, L 315**). Leibniz arrives at the conclusion that force is the conserved quantity instead of motion from his derivations of the phenomenal nature of extension and its modes. Force is the necessary expression of power to produce motion (**A 329**). Force is to be estimated by the quantity of the effect produced (**AG 50, L 314**). Leibniz discussed the relation of force and effect eight years earlier in the *Conspectus* (**A 235**) and his *Metaphysical Reflections* (**A 251**). In the *Conspectus* (1678-79), Leibniz derives the conservation of power (force) from the equation of cause and effect. The power exerted in a caused action is equal to the power observed in the effect. In the *Metaphysical Reflections* (1678-81), Leibniz discusses the equality of power in relation to divisible matter. Matter is divided in such a way that the momentum (mass times velocity or bulk times speed in Leibniz's terms) is relative. The smaller the piece of matter, the faster it can move. By adding these two considerations together, the conservation of force is derived from the motion of internal parts acting together during the expression of force. The subdivisions of the body create an additive effect when acting as a whole; these effects can be measured.

Article 18 is important because Leibniz believes the conservation of force is God's way of creating a balanced system within corporeal nature (**AG 51-52, L 315**). The principles involved in the composition of corporeal substances control action (form) and passion (matter). The reality of force reinforces Leibniz's contention that the principles of motion can be known through the considerations of force. The force Leibniz is describing is associated with macroscopic motion; not the impenetrability of bodies. Forces involved in motion are derived from the incorporeal principle of substance (**AG**

51, L 315). These forces are involved in creating the phenomenal macrosphere humans perceive¹¹⁷.

Leibniz discusses the relation of force and motion. From the multitude of derivations he has performed on the subject, he restates the claim about the phenomenal and relative states of motion. Force is the gateway through which science can discover the underlying causes of motion. The mathematical and mechanical bases of motion can be explained by referring to the incorporeal natures of substances (AG 51-52, L 315). The final section of *A Specimen of Discoveries* is dedicated to such an explanation.

Article 19 links the utility of final causes with Leibniz earlier works (AG 52-53, L 315-316). Leibniz believes that God followed the principles of perfection and sufficient reason in creation. Human exposition of God's reasoning must mimic the scope of God's view by avoiding any false systematic projections (AG 52, L 315-316). Leibniz notes at the end of *On the Present World* (1684-86) that the false projection of systematic conformity is to be avoided (A 295).

One falsity Leibniz believes his contemporaries propagate is the separation of God and humanity (AG 53, L 316). It is against reason to introduce the existence of God and then feign that introduction when explaining phenomena. Leibniz's formulation of the matter/form complex links God and humanity continuously since God is the source of all the things that affect any substance (A 307-311). The greatest utility of final causes is the understanding of the cause/effect relationship. Leibniz believes outward phenomena

¹¹⁷ The matter/form complex creates phenomenal interaction by providing the guide for perfection to flow from one being to another in reference to God's divine plan. All 'interaction' is controlled by the incorporeal principle acting and reacting to the surrounding substances.

occur because the human mind orders the data received from nature¹¹⁸. This is the basis of the phenomenal appearance of nature. Leibniz holds that all substances never physically interact. They are all predesigned to act and react to each other in all possible given situations, preestablished harmony. The investigation of the effects of physical interaction eventually leads to the discovery of force as the main constituent of substantial bodies. The nature of individual substances reveals the fact that the transferal of force between bodies is impossible.

The effects of nature give witness to God's glory and purpose. He constructed nature in such a way that the infinite parts fit together perfectly and the investigation of nature will reveal the underlying harmony of substances. The causes are not sensibly known but revealed through the connection of the investigator and the investigated. Everything is part of the universe and connected through God. He allows the true being of nature to be known.

Article 21 describes the idea that phenomena are constructed with such workmanship that they are deceptive (AG 53-54, L 316-317). In articles 17 and 18, Leibniz has demonstrated that the conservation of force is God's primary rule in physical interaction. Had extension been an actual attribute of substance, the activity of substance would have been simply geometric and algebraic. The existence of infinite properties within matter and motion proves that the basis of existence lies underneath the surface of physicality and should be sought in metaphysics¹¹⁹.

¹¹⁸ The *Metaphysical Definitions and Reflections* (1678-81) is Leibniz's exposition of how data is received. Both the matter and the form are required to receive data from other substances and accidents (A 237-257).

¹¹⁹ Examples of Leibniz work in infinite quantities: *On Minimum and Maximum* (1672-73) (A 8-19), *Unbounded Lines* (1676) (*Linea interminata*, A 64-75), *Infinite Numbers* (1676) (*Numeri infiniti*, A 83-101), and *Space and Motion are Really Relations* (1677) (A 224-227).

Article 22 examines the dichotomous nature of physical explanation (AG 54-55, L 317-318). Leibniz believes that both efficient and final causes have utility within scientific exploration. He claims that efficient causes are the more descriptive of the two, but final causes are easier to create. Leibniz also explored this subject in the *Metaphysical Reflections* (1678-81). There he says that one or the other can be given as an explanation that is satisfactory however, both are required for the expression of reason and perfection (A 251). The nature of explanation is important in the discovery of the causes of phenomena and the underlying reality. Substance is known only through the reasoning given in a full explanation; the discovery of both final and efficient causes in conjunction.

Leibniz begins his sojourn into the realm of ideas in article 23 (AG 55-56, L 318). Here he claims that the idea must secure the possibility of existence to be real¹²⁰. The proof of existence is important because incorrect consequences can be derived from ideas that do not possess a firm existential basis. In 1678, Leibniz composed *What Is an Idea* (*Quid sit Idea*, L 207-208). This essay is Leibniz's attempt to connect ideas to objects through the linguistic expression of the relations of the predicates to the subject. An idea is the expression of thought. The passage from contemplation to knowledge is mediated through the analogy of the relations (L 207). This analogy is the characteristic expression of attributes using terms (L 208). A nominal definition is the enumeration of the characteristic expressions needed to distinguish the object from all others (*On Universal Synthesis and Analysis*, L 230).

