Introduction

The great scholar of medieval thought, Etienne Gilson, once remarked that Albert the Great is far less known than he is celebrated. Indeed, if Albert is known at all today, it is most likely as the teacher of Thomas Aquinas. Yet, this was not the situation in his own day, when Albert’s fame was far greater than that of his Dominican confrere Thomas. While Thomas was still a young and relatively little-known theologian, Albert already bore the title of Magnus, “the Great,” on account of his vast learning. For an indication of just how rare such a distinction was in those days, one need only consult the published comments of that great gossip of the thirteenth century Roger Bacon. With clear outrage and, perhaps, a bit of envy, he complained that most students in his day and even some very learned men consider that the complete contents of philosophy in fully developed form have already been handed down in the Latin language by a man who is considered as much an authority as Avicenna, Averroes, and even Aristotle himself, even though this man is still alive! An absolutely unprecedented indecency! Whatever Friar Bacon’s complaints, there was no denying Albert’s great learning and his substantial
contributions to the intellectual life of his time. Many today have some vague sense of this even though, as Professor Gilson noted, few know exactly what those contributions are.

**Master Albert’s Intellectual Project**

My task this afternoon is to tell you a story—the story of just who this much celebrated and yet little known man was and why he has earned so much respect from his own time down to ours. The essence of the story begins in the year 1249. That was the year marked by an important development in Albert’s intellectual career and, as we shall soon see, in intellectual history as well. It was the year that Albert finally acceded to the pleas of his Dominican confreres to compose a work explaining the natural science of Aristotle. This event, as it turns out, was of great significance, both in Albert’s personal intellectual career and for the intellectual development of western civilization.

The brothers had been imploring him to write such a book for a good many years while he was a professor of theology at the University of Paris. Albert had come to Paris in 1243 to lecture on the theological *sententiae* of Peter Lombard. He was living at the Priory of Saint-Jacques in the university district teaching under the direction of Guéric of St.-Quentin who held one of the Dominican professorships in theology. In 1245, Albert succeed Guéric and held his chair until 1248. It was during this time, when Albert would have been giving regular lectures on the scriptures, that his young confreres began to ask him to compose an introduction to Aristotle’s books on nature. Clearly, Albert already had an established reputation as an expert on the natural sciences. Albert managed to put off the brothers for three years until the Dominican master general ordered him to resign his professorship at Paris and proceed to Cologne to establish a school of theology there. Thus, in the hot dusty summer of 1248, Albert,
accompanied by a small band of Dominican friars that included the young Thomas Aquinas, made their way on foot along the old Roman road flanking the Rhine River to the Priory of the Holy Cross in Cologne. It was during the following year, 1249, that Albert began work on the long-requested guide to Aristotle’s books on the sciences of nature.

Little did the friars know that their pleas for an introductory textbook in natural science were to set in motion a momentous intellectual development. The work that Albert initially produced was a paraphrastic commentary on Aristotle’s *Physics*. Yet, what he was setting out to do was actually quite far-reaching, for he intended this commentary as the first part of what would become one of the major literary productions of the Middle Ages—a production upon which his later reputation as the foremost medieval expert on Aristotle as well as on the empirical sciences would rest. The significance of this event lies in the fact that Albert, who had been trained in theology and mandated by his religious superiors to prepare young men to take up the sacred sciences, had in addition decided to devote himself to the long-term project of pursuing the natural sciences.

That this is the meaning of his accession to his confreres’ wishes is clear from the beginning of his commentary where he declares that he is setting out to make the new learning of Aristotle intelligible to Latin readers. Indeed, Albert’s plan was far more ambitious than his Dominican brethren could have imagined. He intended not merely to produce an elementary guide to Aristotle’s *Physics*, nor simply a compendium of the natural sciences as then known, but to compose a systematic and learned treatment of the whole of human knowledge. He would accomplish this most ambitious of all intellectual undertakings by rewriting the whole of the then new Aristotelian philosophy. He would treat, in orderly fashion, all the natural sciences—both inanimate and animate—mathematics, logic, rhetoric, astronomy, ethics, economics, politics, and
metaphysics. Albert intended all this from the start and carried out his plan in a deliberate and systematic way following the order of Aristotle’s books. The manuscript evidence reveals this intention. The autograph copy of Albert’s commentaries in the Oesterreichische Nationalbibliothek at Vienna shows that the commentaries were written consecutively in the order of Aristotle’s books as then arranged. Folio 72v contains the last five lines of the *Physica* and continues straightaway on the same folio with the opening of the *De caelo*. This latter work ends and is immediately followed with opening lines of the *De natura locorum* on folio 142r and so on with the *De causis elementorum*.

