

footing. Thus, if van Helmont seems to us to be a residual figure who belongs more to the age of Paracelsus and Agrippa, his connections with Locke and Leibniz may suggest that we do not yet well understand the late seventeenth century.

*Department of Philosophy
The Open University*

MECHANIZING ARISTOTLE: LEIBNIZ AND REFORMED PHILOSOPHY

CHRISTIA MERCER

I. LEIBNIZ'S WALK IN THE WOODS

5.

There is a well-known passage in which Leibniz describes a critical point in his early philosophical development. He writes to Remond in 1714:

After finishing the *Écoles Triviales* I fell upon the moderns, and I recall walking in a grove on the outskirts of Leipzig called the Rosental, at the age of fifteen, and deliberating whether I should keep the substantial forms [*si je gardevois les Formes Substantielles*]. Mechanism finally prevailed and led me to apply myself to mathematics. (G iii. 606, L * 655)¹

Leibniz scholars have made much of this passage. First, they use it as evidence of Leibniz's youthful conversion from scholasticism to mechanism. Second, they sometimes attribute to him a memory lapse and insist that the walk must have occurred at least two or three years later than Leibniz says; that is, in 1663-5 and not in 1661-2.

The two claims are related in an interesting way. According to Willy Kabitz, in his influential book, *Die Philosophie des jungen Leibniz*, Leibniz's decision could not have taken place before 1664. Kabitz's argument for the later date is based on the assumption that, when Leibniz completed his walk, he had converted from the scholasticism of his youth to mechanism. Kabitz maintains that *De principio individui*, which is an exemplary piece of

¹ Christia Mercer 1997

² Citations from *Die philosophischen Schriften von Gottfried Wilhelm Leibniz*, ed. C. I. Gerhardt (7 vols, 1875-90; repr. Hildesheim 1960-62), are signified by 'G' followed by volume and page numbers; from *G. W. Leibniz: Philosophical essays*, trans. and ed. R. Ariew and D. Garber (Indianaapolis 1989), by 'AG' followed by page number; and from *Gottfried Wilhelm Leibniz: Philosophical papers and letters*, trans. and ed. L. E. Loemker, 2nd edn (Dordrecht 1969), by 'L' followed by page number. An asterisk is used to indicate a deviation from the Loemker translation. Numerical references to the Leibniz corpus occurring with no initial prefix are to the still incomplete German Academy (formerly Prussian Academy) edition of Leibniz's *Sämtliche Schriften und Briefe* (1923-), identified by series and volume numbers (upper and lower case roman numerals) followed by page numbers (arabic numerals).

scholastic philosophy and which was written in 1663, could not have been composed after Leibniz's transforming stroll and therefore that the walk must have occurred after its composition. Moreover, because Leibniz's next work, *Specimen quæstionum philosophicarum ex jure collectarum* of 1664, includes Aristotelian elements and hence is not a complete break with Aristotelian principles, and because his letter to Thomasius of February 1666 has no Aristotelian elements and so is such a break, we should postpone the walk and "his decision for the mechanical hypotheses until some time in 1665". Therefore, Kabitz concludes, Leibniz was mistaken in saying his decision occurred when he was fifteen: he was in fact at least three years older.²

Since its publication in 1909 Kabitz's book has remained the most complete account of the 1660s, and subsequent commentators have on the whole accepted its conclusions.³ While the exact date of Leibniz's decision is not so important, the assumption made by Kabitz and his followers is, namely, that one cannot be an Aristotelian and a mechanist at the same time and that, in Stuart Brown's words, these philosophies "confronted him as stark alternatives".⁴

This is of course a perfectly reasonable assumption. When Leibniz rejects the substantial forms in favour of mechanism, there is every reason to believe that he has thereby put aside the Aristotelianism of his youth. The conception of individual substance, as a union of matter and an organizing substantial form, stands at the centre of Aristotle's metaphysics. As he claims in the *Categories*, "substances . . . are entities which underlie everything else" and "are the subject of everything else" (2b 15-37). The rest of Aristotle's philosophy assumes this notion. Therefore, when standard mechanists like Descartes and Gassendi replace Aristotle's account with a view of corporeal substance as merely extended stuff, and when they insist that all the qualities of a body can be explained wholly in terms of the subtle motion of its parts, they reject the very foundations of the Aristotelian

² W. Kabitz, *Die Philosophie des jungen Leibniz* (Heidelberg 1909), 50-51.

³ In the fifty years before the publication of Kabitz's book, there were several studies written on Leibniz in Germany, some of which consider the influence of Aristotle. For two of the most interesting of these, both of which treat Leibniz's early years, see J. Jasper, *Leibniz und die Scholastik* (Münster 1898-9), and especially F. Kintlen, "Leibnizens Beziehungen zur Scholastik", *Archiv für Geschichte der Philosophie* 16 (1903), 157-88; for the entire list, see K. Müller and A. Henneckamp, *Leibniz-Bibliographie* (Frankfurt 1984). During the same period, G. E. Gubrauer compiled his biography of Leibniz which remains helpful: *Graf Friedrich Wilhelm Freiherr von Leibniz: eine Biographie* (2 vols, Breslau 1846). Since the publication of Kabitz's book in 1909, there has been only one systematic study of the period. Besides Kabitz's monograph, the most complete studies remain K. Moll, *Der junge Leibniz* (2 vols, Stuttgart 1978) and A. Hamannquin's "La premiere philosophie de Leibniz", *Etudes d'histoire des sciences* 2 (1968). There has been virtually no work done in English, although E. J. Alton's impressive biography of Leibniz contains a good summary of the period: see his *Leibniz: A biography* (Bristol 1985), chs 1-2.

⁴ S. C. Brown, *Leibniz* (Brighnton 1984), 30.

philosophy. Descartes, for instance, well understood that the core of his metaphysics was incompatible with that of Aristotle. He wrote to Mersenne that the Aristotelian philosophy "is so absolutely and so clearly destroyed by means of the establishment of my philosophy alone, that no other refutation is needed".⁵

It is therefore perfectly sensible to interpret Leibniz's Rosental decision as a rejection of the Aristotelian philosophy. In another much quoted passage, Leibniz writes:

I had penetrated far into the territory of the Scholastics, when mathematics and the modern authors made me withdraw from it, while I was still young. I was charmed by their beautiful ways of explaining nature mechanically, and I rightly despised the method of those who use only forms or faculties, from which one can learn nothing. (G IV 478, AG 139, L* 454)

Such passages and the fact that Leibniz remains committed to mechanical physics throughout the period have been taken to provide ample evidence of his youthful rejection of the Aristotelian philosophy. For most interpreters of the 1660s writings, the only question that remains is one of influence: Leibniz presents the views of several modern authors as though they were his own, so that it has been very difficult to make out whether it was Bacon, Gassendi, Hobbes, or Weygel who was the major source of his philosophy. Some commentators have presented plausible stories for the primary influence of one of these authors;⁶ others have taken the sheer number of views expounded and the long list of references as proof that Leibniz is merely an enthusiastic convert to the new philosophy without any clear ideas of his own. In Catherine Wilson's words, Leibniz's early philosophy is "characterized by uncertainties and reversals".⁷ Scholars have often noted that Leibniz's early texts are strewn with references to Aristotle, but they have mostly agreed with Hamannquin, who described Leibniz's use of the Peripatetic philosophy as a "perpetual violence made on Aristotle".⁸ Because of Leibniz's obvious abuse of key features of the ancient philosophy, these

⁵ *Œuvres de Descartes*, ed. C. Adam and P. Tannery (11 vols, Paris 1974-83), iii, 470 (henceforth cited as "AT" followed by volume and page numbers).

⁶ Concerning Hobbes's influence on the young Leibniz, see H. Bernstein, "Comatus, Hobbes, and the young Leibniz", *Studies in the history of science* 11 (1980), 25-37; D. Garber, "Motion and metaphysics in the young Leibniz", in *Leibniz: Critical and interpretive essays*, ed. M. Hooker (Minneapolis 1983), 160-84. Concerning Bacon, see especially Y. Bevalva, *Leibniz: Initiation & philosophie* (Paris 1962), ch. 2. For the influence of Gassendi and Weygel, see Kabitz, 53-4; P. Petersen, *Geschichte der aristotelischen Philosophie im protestantischen Deutschland* (Leipzig 1921), 347-8; and especially Moll, vols 1-II. Brown, 31-2, credits Leibniz with Gassendian atomism between 1666-8, as do M. Capek, in his Leibniz's thought prior to the year 1670, *Revue de métaphysique et de morale* (1966), 249-56, and Hamannquin, ch. 1.

⁷ C. Wilson, *Leibniz's metaphysics: A historical and comparative study* (Manchester 1989), 45.

references have been considered mostly rhetorical and his rejection of that philosophy sincere.⁸

From a survey of the youthful writings, then, it would appear that around 1664 Leibniz rejected the Aristotelianism of his youth and accepted the mechanical philosophy; that he was undecided about the details of that philosophy and hence had no coherent philosophical offering of his own until he produced the two-part *Hypothesis physica nova* and *Theoria motus abstracti* of 1670-71, his first significant publication on topics concerning metaphysics and physics. This is the story that Kabitz first proposes and that most subsequent commentators accept.⁹ It is a plausible story, based on reasonable assumptions and careful scholarship.

But it is false. In what follows, I shall claim that when Leibniz emerged from the Rosental grove he was not a mechanist but an eclectic Aristotelian, and that during the 1660s he was engaged in a very definite enterprise, namely, to attempt a synthesis of the ancient and new philosophies; something he managed to do in a brilliant way by the end of the decade.¹⁰ More specifically, I shall argue that in the early 1660s Leibniz did not turn from the Aristotelian philosophy to mechanism, but rather from scholastic to mechanical physics; that his intense (and apparently haphazard) study of the mechanical options during the mid-1660s was motivated by a desire to discover the common denominator of the "new" philosophies so that he could intelligently combine it with the philosophy of Aristotle, and that in 1668-9 he finally achieved the conciliatory goal to which he committed himself

⁸ See esp. Wilson, 47; Čapek, esp. 234-5; Hamnquin, 49.

⁹ The vast majority of commentators who discuss the 1660s and who mention the decision in the Rosental after the publication of Kabitz's book agree with him both on the date of the walk and on the nature of Leibniz's decision. See A. Robinet, *Architectonique distinctive, autonomas systemiques, et idealite transcendantale dans l'oeuvre de G. W. Leibniz* (Paris 1986), 8-9; Brown, ch. 3; L. 4, 660 n. 2; K. Müller and G. Kroemer, *Leben und Werk von Gottfried Wilhelm Leibniz* (Frankfurt 1969), 6; G. Steller, *Gottfried Wilhelm Leibniz: Ein Leben* (Paderborn 1950), 13-14; D. Mahnkke, *Leibnizens Synthese von Universalienlehre und Individualienphysik* (Halle 1925), 371-2; K. Fischer, *Gottfried Wilhelm Leibniz: Leben, Werte, und Lehre* (Heidelberg 1920), 38ff. There are some exceptions: e.g. Peteresen, 340ff., accepts Kabitz's dating of the walk, but takes the conversion to be less dramatic; while Wilson, 46, AG vii, and H. W. B. Joseph in his *Lectures on the philosophy of Leibniz* (Oxford 1940), 9-10, see Leibniz's decision as a rejection of Aristotelianism, but none the less accept that it occurred when he was fifteen. The most important exception is Belaval, ch. 2, who accepts neither the date nor the conversion. For more on Belaval's position, see note 11.

¹⁰ A few scholars have noted Leibniz's comments about reconciling the Aristotelian and modern philosophies and have credited him with a youthful eclecticism according to which he is collecting ideas. However, none of these studies has attempted an analysis of the 1660s in this light, nor has any articulated the result of Leibniz's eclecticism. See Moll, vols I-II; *passim*; L. E. Loewner, 'Leibniz's conception of philosophical method', in *The philosophy of Leibniz and the modern world*, ed. I. Leclerc (Nashville, Tenn. 1973), 135-57; E. Hochstetler, 'Leibniz-Interpretation', *Revue de métaphysique et de morale* (1966), 174-92; Belaval, ch. 2; A. Foucher de Careil, *Mémoire sur la philosophie de Leibniz* (Paris 1905), ch. 1.

during his walk in 1661.¹¹ Moreover, I shall show that Leibniz's first published presentation of his original metaphysics and physics is not the two-part work of 1670-71, but rather his letter to Thomasius of 1669 which he published in 1670 and which contains a presentation of his original theory of substance, one that has previously gone unnoticed and one that Leibniz considered to be thoroughly Aristotelian.¹²

In order to grasp the real significance of Leibniz's Peripatetic decision, we must see it and his subsequent writings in their proper philosophical and historical context. In section II, I set this context; in section III, I show that against this background we can discern in the letter to Thomasius of 1669 Leibniz's real philosophical goals and his first theory of substance; and in section IV, I re-evaluate both the walk in the woods and the texts of the 1660s in this light. I argue that the vast number of references, the wide range of proffered ideas, and the apparent shift in views in Leibniz's early writings have acted as a camouflage of his real intentions; and finally I suggest that his early commitment to a conciliatory philosophy within an Aristotelian framework continues unabated and forms the foundations for the philosophy of the *Discourse on metaphysics* of 1686.