¹²⁰ Leibniz discussed the possibility of objects in relation to their definition in his 1678 Letter to Tschirnhaus (L 192-195), *On Universal Synthesis and Analysis* (1679) (L 229-234), and *On the General Characteristic* (1679) (L 223-228, AG 5-10).

Article 24 is the explanation of the hierarchy of ideas and knowledge (AG 56-57, L 318-319). Knowledge only becomes useful and real when the enumeration of characteristic expressions secures possibility, uniqueness, and reduction to primitive notions. The highest level of knowledge is the essential definition that gives these without needing any *a priori* proof¹²¹.

Leibniz includes the hierarchy of knowledge in the *Discourse* because these suppositions are the basis of the Combinatorial Characteristic. Even though Leibniz realizes that the reduction of all contingent notions to their respective primitive bases is impossible for humans, he still believes in the utility of the methodology. The predicate-in-subject thesis is the focal point of the Combinatorial Characteristic. The enumeration of terms will allow the knowledge to be categorized and transferred efficiently.

The Combinatorial Characteristic is also a result of Leibniz's multi-faceted formulation of substance. The matter/form complex is based upon the integration of the incorporeal and corporeal raw elements of existence. These components cannot be explained through ordinary scientific means. Any scientific exploration will yield the phenomenal aspects of reality but not the underlying reasons. The only way to know the true nature of reality is to explain the basis and interdependence of all facets of existence. The Combinatorial Characteristic is the methodology Leibniz believes can do just this.

Article 25 outlines the requirements for the contemplation of ideas (AG 57-58, L 319). Contemplation requires recognition of the attributes involved in the notion. The recognition can be clear in confused notions or distinct in intuitive notions¹²². Both types

¹²¹ Article 24 is a paraphrase of *Meditations on Knowledge, Truth, and Ideas* (AG 23-27, L 291-295).

¹²² In § 24, Leibniz defines a confused notion as that which does not identify the object perceived. A distinct notion is one in which those identifying attributes are perceived with the object (AG 56-57, L 318-

of notions contains the necessary attributes to identify an object. The difference is whether or not the perceiver is able to enumerate those attributes. The analysis of the notion must be reduced to the greatest degree of primitive notions. Again, the Combinatorial Characteristic is the method through which a human can achieve this.

Article 26 connects the concept of an idea with the matter/form complex (**AG 58, L 320**). The soul contains vestiges of the entire universe within it. Possessing these vestiges, the soul generates all ideas from within itself when the appropriate action/reaction scenario is presented. The concept of generating ideas from within melds perfectly with the doctrine that all individual substances are independent and ‘experience’ only God. The predicate-in-subject thesis assures that an individual’s substantial notion has access to any needed information¹²³.

Article 27 goes further in the connection of ideas and the matter/form complex (**AG 59, L 320-321**). Ideas are the expression of the soul, the mind recollecting information. An idea is the result of the matter/form complex receiving information from exterior sources or internal experience. An idea that has been conceived or formed within the mind is called a notion or concept. This may be a restatement of Leibniz thoughts about forms in the Paris notes (**L 160**). The forms that were perceived in a single act are now derived from internal experience. These forms are complex in that they contain relations connecting the subject and the object in which they exist. In both expositions, Leibniz

319). See also *Meditations on Knowledge, Truth, and Ideas* (1684) for the definitions of clear, distinct, confused, and intuitive (**AG 24-25, L 291-292**).

¹²³ See above, pgs 53-54, for an exposition of Leibniz’s description of cognition within individual substances from *On the Present World* (1684-86) (**A 285-287**); see also *Meditations on Knowledge, Truth, and Ideas* (1684) (**AG 23-27, L 291-295**).

claims that the understanding of complex forms is conceived *per se* and the subject through the understanding of the forms.

Articles 28 and 29 connect ideas to God (**AG 59-60, L 321**). Even though ideas are borne from internal experience, God is the One who gives ideas to individual substances. God alone is the external object of experience however (**AG 59-60, L 321**); the cognition of ideas is internal. The soul contains within it the capacity for ideas to be revealed through the reception of stimuli (**AG 60, L 321**). The mind is receptive to stimulation from God.

The activity of a mind is a substance reflecting upon itself¹²⁴. Consciousness is the reflection of God within the individual substance¹²⁵. If an idea arises from the internal experience of the individual substance being affected by the expression of the complete notion, then that idea is a reflection of the actual existence of that substance in relation to the vestiges of the universe within itself. God is included within these vestiges. He imparts the ability of the individual substance to have experience as phenomenally exterior to the soul but arising from within.

Article 30 is the explanation of the inclination of the soul (**AG 60-62, L 321-323**). God has decreed that every individual substance is determined to choose the good without necessity. Leibniz believes the necessity is removed by the possibility of a contrary choice. It is certain that every individual substance has all its predicates included from creation. God chooses the unfolding of these predicates in relation to the complete notion. It is certain these predicates will unfold. The particular way in which

¹²⁴ See *On the Present World* (1684-86) (A 285).

¹²⁵ Leibniz equates reflection and consciousness in the *Specimen*. He mentions the concept of reflecting substances in the *Metaphysical Reflections* (1678-81) (A 249) and *On the Present World* (1684-86) (A 285); see *A Specimen of Discoveries* (1688) (A 321).

the unfolding will occur is unknowable by any individual substance because of the infinite characteristics of contingent created substances.

Leibniz addresses the possibility of fatalistic results resulting from the certainty of the predicate-in-subject thesis¹²⁶. The determination of a choice by God is hypothetically necessary. The necessity exists only in the fact that the predicate in question is going to be expressed in some way. The choice of whether to express it or not, at the time of the choice, is left to the individual substance. The time and place of the expression of predicates is determined by the free will of the individual substance coupled with the expression of the surrounding substances. The expression of substances is balanced within the universe. Free will extends only as far as the perfection of the individual substance's expression will allow.

