

Introduction

1. Introduction to the Topic

From the middle of the twelfth century onwards, all of Aristotle's extant works were gradually introduced from the Arabic world into the Latin West.¹ Before the dynamic translation movement began in Spain and Sicily, Latin philosophers had in their hands only Aristotle's logical works, the so-called "Organon." In his newly translated writings, they now found a large body of scientific knowledge that enabled them to explain the nature and order of this world according to Peripatetic principles. The introduction of these writings drastically changed the Latin intellectuals' world-view.²

Albert the Great (Albertus Magnus) (c.1200–80) was one of the earliest Latin authors to produce detailed commentaries on Aristotle's entire corpus. In so doing, he developed his own philosophical position with regard to the universe. He adopted the Philosopher's theories, even where they could not be readily harmonized with the Christian dogmas. Albert's importance in the Aristotelian tradition has been generally acknowledged, but there are still very few in-depth studies of the ways in which Albert read and interpreted Aristotle's works. In particular, his use of previous commentators needs further investigation. Thus, the aim of the present study is twofold. It examines Albert's philosophical—especially cosmological—ideas, but at the same time it also explores how Albert interpreted Aristotle's arguments by using previous commentators' works.

One may wonder, however, why we need not only to analyze Albert's ideas themselves but also to discuss his way of understanding and interpreting Aristotle's world-view. To understand this, it is important to note that Albert's

1 For the movement of translation from Arabic into Latin, see Charles Burnett, "Arabic into Latin: The Reception of Arabic Philosophy into Western Europe," in Peter Adamson and Richard C. Taylor (eds.), *The Cambridge Companion to Arabic Philosophy* (Cambridge: Cambridge University Press, 2005), 370–404. See also Hans Daiber, "Lateinische Übersetzungen arabischer Texte zur Philosophie und ihre Bedeutung für die Scholastik des Mittelalters," in Jacqueline Hamesse and Marta Fattori (eds.), *Rencontres de cultures dans la philosophie médiévale: traductions et traducteurs de l'antiquité tardive au XIVe siècle* (Louvain-la-Neuve: Institut d'Études Médiévales de l'Université Catholique de Louvain, 1990), 203–50; Id., *Islamic Thought in the Dialogue of Cultures: A Historical and Bibliographical Survey* (Leiden: Brill, 2012).

2 For a recent overview of the impact of Aristotle's teaching upon scholastic natural philosophy and cosmology, see among others Edward Grant, *A History of Natural Philosophy: From the Ancient World to the Nineteenth Century* (Cambridge, MA: Cambridge University Press, 2007), esp. 143–238.

philosophy cannot be separated from the practice he adopted in producing his own Aristotelian works.³ In contrast to modern scientists, he did not develop his theories on the basis of facts that he observed, nor by conducting scientific experiments. Albert's intellectual activity had a more bookish character.⁴ He aimed to seek out the theoretical truth inside the vast bulk of Aristotle's writings by endlessly commenting on, and explaining, his words.⁵ Thus, only when we precisely assess where and to what extent he deviated from Aristotle's arguments can we conceive the nature of Albert's thought.

Once Albert's practice in producing his Aristotelian works has been taken into account, we must next introduce a key figure who guided him in interpreting the Greek Philosopher's texts. Somewhat surprisingly, perhaps, this study will shed light on the role of Averroes (Ibn Rushd). Usually Avicenna has been presented as the major Arabic philosopher who influenced Albert, and indeed Albert frequently refers to Avicenna in his works.⁶ But, as this study will show, in paraphrasing Aristotle's writings, Albert relied on Averroes much more heavily than on Avicenna, although he hardly mentioned the name of Averroes.

In this respect, the present study will also shed new light on the importance of Averroes in the history of medieval philosophy and science. Averroes is

3 On the interrelation between philosophical ideas and intellectual practice in medieval and early modern times, a new scholarship has recently appeared. See Ann Blair, *Too Much to Know: Managing Scholarly Information before the Modern Age* (Hew Haven, CT: Yale University Press, 2010).

4 For the bookish character of pre-modern philosophy and science, see among others Anthony Grafton, *Defenders of the Text: The Traditions of Scholarship in the Age of Science* (Cambridge, MA: Harvard University Press, 1991). See also Anthony Grafton and Megan Williams, *Christianity and the Transformation of the Book: Origen, Eusebius, and the Library of Caesarea* (Cambridge, MA: Harvard University Press, 2006).

5 On medieval science as a practice of commenting on Aristotle's natural books, see Edith D. Sylla, "Walter Burley's *Physics* Commentaries and the Mathematics of Alteration," *Early Science and Medicine*, 6 (2001), 149–84; Ead., "Walter Burley's Practice as a Commentator on Aristotle's *Physics*," *Medioevo*, 27 (2002), 301–72. According to Edward Grant, the practice of making commentaries on Aristotle's works explains why Aristotelianism kept a dominant position in the medieval and early modern intellectual world. See his "Aristotelianism and the Longevity of the Medieval World View," *History of Science*, 16 (1978), 93–106.