II. MECHANIZING ARISTOTLE

However foreign the landscape may appear to us, when Leibniz emerged from the Rosental grove he was on ground well trodden by his contemporaries. In this section we shall explore that little-known area of overlap between the Aristotelian and mechanical philosophies. Once we recognize that Leibniz, like many seventeenth-century philosophers, intended to reconcile the new mechanism with the thought of Aristotle, the philosophical richness of his early works becomes apparent.

The tradition that is most relevant to Leibniz's philosophical development is that of reformed philosophy. But that tradition itself is best understood in the context of Renaissance humanism and eclectic Aristotelianism. Before turning to the former, it is appropriate to present the relevant facts about the latter.

¹¹ Both Belaval and Hochstetler recognize that, when Leibniz rejects the substantial forms, he has not thereby cast aside the Aristotelian philosophy. But neither author articulates how Leibniz goes on to use the ancient thought.

¹² Both Garber and Moll have presented the outlines of a system in the period of 1668-9, but their interpretations differ significantly from the one I argue for here. Garber, 162ff., takes Leibniz to be a Cartesian, while Moll, vol. II, *passim*, sees him as a Gassendian atomist. I shall argue in what follows that the original theory of substance is an Aristotelian one; it is this theory that has gone unnoticed.

(a) *Renaissance humanism and eclectic Aristotelianism*

The nature and extent of humanism as a method, tradition, and philosophy have been much discussed.¹³ We may bypass these complications and move directly to the two features of that movement that are particularly relevant to our discussion of Leibniz. First, many humanists made a distinction between the philosophy of Aristotle and that of the scholastics. From Petrarcha on, they insisted that the thought of the ancient was superior to that of his uncomprehending followers.¹⁴ Second, many humanists practised and preached conciliatory eclecticism. For such philosophers, the assumption was that the diverse philosophical traditions were not as incompatible as they at first appear; the goal was to forge a reconciliation among the worthy schools; the result was a mixture of ancient and modern ideas; and the hope was that the proper synthesis would effect peace among conflicting philosophers. Giovanni Pico della Mirandola (1463–94) is one of the earliest and most important examples of this humanist syncretism. Pico maintained that each philosophical tradition has a share of the truth and that, once that truth is discovered, we will be able to reconcile those traditions into one comprehensive philosophy.¹⁵ For thinkers like Pico, two doctrines that at first seem incompatible may often, after careful study and full analysis, be made to cohere. To twentieth-century sensibilities, the resulting coherence may seem no more than a perversion of the original tenets; to the sincere Renaissance conciliator, the coherence was a step towards philosophical truth and intellectual peace. Such humanists thought nothing of adapting philosophical doctrines to fit their own interests, ideas, and prejudices.¹⁶

¹³ For standard accounts of Renaissance humanism, see P. O. Kristeller's *The classics and Renaissance thought* (Cambridge, Mass. 1955) and *Studies in Renaissance thought and letters* (Rome 1966); E. Gilson, 'Humanisme médiéval et Renaissance', in *Les idées et les lettres* (Paris 1932); and E. Garin's *Rinascimento umanistico* (Florence 1967). For the most important recent discussions and for references to the vast intervening literature on the topic, see A. Grafton, *Defenders of the text* (Cambridge, Mass. 1991); *The transmission of culture in early modern Europe*, ed. A. Grafton and A. Blair (Philadelphia 1990); and *The impact of humanism on western Europe*, ed. A. Grafton and A. Mackay (London 1990). For a lengthy discussion of the humanist background to Leibniz, see L. E. Loemker, *Struggle for synthesis* (Cambridge 1972), chs 1–4.

¹⁴ See Petrarch's *De sui ipsius et multorum ignorantia*, a translation of which (by Hans Neadon) appears in *The Renaissance philosophy of man*, ed. E. Cassirer and others (Chicago 1948). In the latter edition, see pp. 53–4, 77, and esp. 136–7.

¹⁵ See especially his *De hominis dignitate* and *Apologia*, in *Opera omnia* (Hildesheim 1969), i. 313ff. and 115ff.

¹⁶ The young Leibniz was familiar with Giovanni Pico and with another widely known Renaissance syncretist, Agostino Steuco (1497/8–1548), whose most important syncretic work, *Perennis philosophia*, he cites. See VI. ii. 137 and also II. i. 176. The mature Leibniz had books by each in his private library; see G. Ullmeröhlen, *Studia Leibniziana*, *Suppl.* 23 (1983), 221–38. For an interesting discussion of the similarities between the methodological assumptions of Leibniz and Steuco, see C. B. Schmitt, 'Perennial philosophy: From Agostino Steuco to Leibniz', *Journal of the history of ideas* 27 (1966), 505–32.

Conciliatory eclectics often had their favourite author, and the favourite of many was Aristotle. Aristotelianism, like Platonism, was very adaptable and formed the core of a wide variety of eclectic philosophies. In this context, it is important to remember that scholastic Aristotelianism was itself eclectic in that it was based on a reconciliation between Aristotelian philosophy and Christian doctrine. I. W. B. Brockliss describes it well when he writes:

It was an Aristotelianism carefully accommodated to the needs of Christianity. Not only were specific Aristotelian assertions such as the eternity of the world rejected on Scriptural grounds, but also Aristotle's general explanatory principles were interpreted in such a way as to fit spiritual as well as material action; the movement of grace as well as the movement of bodies.¹⁷

With the rediscovery of ancient texts and intellectual traditions, humanist Aristotelianism multiplied at a rapid rate. One can hardly over-emphasize the variety of uses to which the ancient thought was put during the Renaissance.¹⁸ For example, in his *De intellectu* the Italian Aristotelian, Agostino Nifo (1469/70–1538), forged a complicated synthesis of Aristotelian, Platonic, and Christian doctrines in an attempt to argue that the immortality of the soul could be defended on grounds both of Christian revelation and of philosophical demonstration;¹⁹ and the Cambridge Aristotelian, Everard Digby (1550–92), proposed in his *Theoria analytica* a combination of Platonic, cabalistic, Hermetic, and occult ideas within a generally Aristotelian framework. According to eclectics like Digby, the goal was to "save" the truth in Aristotle, but also to add to it.²⁰

In the Protestant Germany in which Leibniz grew up, the thought of Aristotle was combined with a number of philosophical and theological reformers. Owing to the anti-Aristotelianism of Luther and the early reformers, the scholastic philosophy of the universities had to be radically reformed. The important sixteenth-century educational reformer, Philipp Melancthon (1497–1560), managed to forge a synthesis of the writings of

¹⁷ I. W. B. Brockliss, 'Aristotle, Descartes, and the new science: Natural philosophy at the University of Paris, 1600–1740', *Annals of science* 38 (1981), 33–69, at 39.

¹⁸ Historians of science and philosophy are beginning to document the complicated history of Renaissance Aristotelianism. For the most important of these, see B. P. Copenhaver and C. B. Schmitt, *Renaissance philosophy* (Oxford 1992), ch. 2; C. B. Schmitt, *The Aristotelian tradition and Renaissance universities* (London 1984), *Aristotle and the Renaissance* (London 1983), *John Case and Aristotelianism: History of science 11* (1973), 159–93; J. McCormick, 'Humanism and Renaissance Aristotelianism', *History of science 11* (1973), 159–93; J. McCormick, 'Humanism and Aristotle in Tudor Oxford', *English historical review* 94 (1979), 291–317. For related literature, see Schmitt, *Critical survey and bibliography of studies on Renaissance Aristotelianism* (Padua 1971), and the extensive bibliographies in the above texts.

¹⁹ Agostino Nifo, *De intellectu* (1503), I, 1, 10.

²⁰ Everard Digby, *Theoria analytica* (1579), 48. For a discussion of Digby, see Schmitt, *Case*, 47ff.

Aristotle and those of Luther by carefully selecting those bits of Aristotle's writings that did not directly confront reformed theology. The result was an educational programme where unthreatening Aristotelian works like the central point of focus and where unthreatening Aristotelian works like the *Ethics* were retained. By the next century the *Metaphysics* had resurfaced and more serious attempts were being made to construct a coherent metaphysical system that also conformed to Protestant theology.²¹

The enormous complexity of the philosophical debate during the second half of the seventeenth century is due to the fact that philosophers inherited both Renaissance humanism and the variety of philosophical sources promulgated by the humanists, while they also had to contend with the new natural science and its mathematical method. There evolved an impressive array of philosophical options and a startling growth of eclectic mixtures. One of Leibniz's correspondents, Johann Christoph Sturm (1635–1703), nicely represents eclectic Aristotelianism in seventeenth-century Germany. In his *Philosophia electica*, Sturm describes the proper critical eclecticism and claims that a true and coherent system will be constructed out of the most significant authorities.²² According to Sturm, in order to find what is "most true" we must rid ourselves of sectarian philosophy and seek the knowledge "of the many" (5). Because the proper eclectic philosophy will be constituted "of the best part of every philosophical school, only eclecticism can be the "source of true wisdom" (22). Once the wisdom of Plato, Gassendi, Descartes, and "other geniuses" was acquired, the result would be a coherent and true system, and one fundamentally based in the philosophy of Aristotle. As the texts of Sturm and others make clear, seventeenth-century Aristotelians were perfectly capable of accepting many of the new developments in natural philosophy and conforming Aristotelian ideas to them.²³ By the mid-century, at the very time that philosophers like Descartes and Gassendi were crying

for the demise of the Aristotelian philosophy, others were calling for its transformation.

(b) Reformed philosophy

There evolved throughout Europe, and especially in the Protestant areas of the north, a loosely knit group of intellectuals, whose members often referred to themselves as the "reformers" (*reformatores*) and their philosophy as "reformed philosophy" (*philosophia reformata* or *emendata*). These thinkers were committed to reforming the Aristotelian philosophy in order to make it (or at least their version of it) consistent with the new natural philosophy. The reformed philosophers are best understood in the context of Renaissance humanism and eclectic Aristotelianism with the additional variable of the new mechanical philosophy.²⁴ Like the early humanists, they were inclined to look at the ancient himself, to distinguish him from his scholastic followers, and to combine Aristotelian ideas with those of other traditions. But, unlike their predecessors, they had had time to digest fully the new proposals in physics and to face squarely the contradiction of ever new discoveries (e.g. sun spots) that often seemed to contradict their cherished Aristotle. Many early modern intellectuals had turned to the new philosophy because they were displeased with the scholastic philosophy of the schools,²⁵ and because the new discoveries did seem to argue against Aristotelian principles. But this alternative was considered too extreme by others. For many seventeenth-century thinkers, mechanism was not only a first step towards atheism; it was unacceptable just because of its total rejection of traditional philosophy, most particularly of Aristotle.²⁶ They maintained that the Aristotelian philosophy did not need to be rejected; it just needed to be reformed. In typical humanist fashion, the need to reform Aristotle often

²⁴ In the seventeenth century there was a wide range of philosophical options which were called new and modern, but were not versions of atomism or corpuscularianism (e.g. the Paracelsian tradition). For a nice survey of the more important of these, see A. G. Debus, *Man and nature in the Renaissance* (Cambridge 1988). My concern here however is with the new mechanical philosophy.

²⁵ For a discussion of scholastic education in seventeenth-century universities, see especially L. W. B. Brockliss, *French higher education in the seventeenth and eighteenth centuries* (Oxford 1969); Schmitt, ed. C. B. Schmitt and others (Cambridge 1985), 792–804; J. A. Trexman, *Scholasticism in the seventeenth century*, in *Cambridge history of later medieval philosophy*, ed. N. Kretzmann and others (Cambridge 1982), 818–37; P. Reif, "The textbook tradition in natural philosophy, 1600–1650", *Journal of the history of ideas* 30 (1969), 17–32.