The idea of inclination versus necessity can be clarified through a modern argument. The nature versus nurture argument relates human action to the influences of genetic disposition and the experience of living. Leibniz's theory of inclination can be viewed as being parallel to this argument. If an individual substance has all its predicates included, then it can be argued that the individual substance is inclined by its genetic disposition *and* its experience. Leibniz would answer that the dispositions of genetics and experience do not create the possibility of a non-contradictory alternative. The inclinations of these influences can be exposed but they can never be given the status of necessary.

Both genetics and experience could have relation to the expression of addiction in humans. If a person with a high degree of probability for alcoholism became an

¹²⁶ See *On Freedom and Possibility* (1680-82) (AG 19-23), *On Contingency* (1689) (AG 28-30), and *First Truths* (1689) (AG 30-35, L 267-271); see also *On Freedom* (1689) (AG 94-98),

alcoholic because he possessed a severe family history of alcoholism (genetics), owned and worked in a bar, and spent all their time in places associated with drinking (experience). Then the influences of his genetics and experience could be said to incline toward that end. The status of necessity, however, cannot be applied here since that individual could never know that his individual notion included the state of developing alcoholism or that the condition could develop. Obviously, this individual could have reduced their risk by not having anything to do with alcohol, i. e. owning and working in a bar and spending time in alcohol related establishments. But, if that individual is destined to develop alcoholism, neither science nor philosophy can prove it necessary that the expression of the disease occurs. It is completely within the free choices of the individual whether or not to allow their inclinations to affect their actions.

Articles 31 and 32 are the connection of the principles of perfection and sufficient reason with the dispensation of God's grace (**AG** 62-64, **L**323-324). Leibniz derives the fact that God will act with perfection and harmony in all of His dispensations. Grace goes to those whom God has deemed most perfect and harmonious in reference to the entirety of the infinity of the universe. God alone has the ability to grasp this.

Article 33 explains the union of the matter/form complex and the attributes of perception (**AG** 64-65, **L** 324-325). The matter/form complex is a self-contained unit of existence. The harmony and synchronicity of the universe allows all substances to act and react as if physical interaction were actual. The self-contained unfolding of the individual substance allows the soul to know itself, as the matter/form complex, better than any other thing in the universe.

The sensations of the individual substance are of the entirety of the infinite conatuses being impressed from within the substance itself. *A Specimen of Discoveries* (1688) explains this attribute quite well. The infinite impressions are like the infinite perspectives of a ground plan being viewed simultaneously and constantly¹²⁷. The limitations of the individual substance only allow for the clear and distinct perception of that part of the universe which is defined by the individual's particular perspective (A 309).

Perception is the expression of the infinite within a unified whole. The expression of the universe within the individual substance is mediated by the soul through the series of immanent operations: the primitive force of action (A 321). Leibniz claims that the operations of the soul connect it to the body through the series of occurrences. The soul is embodied and relates to the universal vestiges within from that perspective. The matter/form complex is the source of the identity of the individual substance as the expressive unit of that individual's complete notion¹²⁸ (AG 64-64, L 325).

Article 34 is the connection of memory, identity, and mind in relation to morality (AG 65-66, L 325-326). The complete notion provides the identity of the individual substance. The distinguishing factor of an intelligent substance is the ability to perceive the act of perception: memory (A 237). The intelligent substance has a mind associated

¹²⁷ Leibniz repeatedly references this type of example when describing God's point of view or the reason why he created individual substances with particular views. Hence his own formulations of metaphysics are multifaceted.

¹²⁸ Wilson's discussion of the matter/form complex and its derivations leaves much to be desired (98-104). She has not delved into the matter/form complex as the origin of the incorporeal source of motion. The only correct claim is that of Leibniz's formulation is in response to the Cartesian doctrine of extension (98). The matter/form complex is the true ontological basis of Leibniz's metaphysics as the passive principle of perception coupled with the active principle of motion. Her criticism of Leibniz's contention that all bodies have an infinity of active, motile creatures within is not totally accurate (104). Even though modern science has proven that 'atoms' do exist, it has also proven that all 'atoms' are in constant motion. Leibniz just happened to be ahead of his time when describing the true nature of microscopic material being.

with the matter/form complex which imparts the ability to reflect inwards (A 285). The reflection upon oneself creates the identity of the individual substance: the “I”. Hence the moral character of humanity comes from the fact that humans can reflect upon their actions and judge them right or wrong.

The last three articles, 35, 36, and 37, are Leibniz’s attempt to connect God, humanity, and the world (AG 66-68, L 326-328). Minds are the most perfect beings since they interfere with each other the least and they are the reflections of God (§36, AG 67, L 326). The remaining created individual substances are reflections of the universe, the mirror through which minds can recognize God and His creation (§ 35, AG 66, L 326). The teleological end of the universe is perfection, but the teleological end of the community of minds is *happiness* (§ 36, AG 67-68, L 327). The individual substance that is able to express the perfection of their own notion shares the most in the happiness of God (§37, AG 68, L 327-328).

The *Discourse* is mainly a theological treatise supported by extensive ontological formulations. The first few articles of the *Discourse* deal with the attributes and actions of God. God is perfect and infinite (§1). God creates only good and righteous things (§2-3). Human love should and must be given because of these attributes (§4). God acts and creates parsimoniously and in balance with the universe (§5). God acts in an orderly manner so as to allow understanding of His creation, and miracles are included, however, He may choose to act according to perfection rather than according to the subordinate maxims (§6-7).

Now that Leibniz has described God, he will describe God’s creations using the substance ontology he has labored to refine. God placed within substances a self-

sufficient system to allow them to exist together, as vestiges of each other within, but separate, as completely independent units. This system is the matter/form complex expressing the predicate-in-subject thesis. Substances are imitations of God exhibiting confused omnipotence and omniscience and immortality (§8-13). Individual substances are totally self-contained and non-interactive, except for the emanation from God. All attributes are contained within (§14). God allows the created to know perfection as pleasure (§15). Leibniz describes the balance of force as a source of the expression of perfection; the more perfect individuals will act on the less perfect (§15-17).