6 On Avicenna's influence on Albert, see among others Dag Nikolaus Hasse, "Das Lehrstück von den vier Intellekten in der Scholastik: von den arabischen Quellen bis zu Albertus Magnus," *Recherches de Théologie et Philosophie médiévales*, 66 (1999), 21–77; Id., *Avicenna's De Anima in the Latin West* (London: Warburg Institute, 2000); Amos Bertolacci, "Subtilius speculando: Le citazioni della *Philosophia Prima* di Avicenna nel Commento di Alberto Magno alla *Metafisica* di Aristotele," *Documenti e studi sulla tradizione filosofica medievale*, 9 (1998), 261–339; Id., "Le citazioni implicite testuali della *Philosophia prima* di Avicenna nel Commento all'*Metafisica* di Alberto Magno: analisi tipologica," *Documenti e studi sulla tradizione filosofica medievale*, 12 (2001), 179–274; Id., "The Reception of Avicenna's *Philosophia Prima* in Albert the Great's Commentary on the *Metaphysics*: the Case of the Doctrine of Unity," in Walter Senner et al. (eds.), *Albertus Magnus: Zum Gedenken nach 800 Jahren: Neue Zugänge, Aspekte und Perspektiven* (Berlin: Akademie Verlag, 2001), 67–78; Id., "Albert the Great and the Preface of Avicenna's *Kitab al-Sifa*," in Janssens and de Smet (eds.), *Avicenna and His Heritage* (2002), 131–52.

recognized as a crucial figure in the medieval and early modern Aristotelian tradition, for he was called simply “the Commentator” in the same manner as Aristotle was named “the Philosopher.” But scholars have yet to fully evaluate Averroes’s ideas and the role that he played in the development of medieval philosophy and science. As I will show as far as it is mirrored in Albert’s works, Averroes was not merely a commentator on Aristotle, but also an ingenious thinker who presented radical philosophical positions on such issues as the guiding principle of the universe, the nature of the celestial sphere, the influence of celestial motion on sublunary phenomena, and the relation between the forms of sublunary elements and the primary qualities.

As I will argue, Albert composed his own paraphrases of Aristotle’s works while having in front of him Aristotle’s corpus and Averroes’s commentaries. Albert developed his philosophical and scientific ideas not only by interpreting Aristotle’s texts but also by reading Averroes’s commentaries on them.⁷ He inevitably considered the Commentator’s interpretation and was heavily influenced by it. Thus, we should examine the development of Albert’s thought by considering how he responded to Averroes’s interpretations of Aristotle’s arguments.

In order to examine the particular nature of Albert’s Aristotelian philosophy and his debt to Averroes, this study focuses on one of the most crucial issues in cosmology that was not fully explained by Aristotle and that thus needed to be commented on by subsequent authors: the causal link between the celestial principles that govern the universe, on the one hand, and the sensible world inhabited by human beings, on the other.⁸ Aristotle had divided the universe into two distinct realms, which he isolated from each other: the celestial region and the sublunary world. The two realms have different constituents and follow different rules.⁹ The sublunary world is composed of the four elements: earth lies at the center of the universe, surrounded by spheres of water, air, and fire.

7 The notion “Reader of Averroes” derived from Jean-Baptiste Brenet, who used it to characterize Jean of Jandun. See his “Perfection de la philosophie ou philosophe parfait?: Jean de Jandun lecteur d’Averroès,” *Recherches de théologie et philosophie médiévales*, 68 (2001), 310–348; Id., *Transferts du sujet: la noétique d’Averroès selon Jean de Jandun* (Paris: J. Vrin, 2003).

8 Addressing this issue, I am very much indebted to Gad Freudenthal’s stimulating studies. See Freudenthal, “The Medieval Astrologization of Aristotle’s Biology: Averroes of the Role of the Celestial Bodies in the Generation of Animate Beings,” *Arabic Sciences and Philosophy*, 12 (2002), 111–37; “The Medieval Astrologization of the Aristotelian Cosmos: From Alexander of Aphrodisias to Averroes,” *Mélanges de l’Université Saint-Joseph*, 59 (2006), 29–68; “The Astrologization of the Aristotelian Cosmos: Celestial Influence on the Sublunary World in Aristotle, Alexander of Aphrodisias, and Averroes,” in Alan C. Bowen and Christian Wildberg (eds.), *New Perspectives on Aristotle’s De Caelo* (Leiden: Brill, 2009), 239–81.

9 For Aristotle’s conception of nature and the universe in general, see among others Friedrich Solmsen, *Aristotle’s System of the Physical World* (Ithaca, NY: Cornell University Press, 1960).

These elements undergo generation and corruption, and move rectilinearly upwards and downwards. By contrast, the celestial realm is ungenerated and incorruptible. The celestial bodies are made of a different, special element, which is usually called the “fifth element” or “ether”; unlike the four sublunary elements, this element does not suffer any change, but undergoes eternal circular motion. In Aristotle’s universe, the phenomena occurring in one realm must be explained independently from those occurring in the other.

And yet, despite this strong ontological distinction between the two realms, Aristotle also argued that the celestial region affects sublunary things. For instance, in his *Meteorology*, he claimed that celestial heat, which mainly originates in the sun, contributes to the meteorological phenomena occurring in the space between the heavens and the earth.¹⁰ He also suggested that the generation of living beings cannot take place merely on the basis of the sublunary elements and their powers, but necessarily involves a vital heat analogous to the celestial element.¹¹

In some works, then, Aristotle emphasized the radical distinction between the celestial and the sublunary region, whereas in others he indicated some kind of causal interaction between the two realms. This apparent tension in Aristotle’s writings was noticed by commentators. His Greek and Arabic followers, for instance, tended to dismiss or at least minimize the distinction between the celestial and sublunary regions. For these authors, and in particular for Alexander of Aphrodisias and Averroes, sublunary phenomena should not be explained merely in terms of the four elements and their powers, but involve superlunary, celestial causation.