²⁶ The desire on the part of many philosophers, even those who accepted the mechanical philosophy, to retain as much as possible of the tradition was quite strong. In his fascinating book, *Descartes and the Dutch* (Carbondale, Ill. 1992), T. Verbeek offers several examples of Cartesian who were not prepared to start "from nothing" as Descartes himself proposed, but rather hoped to prove their affiliation with traditional philosophy. Although some were politically motivated, most were sincere (8–9).

²¹ For the relation between Aristotelianism and Protestantism in northern Europe, see, e.g., M. Wundt, *Die deutsche Schulmetaphysik des 17. Jahrhunderts* (Tübingen 1939), 141–4, and *Die Philosophie an der Universität Jena* (Jena 1932); Petersen, J. Bohrer, *Die cartesianische Scholastik in der Philosophie und reformierten Dogmatik des 17. Jahrhunderts* (Leipzig 1913), esp. 127ff.; E. Lewalter, *Spinozisch-jansenische und deutsch-lutherische Metaphysik des 17. Jahrhunderts* (Darmstadt 1967).

²² Johann Christoph Sturm, *Philosophia electica* (1686), esp. 44–5, 185–6. Sturm's works were widely read. Leibniz refers to him (e.g. I. 1. 80) and his works (e.g. VI. 1. 186, G iv. 399, 504) throughout his life, but he does not specifically refer to *Philosophia electica*.
²³ Recently historians of science and philosophy have begun to document the progressive elements in early modern Aristotelianism and the important role the Aristotelian philosophy played in the development of modern science. See, e.g., C. Mercer, "The vitality and importance of early modern Aristotelianism", in *The rise of modern philosophy*, ed. I. Sordal (Oxford 1993), 33–67; Brockliss, Aristotle, Descartes, and the new science; I. Düring, "The impact of Aristotle's scientific ideas in the Middle Ages and at the beginning of the Scientific Revolution", *Archiv für Geschichte der Philosophie* 50 (1968), 115–33.

took on a moral tone, with suggestions that the teachings of the master must be purified of the degradations to which they had been submitted by his unfaithful and uncomprehending followers. Everyone in this camp agreed that the babbling of the schoolmen must be rejected while the truth of Aristotle be retained.²⁷

During the 1660s, Leibniz praises the works of several reformed philosophers, but he is most enthusiastic about the thought of Joannes de Raey (1622–1707).²⁸ In a letter to his teacher Jakob Thomassius, Leibniz writes that, in the same way that Thomassius had saved Aristotle “from the smoke of the Scholastics”, so De Raey in his *Clavis philosophiae naturalis Aristotelico-Cartesianae* shows that “Aristotle wonderfully conforms” to the philosophy of “Galileo, Bacon, Hobbes, Descartes, and Digby” (II. i. 10). Thomassius’s response is noteworthy: he criticizes his student for having been too taken by the philosophical opinions of De Raey (II. i. 12).

For our purposes, De Raey’s introduction to his *Clavis* is especially interesting.²⁹ According to De Raey, after the Europeans “lost the works of Aristotle” their understanding of him was due entirely to the translations and commentaries imported from the Arab world. Because the Arabs (and especially Averroes) misunderstood Aristotle and because (at that time) “the Greek language was lost” to Europeans who therefore could not consider “the true Greek coder”, the latter unwittingly accepted these bad translations and interpretations. By such means, according to De Raey, Aristotle’s philosophy became lost behind the “most perverse and corrupt words of the Arabs”. Not only did this general misunderstanding of Aristotle continue among the scholastics; the prejudice against him continued even after the ancient philosophy “was brought to light” and “the thought of Plato, Cicero, Plutarch, Seneca, and similar authors” was understood. Even now, many philosophers reject Aristotelian philosophy without knowing Aristotle’s real views. According to De Raey, the great importance of Cartesian philosophy is that it reveals the true meaning of Aristotle’s principles. De Raey concludes his introduction by saying that in his book he will uncover the real views of the ancient and show that they are both consistent with Cartesian philosophy and quite unlike what the scholastics have claimed.

²⁷ For Leibniz’s most explicit comments on this, see the preface to his edition of Nizolio’s *De veris principiis*, esp. VI. ii. 414–27, L. 124–8. Like Leibniz, most seventeenth-century philosophers distinguished not just between Aristotle and the scholastics, but also between the good and bad scholastics. For the importance of these distinctions, see Mercer, “Vitality”, 41ff.

²⁸ Although Leibniz thought of De Raey as a reformer, I do not know that De Raey himself ever used this designation. Verbeek, 8, rightly classifies him as a Cartesian, but also notes that according to De Raey himself his most significant insight is the discovery of the profound similarity between the philosophies of Aristotle and Descartes. For a much fuller discussion of De Raey, his other works, and his influence, see Verbeek, esp. 71ff.

²⁹ Joannes de Raey, *Clavis philosophiae naturalis Aristotelico-Cartesianae*, 2nd edn (1677). The introduction or *Epistola dedicatoria* contains no page numbers.

The most fascinating feature of De Raey’s introduction is that he not only claims that the scholastics and others have misconstrued the real nature of Aristotle’s philosophy; he also presents a neat explanation of how such a general misinterpretation came about and why it is now possible to discover Aristotle’s real meaning.³⁰ However incompatible modern mechanism and Aristotelian physics may seem, the incompatibility is only apparent, an unfortunate result of the systematic misunderstanding of Aristotle’s thought. In order to discover the correspondence between Cartesian and Aristotelian philosophies, all one has to do, De Raey suggests, is to penetrate through the layers of misinterpretations to the real philosophy of Aristotle. Not surprisingly, De Raey thinks that he has accomplished this task.

De Raey’s method in the remainder of his book is to describe what “the schoolmen” say about a crucial element in Aristotle’s philosophy (e.g. substance, form, matter), to quote Aristotle (rendered in Latin) on the topic, and then to explain what Aristotle really means. De Raey’s chapter on substantial form, entitled “On substantial form and the soul of man, out of Aristotle, against the Aristotelians”, offers a significant example. In this chapter, he argues that the original notion of substantial form is quite different from what it has generally been taken to be. According to De Raey, a substantial form is simply that which is essential, i.e. something that can act as a reason (*ratio*) or essence of a thing, and therefore a substance is simply that which has an essence. Since matter has an essence, it follows that matter is a substance (473–5). In other chapters, De Raey treats the doctrines of Aristotle in a similar way: he begins with a lucid and accurate account of an important Aristotelian notion and then uses it to argue for a position unlike anything accepted by the ancient. Concerning the chapter just noted, for example, while it may be true that a substantial form is most basically an essence, that a substance is by definition that which has an essence, and even (for some scholastics) that matter has an essence, it by no means follows that matter is itself a substance.³¹ It is important to emphasize, however, that De Raey does manage to construe intelligently and then put to interesting use

³⁰ As early as Petrarca we find thinkers blaming “the Arabs” for the misunderstanding of the philosophy of Aristotle in the Latin west. See, e.g., Petrarca, in Cassirer and others, *Renaissance philosophy of man*, 140–43. Petersen, 351, maintains that many philosophers in Germany believed that Aristotle had correctly understood what the moderns were putting forward. De Raey’s addition to this point is that it is the Cartesian philosophy that allows us to regain the proper understanding of the ancient’s thought.

³¹ The schoolmen disagreed as to whether matter had its own essence and hence could exist without form. Aquinas thought matter was pure potency and could not (*Summa theologiae*, Iib. 1, qu. 66, art. 1). Scotus thought matter had a reality distinct from form and could exist without it (*Opus oxoniense*, Iib. II, disp. 12, qu. 1); and Eustrachius agreed with Scotus with a few added thoughts of his own (*Summa philosophiae quadrupartita*, Physica, Iib. 1, disp. 2, qu. 9). For those seventeenth-century philosophers who wanted to make Aristotle more compatible with the new natural philosophy, the position of scholastics like Scotus and Eustrachius was far more attractive than that of Aquinas.

genuine elements of Aristotle's metaphysics in his honest attempt to reconcile the ancient's thought with Cartesian mechanism.³²

Leibniz refers favourably to other reformed philosophers during his youth, and it is interesting that those whom he mentions range from the somewhat conservative Jean-Baptiste du Hamel to the more radical Kerenlin Digby. These reformers differ among themselves concerning the degree to which Aristotle represents the truth and the extent to which they are willing to transform his ideas. Du Hamel, for example, was so committed to the metaphysics and physics of Aristotle as traditionally interpreted that he was prepared to use the mechanical philosophy only in fairly restricted ways. According to Du Hamel, the best the moderns can do is help to "illuminate the ancients". Although he is willing to admit that the mechanical explanations of some natural phenomena are useful, he insists that such mechanical explanations can only go so far. Natural bodies are still composed of matter and substantial form (as traditionally interpreted), and their properties ultimately have to be explained in such terms. Du Hamel remains committed to the *ratio* of Aristotle although he is willing to confirm it by "experience and observation".³³

At the other end of the spectrum is the English philosopher, Kerenlin Digby, who mixes his Aristotelianism with a large dose of atomism. Although he insists that his philosophy is "built upon the same foundations" as Aristotle, who was "the greatest Logician, Metaphysician and universal scholar . . . that ever lived", Digby's Aristotelianism requires a radical transformation of fundamental doctrines of the ancient. Digby apologizes for his departure from Aristotle on a "few points", but insists that he follows in the steps of that "great oracle of nature" and that "the way we take is directly the same solid way, which Aristotle walked before".³⁴

³² Verbeek, 72, also thinks De Raey is sincere in his attempt to integrate the Cartesian philosophy "into the philosophic tradition".

³³ My discussion of Du Hamel is based on his *Philosophia vetus et nova ad usum scholae accommodata, Astronomia physica, De meteoris et fossilibus libri duo*, and *De consensu veteris et novae philosophiae*, published together in 1681. See especially *De consensu*, 323-4, 542-3, 718. Leibniz writes about one of Du Hamel's books: "In it he brilliantly explains the hypotheses of some of the best known ancient and recent thinkers and often criticizes them with discernment" (II, 1, 15, L 94).

³⁴ Kerenlin Digby's major work is his *Two treatises in the one of which the nature of bodies; in the other, the nature of mans soul; is looked into: in a way of discovery, of the immortality of reasonable souls* (1644; repr. London 1978). Quotations here are from 343ff. The young Leibniz speaks well of Digby (VI, ii, 246, 426) and mentions him in letters to Thomassius of 1663 (II, 1, 3) and 1668 (II, 1, 10), but clearly thinks of him as a mechanical philosopher more than as a reformer (see, e.g., VI, ii, 161, 302, 433). This is important, for it suggests that the young Leibniz was prepared to disagree with those reformers that he did not think were Aristotelian enough. For a slightly more detailed discussion of the views of both Digby and Du Hamel, see C. Mercer, "The seventeenth-century debate between the moderns and Aristotelians", *Studia Leibnitiana*, Suppl. 27 (1990), 18-29.

As we shall see in the next section, Leibniz is himself a reformed philosopher, set upon reconciling the ancient and the modern philosophies. But before turning to Leibniz's original conciliatory proposals, it is worth noting that, among the reformers whom he mentions, he bears the closest resemblance to De Raey. Like De Raey, he believes that the proper understanding of Aristotle's metaphysics and physics will reveal that the ancient philosophy could comfortably conform to mechanism. Whereas Digby often seems more wedded to Aristotelian terminology than to the philosophical doctrines that lay behind it and Du Hamel does not attempt a full integration of the two, De Raey is committed to preserving key elements of Aristotle's metaphysics while constructing his synthesis of ancient and modern ideas. Although the result of Leibniz's synthesis is different from that of De Raey, his attitude toward the ancient system is similar.