Saying that Albert set out to rewrite Aristotle hardly captures the complex nature of this undertaking. True, Albert’s commentaries are paraphrastic in the manner of Avicenna rather than expository in the style of Averroes, a style later followed by Thomas Aquinas in his Aristotelian commentaries. Albert’s procedure was to follow the order of Aristotle’s text and restate what he found there. Among these paraphrastic passages, however, Albert inserted comments, corrections, and explanations, often quite lengthy ones. Indeed, Albert interpreted and updated Aristotle at nearly every turn. Further, Albert attempted to supply the missing parts of the corpus. Knowing, for example, that Aristotle had composed a treatise on animal motion which was not contained in the *translatio vetus* he was using, Albert reconstructed the work out of his own ingenuity. He also added to the corpus a whole new science of minerals, not treated by Aristotle, but clearly needed to complete the Aristotelian program of empirical studies. In addition, Albert extended Aristotle’s *De animalibus* and the pseudo-Aristotelian *De plantis* with new research, including some of his own, treating those species the early Peripatetics did not know. This was clearly a comprehensively planned program, carried out deliberately and in accordance with a carefully defined understanding of the place of learning in Christian culture.
The Medieval Scientific Revolution

In order to properly understand Albert’s ambitious project and its meaning, it is necessary to see it in the historical context in which it was conceived and carried out. Albert was Swabian, born in the Danube town of Lauingen during the final year of the twelfth-century, 1200. He did not pursue the military profession of his father, instead he was sent to the university town of Padua to study the liberal arts. In 1223, Jordan of Saxony, master general of the then newly founded Order of Preachers, arrived in Padua with the purpose of recruiting among the students. The story goes that, at least at first, Jordan found the students rather cold. Apparently, they later warmed up for before Jordan left town, he had been approached by no fewer than ten students seeking admission into the order. This group of candidates included two students from prominent military families of the German Empire, one of whom was clearly Albert. By 1228, Albert had completed his novitiate and four years of theological study and was ready to be sent out as lector of theology to various Dominican priories located in German speaking territories. By 1243, it was clear to Albert’s religious superiors that they had something special on their hands—Albert’s learning in all of the arts as well as theology was already becoming quite obvious. Hence his subsequent education at the University of Paris and his inception as Regent Master of theology there in 1245, followed by his establishment of the Dominican studium generale in Cologne in 1248.

Albert’s training and early career must be seen against the background of two profound events in intellectual history. The first of these is the foundation of the early universities in Western Europe during the latter half of the twelfth century. It must be recalled that, while higher education is very ancient, universities are a medieval invention. In antiquity, advanced study was a private affair. The student who wanted to pursue higher studies personally
approached a scholar of reputation requesting to “sit at his feet” as the saying went. Even when this involved travel to some locus of intellectual activity—such as those famous intellectual centers of the ancient Greco-Roman world at Athens and Alexandria—the essential nature of the student-master relationship remained a matter of personal mentorship. Higher education did find a home in the institutions of the early medieval period—the monastic schools in the Christian world; the court school of Baghdad and the mosque school at Cordova in the Islamic world—yet these institutions were not primarily intellectual institutions. They were religious or governmental institutions that had incorporated some intellectual activity among their operations. The universities were something new. For the first time in human history, there came to exist institutions the function of which was explicitly and solely that of promoting the intellectual life. Like their modern successors, medieval universities were established as independent legal corporations of scholars and masters under the authority of civil and/or ecclesiastical government. They were thus able to devote themselves to teaching and research in the sciences and the professions in a more comprehensive and continuous manner than was possible in institutions that existed primarily for the sake of carrying out a civil or religious mission.