Celestial causality and its effects on terrestrial phenomena is a crucial issue in Aristotelian cosmology, and one that had been a focus of debate among the ancient and medieval commentators. For these reasons, it provides an excellent topic for the present study of Albert’s cosmology. How did Albert himself view the interrelation between the two cosmological domains, and in what way did he rely on or use the previous commentary tradition? What was his way of proceeding as a commentator and a philosopher?

10 Aristotle, *Meteorology*, I.3.

11 Aristotle, *Generation of Animals*, II.3.

2. The State of Scholarship

Albert's philosophy and theology have long attracted scholarly attention.¹² In the last century, eminent historians such as Pierre Duhem, Étienne Gilson, Bruno Nardi and Fernand van Steenberghe studied him as one of the most important figures of the medieval scholastic tradition.¹³ Not surprisingly, they suggested that Albert developed his ideas by relying on the heritage of the Aristotelian tradition. But in their focus on the indebtedness and genealogy of his ideas and theories, they did not sufficiently take into account the way he wrote commentaries.

This situation has since improved. James A. Weisheipl has dedicated a series of articles to Albert's natural philosophy, directing ample attention to its metaphysical and theological foundation.¹⁴ He suggested that scientific themes occupied an important place in Albert's intellectual career. Moreover, on the occasion of the 700th anniversary of Albert's death, Weisheipl convened historians of science and medicine to produce a monumental volume of collected essays.¹⁵ More than twenty studies addressed not only fields of the exact sciences such as kinetics and astronomy but also branches of the practical sciences such as mineralogy, botany, embryology and medicine. This volume singled out Albert from other scholastic theologians by showing that he addressed a remarkably wide range of topics and questions beside Christian theology and Aristotelian metaphysics.¹⁶

Keeping pace with the advancement of scholarly studies, beginning in the early 1950s, a new critical edition of Albert's *opera omnia*, the so-called Cologne edition, is being gradually published. The newly edited texts provide historians

12 For the scholarship on Albert, see among others Irven M. Resnick and Kenneth F. Kitchell, Jr. (eds.), *Albert the Great: A Selectively Annotated Bibliography (1900–2000)* (Tempe, AZ: Arizona Center for Medieval and Renaissance Studies, 2004).

13 Pierre Duhem, *Le système du monde: histoire des doctrines cosmologiques de Platon à Copernic*, 10 vols. (Paris: Hermann, 1913–59), esp. III: 327–45, V: 412–67; Etienne Gilson, *History of Christian Philosophy in the Middle Ages* (New York: Random House, 1955), 277–94; Id., "L'âme raisonnable chez Albert le Grand," *Archives d'histoire doctrinale et littéraire du Moyen Âge*, 14 (1943–5), 5–72; Bruno Nardi, *Studi di filosofia medievale* (Rome: Edizioni di Storia e Letteratura, 1960), passim; Fernand Van Steenberghe, *La philosophie au XIIIe siècle*, 2nd ed. (Louvain-la-Neuve: Institut Supérieur de Philosophie, 1991), 245–75. See also Lynn Thorndike, *A History of Magic and Experimental Science*, 8 vols. (New York: Columbia University Press, 1923–58), II: 517–92.

14 James A. Weisheipl, *Nature and Motion in the Middle Ages*, ed. William E. Carroll (Washington, DC: Catholic University of America Press, 1985).

15 James A. Weisheipl (ed.), *Albertus Magnus and the Sciences: Commemorative Essays 1980* (Toronto: Pontifical Institute of Mediaeval Studies, 1980).

16 For Albert's natural philosophy, Paul Hossfeld, the editor of Albert's paraphrases of Aristotle's *libri naturales*, also produced a series of significant studies. See Paul Hossfeld, *Albertus Magnus als Naturphilosoph und Naturwissenschaftler* (Bonn: Albertus Magnus Institut, 1983).

with a precise and comprehensive picture of Albert's works and also give them much information about his doctrinal sources.

Once historians had drawn up a general map of Albert's philosophy and science, they could start to produce monographic studies. Alain de Libera, Henryk Anzulewicz and Jörn Müller may be singled out here for their profound analyses of Albert's metaphysics, anthropology and ethics.¹⁷ In their different ways, they have investigated the unique features of Albert's system, quite unlike their predecessors who had viewed him only as an actor within the broader history of scholasticism. According to these more recent studies, Albert must no longer be regarded as a mere eclectic mind, who fused different currents in his textual melting pot, but rather as an original thinker who tried to present a coherent picture of the human being within its cosmic order.

Over the last fifteen years or so, a new scholarship has arisen, which views Albert primarily as a commentator; this scholarship has flourished thanks to historians such as Dag Nikolaus Hasse and Amos Bertolacci.¹⁸ Going beyond a mere analysis of his ideas, they addressed the "relationship between literary form and doctrinal content" and investigated Albert's art of commentary by showing how exactly he read Aristotle and how he used the commentaries by his predecessors.¹⁹ According to these historians of philosophy, Albert often

17 Alain de Libera, *Albert le Grand et la philosophie* (Paris: J. Vrin, 1990); Henryk Anzulewicz, *De forma resultante in speculo: Die theologische Relevanz des Bildbegriffs und des Spiegelbildmodells in den Frühwerken des Albertus Magnus*, 2 vols. (Münster: Aschendorff, 1999); Jörn Müller, *Natürliche Moral und philosophische Ethik bei Albertus Magnus* (Aschendorff: Münster, 2001); Alain de Libera, *Métaphysique et noétique: Albert le Grand* (Paris: J. Vrin, 2005).