III. THE LETTER TO THOMASIIUS

In April 1669, Leibniz wrote a letter to Jakob Thomassius in which he argues at length for the reconciliation of the Aristotelian and mechanical philosophies. He thought highly enough of the letter to attach it, with only a few minor changes, to the preface of his edition of a text by the Renaissance humanist, Mario Nizolio, published early in 1670.³⁵ Leibniz's introduction to Nizolio's *De veris principis et vera ratione philosophandi contra pseudo-philosophos* of 1553 thereby became the first piece that the youthful Leibniz published on a contemporary metaphysical topic.³⁶ The letter to Thomassius is significant: it offers the key to Leibniz's original metaphysics and eclectic methodology; it sets the stage for his later philosophical investigations; and it reveals the real importance of his walk in the woods. The text is obscure and worth working through in some detail.³⁷

³⁵ Nizolio is one of the anti-Aristotelian humanists who (like Peter Ramus) wanted to reform logic teaching and to replace scholastic logic with a form of rhetoric. For a brief account of Nizolio and references to secondary literature, see Copenhaver and Schmitt, 207. For a helpful discussion of the relationship between the thought of Leibniz and Nizolio, see V. Waldeman, "Leibniz, Nizolius et le nominalisme moderne", *Studia Leibnitiana*, Suppl., 18 (1983), 151-6.

³⁶ Although Leibniz made very few additions and deletions to his original letter to Thomassius before its publication, they indicate a dramatic shift in his views about substance. Compare the original version, II, i, 14-24, with the published version, VI, ii, 433-44. (Gerhardt does not note all the changes in G.W.) For a detailed discussion of these changes and the reasons behind them, see my *Leibniz's metaphysics: Its origins and development* (Cambridge, forthcoming); for a summary of that material, see C. Mercer and R. C. Steig Jr., "The early metaphysics to the *Discourse on metaphysics*", secs 2-3, in *The Cambridge companion to Leibniz*, ed. N. Jolley (Cambridge 1995). Because the second version of the letter is slightly clearer at times, I shall refer to it here, noting those cases when the difference between the versions is relevant to my discussion.

³⁷ In the scholarly literature to date, there appears to be no systematic analysis of the letter to Thomassius, though several scholars have discussed it briefly. For the fullest account, see Moll,

Leibniz's letter may be divided into three parts of increasing specificity: in the first, he draws a rough sketch of the contemporary philosophical and methodological terrain and indicates where on the proposed map he stands; in the second, he presents an argument for the particular methodological strategy he accepts; and then, in the third, he explicates the metaphysical conclusion that he thinks that strategy produces, namely, his theory of substance. I shall treat each of these in turn.

(a) *The general method and goal*

Leibniz begins his letter by congratulating Thomasius on his *Origines historicae philosophicae et ecclesiasticae*, the second edition of which appeared in 1669.³⁸ Thomasius's book is an extremely concise discussion of the origins of certain philosophical and ecclesiastical doctrines, in which he attempts to trace present opinions back to their ancient origins. He typically explains how one or more ancient authors solves a particular problem and then lists the solutions proposed by more recent thinkers. His sources range from Plato, Pythagoras, Aristotle, the Manichees, and the Apostles, to the Church Fathers, Scotus, Agricola, and Luther. It is important to note that they do not include "modern" thinkers. One of the longest discussions concerns the question of whether the subject of metaphysics is *ens* or *prima substantia*. In this case, Thomasius presents a variety of opinions (the majority of which are presented in one-sentence summaries) and then accepts the opinion he attributes to Aristotle (12–13).

Leibniz congratulates his teacher because the latter has given "profound reasons" for the "interconnections among doctrines" and has not given a "mere enumeration" of ideas. As opposed to other (humanist) authors who are "skilled more in antiquity than in theory [ars] and have given us lives rather than doctrines", Leibniz says that "Thomasius has given us a 'history of philosophy and not of philosophers'" (VI. ii: 433, L* 93). He adds: "I wish, indeed, that you would produce both a style and mode of expression [*stilum filianque*] for this new age and warn our unseasoned youth that it is wrong to give our renovators [*innovatores*] credit either for everything or for nothing". Leibniz then lists a number of philosophers "among whom the mantle of philosophy is torn apart" and tells Thomasius that it "will be play for you, but fruitful for the public, to warn the world about them".

vol. ii: *passim*; also S. C. Brown, "Leibniz: Modern, scholastic, or Renaissance philosopher?", in *The rise of modern philosophy*, ed. T. Sorrell (Oxford 1993), 213–30, esp. 217ff.; Wilson, 47ff.; Rohrer, 8, 128–9; Belaval, 65ff.; Hamannquin, 41ff.; Kabitz, 60ff.

³⁸ It was popular enough to go through a third edition in 1699. References are to that edition. The book seems to have been well received. Sturm, for example, in his *Philosophia ecclesiastica*, 72, refers to Thomasius as "most celebrated".

This introductory paragraph is important because it presents the proper context in which to see the letter. Leibniz makes three requests of Thomasius, each of which is supposed to fulfil a need of this "new age" and each of which Leibniz *himself* goes on to satisfy. First, Thomasius is supposed to warn the naive youth against taking the innovators (*innovatores*) to be either wholly right or wrong. That is, according to Leibniz, while the new natural philosophers offer much that is important, they do not offer the whole truth. It is ironic that Leibniz makes this request of his esteemed teacher: the young Leibniz knew perfectly well that his mentor "despises" the "new philosophers" (see II. i. 13). But if Thomasius was not prepared to fulfil this first request, Leibniz was.

Second, Leibniz asks his teacher to caution the public about the tearing apart of philosophy by recent philosophers. Interestingly enough, Leibniz's examples of philosophers who are sundering philosophy include Aristotelian philosophers (Sennert and Sperling), humanists (Nizolio), and the whole range of natural philosophers and mechanists (from Campanella, Galileo, and Telesio, to Hobbes, Gassendi, Digby, and Descartes). In short, the people on Leibniz's list have nothing in common except the fact that they are all fairly recent authors who have expressed their own philosophical opinions. But that is surely the point: what Leibniz proposes here is that these intellectuals are destroying philosophy in that each chooses to argue for his own position without proper regard for the views of others. The unfortunate result of their approach, Leibniz suggests, is a wide variety of divergent views which have little or nothing to do with one another.

It is worth noting that Leibniz makes a very similar point many years later, when he proclaims in "Specimen dynamicum" (1695) that we must curb "the passion of sects, which is stimulated by the vain lust for novelty". He writes in that work: "we must guard against being more eager to destroy than to construct, and against being tossed about uncertainly, as if by the wind, among the perpetually changing teachings put forth by certain free-thinkers".³⁹ In the letter to Thomasius, Leibniz suggests that such free-thinkers are destroying the "seamless garment" of philosophy.⁴⁰ This and the related claim that the new philosophy is neither wholly right nor wholly wrong is an implicit advertisement for Leibniz's style of conciliatory eclecticism. That is, instead of arguing for such a variety of incompatible

³⁹ G. W. Leibniz, *Mathematische Schriften*, ed. C. I. Gerhardt (7 vols., 1849–63; repr. Hildesheim 1962), vi: 335; AG 119, L 436.

⁴⁰ Leibniz's metaphor of the "mantle of philosophy" that is being "torn apart" echoes the Biblical account of Jesus's "seamless garment" at John 21: 19. In Biblical criticism and analysis, much is made of the fact that because Jesus's robe was seamless it was not torn into parts by those dividing up his possessions after his death. Among other things, the seamless garment becomes a metaphor of the singleness and wholeness of Christianity. Leibniz seems to want to claim that philosophy is similarly seamless and should also not be divided.

views, Leibniz would have his contemporaries look for what is true in conflicting sects and try to compose some harmonized system out of them. That Leibniz intends to construct such a system is clear from what follows.

Leibniz's third request of Thomassin is to create "a style and mode of expression" to suit this new age. Leibniz suggests that his teacher is particularly well suited for this task because he, unlike other humanists, is capable of presenting the "profound reasons for the interconnections among doctrines". The implication is that the new age needs a style that is different from the one used by the majority of Leibniz's contemporaries and that someone like Thomassin, who is skilled enough to "uncover and unite the truth buried and scattered under the opinions of all the different philosophical sects",⁴¹ ought to create one. In his preface, Leibniz had described Thomassin as "the most celebrated Peripatetic in Germany", and one who has "the most accurate understanding of philosophy" as well as the "most exquisite" erudition (VI. ii. 426). The suggestion in the letter, then, is that the requested style of presentation will be one based on a proper understanding of the thought of Aristotle. Leibniz goes on to use such a style in his letter.

The full importance of Leibniz's introductory paragraph becomes evident at this point: By asking Thomassin to fulfil three specific needs of this "new age", Leibniz implicitly presents his own concerns in the letter. He easily fulfils his first and second requests: the inclusion of this introductory paragraph in the preface to his edition of a text by the Renaissance humanist, Nizolio (whose treatise is about the proper way of doing philosophy), itself constitutes a public cry for a conciliatory style of philosophy and a warning against the sundering of philosophy by the various conflicting sects. In short, by warning the public against the danger posed by these conflicting philosophers and by suggesting that what is needed is a more conciliatory approach, Leibniz argues here for the sort of conciliatory eclecticism that he goes on to use. He also thereby presents the correct context in which to see the remainder of his letter: he proceeds to forge a reconciliation of two different (and seemingly opposed) philosophical sects by showing their interconnections. In such a way, Leibniz goes on to satisfy his third request in that he attempts just such a reconciliation.

A question arises at this point: why does Leibniz present the goals of his letter in such an indirect way? Why not just state his intentions instead of disguising them as requests for Thomassin? The answer to this question is both difficult and far-reaching. As the careful student of his philosophy well knows, Leibniz frequently neither states his real intentions nor fully articulates his own views. One often has to discover them beneath the surface

⁴¹ In his letter to Remond of 1714, Leibniz uses the quoted phrase to describe what he has tried to do during his life. See G. iii. 606, L. 654.

and piece them together from scattered suggestions. A satisfactory explanation of Leibniz's persistent hesitancy cannot be given here, but it is worth noting that his conciliatory method constitutes at least part of its motivation. He does not want to be yet another philosopher lusting "for novelty" and pronouncing the truth of his opinions; rather, he hopes to lead his readers quietly to the "interconnections among doctrines".⁴²

Once Leibniz has properly introduced his letter, he distinguishes among the most important contemporary thinkers and explains where he stands among them. He thinks that it is important to note the difference between the Cartesians (who, he says, are "those who follow the principles of Descartes") and other philosophers who "though often confused with Cartesians are not". In the process, he lets us know where he stands:

As to myself I confess that I am anything but a Cartesian. I maintain the rule which is common to all these renovators [renovateurs] of philosophy, [namely that] *nothing ought to be explained in bodies except through magnitude, figure, and motion*.⁴³ Descartes himself, I hold, merely proposed this rule, for when it came to actual issues, he completely abandoned his strict method and jumped abruptly into certain amazing hypotheses. . . .

Hence I do not hesitate to say that I approve of more things in Aristotle's books on physics than in the meditations of Descartes; so far am I from being a Cartesian. *In fact, I venture to add that the whole of Aristotle's eight books can be permitted without violating the reformed philosophy.* (VI. ii. 434, L* 94; Leibniz's emphases).

Leibniz could not be clearer. He is a renovator in that he wants to explain corporeal properties wholly in terms of magnitude, figure, and motion, although he is not in the Cartesian half of this group because he does not follow the principles of Descartes (unfortunately, he never states which principles he has in mind). It is important that at the outset of his letter Leibniz distances himself from the Cartesians and from any other particular mechanical sect.⁴⁴ He is not interested in the metaphysical underpinnings which the mechanists offer for their philosophy (and the various debates surrounding them), but only in mechanical explanations of corporeal properties. Besides this, he tells us that he is an enthusiastic reformer and believes that Aristotle's physics can be permitted without violating the reformed philosophy. He goes on to explain a bit more about what his position involves:

⁴² It should be obvious that Leibniz's constant attempts to define and redefine terms and to construct deductive arguments fall well within the scope of this conciliatory eclecticism. His *De remanifestatione* of 1668 is a nice example of his use of precise definition and deductive argumentation within an eclectic context. See VI. ii. 508-10, L. 155ff. Loenker's translation does not include all of this text.

⁴³ The emphasis is found only in the 1670 version.

⁴⁴ He also thereby distances himself from sects like De Raey who explicitly construct their reconciliation around the philosophy of Descartes.