The second of the two profound historical events is the recovery in the Latin West of the books of Aristotle. As is well-known, the only works of Aristotle to be found in the monastic libraries of Western Europe before the twelfth century were a few logical treatises, most notably the *Categories* and *On Interpretation*, along with bits and pieces of Aristotle’s syllogistic logic. These were available in the sixth-century Latin translations of Boethius along with his Latin commentaries and the commentary of Porphyry, also translated by Boethius. Latin monastic scholars knew that Aristotle had written much more, but this *logica vetus* or “old logic” as it came to be called, was all they had. During the course of the twelfth century, however, this
situation changed radically. Within the span of about a generation, the entire literary production of Aristotle became available in translation from the Arabic and the Greek. By 1220, good working Latin versions of all of Aristotle’s books were available to the faculties of the new universities. Suddenly, the whole of the Aristotelian recension, with its comprehensive treatment of all of the sciences, became available for study. It was immediately apparent to Latin readers that this body of literature was primarily a natural science. Today we tend to think of Aristotle largely in philosophical terms—that is, as a formal logician, an ethicist, a political theorist, a metaphysician. Yet, if one looks at Aristotle’s literary corpus as a whole without the prejudice of the pre-determined focus of our modern philosophical curriculum, one finds that the vast majority of Aristotle’s works concern the study of nature. Well over half of the corpus is devoted to the various natural sciences—a full 25% devoted to zoology alone. Masters and students in the medieval universities found in Aristotle’s books a naturalistic worldview supported by a large body of scientific research. Further, these books included, not only updated versions of the logica vetus, but the logica nova or “new logic”—those logical works of Aristotle that Boethius never got around to translating. Especially important among these were the Posterior Analytics and the Topics which together provide a carefully explicated scientific method for the study of nature. No wonder the recovery of Aristotle’s books caused so much excitement in the new universities. These books not only provided access to accounts of Aristotle’s programs of empirical research, but these accounts were accompanied by a methodology that held the promise of future scientific progress.

Such a naturalistic view of intellectual activity was in sharp contrast to early medieval approaches to learning and philosophy. The Christian monastic schools had been focused on elementary liberal arts education and, not surprisingly, tended to limit advanced study to
theological topics. The study of nature in the monasteries was limited to a few practical pursuits such as herbal medicine. The approach to philosophy in the Islamic schools was dominated by a Neoplatonic tendency to harmonize the thought of Plato and Aristotle. The differing accounts of form given by each of these philosophers with which we are all familiar from our modern textbooks were taken by medieval Islamic thinkers as representing distinct dialectical approaches to the same, basically Platonic, ontology. The early Islamic philosopher Alfarabi epitomizes this tendency in his famous claim that Plato and Aristotle, despite their differences, intend to offer one and the same philosophy. Again, except for medicine and certain other practical arts, the empirical study of nature was left generally undeveloped. The sudden twelfth-century recovery of Aristotle’s books in the Latin West occurred in such a way that attention was drawn to the fact that philosophy, the pursuit of wisdom, was considered by Aristotle to be largely a pursuit of empirical knowledge. At the time, this was a new idea.

The result of the conjunction of these two profound historical events—the foundation of the new universities and the recovery of Aristotle’s books—was nothing less than a scientific revolution. It almost immediately gave rise to the historically continuous tradition of experimental science that continues today. The medieval universities became centers for scientific research that produced a large literature—mostly in the form of commentaries on Aristotle’s books—upon which later scientists such as Galileo drew in their own experimental work. Our modern research science owes its remote origins to this medieval scientific revolution that, by the time Albert was born in the year 1200, was already beginning to develop.

Albert became a central figure in this historical development. By the time he was studying the liberal arts at Padua, the recovery of Aristotle’s books had already caused great excitement in the new universities. Albert, no less than many of his contemporaries, was
impressed by the possibilities that Aristotle’s scientific method held for future research in the natural sciences. Further, Albert became acquainted with the research that Aristotle and his early students had already done in the life sciences, the earth sciences, atmosphere science, and other disciplines. He realized that this body of research provided a model of how the Aristotelian methodology can be applied to new research programs. Albert eagerly engaged this new scientific literature and, by the time of his appointment as Regent Master of theology at Paris in 1245, had already developed expertise on Aristotle’s natural science. Hence his confreres’ request that he write something on the subject for them. Despite the fact that Albert was by profession a theologian, he had clearly determined to devote himself to a life-long pursuit of natural science. This is confirmed by his carefully planned and conducted response to his confreres’ request that took the form of complex and on-going project to both make Aristotle’s empirical researches known and to conduct his own researches advancing various scientific disciplines by application of Aristotle’s scientific method. Further evidence of Albert’s devotion to empirical studies as a complement to his theological studies can be found in the reportationes of his lectures given at Cologne. These not only include lectures on the scriptures and the church fathers, but also on Aristotle’s ethics and even on Aristotle’s animal studies as well. That Albert’s notion of a suitable curriculum for a theological studium includes work in zoology, reveals a good deal about Albert’s conception of the intellectual life as well as his attitude toward the relationship of faith and reason.