18 For the works by Dag Nikolaus Hasse, see Hasse, "Das Lehrstück von den vier Intellekten in der Scholastik: von den arabischen Quellen bis zu Albertus Magnus," *Recherches de Théologie et Philosophie médiévales*, 66 (1999), 21–77; Id., *Avicenna's De Anima in the Latin West* (London: Warburg Institute, 2000), esp. 60–9; Id., "The Early Albertus Magnus and His Arabic Sources on the Theory of Soul," *Vivarium*, 46 (2008), 232–52. For those by Amos Bertolacci, see Bertolacci, "Subtilius speculando: Le citazioni della Philosophia Prima di Avicenna nel Commento di Alberto Magno alla Metafisica di Aristotele," *Documenti e studi sulla tradizione filosofica medievale*, 9 (1998), 261–339; Id., "Le citazioni implicite testuali della *Philosophia prima* di Avicenna nel Commento all'*Metafisica* di Alberto Magno: analisi tipologica," *Documenti e studi sulla tradizione filosofica medievale*, 12 (2001), 179–274; Id., "A New Phase of the Reception of Aristotle in the Latin West: Albertus Magnus and His Use of Arabic Sources in the Commentaries on Aristotle," in Ludger Honnefelder (ed.), *Albertus Magnus und der Ursprung der Universitätsidee: Die Begegnung der Wissenschaftskulturen im 13. Jahrhundert und die Entdeckung des Konzepts der Bildung durch Wissenschaft* (Berlin: Berlin University Press, 2011), 259–77.

19 Cf. Olga Weijers, "The Literary Forms of the Reception of Aristotle: Between Exposition and Philosophical Treatise," in Ludger Honnefelder et al. (eds.), *Albertus Magnus und die Anfänge der Aristoteles-Rezeption im lateinischen Mittelalter* (Münster: Aschendorff, 2005), 555–84. See also Jacqueline Hamesse, "Les instruments de travail philosophiques médiévaux: témoins de la réception d'Aristote," *Early Science and Medicine*, 8 (2003), 371–86; Olga Weijers, *Le maniement du savoir: Pratiques intellectuelles à l'époque des premières universités (XIIe–XIVe siècles)* (Turnhout: Brepols, 1996).

integrated passages and complete texts from Aristotelian authors into his own texts, without however mentioning the names of his forerunners.²⁰

None of the monographs mentioned above has, however, addressed the way in which Albert tried to explain the interrelation of the celestial region and the sublunary realm in the framework of his project of Aristotelian commentary. David B. Twetten and Loris Sturlese have written on Albert's discussion of celestial causality, but without taking into account his commentaries on Aristotle's *De generatione et corruptione*, *Meteorology* and biological works, all of which are important in this respect.²¹ Nor did they discuss the profound influence of the ancient Greek commentators and of Averroes on Albert the Great.

This is the outline of the broader field into which the present study fits and to which it aims to contribute. The purpose of this dissertation can be summarized as follows. It offers an examination of Albert's views on the interrelation between the celestial region and the sublunary world and the way in which they emerged from his study of previous commentators, notably Averroes. As textual sources for this study I will use all of Albert's Aristotelian paraphrases, and relevant Greek and Arabic commentaries.

3. The Life and Works of Albert the Great

Let me first introduce the main figure of this study. Albert was born around 1200 in the Swabian town of Lauingen, although the circumstances of his childhood remain obscure.²² What we know is that in about 1222 he moved to Padua, where he probably heard some introductory lectures on Aristotle's natural philosophy and was recruited into the Dominican order. Then, after receiving introductory teaching in theology at Cologne, from the late 1220s to the 1230s, he served as a

20 Cf. Gerhard Endress, *Der arabische Aristoteles und sein Leser: Physik und Theologie im Weltbild Alberts des Großen* (Lectio Albertina, vol. 5) (Münster: Aschendorff, 2004).

21 Loris Sturlese, "Il razionalismo filosofico e scientifico di Alberto il Grande," *Documenti e studi sulla tradizione filosofica medievale*, 1 (1990), 373–426; David B. Twetten, "Albert the Great on Whether Natural Philosophy Proves God's Existence," *Archives d'histoire doctrinale et littéraire du Moyen Âge*, 64 (1997), 7–58; Id., "Albert the Great, Double Truth, and Celestial Causality," *Documenti e studi sulla tradizione filosofica medievale*, 12 (2001), 275–358.

22 For the life and works of Albert, see James A. Weisheipl, "The Life and Works of St. Albert the Great," in Id. (ed.), *Albertus Magnus and the Sciences: Commemorative Essays 1980* (Toronto: Pontifical Institute of Mediaeval Studies, 1980), 13–52; Henryk Anzulewicz, *De forma resultante in speculo: Die theologische Relevanz des Bildbegriffs und des Spiegelbildmodells in den Frühwerken des Albertus Magnus*, 2 vols. (Münster: Aschendorff, 1999), I: 4–17; Id., "Albertus Magnus," in Noretta Koertge (ed.), *New Dictionary of Scientific Biography*, 8 vols. (Detroit, MI: Scribner, 2008), I: 36–40; Irven M. Resnick, "Albert the Great: Biographical Introduction," in Id. (ed.), *A Companion to Albert the Great: Theology, Philosophy and the Sciences* (Leiden: Brill, 2013), 1–11.

lector within the Dominican Order at several places in the Holy Roman Empire. From 1241 on, he studied theology at Paris and became a master in 1245. From 1245 until 1248, Albert was the first representative of the German *natio* to hold one of the Dominican chairs at the University of Paris. During this period, he also became acquainted with Thomas Aquinas, who was to become his most important student.