Article 18 is paramount to Leibniz's exposition of the relation between God and individual substances because force is the real attribute God placed in creation through which substances can know creation. Leibniz's conception of force supports all the attributes of individual substances. The way in which individual substances know force is real, and the modes of matter are phenomenal, leads into the conception of notions (§19-26). The expression of the soul, as an embodied incorporeal substance, generates the ability to conceive notions, i. e. the complete notion of an individual substance (§27). God may be the only actual external object, but individual substances think for themselves. These thoughts are guided by the complete notion (§ 28-30). It is the choice of the individual substance to follow or reject the inclinations of the complete notion in accordance with perfection. That choice is mediated by the matter/form complex in relation to the surrounding substances and the predicates contained in that substance's notion. God chose that substance to act in accord with His divine plan. He will dispense grace according to the free actions performed (§31). God is united with all substances and they only require Him to exist (§32). Every matter/form complex knows itself better

than any other thing. From this intimate knowledge, those substances with self-consciousness have that ability to recognize themselves as existing with God and share in His happiness. God created all other substances to reflect the divine in the universe. God created the individual substances to either share in the perfection and happiness of the universe or aid in that sharing (§33-36).

The final article, 37, is the greatest evidence for the thesis that the *Discourse on Metaphysics* is of theological focus (AG 68, L 327-328). The fact that Leibniz now includes Jesus Christ as the revealer of the truth of God is this evidence. The theological focus of this piece is shown in its description of individual substances in relation to God and His eternal plan. Leibniz claims that the gospels have the necessary information for any intelligent substance to reach the glory of heaven. God regards intelligent substances highest of all His creations and preserves them. The fear of created substance is offset by the salvation imparted by Christ's sacrifice and the knowledge of His greatness through the gospels.

A Specimen of Discoveries of the Admirable Secrets of Nature in General (1688) restates what Leibniz has claimed about substance in the previous 22 years and improves the inquiry. Leibniz has changed the basis of reasoning to the principles of contradiction and sufficient reason. The principle of identity is now the basis of necessary or eternal truth (A 303). Only God knows the series of existence with certainty and creates the appropriate substance to respond to the inclinations derived from its complete notion (A 305).

Contingent truth needs a reason external to the substance to be justified. Leibniz identifies this reason as God, the only necessary being and the basis of all existence.

“And since the full reason for a thing is the aggregate of all primitive requisites [...] it is clear that the causes of all things are resolved into God’s attributes themselves” (A 307). Leibniz first stated this idea, that all attributes can be traced to the existence of God because He is the source of simple forms, in February 1676 (L 158, A 49). The reason for truth is to be found in the ideas. Ideas exist in the realm possibility: the mind of God (A 307-309).

Individual substances carry vestiges of the divine within. These vestiges are infinite in character. The individual substances reflect the universe from their particular, unique perspective. Because limited beings have infinite vestiges within their notion, some of their perceptions are confused according to their particular limitations. The infinite vestiges, however, allow the conatuses to reach beyond the immediate. The action of one substance affects the whole universe because the universe sympathizes and harmonizes with itself. This fact removes the possibility of purely extrinsic denominations in things (A 309).

The individual substance has a perfect notion considered by God in a state of pure possibility before it exists. The difference between universal and individual substances is that the latter will contain contingent predicates. The contingent predicates are necessary to preserve the freedom of action in individual substances. Before creation, God considers each substance as pure possibility. All possibilities of the infinite individual substances holding infinite choices within their complete notion are known by God, who chooses each particular one. When God chooses a particular substance to create, its notion includes all possible free actions. The possibility of free action takes into account the infinitely infinite series of existence of the entire universe (A 309).

The notion contains all the possible operations of the substance and each could operate without exterior things because it also carries the entire universe¹²⁹. All individual substances are chosen by God to work together to create the greatest possible harmony. The universe is constructed to operate freely and independently, without God's intervention (A 311).

Individual substances do not interact *per se* but act according to the set of individual substances surrounding it. The action/reaction duality is set in motion when each individual substance is created with all possible operations included. Therefore, the phenomenal causality observed by humans is the least complicated reasoning the human mind can imagine: "Causes are not derived from a real influence, but from the providing of a reason" (A 311). Bodies move from innate forces in response to other bodies: "For each individual substance, expressing the same universe in its own measure according to the laws of its own nature, behaves in such a way that its changes and states correspond perfectly to the changes and states of other substances" (A 313). The connection of the matter and form in the matter/form complex comes from the fact that individual substances are independent of *all* external influence. They rely upon themselves for perceptive data:

Therefore the true *reason for the union between soul and body*, and the cause of one body's accommodating itself to the state of another body, is simply that the different substances of the same world system were so created from the beginning as to harmonize with one another as a result of the laws of their own individual nature (A 313 L2)

¹²⁹ This mirrors the statement in the *Discourse* § 14 and 15 (AG 46- 48, L 311-313).

Space and time are the relations of motion. They are the windows through which the human intellect can know change in reference to the identity contained in the matter/form complex (A 313 L3).

The coordination of substances is a result of the actual nature of corporeality. The form is immortal and the unifying factor of the material aspect of the substance. The unification comes from the power of action and passion. The passive part of substance, the matter, is a relative composition related to its surroundings: it accommodates itself to the situation. The active part of substance, the form, is the source of the action of bodies. The reality of forces, the defining attributes of corporeality, renders motion a relation then. They are the principles of action and resistance (A 315).

The only way to assign motion to a body is through the forces, not the change of place (A 315-317). Since extension and motion are phenomenal, the extremes of hardness and void are excluded. There are no perfect atoms in nature because of the infinite subdivision of matter. This contiguous state allows the propagation of motion to infinity. For this infinite diffusion, the universe must be a plenum through which conatuses can be propagated. A physical vacuum cannot exist (A 317).