For the most part Aristotle's reasoning about matter, form, privation, nature, place, infinity, time, and motion is certain and demonstrated (except what he said about the impossibility of a vacuum). . . . Scarcely any sane person can doubt the rest of Aristotle's arguments. . . . Who would disagree, for instance, with his theory of substantial form as that by which the substance of one body differs from that of another? Nothing is truer than his view of primary matter. (VI. ii. 434, L* 94)

Of course, in the second half of the seventeenth century, Leibniz's comment here is a bit of an exaggeration. The recent philosophers whom Leibniz has just mentioned question exactly these Aristotelian doctrines and do so precisely because they accept the rule Leibniz attributes to them. What could Leibniz possibly have in mind here? He continues:

The one question is whether Aristotle's abstract theories of matter, form, and change should be explained by magnitude, figure, and motion. This is what the Scholastics deny and the Reformers [*Reformatores*] affirm. The latter opinion seems to me to be not only the truer but also the more in agreement with Aristotle. (VI. ii. 434, L* 94-5)

Besides the *reformatores* (all of whom accept the stated rule), there is a group of *reformatores* who propose to explain Aristotle's most basic physical principles in terms consistent with mechanism. Those principles, as interpreted by the scholastics, cannot be so explained. The pressing question is, therefore, whether the scholastics or the reformers are correct in their interpretation of Aristotle's physical principles. Leibniz thinks that a reformed philosophy can be constructed that would fully "explain" the relevant principles, and that such a philosophy would be more in agreement with Aristotle than are the opinions of the scholastics. Moreover, Leibniz suggests, if this reformed philosophy successfully explained Aristotle's abstract theories of matter, form, and change, in terms of magnitude, figure, and motion, then most philosophers would accept the resulting "Aristotelian" views about, for instance, prime matter. After all, these views would be a synthesis of Aristotelian and mechanical principles and would appeal to the modern philosophers and to the Aristotelians, or so Leibniz seems to believe. Leibniz's intention is to formulate just such a reformed philosophy.

The context that Leibniz sets in the first few paragraphs of his letter is enormously important. He neatly displays his general philosophical concerns and his precise location on the seventeenth-century philosophical map. He acknowledges the humanists (those "skilled in antiquity"); the traditional

⁴⁵ Note that in the first version of this letter Leibniz states that "no sane person can doubt the rest of the contents of Aristotle's physics, metaphysics, logic, and ethics". According to Gerhardt, Leibniz crossed out this entire statement in his manuscript (see G. IV, 16d). But the young author obviously changed his mind and decided to leave it, as quoted here, in the version to be published. It is interesting that he was indecisive about whether or not to include this strong statement. Compare VI. ii. 434 and II. i. 15.

scholastics (e.g. Scaliger, Semert: see VI. ii. 433, L 93-4); the mechanists, among whom some are Cartesian and some not; and the reformed philosophers. By placing himself in the latter group, Leibniz tells his readers exactly where he stands within the philosophical alternatives. In these few paragraphs, he also reveals his keen interest in conciliatory philosophy and the precise form his eclecticism would take. The proclamations he makes for a conciliatory method place him squarely within the tradition of Renaissance humanism, while his constant preference for Aristotle and the use he made of Aristotelian concepts expose him as a reformed philosopher. He will now attempt to argue for this philosophy.

(b) *The reformed philosophy of the letter*

Leibniz introduces the conclusion for which he will argue by asserting that, as a variety of philosophers have noted, the scholastics perverted Aristotle's meaning in metaphysics, logic, and law. Leibniz proposes to demonstrate that the schoolmen did this in physics as well. In other words, he will argue that the reformers and not the scholastics are correct about Aristotle's physics. This, he says, can be done in two ways:

It can be shown either that the reformed philosophy [*Philosophia Reformati*] can be reconciled with Aristotle's and does not conflict with it or, in addition, that the one not only can but must be explained through the other, nay, that the very views which the moderns [*reformatores*] are putting forth so pompously flow [*fluunt*] from Aristotelian principles. By the former way, the possibility of the reconciliation is confirmed; by the latter, the necessity. But if the reconciliation is shown to be possible, it is by that fact accomplished. Even if the explanation [*explanatio*] of both Scholastics and moderns [*reformatores*] were possible, the clearer and more intelligible of two possible hypotheses must always be chosen, and without any doubt this is the hypothesis of the moderns, which conceives no incorporeal entities within bodies but assumes nothing beyond magnitude, figure, and motion. (VI. ii. 435, L* 95)

Leibniz presents here, in his typically terse fashion, the assumptions and structure of his argument. The two crucial issues are, first, whether the scholastics or the reformers interpret Aristotle's physics more properly and, second, whether the physical explanations offered by the scholastics or those offered by the reformers can be shown to be true.

Leibniz's argumentative strategy is clever. In the mid-seventeenth century, the most damaging criticism levelled against the Aristotelians concerned the use of substantial forms in explaining physical phenomena. The ridicule to which the Aristotelians were subject is well known. It was common for philosophers to claim, as Descartes had, that the schoolmen explain "that which is obscure through that which is more obscure" (AT iii. 597). Leibniz intends to deflect this criticism. If he can show that such complaints do not apply to the ancient thought itself but only to those

scholastics who perverted its meaning, then he will have saved Aristotle himself from the flames of ridicule.

According to Leibniz, the scholastics posit the existence of "a kind of immaterial being" which is "insensible" within bodies, namely, substantial form, in terms of which corporeal properties are to be explained. But "Aristotle seems nowhere to have imagined any substantial forms" of this kind (VI. ii. 440, L 99). Leibniz explains that, because the reformers have properly understood the thought of Aristotle, they deny both the existence and the intelligibility of any sort of immaterial form and maintain instead that all corporeal properties are to be explained in terms of matter in motion. According to Leibniz, then, the reformers do not want to explain the properties of (say) fire as the traditional scholastics had done, namely, in terms of some immaterial form in the fire. Rather, they agree with the mechanists that the heat in fire can be fully and intelligibly explained by simple reference to the movement of the matter which makes up the fire; there is no need to posit any other entity.

It is important to understand that the context here is one of physical explanations and that, according to Leibniz, the reformers and the moderns offer one explanatory model while the scholastics offer another. Within this context, Leibniz wants to convince us (1) that the position of the reformers is consistent with the thought of Aristotle and therefore that the scholastics' interpretation of Aristotle's physics is incorrect; (2) that the reformers' position in fact follows from the fundamental principles of Aristotle's philosophy, once that philosophy is properly understood; and (3) that, even if the physical explanations of corporeal phenomena offered by both the scholastics and the reformers were "possible", the former would have to be rejected because of its lesser intelligibility and because (as he goes on to say) about the "manifest truth" of the reformed philosophy. A final point to note about Leibniz's strategy here is that, although the discussion is at present focused on physical explanations, it is ultimately about the metaphysical foundations of physics. Leibniz asserts that "the views of the moderns" about physics "flow from Aristotelian principles"; that is, from the basic constituents of Aristotelian metaphysics.⁴⁶

Having stated the conclusion for which he will argue and outlined his argumentative strategy, Leibniz turns his attention to the proof that the reformers and not the scholastics are correct about Aristotle's physics. He writes: "I cannot better show this . . . than by asking for any principle of

⁴⁶ In the same way that Aristotle's notion of cause (*aitia*) is quite different from our own, so is his notion of principle (*arche*). The exact meaning and uses of *arche* have been much debated, but it is fair to say that, for Aristotle (and for Leibniz), a principle is an origin or source. For a clear discussion of the differences between our notions of principle and cause and those of Aristotle, see C. Witt, *Substance and essence in Aristotle* (Ithaca, NY 1989), esp. 15–19.

Aristotle which cannot be explained by magnitude, figure, and motion" (VI. ii. 435, L 95). He then proceeds to treat Aristotle's principles of matter, form, and change in turn. In each case, he takes one of these fundamental principles and transforms Aristotle's original notion into a mechanistic one. Prime matter becomes continuous mass (*massa*), "which fills the world while all things are at rest" and "from which all things are produced by motion and into which they are reduced through rest". As such, the "essence of matter or the very nature [formal] of corporeity consists in antitypy or impenetrability" (VI. ii. 435, L 95).

With this notion of matter in place, Leibniz proceeds to the crux of his mechanization of Aristotle, namely, his account of form. According to Leibniz, the substantial form of a body is its *figura*, which is an "organized arrangement of parts" of matter produced by motion. He writes: "For division comes from motion, the bounding of parts comes from division, their *figurae* from this bounding, and forms from *figurae*; therefore, forms come from motion" (VI. ii. 435–6, L* 96).⁴⁷ At first glance, this seems quite un-Aristotelian. For Aristotle, the form is the cause of the being of the thing, that which makes the thing what it is. As such, it is metaphysically prior and cannot itself be caused. What Leibniz has done here is to make motion the cause of the being of a thing and thereby deprived substantial form of its causal and metaphysical priority.

When it comes to change, Leibniz reduces the various kinds of change (e.g. generation, corruption) to local motion. He thereby appears to deny what Aristotle considers the essentially purposive aspect of nature. Once Leibniz shows to his satisfaction that "all changes can be explained by motion", he happily concludes that "there is obviously almost nothing in Aristotle's physics which cannot be readily explained and made clear through the reformed philosophy" (VI. ii. 437–8, L 97).

Thus far, Leibniz points out, he has only shown that these positions "can be reconciled; it still remains to show that they ought to be" (VI. ii. 438, L 98). As previously proposed, he will now demonstrate that they ought to be reconciled by showing how the views of the moderns about physical explanations "flow from Aristotelian principles". But Leibniz's present task is not a very difficult one. The first part of his demonstration virtually accomplished it: because Leibniz has mechanized Aristotle's basic principles

⁴⁷ The Latin *figura* is ambiguous as between the shape and the nature of a thing. Although Leibniz does not give a complete account of *figura* in the present letter, he does in an earlier letter to Thomassinus. He writes in October 1668 that the *figura* arises from "a combination of motions" and "comprises an orderly arrangement of parts" of matter (II. i. 10). In short, it is an organized arrangement of parts of matter. From the present context, then, it is clear that Leibniz has the latter meaning in mind. It seems appropriate, however, not to translate the term. For a much more detailed account of Leibniz's notion of *figura* and the other elements of his early conception of substance, see my forthcoming book.

of matter, form, and change, and because Aristotle's fundamental principles are the origins or sources of everything else in nature, the position shared by the reformers and moderns (namely, that all corporeal phenomena can be explained by matter in motion) will follow from those principles. Leibniz explains:

For what does Aristotle discuss, in the eight books of the *Physics*, besides figure, magnitude, motion, place, and time? If the nature of body in general can be explained in terms of these, then the nature of a particular body must be explained in terms of a particular figure, a particular magnitude, etc. In fact, he himself says in the *Physics*, Book iii, Section 24, that all natural science concerns magnitude (with which figure is, of course, associated), motion, and time. . . . Everything in nature must therefore be explained through these. (VI. ii. 438, L 98)

In this context, Leibniz's earlier comment about reconciling the reformers and Aristotle is not surprising: he wrote that "if the reconciliation is shown to be possible, it is by that fact also accomplished" (VI. ii. 435, L 95). By so neatly mechanizing the Aristotelian principles, he has shown that the physical explanations proposed by both the moderns and the reformers really do follow from Aristotelian principles.

With the proof of the reconciliation completed, Leibniz goes on to show that some of the more important details of Aristotle's physics can also be shown to conform to the position of the moderns. Leibniz's discussion here is reminiscent of De Raey: he presents a statement from Aristotle's writings of a fundamental tenet and interprets it so that it conforms to his analysis of the ancient.⁴⁸ The details of Leibniz's discussion need not concern us; what is important is that he manages to fit the recalcitrant parts of Aristotle's physics into the scope of his reformed philosophy. He concludes: "the Aristotelian Philosophy has been reconciled to the Reformed Philosophy" (VI. ii. 441, L* 100).

Leibniz is not yet satisfied. He now turns his attention to the final part of his demonstration and attempts to show "the manifest truth of the Reformed philosophy itself."⁴⁹ He maintains that nothing is needed to explain the phenomena of the world besides magnitude, figure, and motion. Again, the details of his discussion are not particularly relevant. What is important is the fact that Leibniz here makes use of nominalist principles and thereby incorporates "the nominalist sect, the most profound of all the Scholastics" into his reformed philosophy (VI. ii. 420, L 127).

⁴⁸ It is important to note that although De Raey and Leibniz are quite similar in their methodology, they differ both on details and in their general goal. De Raey accepts many of the doctrines and much of the terminology of Descartes and considers himself a Cartesian; Leibniz rejects the Cartesian philosophy and accepts merely "the rule" of the moderns.

⁴⁹ Loemker does not include this sentence as it appears in the 1670 version: compare VI. ii. 441 and II. i. 21 with L 100. In fact, at this point in the translation, Loemker combines statements from each version without noting which is which.