In 1248 Albert left Paris for Cologne to establish the Dominicans' *studium generale*, that is, the general house of study for the training of the order's students. Between 1254 and 1257 he was the Dominican provincial in Teutonia (Germany). After a renewed stay at Cologne between 1257 and 1259, he served as bishop of Ratisbon (Regensburg) from 1260 to 1262. In the late 1260s he visited Würzburg and Strasbourg, where he lectured. He passed away at Cologne in 1280.

Albert was one of the most prolific writers of the Middle Ages.²³ His writings mainly consist of two groups: Christian theological works and Aristotelian philosophical ones. Although he started and ended his intellectual career as an author of Christian theological treatises, he devoted at least as much of his time to producing detailed expositions or paraphrases of Aristotle's corpus.

In the mid-1240s in Paris, Albert wrote his so-called "first summa," the *Summa de creaturis* (*Book of Creatures*). He then started to produce his commentary on Peter Lombard's *Sentences*, the most important resource on theological doctrines in the scholastic period, which he finished at Cologne in 1249. Around 1250, Albert composed the commentaries on the *Corpus Dionysiacum*, the works of the Christian Neoplatonist Pseudo-Dionysius Areopagita (*De caelesti hierarchia*, *De ecclesiastica hierarchia*, *De divinis nominibus*, *De mystica theologia* and *Epistulae*), while at the same time writing *Super ethica*, his first commentary on Aristotle's *Nicomachean Ethics*.

From the early 1250s, Albert composed commentaries on Aristotle's *libri naturales*—*Physics*, *De caelo*, *De generatione et corruptione*, *Meteorology*, *De anima*, etc.—one by one. In the late 1250s, in addition to paraphrasing the *Parva naturalia*, including *De respiratione*, he wrote a series of mineralogical, botanical and biological or zoological works: *De mineralibus*, *De vegetabilibus et plantis* and *De animalibus*. On the basis of what he had learned in paraphrasing Aristotle's natural works, he composed a small original treatise on the nature of the human soul, *De natura et origine animae*.

In the early 1260s, Albert produced his *Ethica*, which is his second commentary on the *Nicomachean Ethics*, and then accomplished his Aristotelian project by

23 Although the definite chronology of Albert's works has not been established yet, see among others James A. Weisheipl, "Albert's Works on Natural Science (*libri naturales*) in Probable Chronological Order," in *Albertus Magnus and the Sciences* (1980), 565–77; Anzulewicz, *De forma resultante in speculo*, 6–17.

commenting on the *Metaphysics* and composing *De causis et processu universitatis*, his paraphrase of the pseudo-Aristotelian *Liber de causis*. After finishing his Aristotelian paraphrases, he returned to writing Christian theological works, among which we should mention the so-called “second summa,” or the *Summa theologiae sive de mirabili scientia Dei*. In addition to the authentic works mentioned above, some works, including the *Speculum astronomiae*, have traditionally been attributed to him.²⁴

4. The Greek and Arabic Commentators on Aristotle’s Works

Before Latin authors started to read and interpret Aristotle’s writings, there existed a long and fruitful Greek and Arabic commentary tradition. In order to be able to place the role and specific contribution of Albert as an interpreter of Aristotle, we must mention, however briefly, his major forerunners and those of their works that were available in Latin at the time in which Albert wrote.²⁵

4.1. Ancient Greek Commentators²⁶

Alexander of Aphrodisias (fl. c. AD 200) had originally held a privileged status as Aristotle’s “commentator par excellence,” until Averroes took his place about a millennium later.²⁷ He was not the first author who produced textbooks and

24 The attribution of the *Speculum astronomiae* remains controversial. For this astrological work, see among others Paola Zambelli, *The Speculum Astronomiae and Its Enigma: Astrology, Theology and Science in Albertus Magnus and His Contemporaries* (Dordrecht: Kluwer, 1992); Agostino Paravicini Bagliani, *Le Speculum astronomiae, une énigme?: Enquête sur les manuscrits* (Florence: Sismel, 2001). See also H. Darrel Rutkin, “Astrology and Magic,” in Irven M. Resnick (ed.), *A Companion to Albert the Great: Theology, Philosophy and the Sciences* (Leiden: Brill, 2013), 451–505.

25 For the Greek and Arabic commentary tradition on Aristotle in general, see Richard Sorabji (ed.), *Aristotle Transformed: The Ancient Commentators and their Influence* (Ithaca, NY: Cornell University Press, 1990); Cristina D’Ancona, “Commenting on Aristotle: From Late Antiquity to Arab Aristotelianism,” in Wilhelm Geerlings and Christian Schulze (eds.), *Der Kommentar in Antike und Mittelalter: Beiträge zu seiner Erforschung*, 2 vols. (Leiden: Brill, 2002), I: 201–51; Silvia Fazzo, “Aristotelianism as a Commentary Tradition,” *Bulletin of the Institute for Classical Studies*, 47 (2004), 1–19. See also Cristina D’Ancona, “The Origin of Islamic Philosophy,” in Lloyd P. Gerson (ed.), *The Cambridge History of Philosophy in Late Antiquity*, 2 vols. (Cambridge: Cambridge University Press, 2010), II: 869–93.

26 On the Latin translations of the Greek commentators’ works, see “Appendix B.1: Greek Aristotelian Works Translated into Latin,” in Robert Pasnau (ed.), *The Cambridge History of Medieval Philosophy* (Cambridge: Cambridge University Press, 2010), 793–7.