The notion of the form is included in the notion of the substance. The instantiation of substances, the individual substance, has the attribute of the subject including all its predicates, as do the notion of universal substances (A 319). The nature of substance is to express the universe through action and passion: the series of the immanent operations of each substance. The series of various states in which the substance can exist results from the principle of action: the form. The primitive force of action is the principle by which matter can remain unified through change. Perception then is the expression of

many in one if it is to apply to all forms. Sensation is a distinct perception. But, the explanation of forms applies only to happenings of the soul. The laws of motion explain the happenings of the body (A 321).

Here Leibniz locks in his early formulation of the role of the mind in the matter/form complex. The mind is derived from the complete notion as the identical self-reflective principle. It is the source of the 'imminent operations' through which the individual substance is the reflection of objects and of God (A 319+321). The last connection needed between the mind and the individual substance is provided. The individual substance, as matter/form, complete notion, and phenomenal interaction, defines the mind. The mind is the nexus of sensation. The identity of the substance comes from the mind as the ordering factor of the expression of multiplicity in a unity. The mind links the soul and matter by being the causal link of action/reaction scenarios. The substance cannot perceive without matter and cannot act without form. So the mind harmonizes the two as the link between the laws of perception and motion.

The last part of the *Specimen* is Leibniz's attempt to tie in the metaphysical basis of reality with the phenomenal nature of motion: the Laws of Corporeal Nature. All bodies have magnitude and shape. Different bodies cannot occupy the same space nor can one body be in several spaces. Bodies are movable and they have direction in their movement. The tendency of a body in motion is to resist changes (A 321). The universe is a plenum since no reason can be given for another state of affairs, i.e. atoms. All bodies have force. The infinite divisibility of bodies allows motion throughout the plenum resulting in the propagation of motion across all distances. The unity of a body is secured by the forces of struggle exerted from adjacent bodies (A 323).

The conservation of power exists as a law of nature. This is shown by the equivalence of cause and effect. Power is that which is used in action or producing an effect. Also conserved is the quantity of progress or direction. This comes from the equality of the aggregates of motions within a body before and after interaction. All motions are compoundable (A 329-331).

The suppositions of the motive qualities of matter yield the principles of cohesion and fluidity. Cohesion is the harmony of motion and fluidity is the variety of motion. Cohesion and fluidity regulate the balance in nature within motive systems. The universe is therefore composed of a balanced fluid state; all matter has some degree of fluidity and firmness (A 331).

From this fluid system of phenomenal existence, Leibniz derives his vortex theory. As matter moves, it stirs up vortices that exert effects upon neighboring matter. The vortices empty space in the direction of the motion while filling it after the matter has passed. The transition of matter from one place to another happens in degrees then, not instantaneous bursts. All changes in motion are balanced. The motion is relative to the system of matter. It cannot be assigned absolutely to any object. The only absolute within the system is the force creating motion. The forces are not transferred between bodies. They are pre-designed to act and react according to all possible occurrences. The active and passive forces, or the form and matter respectively, can be assigned because of the balanced nature of the causes and effects (A 333).

The dispatching of the *Discourse* to Arnauld brought Leibniz a serious criticism of article 13 and the predicate-in-subject thesis. The discussion of the metaphysical origins of Leibniz's thesis probably enticed him to compose a better exposition of the scheme of

ontology. The ontology Leibniz uses within the discussion of the *Discourse* is integrally connected to the previous ontological works and the subsequent works also. *A Specimen of Discoveries* exhibits the entrance of force as a defining factor within Leibniz's ontology. Leibniz composed some of the most important ontological essays in the mid to late 1680's. These essays hold the evidence needed to support the thesis that Leibniz had created a coherent substance ontology and exhibited it in the *Specimen*.

Conclusion

The origins of Leibniz's substance ontology have been outlined above¹³⁰. The conclusion that the *Discourse on Metaphysics* is an adequate exposition of Leibniz's early metaphysical position is not totally accurate¹³¹. A better candidate for the first full exposure of his substance ontology is *A Specimen of Discoveries of the Admirable Secrets of Nature* (1688). Within this essay all the aspects of Leibniz's substance ontology are explicated and derived. Proof is given why Leibniz holds these ontological principles as true.

A Specimen of Discoveries and several other pieces discussed in this paper remained unpublished during Leibniz's lifetime and for several decades after¹³². Russell believed that the *Discourse on Metaphysics* was one of the best expositions of Leibniz's mature philosophy¹³³. The status bestowed upon it by Russell may explain why the *Discourse* was used, incorrectly, as a definitive exposition of his ontological stance for many years¹³⁴. The *Discourse* presents the predicate-in-subject thesis as the primary ontological system Leibniz espoused.

¹³⁰ Mercer claims that any attempt to discover unity in Leibniz's work is to be found through an analysis of the texts "in an attempt to discover the more fundamental assumptions beneath" (71).

¹³¹ Loemker states that the *Discourse* was a poor exposition of Leibniz's early philosophical position in reference to his later works; "A Note on the Origin" (449).

¹³² Leibniz's published these works, which are discussed above, within his lifetime: *Dissertatio de arte combinatoria* (1666), *Theoria motus abstracti* (1671), *Meditationes de cognitione, Veritate et ideis* (1684), and *Brevis Demonstratio Erroris memorabilis Cartesii et aliorum circa Legem Naturalem* (1686).

¹³³ *A Critical Exposition of the Philosophy of Leibniz* (Russell, 7).

¹³⁴ Russo claims that the *Discourse* is a benchmark of Leibniz's philosophy (275).

Careful examination of the previous twenty years of ontological experimentation proves that Leibniz espoused a multifaceted substance ontology. The matter/form complex is the ontological basis of his multifaceted view. The matter/form complex began as the figure added to matter in the late 1660's. In the 1670's, Leibniz realigned the form to take on the role as the principle of action. Finally in the early 1680's, the final formulation of the matter/form complex, as passive matter and active form, came about.