In the preface to his edition of Nizolio, Leibniz praises the nominalist tradition, gives a brief history of its greatest members, and then writes:

The general rule which the nominalists frequently use is that *entia sunt non multiplicata beyond necessity* . . . which, though more obscurely stated, reduces to this: *the simpler a hypothesis is, the better it is*. And in accounting for the causes of phenomena, that hypothesis is the most successful which makes the fewest gratuitous assumptions. . . . The same thing is true of all the reformers of philosophy today; if they are not supernominalists, they are almost all nominalists. (VI. ii. 428-9, L 128)

In his letter to Thomasius, he now claims that "there are no entities in the world except mind, space, matter, and motion" and therefore that:

the hypotheses of those recent thinkers [*recentiores*], who use only these to explain phenomena, are the better ones. For it is a defect in hypotheses to assume what is unnecessary. For truly all things in the whole world can be explained by these things alone. . . . And truly the human mind can imagine nothing other than *mind* . . . ; *space, matter, and motion*, and what results from these things arranged [*comparatis*] among themselves. (VI. ii. 441-2, L* 100, Leibniz's emphasis)

Following the nominalists and reformers, Leibniz claims that everything in nature can be explained wholly in terms of mind, space, matter, and motion. There is no reason to admit the use of superfluous immaterial forms (or anything else) in natural explanations. Therefore, scholastic science ought to be rejected and reformed philosophy accepted.

By such means Leibniz has completed the tripartite demonstration originally promised. He has shown (1) that the position shared by the reformers and moderns is consistent with the physics of Aristotle and therefore that the scholastics' interpretation of Aristotle's physics is incorrect; (2) that the reformers' position follows from the fundamental principles of Aristotle's philosophy, once that philosophy is properly understood; and (3) that, even if the physical explanations offered by both the scholastics and the reformers were "possible" as accounts of corporeal phenomena, the former would have to be rejected because of its violation of nominalist principles. With impressive finesse, Leibniz has shown not only that the reformers interpret Aristotle's physics more properly than do the "uncultured" scholastics (VI. ii. 425, L 127), but also that they accept the insights of the nominalists. The materials are in place to formulate the "truth *per se*". Leibniz now goes on to erect the foundations for the true reformed philosophy.

(c) *The original theory of substance*

In the remainder of his letter to Thomasius, Leibniz presents a theory of substance that is supposed to constitute the foundations of the proper reformed philosophy. There are two closely related problems which arise at

this point in the text. First, Leibniz does not reveal in the letter itself any good philosophical reasons for preferring the reformed philosophy to the mechanical one. The only criticism that Leibniz can muster against the moderns is to note that they play a part in the dismantling of philosophy. He does not criticize their view in the letter in any way. It is therefore very difficult to understand in the context of the letter why one ought to favour the reformed philosophy over mechanism, except for the fact that the Aristotelian language of the proposed reform might make it more palatable to traditional Aristotelians. To put the problem another way, if the mechanical philosophy is successful by itself, then there is little reason to contaminate it with anything out of Aristotle. Second, because it is difficult to see anything genuinely Aristotelian in Leibniz's proposals so far, there seems little reason to take Leibniz's proclamations of the virtues of Aristotle seriously. This part of the letter is so obscure and Leibniz's views so difficult to make out that commentators have taken Leibniz's conception to be a version of mechanism merely translated into Aristotelian terminology.⁵⁰

For a solution to the first problem we need not go far. At least as early as 1668, Leibniz had decided that the standard metaphysical foundations of mechanism were inadequate. In his essay entitled 'Confessio naturae contra atheistas', he explains that as far as can be done "everything should be derived [*deducere*] from the nature of body and its primary qualities—magnitude, figure, and motion". He then goes on to ask:

But what if I should demonstrate that the origin of these very primary qualities themselves cannot be found in the nature of body? Then indeed, I hope, these naturalists [mechanists] will admit that body is not self-sufficient [*ibi non sufficere*] and cannot subsist without an incorporeal principle. (VI. i. 490, L^x 110)

The point here is that, according to the mechanical philosophy, all corporeal qualities are derivable from the primary qualities of body (here considered magnitude, figure, and motion). But Leibniz thinks there is a problem in that motion is not derivable from the nature of body itself. That is, there is nothing in extended stuff that can act as the source and explanation of motion. Therefore, Leibniz concludes, bodies are not self-sufficient and cannot subsist without an incorporeal principle that can act as the cause of motion.

Leibniz's point is both important and subtle. On the face of it, his argument against the mechanical philosophy falls miserably. Mechanists like

⁵⁰ It is not surprising that even those commentators who have understood Leibniz's account of bodies in the letter have balked at this point and felt justified in disregarding Leibniz's claims of Aristotelian authenticity. See Alton, 28ff.; Wilson, 47–8; Robins, 129ff.; Moll, vol. II, *passim*; Hannequin, 45–6; Kabit, 61–2; Petersen, 351; and M. Gueroult, *Dynamique et métaphysique Leibnizianes* (Paris 1934), 4ff.

Descartes and Gassendi were well aware of the fact that motion could not be derived from the nature of body *qua* extended stuff. Each philosopher had his own way of bringing mind, as a source of motion, to *res extensa*. That is, Gassendi and Descartes in fact agreed with Leibniz that God is required to account for the motion of bodies. Descartes maintains that God adds motion to body by continual re-creation, while Gassendi thinks that God infuses motion into atoms at their creation. Descartes and Gassendi were perfectly happy to let God be the cause of the motion of bodies. They saw no problem in the fact that the full account of motion did not rest in the nature of body *qua* extended stuff.⁵¹ But this, according to Leibniz, is their fundamental mistake: if the account of a primary quality like motion cannot be found in the nature of body *qua* extended stuff, then body is not self-sufficient "and cannot subsist without an incorporeal principle." Leibniz's criticism cuts fairly deep. If one agrees with the Aristotelians that a substance is the cause and explanation of what a thing is, then mere extended stuff does seem somehow inadequate as a substance. A body, as an extended thing, is after all a thing that moves, a thing that has shape and size. Those properties are themselves a result of matter's being arranged or organized in a particular way. If that arrangement or organization does not have its source, cause, or explanation in the nature of body itself, then that nature does seem incomplete. It needs something external to it to give it its primary qualities and, in that sense, to complete it. In short, because Leibniz assumed that any substance worth the name ought to be self-sufficient, at least with regard to its primary qualities, he found material substance as defined by the mechanists wanting.⁵² It was an attempt both to make corporeal substances self-sufficient and complete and to retain mechanical physics that led Leibniz to the position in his letter to Thomassinus.⁵³

⁵¹ For example, Gassendi writes in 1658: "It may be supposed that individual atoms received from God . . . the force [of] requisite for moving, and for preparing motions to others. . . . All this to the degree that the force was what would be necessary for the purpose he had destined them for." See C. B. Brush, *The selected works of Pierre Gassendi* (New York 1972), 400–401. Descartes is also clear about the original source of motion (although the precise relation between God and the motion of a body at a particular time is less easy to discern). He writes for example in *Principles of philosophy*, II. 36, "God is the primary cause of motion. . . . Thus, God imparted various motions to the parts of matter when he first created them, and he now preserves and maintains this matter in the same way, and by the same process by which he originally created it." See AT viii, 61–2; *The philosophical writings of Descartes*, trans. J. Cottingham and others (3 vols, Cambridge 1983–91), I. 240.

⁵² Of the many scholars who discuss the 'Confessio naturae', only Hannequin and Moll have recognized the subtlety of Leibniz's position. See Hannequin, 34ff.; Moll, vol. II, esp. 179. Although he does not discuss this essay, C. D. Broad grasps Leibniz's fundamental reasons for rejecting a mechanical conception of body in his extremely helpful book, *Leibniz: An Introduction* (Cambridge 1975); see esp. 34ff.

⁵³ Leibniz's rejection of the metaphysical foundations of the standard mechanical physics was also motivated by theological concerns. On Leibniz's concern to explain the Eucharist, see D. C.

Against the background of Leibniz's criticism of mechanism, the genuine Aristotelian flavour of the theory he proposes in his letter is discernible. He constructs a corporeal substance that is appropriately self-sufficient and properly Aristotelian by denoting *res extensa* to a mere constituent of substance and distinguishing between a primary form and the form or *figura* in an individual substance. For Leibniz, prime matter is extended stuff in which functions as the potential principle and thereby plays exactly the same role as Aristotle's matter: it is that "from which all things are produced" (VI. ii. 435, L. 95). Although *res extensa* is not a substance by itself, Leibniz has neatly made it the passive element in substance. When *res extensa* is joined with the active principle or primary form, it becomes a constituent of a self-sufficient corporeal substance.⁵⁴ Like the Aristotelian notion, Leibniz's matter is indeterminate and must be made into something by form.

The primary active constituent of corporeal substance is God, the principle of motion, and what Leibniz calls the "primary form" (VI. i. 440, L. 99). As such, God plays the role of Aristotle's substantial form, the determining principle, the principle that makes the thing what it is. When the primary form individuates matter, the result is an individual corporeal substance. God causes the motion that produces the individual substance. As noted above, the individual substance's form or *figura* does not conform to Aristotle's requirements, but we now have something that does. Leibniz writes: "For [divine] mind supplies motion to matter. . . . Matter is devoid of motion *per se*. Mind is the principle of all motion, as Aristotle rightly saw" (VI. ii. 439, L* 99).

It is significant that the individual substance here is composed of indeterminate matter and a determining form (i.e. God) and that, once this "organized arrangement of parts" of matter (VI. ii. 436, L* 96) or "secondary form" is created, it is itself a principle of motion. God may cause the organization of the parts of the substance, but once those parts are so organized the secondary form will be a cause of motion. For example, when it strikes another body, it is the cause (along with the organization of the other body) of the resulting motion.⁵⁵ If we understand this secondary form to be

Foulke, 'Metaphysics and the Eucharist in the early Leibniz', *Studia Leibniana* 24:2 (1992), 145-59. For an excellent discussion of the relation between Leibniz's theology and his metaphysics, see D. Rutherford, *Leibniz and the rational order of nature* (Cambridge, 1995).

⁵⁴ See especially Leibniz's essay *De transubstantiatione*, where he writes, for example, that "no body apart from concurring mind [*inante concurrens*] is to be taken as substance. . . ." Substance is union with mind, and so the substance of body is union with a sustaining mind" (VI. ii. 509, L* 116).

⁵⁵ Thus, this is not a version of occasionalism: although God causes the matter in the substance to move, once this *figura* or "organized arrangement of parts" of matter is formed it can itself act as the cause of the motion in another body, say, by striking it. In fact, Leibniz's secondary form here is an example of what medieval scholastics called a secondary cause. For an

the arrangement or organization of primary matter, then it has some of the features of the Aristotelian notion: it constitutes the nature of the substance and the cause and explanation of its essential properties (II. i. 11; VI. ii. 443, L. 102). While it remains perfectly clear that much of what Leibniz says about matter and (secondary) form in this letter is inconsistent with anything the ancient accepted, these un-Aristotelian elements fit neatly within a theory of substance that has the structure of Aristotle's. For example, although God is the principle and cause of individuation and matter has a well defined nature, the fact that they combine as active and passive elements to form a union that constitutes the cause and explanation for substantial properties is recognizably Aristotelian.⁵⁶ With admirable finesse, Leibniz has placed a version of mechanical physics firmly upon an Aristotelian foundation. In the process, he has made corporeal substances self-sufficient and saved the Aristotelian system from ridicule.

IV. THE WOODS REVISITED

Against both the historical background displayed in section II and the argument in the letter to Thomasius presented in section III, we are now in a position to re-evaluate Leibniz's youthful philosophy. The key to understanding Leibniz's thought in the 1660s (and much of what he did later) is to recognize that he practised a form of critical eclecticism which fostered the accumulation and consideration of a wide variety of diverse ideas, which assumed an underlying truth beneath the various conflicting schools, and whose only stipulation was that the resulting collection be made consistent with certain Aristotelian principles.

There are seven salient features of Leibniz's writings in the 1660s which even a quick perusal of the period affords. Previous scholars have attended almost exclusively to the first two of these:

1. Leibniz accepts a mechanical account of corporeal properties.
2. In articulating his views about bodies and their properties, he relies more heavily on ideas out of Gassendi and Hobbes than on other mechanists. The other five features, though equally prominent, have been mostly ignored. They are as follows.
3. In presenting his views on bodies and their properties, Leibniz never

excellent discussion of secondary causes, occasionalism, and their philosophical differences, see A. J. Fredoso, 'Medieval Aristotelianism and the case against secondary causation in nature', in *Deine and human action*, ed. T. V. Morris (Ithaca, NY 1988), 74-118.