27 For Alexander of Aphrodisias, see among others Robert W. Sharples, “Alexander of Aphrodisias: Scholasticism and Innovation,” in Wolfgang Haase (ed.), *Aufstieg und Niedergang der römischen Welt (ANRW)* (Berlin: de Gruyter, 1987), II, 36–2, 1176–1243; Id., “Peripatetics,” in Gerson (ed.), *The Cambridge History of Philosophy in Late Antiquity*, I: 140–60.

manuals to teach Aristotle's philosophy, but he chose the commentary form as his main device for explaining the Philosopher's teaching. To structure his commentaries, Alexander divided Aristotle's text into lemmata, or small portions of texts, as the units undergoing examination.

Only a few of his commentaries have survived: those on *Metaphysics* I–V, *Prior Analytics* I, the *Topics*, the *Meteorology* and *De sensu*. Parts of his commentary on *De generatione et corruptione* have recently been found in an Arabic manuscript.²⁸ Other fragments of his writings are preserved in the works of later Greek commentators who quoted him. Alexander also produced several original treatises: *On Mixture*, *On Fate*, and *Questions* have survived in the Greek, while some others have been preserved only in Arabic, such as *On the Principles of the Universe*, *On Providence* and *On the Intellect*. Many of his writings were translated into Arabic in the ninth century and had a considerable impact on the manner in which Arabic authors understood Aristotle's thought.²⁹ By contrast, the medieval Latin world had only *On the Intellect*, which was rendered into Latin by Dominicus Gundisalvi between 1160 and 1190, and his commentaries on *Meteorology* and *De sensu*, both of which were translated by William of Moerbeke in 1260–70. Albert probably used the Latin translation of Alexander's commentary on *Meteorology*.

Themistius (fl. 4th century AD) was a philosopher and politician who served as an advisor to a number of early Christian Roman emperors, although he himself was no Christian.³⁰ He used the commentaries by Alexander. However, instead of adopting the latter's commentary style, he chose the form of "paraphrase." In his paraphrases, Aristotle's text is not subdivided into lemmata, but is incorporated into a continuous prose text.

Among his paraphrases, only five are extant; three of them (on *Posterior Analytics*, *De anima* and *Physics*) are preserved in Greek, while two (on *De caelo* and the *Metaphysics* XII) have survived in a medieval Hebrew translation from Arabic. In the medieval Latin, his paraphrase of *Posterior Analytics* was translated by Gerard of Cremona (before 1187) and then that of *De anima* was done by William of Moerbeke (1267). Albert used his paraphrase of *Posterior Analytics*.

28 Emma Gannagé (trans.), *Alexander of Aphrodisias: On Aristotle's On Coming-to-Be and Perishing* 2.2–5 (Ithaca, NY: Cornell University Press, 2005).

29 For the transmission of Alexander's writings into the Arabic world, see Silvia Fazzo and Hillary Wiesner, "Alexander of Aphrodisias in the Kindī-Circle and in al-Kindī's Cosmology," *Arabic Sciences and Philosophy*, 3 (1993), 119–53; Charles Genequand, "Alexander of Aphrodisias and Arabic Aristotelianism," in Henrik Lagerlund (ed.), *Encyclopedia of Medieval Philosophy: Philosophy Between 500 and 1500* (Dordrecht: Springer, 2011), 60–2.

30 For Themistius, see Robert B. Todd, "Themistius," in P.O. Kristeller, F.E. Cranz and V. Brown (eds.), *Catalogus translationum et commentariorum* (Washington, DC: Catholic University of America Press, 2003), VIII: 56–103; Inna Kupreeva, "Themistius," in Gerson (ed.), *The Cambridge History of Philosophy in Late Antiquity*, I: 397–416.

Simplicius (fl. first half of 6th century AD) was the author of the most elaborate commentaries on Aristotle in late antiquity.³¹ What makes Simplicius conspicuous is his strong conviction that Aristotle's teaching could be harmonized with Plato's and Neoplatonic philosophy.

Simplicius wrote four or five commentaries on Aristotle. His commentaries on the *Categories*, *Physics* and *De caelo* have been preserved in Greek, while that on the *Metaphysics* is now lost and the authenticity of the commentary on *De anima* is still controversial. In the Arabic world, only the commentaries on the *Categories* and *De anima* were known. For the Latin world, William of Moerbeke translated his commentaries on the *Categories* and *De caelo*. While Thomas Aquinas used these two translated works for his own commentaries on Aristotle, Albert the Great could not yet avail himself of them when he composed his own paraphrases of these specific Aristotelian works.

John Philoponus or **John the Grammarian** (c.490–early 570s) was a Christian Neoplatonist.³² He tended to direct vehement attacks on the Aristotelian doctrines that could not be reconciled with Christian dogmas. He is particularly known for criticizing Aristotle's ideas on the eternity of the world.

Philoponus wrote commentaries on Aristotle's *Categories*, *Prior* and *Posterior Analytics*, *De generatione et corruptione*, *De anima* (of which the third book was wrongly attributed to him), *Physics* (of which only books 1–4 have been preserved, while others have been transmitted to us in fragments), and *Metaphysics*. He also produced original philosophical and theological works such as *De aeternitate mundi contra Proclum*, *Contra Aristotelem* and *De opificio mundi*. Since none of his works was translated into medieval Latin, Albert had no direct exposure to Philoponus's writings.