The predicate-in-subject thesis doubles as the teleological and epistemic branches. The seeds of this thesis are sown in the *Dissertation* of 1666 as a complexion theory. The mid to late 1670's yielded the predicate-in-subject thesis derived from Leibniz's work on the Combinatorial Characteristic and the infinitesimal calculus. Leibniz's belief in the integral connection of terms and objective attributes allowed him to formulate the predicate-in-subject thesis as a substantial descriptive tool. The pathway to the knowledge of substance starts with the perceptive functions of the matter/form complex. The identical complex thinks using characters to order the images. The images are compared and judged. The judgments have the predicate-in-subject form to convey the truthfulness of the attribute and secure the possibility of analysis.

The phenomenal nature of physical interaction follows from the consequences of self-contained and complete substance ontology. The matter/form complex underlies the predicate-in-subject thesis. The separation of the inert material and active form allowed Leibniz to assign differential attributes. Matter is the shell of the substance. It is passive and receptive. Matter allows the relation of one substance to another phenomenologically. Form is the 'filler' of that shell. It imparts the ability to act and

‘affect’ other substances. Taken together, the matter/form complex creates the substrate for the phenomenal interactions of corporeal existence. The intricacies of real existence do not need to be explicated in the physical interactions of bodies. Physics can discover the truths of phenomena independently. All of these formulations are based in Leibniz’s belief that the principles of perfection and sufficient reason lie beneath the entirety of creation.

The question remains: why did a man of singular genius, such as Leibniz, choose to espouse a counterintuitive substance ontology that carried the charges of solipsism and determinism? Leibniz’s thought experiments with the infinite nature of matter led him to question contemporary mechanistic physics and Cartesian ontology. Infinite existence relates to all formulations of substance within his metaphysics. Upon realizing that motion requires more than extension to account for material interaction, Leibniz began the long path to the substance ontology exhibited in *A Specimen of Discoveries*, two years after the composition of the *Discourse*.

Leibniz’s questions led him to revive the Aristotelian form as the incorporeal principle of action. The substantial form replaced mind as the unifying factor of matter leaving mind as the connection between the two: the principle of identity and the pathway of perception and action. The predicate-in-subject thesis provided the identical matter/form complex its purpose in existing, though unknown to this limited being, and the ability to derive knowledge from the external world.

The key factor connecting infinite material bodies and incorporeal principles of action is that they both support the relative nature of space and time. Leibniz proved that motion cannot be assigned to any particular body within a motive system. His search for

the connective balancing factor in relative existence revealed the need for the primacy of a reference point: identity. All being is constantly changing; including the perceiver. For a relative universe to have any coherence it must have a reference point from which to begin.

Leibniz exposed this reference point as the identical mental aspect of the matter/form complex. The mind, as identity, can memorize pieces of a referential system as the storage of conatuses. The memory is only as perfect as the clarity of the perceptions of multiplicity within the unity of the individual substance. The ability of the mind to order the chaotic influx of infinite conatuses expressed continuously. The order yields coherent judgments about external things.

The order of external things is derived from the internal storage of the vestiges of the infinite within the individual substance. The individual substance carries within it the entire universe. It is limited, however, to a perspective from a particular standpoint: that of its embodied soul. As such, the identical matter/form complex uses the predicate-in-subject thesis to derive all the facts it needs to 'interact' with the surrounding world. The necessary facts reflect the eternal and divine aspects of the universe and the contingent facts reflect everything else including the identical matter/form complex.

Freedom is saved through the possibilities of choice expressing the perfection of the substance. The complete notion may incline a individual substance to a certain choice. That choice is derived from the nature of the individual substance and its experiences. The choice is free in that it cannot be known with any certainty what the desired outcome will be. The experience of any identical matter/form complex is derived from within yet phenomenal in nature, meaning the true nature of reality is shrouded.

Phenomenal activity follows from the orderly states of incorporeal being. However the incorporeal principles are not needed to explain them. Any material not infused with a substantial form is not a substance and cannot be explained with incorporeal principles. All non-substantial activity follows the subordinate maxims of corporeality. Necessary states of affairs cannot be derived through scientific means nor can the actions of individual substances.

Attempts to draw a system of ontology out of the *Discourse* have failed due to its focus and Leibniz lack of commitment to a system. Russo suggests that conflicting interpretations of Leibniz's work often come from the assignment of a system¹³⁵. If a system is to be derived from Leibniz, it should come from *A Specimen of Discoveries* rather than the *Discourse*. The coherence of the ontology, derived from the previous 22 years of investigations and exhibited in *A Specimen of Discoveries* in 1688, is the basis for the pieces of metaphysics Leibniz used within the *Discourse*.

Leibniz drew heavily on his previous works to compose the *Discourse on Metaphysics*. The exposition of his ontological principles is distorted within this piece. He makes claims that he does not justify because he has partially derived the principles elsewhere. Leibniz is comfortable making these claims within the scope of the theological nature of the *Discourse* because he is not exposing a system of substance ontology. The *Discourse* is meant to explain how God and humanity interact within the universe.

¹³⁵ *The Concept of Matter in Leibniz* (Russo, 280).

The rational theology of the *Discourse* is obvious. Leibniz's intention in writing this treatise, however, is obscure¹³⁶. The ontology he used within the *Discourse* was directed toward the defense of the relationship between God and humanity. Through the exposition of the structure of individual substances, Leibniz hoped to derive a firm foundation for the principles of grace and salvation. The goodness of God is expressed within every created being. Because God has created each being and chosen them to harmonize and synchronize within the universe, God is assured that substances will follow His decrees set forth in sacred texts.

Leibniz claims that the nature of an individual substance is to have a complete notion. The complete notion contains everything required for existence. But, in what does this 'complete notion' exist? Leibniz says in §12 that substantial forms must be added to bodies to ensure substances are: "[...] citizens of the republic of the universe, whose monarch is God" (AG 44). This claim is one of theology, not ontology. The coherence of the matter/form complex is not derived in the *Discourse*, only that it exists as the storehouse of the complete notion.