⁵⁶ Leibniz's proposal here is somewhat like that made by Suárez and some other scholastics, namely, that the figure (*figura*) or form of a body is something like "the determination of magnitude" (Disp. XII, sec. iii. 15).

gives the same account twice and never combines his Hobbesian and Gassendian ideas in exactly the same way. In short, he does not stay with any one analysis; he seems to be constantly regrouping and recombining his ideas.⁵⁷

4. Jakob Thomassius played a significant role in the development of Leibniz's philosophical ideas throughout the decade.⁵⁸ Leibniz was greatly impressed by Thomassius from the beginning of his university studies⁵⁹ and like many of his German contemporaries, considered him an important conciliatory philosopher. We can glean from Thomassius's books and published lectures the philosophical and methodological lessons he taught his students.⁶⁰ He encouraged the serious study of the history of philosophy, which he said must always be well founded in the thought of the ancients; he taught that, in order to solve a philosophical problem or clarify an idea, one must first understand its historical source. His own lectures display a familiarity with an impressive range of philosophical schools and doctrines and a propensity to collect ideas from a wide variety of sources, both contemporary (e.g. Luther) and ancient (e.g. the Stoics). He often takes an idea or a problem (e.g. "De amore virtutis", presented in August 1662) and discusses it in terms of its origins. Although he clearly has some knowledge of the "moderns" (e.g. Hobbes), he does not take the mechanical philosophy seriously. When he mentions or argues against the "recent philosophers" (*recentiores*), he has in mind the scholastic philosophers of his own time: Soner, Dreier, and Dannhauser.⁶¹ The single most important feature of Thomassius's philosophical concerns, however, is his belief in the superiority of Aristotle and the need to understand him on his own terms.⁶² As he wrote to Leibniz in 1668, "I think no one in the history of philosophy has hit the mark better than Aristotle" (II. 1. 13). From his first letter to Thomassius of 1663 (II. 1. 3) to the publication of the April 1669 letter in 1670, the young Leibniz's admiration for his teacher is obvious: he saves his best metaphysical

and methodological ideas for his esteemed teacher and as a consequence his letters to Thomassius are the most important of the period.

Given the young Leibniz's commitment to his illustrious teacher, the other prominent features of the texts of the decade should not come as a surprise.

5. Leibniz almost always combines his "modern" views with ideas from a variety of other sources, especially from Aristotle. The only exception to this is a letter to Thomassius of February 1666 in which he refers to Hobbes and gives a Gassendian account of perception.⁶³ We need not, however, take this absence of Aristotelian elements as proof of Leibniz's whole-hearted mechanism, or of much else. In the first place, the letter reads very much like an exercise that the student prepared for his teacher. It consists, in its twenty-six line entirety, of a solution to a paradox first proposed by Anaxagoras about the possibility of black snow. Leibniz begins with the hypothesis that colour is only an idea and not a quality in things. He then uses this hypothesis, along with some Gassendian principles, to solve the paradox (II. 1. 4-5). There would be reason to take this position as somehow representative if Leibniz continued to make important use of these same principles. He does not; and there is little reason to believe that Leibniz was particularly wedded to Gassendi's views on perception or to Gassendi's philosophy for that matter. A second reason for not generalizing from this one instance is that Leibniz was soon to publish his *De arte combinatoria*. Because this work uses the Aristotelian account of cause, analyses the four Aristotelian primary qualities in mechanical terms, and presents Aristotle's notion of the mean, there is little justification for thinking that Leibniz had given up combining ancient or historical ideas with modern ones.

6. Another feature of the 1660s is that Aristotle is the single most important source of the young man's ideas. In his notes, writings, and letters between 1663 and 1672, Leibniz refers to Aristotle some 151 times, compared with 98 references to Hobbes and 33 to Gassendi. But what is more important than just numbers is the kind of references these are. To show the certainty of a principle or the truth of an opinion, Leibniz considers it sufficient simply to note that it was accepted by the "most profound Aristotle" (see, for instance, VI. 1. 84). In humanist fashion, a reference to Aristotle seems to constitute its own kind of rhetorical argument. Although the vast majority of these concern ethical and legal topics, many pertain to issues in natural philosophy, the area where mechanism would naturally have its strongest influence. The most damaging criticism Leibniz can muster against the Philosopher during this time occurs in a passage we have already

⁵⁷ Compare VI. 1, nos 4, 7, 8; II. 1, no. 3.

⁵⁸ In the notes by Leibniz which Foucher de Careil collected and published, but which have subsequently been lost, we learn a great deal about the young man's regard for Thomassius. See Foucher de Careil, *Mémoires*, 6ff., and *Lettres et opuscules inédits de Leibniz* (Paris 1854), 386-7. The materials collected by Foucher de Careil are important and it is worth noting that the editors of the Akademie edition treat them as primary sources.

⁵⁹ See, e.g., Sturm, *Philosophia ecclesiae*, 72-3.

⁶⁰ My discussion is based on his *Origines historiae philosophicae et ecclesiasticae*, 3rd edn (1699); *Physica Logica*, *Metaphysica*, and *Rhetorica*, published together (1692); *Dissertationes LXIII vultu argumenti magnum partem ad historiam philosophicam et ecclesiasticam pertinens* (1693). The last is a collection of some of the lectures Thomassius gave in the 1650s, 1660s, and 1670s; they reveal a good deal about his attitudes towards philosophy and the proper philosophical method.

⁶¹ *Physica*, 66-87; *Origines*, 14. On Hobbes, see *Dissertationes*, lect. VIII, entitled "De statu naturali adversus Hobbesium", dating from Jan. 1661.

⁶² See, e.g., *Dissertationes*, 466, 478-9.

⁶³ Scholars of the period have made much of this letter. Kabitz used it as evidence that by 1666 Leibniz had finally rejected his youthful Aristotelianism; Kabitz and many others have taken it as proof of his commitment to Gassendi. See, e.g., Capek, 299; Belaval, 33; Kabitz, 51-3; Hannequin, 24ff.

seen from his letter to Thomassinus: "For the most part Aristotle's reasoning about matter, form, privation, nature, place, infinity, time, and motion is certain and demonstrated, almost the only exception being what he said about the impossibility of a vacuum and of motion in a vacuum" (II. i. 15, L 94). But if Leibniz could not bring himself to criticize Aristotle, he had no such problem in disagreeing with philosophers like Hobbes.⁶⁴ Even Leibniz's letter to Hobbes of July 1670 exemplifies his greater regard for Aristotle. After noting some problems which he thinks Hobbes's conception of body may face, he defers to Aristotle on a topic concerning body (II. i. 57, L 107). Both here and in the other one hundred and fifty references to Aristotle, Leibniz takes the ancient to be the final word on most topics, even those concerning physical matters.

7. Finally, not only are Leibniz's texts full of references to Aristotle and, to a lesser extent, Gassendi and Hobbes, they are brimming with citations of a vast number of ancient, medieval, early Renaissance, and contemporary philosophers. He seems to have consumed books and ideas with a ferocious appetite and to have been happy to use them whenever possible. The preface to his edition of Nizolio's *De veris principijs* perfectly exemplifies the extent of his erudition (and his pride in it). It includes paragraph-long lists of references to philosophical doctrines and texts from a huge variety of contemporary and historical sources. Indeed, Leibniz's preface looks much more like a work by Thomassinus or Sturm than one by Descartes, Hobbes, or even Gassendi.

These facts make one thing immediately clear: Leibniz was not just a mechanist during the period. To isolate his reflections on the mechanical philosophy is to miss the point of what he was doing. Even the quick survey of the 1660s offered here suggests that Leibniz's youthful philosophical evolution is both more complicated and more interesting than previously thought. On the basis of these and other facts, I would now like to present the general outline of Leibniz's philosophical development during the 1660s.⁶⁵ Leibniz matriculated at the University of Leipzig in April 1661, three months before his sixteenth birthday and two years before he wrote *De principio individui*. Accordingly, the recollection of his walk as he describes it to Remond in 1714 places his decision at about the time he began his

university study. Since Leibniz was of very sound mind in 1714, it is unlikely that he would forget whether something so noteworthy as the commencement of his university studies had happened at about the same time as the Rosental decision or three years before. Moreover, there is at least one other text in which Leibniz describes his meditative walk. He writes in 1697: "for I began very young to meditate and I was not quite fifteen years old when I wandered for whole days in a forest to choose a party between Aristotle and Democritus" (G.iii. 205). It therefore seems very likely that Leibniz made his transforming stroll around the age of fifteen, at least two years before he wrote *De principio*.

It also seems clear that his Rosental conversion was only partial. Leibniz had rejected the immaterial substantial forms of the scholastics, but not the Aristotelian philosophy. That is, at the completion of his walk, mechanism had "prevailed" and he had chosen Democritus in a very limited way; he had decided to use mechanical principles and not scholastic substantial forms to explain the properties of bodies. In a fascinating passage written in the 1660s, Leibniz describes the crucial, next phase in his early development:

As soon as I arrived at the Academy, by a rare fortune I met, as a Master, the well-known J. Thomassinus who, although he did not accept my doubts and was very little disposed to let me do such a reform of the substantial, incorporeal forms of bodies, engaged me very strongly to read Aristotle, announcing to me that, when I had read this great philosopher, I would have a wholly different opinion from that offered by his scholastic interpreters. I soon acknowledged the wisdom of this advice and saw that between Aristotle and the scholastics there was the same difference as between a great man versed in the affairs of state and a monk dreaming in his cell. I therefore took of Aristotle's philosophy another idea than the common one. . . . Aristotle seemed to me to admit, more or less like Democritus or, in my time, like Descartes and Gassendi, that there is no body which can be moved by itself.⁶⁶

Leibniz could not be clearer: when he arrived at the academy he was already concerned to reform the scholastic notion of substantial form (he may also have had other doubts about the Aristotelianism he gleaned from his early education); under the encouragement and advice of Thomassinus, he began a more serious study of Aristotle than he had previously made; the result of this study was that he went beyond the teaching of his master and discovered that Aristotelian physics could be made to conform with mechanism.

It was under Thomassinus's tutelage that Leibniz wrote *De principio individui*. The dissertation shows the influence of the teacher in two interesting ways: it displays an impressive mastery of scholastic philosophy, especially of those schoolmen whom Thomassinus deemed most valuable,⁶⁷ but

⁶⁴ E.g. VI. i. 490, L. 110; VI. ii. 428, L. 128; VI. ii. 432, L. 130.

⁶⁵ In fact, I am leaving out of my discussion a major concern of Leibniz's during the period, namely, the attempt to develop a universal characteristic. This topic has been much discussed and, although related, it is not crucial to an understanding of the development of his original metaphysics. For discussions of his early ideas on this important topic, see esp. Wilson, ch. 1; Mohl, vol. 1, *passim*; M. Margua, "Der Begriff der Harmonie als metaphysische Grundlage der Logik und Kombinatorik bei Johann Heinrich Biserfeld und Leibniz," *Studia Leibnitiana* 5:1 (1973), 43-73; and D. Rutherford, "Philosophy and language in Leibniz," in *The Cambridge companion to Leibniz*, ed. Jolley, 224-69, esp. sec. 1.

⁶⁶ Foucher de Careil, *Mémoires*, 6-7; my emphasis. According to Foucher de Careil, 5, the passage cited here was written during the 1660s.

⁶⁷ See, for example, Thomassinus, *Dissertationes*, esp. lect. XII, "Adversus philosophos novantiquos".

it also solves the problem of individuation in a way suggested by the master himself.⁶⁸ In other words, *De principio* is exactly the kind of work the admiring student would produce in an attempt to follow his mentor's advice.⁶⁹ As Leibniz was to write in the late 1670s, speaking of himself in the third person: "he fell first across the ancients, in whom at the beginning he understood nothing, and then something, and at last as much as was needed". He gained an understanding "not only of their language but of their thoughts" (G vii. 52).⁷⁰

But at the same time that Leibniz was coming to understand the thought of Aristotle, he was also applying himself to the mechanical philosophy. The fact that he could make his Rosental decision in 1661, write *De principio* two years after that, and then compose both the Thomassius letter of February 1666 (in which he discussed the possibility of black snow in GasSENDIAN terms) and *Novae methodus discendae doctrinae jurisprudentiae* (in which he makes use of Baconian and Aristotelian doctrines) a year later tells us a great deal about the complexity and variety of Leibniz's interests during this time.⁷¹ He may have been interested in a mechanical account of body, but he was interested in many other things as well.