4.2. Arabic Aristotelian Philosophers: Avicenna and Averroes

Avicenna or **Ibn Sina** (c.980–1037) is one of the most important figures in the history of Islamic (Arabic and Persian) Aristotelianism.³³ He synthesized a vast

31 For Simplicius, see Ilsetraut Hadot, *Simplicius: sa vie, son oeuvre, sa survie* (Berlin: de Gruyter, 1987); Han Baltussen, "Simplicius of Cilicia," in Gerson (ed.), *The Cambridge History of Philosophy in Late Antiquity*, II: 711–32.

32 For Philoponus, see Richard Sorabji (ed.), *Philoponus and the Rejection of Aristotelian Science* (London: Duckworth, 1987); Frans de Haas, *John Philoponus' New Definition of Prime Matter: Aspects of Its Background in Neoplatonism and the Ancient Commentary Tradition* (Leiden: Brill, 1997); Koenraad Verrycken, "John Philoponus," in Gerson (ed.), *The Cambridge History of Philosophy in Late Antiquity*, II: 733–55.

33 For Avicenna, see among others Dimitri Gutas, *Avicenna and the Aristotelian Tradition*, 2nd ed. (Leiden: Brill, 2014). See also Robert Wisnovsky, "Avicenna and the Avicennian Tradition," in Peter Adamson and Richard C. Taylor (eds.), *The Cambridge Companion to Arabic Philosophy* (Cambridge: Cambridge University Press, 2005), 92–136; Nadja Germann, "Avicenna and afterwards," in John Marenbon (ed.), *The Oxford Handbook of Medieval Philosophy* (Oxford: Oxford University Press, 2012), 83–105.

body of philosophical, theological and medical knowledge available in his time. Avicenna did not write commentaries on Aristotle; rather, he used the Philosopher's teaching as the major doctrinal resource to establish his own theories.

Dealing with nearly all fields of philosophy and science, Avicenna wrote about 130 authentic works. Even though only a few of them were translated into medieval Latin, these still amount to a huge corpus. In the eyes of Latin authors, his most important philosophical work was the *Book of the Healing* (*Kitab al-Shifa'*), which was called *Sufficiencia* in the Latin world. This treatise consists of four major parts: logic, natural philosophy, mathematics, and metaphysics. The part on natural philosophy is further subdivided into eight sections, among which we find his treatise on the soul.

Several parts of Avicenna's *Book of the Healing* were translated at Toledo in the second half of the twelfth century.³⁴ In particular, the parts on psychology (titled *Liber de anima seu sextus de naturalibus*) and metaphysics (known as *Liber de philosophia sive scientia divina*) were highly respected by the scholastics. Some parts of the meteorological treatise of the same book were translated by Alfred of Shareshill either in Spain or in England in about 1200 and circulated as a quasi-independent work under the title *De congelatione et conglutinatione*, which was sometimes even taken to be a part of Aristotle's mineralogical treatise. Another chapter of the meteorological part was anonymously translated into Latin as *De diluviis*, which contains a discussion of spontaneous generation. Furthermore, Michael Scot translated the zoological part, which became known as *De animalibus*. Other important parts (for instance, parts on *De caelo* and on *De generatione et corruptione*) were translated after 1275 by Juan Gonzalves de Burgos and Salomon. In addition to the *Book of the Healing*, Avicenna's major medical encyclopedia was translated by Gerard of Cremona as *Canon medicinae* between 1170 and 1180. Of Avicenna's works mentioned above, Albert used all translated parts except the texts that were rendered after 1275.

Averroes or **Ibn Rushd** (1126–98) took over from Alexander of Aphrodisias as the most prominent commentator on Aristotle, at least in the eyes of the Latin West.³⁵ In the Latin and Hebrew Aristotelian traditions, he came to enjoy the

34 On the translation of Avicenna's works, see Charles Burnett, "Arabic into Latin: The Reception of Arabic Philosophy into Western Europe"; Id., "Arabic Philosophical Works translated into Latin," in Robert Pasnau (ed.), *The Cambridge History of Medieval Philosophy* (Cambridge: Cambridge University Press, 2010), 814–22.

35 For Averroes, see among others Gerhard Endress and Jan A. Aertsen (eds.), *Averroes and the Aristotelian Tradition* (Leiden: Brill, 1999); Ruth Glasner, *Averroes' Physics: A Turning Point in Medieval Natural Philosophy* (Oxford: Oxford University Press, 2009). See also Richard C. Taylor, "Averroes: Religious Diarectic and Aristotelian Philosophical Thought," in Adamson and Taylor (eds.), *The Cambridge Companion to Arabic Philosophy*, 180–200; Matteo Di Giovanni, "Averroes and Philosophy in Islamic

title of “Commentator” *tout court*. In addition to developing his own philosophical theories on the basis of Aristotle’s teaching, Averroes also worked as a doxographer who collected the doctrines of the Greek commentators, especially Alexander and Themistius, and of the Arabic authors such as Ibn Bajja and Al-Ghazali, and handed them down to the following generations. Through his commentaries, later authors, including Albert, could have mediated access to the interpretations of these earlier commentators, even though they did not possess their writings.

Averroes produced three types of commentary on Aristotle: epitomes or *Short Commentaries*, the paraphrases known as the *Middle Commentaries*, and five *Long Commentaries* (on the *Posterior Analytics*, the *Physics*, *De caelo*, *De anima*, and the *Metaphysics*). He also wrote original treatises, among which we should mention three: a highly influential cosmological treatise known as *De substantia orbis*; *The Incoherence of the Incoherence*, which was intended as a refutation of Al-Ghazali’s criticism of Aristotelian philosophy; and his *Colliget*, a medical treatise.