Leibniz claims that substances do not interact in §14. The derivation of the existence of each individual substance is contained within each complete notion. Each notion was created by God to harmonize and synchronize with each other within the universe. Only thoughts and perceptions can happen to substances. How are individual substances to experience thoughts and perceptions when they are collections of attributes? There has to

¹³⁶ Brown seems to favor the interpretation that Leibniz was answering Malebranche and preparing to help reunify the church factions; (96). Loemker claims that the *Discourse* is probably a preface to the Leibniz's proposed work: the *Demonstrationes Catholicae*; "A Note on the Origin" (450). Wilson cites three possible reasons for the writing of the *Discourse*: church reconciliation, an attack on Leibniz's contemporaries, or a response to Malbranche (79).

be something that perceives. The mind obviously perceives but where is the mind? Leibniz did not describe the subject in which the predicates exist. An exposition of substance ontology would have to explain how the perceiver is able to receive information. An exposition of rational theology, however, does not. Leibniz's exposition of the relation of God to individual substances does not require the derivation of material existence, if that existence is not integral to the relation. The existence of individual substances as material beings is ancillary to Leibniz's argument. The explication of these individual substances, however, is necessary to substantiate the claims within the *Discourse*.

The parts of Leibniz's substance ontology required to support his rational theology are: the pieces of individual substances that are directly related to God and His decrees (matter/form complex), the way in which an individual substance can know God's glory and expectations (this aspect is actually teleological and epistemic), and how and where do physical actions fit into God's plan for perfection.

The substantial form is the direct connection between God and created substances. Within the form are the vestiges of God and the universe which allow intelligent souls know themselves and nature and lower substances to participate in creation as reflections of the universe. God's decrees of perfection and harmony relate to the form as the source of action. The form directs the substantial actions by expressing multiplicity (the universe) in a unity (the individual). The form allows the predicates to unfold according to God's design for that substance. The form is the source of the complete notion which is the teleological and epistemic nature of the substance.

The predicate-in-subject thesis is the general description of the teleological and epistemic attributes of an individual substance. The subject, which is an individual substance, contains all its predicates and the vestiges of the universe. Intelligent substances are able to use the predicate-in-subject notion to derive information about everything corporeal. The ability to reflect upon one's own attributes and compare them to exterior objects allows the substance to derive identity. From the identity the substance can learn about the universe as phenomenal (physical existence) and real (formal existence). The intelligent substance can derive the basis of existence as the possession and expression of *force*. From the actions and passions involving forces, the intelligent substance can derive what is real and what is phenomenal. The knowledge of reality allows the intelligent substance to partially derive the reasons for existing things. Complete knowledge of these reasons is impossible because the derivation continues to infinity and cannot be performed by a limited creature.

The knowledge of phenomenal existence allows the intelligent substance to derive the reasoning for external objects. The theory of concomitance describes the activity observed in external objects. God created all substances to work in harmony. The ability of intelligent substances to know phenomenal existence as uniform and predictable shows intelligent substances that there is a reason substances exist as they do. God has decreed that the substances without intelligence exist to facilitate the intelligent substance's strife for perfection. All of the ontological descriptions Leibniz used in the *Discourse* support the thesis that God is eternally committed to helping His 'children' achieve perfection. Leibniz derives and explains the scheme of substance ontology supporting the rational

theology of the *Discourse* in *A Specimen of Discoveries of the Admirable Secrets of Nature*.

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Appendices

Appendix A: Summation and discussion of *First Truths, On Freedom, and On Contingency*

Leibniz compiled the information he developed in the late 1670's and early 1680's in a paper dubbed *First Truths*¹³⁷. Leibniz attempts to connect the predicate-in-subject thesis with the matter/form complex. He begins by expressing his views of the predicate in subject thesis and how this can yield *a priori* proofs of existents (L 267, AG 31-32). The nature of truth is expressly identical. The predicate is in the subject and no derivation is needed. Or truth is implicitly identical. The connection between predicate and subject requires derivation to be revealed. The nature of truth reveals the fact that all things possess a reason. If all truth is identical and all things that are true have a reason, then the reason that a thing exists can be derived. That reason identifies that thing and separates it from all others. All attributes are derived in this manner and are partially intrinsic (L 268, AG 31). The individual nature of substances requires something other than material attributes to create identity and universal sharing¹³⁸.

Leibniz proceeds into a discussion of corporeal substances. Individual substances have real properties that identify them. These properties are part of the complete concept of the substance including past, present, and future predicates (L 268, AG 32). The individual substance possesses vestiges of the entire universe derived from the internal attributes of the complete concept. The relations of substances are derived from the

¹³⁷ The beginning words of this paper are '*primae veritates*' and hence the editor's title (L 267-271). Ariew and Garber call the paper 'Primary Truths' for the same reason (AG 30-34). The dates are different also: Loemker dates this piece between 1680 and 1684 versus Ariew and Garber who date it in 1689 based on the Akademie edition. The later dating was revealed to the author after final submission, but the argument based upon this piece remains the same. If this piece was written after *A Specimen of Discoveries* then the impact of the claims Leibniz made reinforce the thesis that he was working toward a coherent substance ontology. This ontology was exhibited in the late 1680's, especially in the *Specimen*.

¹³⁸ The identification of individual substances comes from the substantial form and the complete notion.

Appendix A: (continued)

possession of the universe as externally denominated attributes. When attributes change, this change affects all other substances. The internal attributes, the universal attributes held within the complete concept, are shared. The complete concept also holds the entire universe within because each individual substance is that particular expression of God's creation and need the vestiges to derive perception (**L 269, AG 33**).

The individual substance exerts physical action upon each other but not metaphysical action. This is because of the composition of matter/form complex. The matter interacts through the elasticity of its material, thus creating sensation. Elasticity explains the physical interaction. It is internally based as the principle of passion. Elasticity removes the need to explain how substances can transfer metaphysical attributes (**L 269, AG 33**).

The matter/form complex is the nature of substance as the unifying factor within the diversity of the universe. But the forms do not interact because nothing can pass from one substance to another. The causality observed within the physical universe is only the concomitant requisites of a harmonious nature working in such a perfect way that the matter/form complex acts and reacts as if things were passed from one substance to another¹³⁹ (**L 269, AG 33**).