When Leibniz emerged from the Rosental woods, he had set himself a course on which he would remain throughout his youth: to construct a comprehensive and true metaphysics that would somehow be built out of the ultimate principles discovered beneath the various sects and within a generally Aristotelian framework. The reason his works are brimming with such a variety of references and the reason his views on bodies, for example,

⁶⁸ In Thomassius's preface to the piece, he introduces the problem of individuation and suggests what the right solution might be (see VI. i. 7). This is in fact just the sort of solution to the problem that Leibniz goes on to defend, i.e. one that rejects Scotus's *haecceitas* in favour of a Suarezian notion of complete entity.

⁶⁹ Leibniz's dissertation is a first-class piece of work. Kabitz, 49, describes it as a "virtuoso piece of scholastic philosophy" and Wundt, *Schulmetaphysik*, 143, maintains that its survey of scholastic literature is well done, even for the time.

⁷⁰ The remainder of this passage is interesting: Leibniz compares the ancients with the moderns about whom he felt "disgust" and says that what he learned from the ancients, as opposed to the moderns, was "always to seek for clearness in words". The picture he paints is rather different from those found in the later accounts of his development, or even in the letter to Arnould of 1671 (II. i. 169–81). The lesson here is important: we should not take any one of the various (and often inconsistent) accounts he gives of his philosophical development too seriously. When describing his intellectual history, as he does in the letters to Remond and in "A new system of the nature and the communication of substances" of 1695, Leibniz often paints in broad strokes. The point of these stories is not so much to present the actual steps in his intellectual autobiography as to give his reasons for accepting some philosophical doctrines and rejecting others. It is a mistake then to base one's history of Leibniz's philosophical development entirely upon such accounts, as many commentators have done. As the analysis offered here suggests, the facts of his development often suggest both a more complicated and a more interesting story. For more about his philosophical development, see my forthcoming book.

⁷¹ In the preface of the later work, he refers to Plato, Socrates, Galileo, Harvey, Descartes, Campanella, and a long list of lesser figures. See VI. i. 264–5.

are constantly being recombined and reconsidered is that he was casting about for the key to his conciliation. As a syncretist, he must search through the dominant philosophical options and attempt to find what is worthwhile in each, as a philosopher interested in combining the mechanical physics with Aristotelian metaphysics, he must discover the common denominator among the mechanical options in an attempt to achieve the proper mix. It is not surprising that the works of the mid-1660s are replete with a vast variety of differing opinions. For example, his comments of 1663–4 on Daniel Stahl's *Compendium metaphysicæ* reflect his propensity to collect as opposed to reject.⁷² These notes are particularly interesting because they reveal the energy with which he compared ideas from a wide variety of sources (VI. i. 21–41). Although Stahl's book is a commentary on Aristotle's metaphysics, Leibniz brings an impressive array of authors and doctrines to the text. He refers to Aquinas, Hobbes, and Honoratus Fabri regarding Stahl's discussion of *ens* and *essentia*, and mentions Hobbes in connection with the author's account of words. The young Leibniz obviously has opinions about Aristotle's views and is prepared to criticize both the completeness and the accuracy of Stahl's account (see, e.g., VI. i. 39). Another important example of the young man's eclectic tendencies is *De transsubstantiatione* of 1668. Here he compares his own account of substantial form with that of Zabarella, Averroes, and others, and contends that his notion of God is like that of Plato and the Stoics (VI. i. 510).

But we should not let the vast number of references and startling combinations camouflage Leibniz's genuine philosophical goal: he seeks to penetrate "into the harmony of these different realms" (G iii. 607). As we saw in section III (c), he has discovered the common denominator among the members of the mechanical sect by 1668: in his "Confessio naturæ", he treats "the naturalists" as a group and argues that their physics does not have the proper metaphysical foundation. Other works from the period, like his *De arte combinatoria* of 1666 (VI. i. 163–230) and his notes on a text by Thomas White of 1668 (VI. i. 501–7), also reveal his concern to find a common core within differing proposals and to combine ideas from a myriad of sources into a coherent mixture. As noted in section III (b), the reformed philosophy of the preface to his edition of Nizolio is one built out of Aristotelian, mechanical, and nominalist doctrines.

Nor should we doubt Leibniz's sincerity. There is ample evidence that he was ingenious in his proposals. He was surely cognizant of the fact that some readers would not be sympathetic to his reformed philosophy and its interpretation of Aristotle. Thomassius had responded to an earlier (and less

⁷² Stahl had been a well respected Aristotelian at Jena the generation before Leibniz and was well liked at Leipzig; this work reflects his scholarly Aristotelianism. For a discussion of Stahl, see Wundt, *Schulmetaphysik*, 126–9.

developed) version of Leibniz's conciliatory philosophy by warning his student that before there can be "any hope of harmony" among the philosophical schools "we need to examine a bit more fully the mind of the Philosopher". After suggesting that Leibniz has misunderstood Aristotle, his esteemed teacher goes on to point out that the substantial form cannot be identified to accidental things like the figuration and magnitude of parts "in whose agreement you seem to construct the harmony" (II. i. 12). Then Thomastius acknowledges that he is "aware of this way of talking" and that others may accept this way of making "peace". In other words, Thomastius does not find Leibniz's position shocking; he just wants to have nothing to do with the moderns "whose philosophy I plainly despise" (II. i. 13).

Even without his teacher's approval, Leibniz was proud of his original theory of substance and his first attempt at a conciliatory philosophy. In the writings of 1668–9, he frequently emphasizes his success at revealing the true sophistication of the philosophy of Aristotle (e.g. II. i. 15, 17; VI. i. 510); and in one of his most important early publications, *Hypothesis physica nova* of 1671, he proudly announces his reconciliation of Aristotle with the mechanists (VI. ii. 247). But the most vivid display of the motivation and sincerity behind his reformed philosophy occurs in a paragraph which he wrote to Thomastius in April 1669 but deleted from the published version of the letter: He tells his teacher that the "truth *per se*" of the reformed philosophy must be shown "in the same way that the Christian religion can be proved by reason and experience as well as from sacred scripture" (L. 100).⁷³ He then continues the analogy:

The saintly fathers clarified the sacred scripture with the best interpretations; the monks soon obscured it with their superstitions. [Now] the reformed theology is therefore: there is heretical theology that rejects the scriptures themselves . . . ; there is the schismatical theology that rejects the ancient fathers of the church . . . ; there is the true theology that reconciles the teachers of the church with the sacred scriptures and the earliest church. . . . Similarly, the Greek interpreters clarified Aristotle; the Scholastics obscured him by means of idle talk. [Now] the reformed philosophy is therefore: the dull [scholastic] philosophy, that of Paracelsus, Helmont, and others, that straightforwardly rejects Aristotle; the audacious philosophy that has little concern for the ancients, nay, open contempt for them, and replaces even the good ideas with suspicious meditations, as Descartes did; and the true philosophy that understands Aristotle to be both a great man and for the most part true. (II. i. 21; compare VI. ii. 441)

In this extraordinary passage, Leibniz compares Aristotle to sacred scripture and the Greek commentators to the Church Fathers. In the same way that "the monks" perverted the Bible, so the schoolmen obscured Aristotle.

⁷³ Loemker includes this sentence in his translation, but not the rest of the passage. In fact, the whole passage is deleted from the 1670 version. Loemker does not make this clear.

Analogous to the true theology, the true reformed philosophy will be one of reconciliation grounded in the philosophy of Aristotle. Leibniz's commitment to a reformed philosophy is clear, as is the fact that he had no taste for any philosophy (audacious or otherwise) that ignored the "great man".

Once we see the works of the 1660s as motivated by a conciliatory eclecticism and the published letter to Thomastius as an attempt to offer just such a philosophy, the importance of the period becomes clear. Not only do the texts of the 1660s display Leibniz's fundamental methodological assumptions; they contain his first attempt at original metaphysics. In particular, the letters to Thomastius of 1668–9 present Leibniz's first theory of substance and the first of several attempts to formulate an account of individual substance that is both fully self-sufficient and an adequate base for mechanical physics.

But the lessons from the period are more important than that. When Leibniz emerged from the Rosental grove, he was on a path that would eventually lead to the mature thought of the *Discourse on metaphysics*: he had rejected the use of substantial forms in physical explanations, but he had not rejected the philosophy of Aristotle; he had accepted mechanism as the source for physical explanations, but he had not accepted the modern metaphysical options that went with it (say, those of Descartes or Gassendi). By the late 1660s, this path had led him to his first account of substance and, after some important revisions, to the theory of substance assumed in the physical works of 1671, a theory also modelled on an Aristotelian conception.⁷⁴ In the 1670s, as Leibniz's interests and sources expand to match the intellectual fecundity of the period, it becomes more and more difficult to identify the myriad of sources for his eclectic system; but he none the less remains fundamentally committed to a conciliatory philosophy centred around the metaphysics of Aristotle.⁷⁵ However much the details of his metaphysics (and physics) evolve, Leibniz does not waver from his attempt to forge a synthesis of Aristotelian metaphysics and mechanical physics. And however much the sources of his doctrines multiply and vary, he continues to attempt to achieve a philosophy of reconciliation. Thus,

⁷⁴ In brief, he decided that his attempt to formulate a corporeal substance out of a union of the mind of God and matter was not adequately self-sufficient and would have to be changed. He came to believe that, in order to construct a truly self-sufficient substance, he needed to make the source of motion internal to the nature of substance in a way that the mind of God was not. For a complete account of the motivations behind this change, in view and of the development of the theory of substance of the early 1670s, see my forthcoming book; for a summary, see Mercer and Sleight, secs 2–3.

⁷⁵ To cite one particularly significant example, during his years in Paris (1672–6), he studied Plato more seriously than he previously had. He was particularly interested in neoplatonic accounts of the creation of the world; and there is good reason to believe that such ideas played a significant role in the development of his doctrine of pre-established harmony. For further details, see my forthcoming book.

Leibniz could write in 1714, in the same letter to Remond with which I began this paper: "I have tried to uncover and unite the truth buried and scattered under the opinions of all the different philosophical sects, and I believe I have added something of my own which takes a few steps forward" (G iii. 606, L 654).⁷⁶

*Department of Philosophy
Columbia University*

⁷⁶ I would like to thank Daniel Garber, Stephen Grover, P. O. Kristeller, Donald Rutherford, Robert Sleigh, and Margaret Wilson for helpful comments on an earlier draft of this paper. I am indebted to Susan Roth for help with bibliographical matters. Because there has been a nine-year lag between the acceptance and publication of this paper, it does not reflect my most recent research on the development of Leibniz's early thought.

6

LEIBNIZ AND THE
ANIMALCULA

CATHERINE WILSON

Leibniz's theory of immaterial atoms or monads might well be described as a continuation of policy by other means. For although his theory is in line with the seventeenth century's generally favourable attitude towards atomism, his version, according to which atoms are sentient and even living, is highly unorthodox. It is now safe to say that his opposition to the theory of physical atoms, as well as his objections to the non-atomistic corpuscular physics of Descartes, are well understood. The problems of cohesion, division, composition, and the continuum, and the inadequacy of "matter" as a substratum for force, were sufficient to convince him that the substance of the world could not be composed of atoms or particles possessing only extension, figure, and motion. Less well understood are the developments in seventeenth-century natural science which suggested a different approach to the question of the nature of substance from that supplied by the mainstream of corpuscularian mechanists, and this paper is addressed to that issue. For, contrary to the conventional picture, which assumes that the problem of "form" was either banished with the reduction of structures to corpuscular complexes or survived only as a reactionary Aristotelianism, many of the major and minor writers of the second half of the century were specifically concerned with the morphology of living creatures and with what that suggested about the irreducibility of life to matter in motion.

This essay examines Leibniz's anti-corpuscularian ideas from the positive perspective, considering them not as reactions to the inadequacies of Cartesianism and its variants, but as an attempt to incorporate into metaphysics the new revelations of the microscope, revelations which brought the notion of form again into the centre of natural philosophy. I shall concentrate accordingly on two main themes: first, the interest of Leibniz and his near contemporaries in the subject of palaeogenesis, or the revocation of vanished form, and preformation, or the assertion of the pre-existence of the body, and all of its parts, of every living creature before its birth; second, the prominence of beliefs about the infinite distribution of living creatures of