Most Latin translations of Averroes’s works were carried out between 1220 and 1260 in Toledo and Sicily.³⁶ Michael Scot translated Averroes’s *Long Commentaries* on *De caelo*, *Physics*, *De anima*, and *Metaphysics*, and his *Middle Commentaries* on *De generatione et corruptione* and *Meteorology* (though only its fourth book). He also translated Averroes’s paraphrase of the *Parva naturalia* as well as *De substantia orbis*. The remaining commentaries on Aristotle’s logical works were translated by William of Luna. As far as Albert is concerned, the works translated by Michael Scot were the only ones known to him; the *Colliget* and *Incoherence of the Incoherence* were rendered into Latin only after Albert’s death.

5. Content of Chapters

My study consists of six chapters. **Chapter 1** examines Albert’s discussion of the governing principle of the universe in his paraphrase of *De caelo*. As I will show, he there developed his understanding of this principle under the name of “prime cause.” It had occupied a crucial place in the Greek and Arabic traditions. In his paraphrase, Albert explicitly linked the idea of “prime cause” with that of deity.

Spain,” in John Marenbon (ed.), *The Oxford Handbook of Medieval Philosophy* (Oxford: Oxford University Press, 2012), 106–29.

36 For the Latin translation of Averroes’s works, in addition to Burnett’s articles mentioned in note 34, see Dag Nikolaus Hasse, *Latin Averroes Translations of the First Half of the Thirteenth Century* (Hildesheim: Olms, 2010).

However, this notion, which was developed within the context of his Aristotelian project, could not readily be identified with the Christian Trinitarian God. This is why it will be important to explain how Albert responded to the Greco-Arabic “cosmic theology,” in which stars and celestial orbs themselves were considered deities of sorts.

The issue of the prime cause of the universe having been addressed, **Chapter 2** will turn to the question of how Albert reacted to the issue of the animation of the heavens, which had also been propounded by his pagan forerunners. Ancient Aristotelians had generally regarded stars and celestial orbs as ensouled, living entities. When paraphrasing *De caelo*, Albert elaborated on the nature of celestial souls and in so doing went clearly beyond Aristotle’s original discussion. We will see how, in his inquiry, he also referred to *Physics* VIII and *Metaphysics* XII, in which Aristotle introduced the theories of the “unmoved mover.” Besides analyzing Albert’s reliance on the thought of Greek and Arabic Aristotelians, I will also call attention to a theoretical reason behind those authors’ insistence that celestial bodies must have psychic faculties.

Once the problem of celestial deities and their animation has been addressed, I will turn to the problem of how Albert views the causal link between the celestial region and the sublunary world. **Chapter 3** examines his discussion of this issue in his paraphrases of *De caelo* and *De generatione et corruptione*, two treatises in which Aristotle had presented two divergent explanations of the relation between celestial motion and sublunary phenomena. In *De caelo*, he advanced the idea of the “final cause”: celestial bodies carry out diverse movements “for the sake of” the sublunary phenomena. By contrast, *De generatione et corruptione* emphasized the “efficient cause”: these bodies play the role of agent for the change in the sublunary region. How did Albert respond to this ambivalence? I will reveal the sources that he relied on in providing his answer, and how he transformed them in his treatment of this issue. I will also show that Alexander’s notion of divine providence was the crucial issue there.

Following these analyses of the nature of the heavenly region and of celestial causality, **Chapter 4** addresses Albert’s study of the four sublunary elements in his paraphrase of *De generatione et corruptione*. One of the most difficult problems he encountered concerned the “form” (*forma*) of the elements. Roughly speaking, we may say that Greek and Arabic Aristotelians were divided into two groups in their understanding of Aristotle’s opinions as expressed in *De generatione et corruptione*. Some believed that the form of the elements could be reduced to a combination of the four elemental qualities (hot, cold, moist and dry), while others supposed that the form of the elements has nothing to do with their qualities. The first view could be labeled as a “materialistic” position, tending to reduce the governing principle of the natural world to elementary qualities such

as heat. But was this position acceptable for Christians? As we will show, in order to tackle this problem, Albert focused on the question of the generation of the elements. In this discussion, the notion of the substantial change that elements undergo was a central issue.

Chapter 5 turns to Albert's matter theory as developed in his paraphrase of *Meteorology IV*, which constitutes a natural continuation of his discussion of *De generatione et corruptione*. In *Meteorology IV*, Aristotle had explained the mechanism of sublunary phenomena in terms of operations produced by the four elemental qualities. I will show how Albert went beyond the Philosopher by postulating the activity of celestial heat in the generation of sublunary beings. In order to understand his theory more fully, I will also examine his digression into the issue of spontaneous generation.

The way in which celestial bodies influence the sublunary world is, however, quite complex. **Chapter 6** specifically examines how Albert explained the nature of celestial influence through the novel notion of "formative power" (*virtus formativa*). On the basis of this notion, he could now claim that a heavenly "power" is indispensable for the generation of sublunary bodies. In his discussion of this issue, he emphasized the analogy between natural phenomena and artificial products. In order to gain a full understanding of the workings of Albert's model, it will be necessary to take into account also such Albertian treatises as *De mineralibus* and *De natura et origine animae*, as well as his paraphrases of Aristotle's *De respiratione*, *Generation of Animals*, and *Metaphysics* and the *Liber de causis*.

This study ends with a Conclusion that will summarize what, in my eyes, the textual analyses provided in our six chapters amount to, and how this changes the received understanding of Albert the Great's philosophical (and theological) understanding of the relation between the heavens and our physical world.