The entire universe is infinitely divisible and contains an infinity of creatures within. As such, there is no determinate figure or shape in bodies. Since there is no determinate shape, all physical interaction is phenomenal. The phenomenal interaction is based upon real systematic existence: the matter/form complex. It is the incorporeal nature of the

¹³⁹ Leibniz defined a requisite as the connection necessary to understand two separate things that are connected integrally. The connection is essential if it is necessary to the understanding of the things in question (**L 161**).

Appendix A: (continued)

form which allows substances to exist as unities within the diversity of the universe. The possession of a form also makes the corporeal substance immortal. The corporeal substance cannot be created or destroyed, only transformed because a unified being resists division (**L** 270, **AG** 33-34).

Leibniz considers necessary and contingent existence in a 1689 paper about freedom¹⁴⁰. Leibniz recognizes that if God is truly free, then possible things that are not actualized must be admitted. Otherwise, God would create only that which is necessary and any other creation would be impossible. The consideration of freely acting individual substances made him think of the role of necessity in the analysis of truth (**L** 263, **AG** 94-95). How does contingency affect truth? The answer comes at the expense of his hopes for a true infinite Combinatorial Characteristic.

Leibniz here mentions in conjunction with the fact that the subject of a proposition about an individual substance contains all of its predicates, that all substances also contain: a divine spark, an infinity of creatures within any portion of matter, a complete set of the happenings (past, present, and future) of its existence, as well as the mirror of the entire universe. Leibniz cites the fact that the contingent aspects of an individual substance are characterized by an infinite number of predicable terms. This infinite series can only be comprehended by God, since He, alone, is capable of 'seeing' the entire

¹⁴⁰ Loemker dates this piece in 1679 whereas Ariew dates it in 1689. Since the dating by Ariew is probably the more correct, this piece is included here. The statements Leibniz makes in this work shed light on his formulation of substance and his views of necessity and contingency (**AG** 94-98, **L** 263-266).

Appendix A: (continued)

series simultaneously and because He created that particular substance¹⁴¹ (L 264, AG 95).

The key to freedom is the ability or inability to grasp the inclusion of the predicate in the subject. For necessary truths, humans can grasp the concept of the predicate-in-subject thesis because every term is reducible to identities; or the indication of a contradiction in the possibility of the contrary state of affairs. For contingent truths, humans do *not* have the ability to grasp the infinite series of predicates included in the subject. God alone can grasp the series because He created it and can ‘see’ the series completely outside space and time in relation to the infinite character of creation as a whole. God’s ability to choose according to His infinite knowledge ensures His freedom. The inability to comprehend contingent truths and derive future states of affairs ensures human freedom; humans cannot know what choices to make (L 264-265, AG 95-96):

In contingent truths, however though the predicate inheres in the subject, we can never demonstrate this, nor can the proposition ever be reduced to an equation or an identity, but the analysis proceeds to infinity, only God being able to see, not the end of the analysis indeed, since there is no end, but the nexus of terms or the inclusion of the predicate in the subject, since he sees everything which is in the series. (L 265)

The infinite character of created things leaves only experience and reason for humans to explore contingent truths. Experience yields knowledge through observation. Leibniz

¹⁴¹ I have put this term in quotes to express the fact that God is pure active existence, therefore the concept of perception does not apply because it requires a passive state which God does not have according to Leibniz (A 247).

Appendix A: (continued)

relies upon the principle of perfection for the coherence of any empirical data. Reason relies on the principle that God created substances in such a way that happenings occur purposefully. Perception and cause are the focus points of infinite analysis. The assumption Leibniz makes is that perception is true; the sense data received is accurate in relation to the object. God works to create perfection and harmony within the universe (**L** 265, **AG** 96-97).

With these two suppositions about the nature of sense data and God's intentionality, the contingent nature of truth supports the predicate-in-subject thesis. The analysis of predicates will still be contained within the subject but this analysis creates an infinite series instead of being resolved into demonstrable or identical terms (**L** 265-266, **AG** 97). The analysis of contingent propositions must be continued to reveal clarity within the notions involved. The terms are analyzed until the relation of the predicate to the subject can be exposed. This calculation would aid the creation of knowledge pertaining to contingent truth.

Leibniz continues his analysis of freedom in a paper from 1689 titled *On Contingency*¹⁴². Existence and essence are separate within created beings. Created beings have a contingent nature. As contingent beings, the truth of their notion must have a relation to necessary truth; and God as the Necessary Being. The connection is in the fact that a reason can be given for the existence of all beings; the principle of sufficient reason exercised by God in creating the universe. The connection of subject

¹⁴² Editor's title, (**AG** 28-30). The actual dating of this piece was revealed to the author after final submission. The dating does not affect the impact of the argument; however the arguments about contingency probably resulted from the correspondence with Arnauld.

Appendix A: (continued)

and predicate in any notion, necessary or contingent, can be revealed through the analysis of terms (**AG 28**).

In the analysis of notions lies the connection and difference between necessary and contingent truths. Leibniz states the fact that contingent truths are known *a priori* only by God due to the infinite analysis of the complete notion (**AG 28**). Leibniz claims that *a posteriori* knowledge of contingent truths is sufficient if humans understand that they are limited beings with the choice of accepting the principle of perfection. Leibniz believes that rational creatures could not find any other truth in contingent things other than perfection based upon the principle of sufficient reason. The number of the possible series of actuals is infinite. All do not attain existence since then the universe would be too crowded for harmony (**AG 29**). The connection between predicate and subject in contingent propositional truths must be derived from the reason of existence: perfection. Even though God must choose the best, that a particular thing *is* the best cannot be demonstrated, this demonstration relies on infinite analysis¹⁴³ (**AG 30**).

¹⁴³ God has cognitive free will in reference to possibilities. Contingent truths support the fact that God has cognitive free will. Humans cannot derive *a priori* reasons for contingent truths. God has a reason to create contingent beings. Within God's effort to create contingent beings there is the cognition of possibilities. If God was required to create certain contingent beings without reference to the possibility of contrary beings, then his creations would exhibit necessity.