Yet, Albert was not alone in his keen interest in Aristotle’s books on natural science and scientific method. At Oxford, under the intellectual leadership of Robert Grosseteste, a tradition of experimental science was already established before Albert went to Paris in 1243. As Chancellor of the University of Oxford and later as Bishop of Lincoln, Robert had been involved
in the translation of Aristotle’s books. He became personally impressed by the new science and wrote the first complete Latin commentaries on Aristotle’s *Physics* and *Posterior Analytics*. Using Aristotle’s methodology, Robert did groundbreaking experimental work in optics. Albert knew this work, and that of Robert’s followers at Oxford, very well and made many references to it in his own commentaries. To be sure, Albert was not alone in his reception and application of the new Aristotelian science.

Albert did, however, make a unique and historic contribution to the revival of Aristotelian science. It is generally acknowledged that Aristotle stands at the beginning of the history of the life sciences as the originator of a program of theoretical description and explanation of animal morphologies and behaviors. His books on animals present a careful and detailed description of numerous species of animals classed in their various genera as well as explanatory studies in animal morphology, locomotion, reproduction and development. These books also contain a detailed treatment of scientific method and its application to zoological research. Despite the sophistication of Aristotle’s animal studies, however, his research program was not continued after his death. Aristotle’s student and collaborator Theophrastus did apply his master’s methods to his botanical studies, but otherwise biology as a research discipline dies out. Historian of science James G. Lennox has established that it was not because Aristotle’s zoological books were lost in antiquity. They remained available and were used by Hellenistic medical scholars, such as Galen. Yet, no scholar takes up and develops the Aristotelian biological research program during this period. By the end of the ninth century, a complete Arabic translation was available and it was known at the court school at Baghdad to physicians such as Avicenna and Avicenna even penned an *abbreviatio* of Aristotle’s animal histories. Yet, again, there is no Arabic tradition of theoretical biological studies developing the Aristotelian
research program. Medieval Greek scholars produced corrected editions of Aristotle’s zoological treatises in the early twelfth century and, therefore, knew them very well. None of these commentators, however, pursues a program of biological research. In all this time—a period of some fifteen hundred years—Aristotle’s zoological research program lay dormant. Until, that is, Albert revives it about the middle of the thirteenth century, explaining and extending Aristotle’s original program of animal studies.

Professor Lennox suggested that the history of Aristotle’s zoological research program indicates that, while familiarity with and even appreciation of the works of Aristotelian biology are a necessary condition for carrying on the research program contained therein, they are not sufficient. What is required, in addition, is an active and intelligent researcher who shares the theoretical aims and methods of Aristotelian science in a way that allows him to extend the research program beyond the point it was left by its founders Aristotle and Theophrastus. After more than a millennium, there emerges just such a researcher in the person of Albert who, as Professor Gilson rightly pointed out, possessed in the highest degree the typical gift of the born biologist: the taste for personal observation. In Albert’s massive *De animalibus*, Aristotle’s zoological research program is reborn. Albert not only provides detailed description of and commentary on all of Aristotle’s zoological studies, but adds reports of new research, including some based on his own observations and studies, extending zoological knowledge to species Aristotle did not know. Albert, therefore, emerges as one of the medieval pioneers of empirical science.

Yet, Albert made an even more foundational contribution to the medieval scientific revolution that gave rise to our modern scientific culture. The contribution concerns the distinction of the Platonic and Aristotelian conceptions of form common to our modern
philosophy textbooks. In Albert’s day, as already noted, interpretation of the thought of Plato and Aristotle was dominated by the Neoplatonic tendency to harmonize their philosophies. Both thinkers were understood as holding the same ontology based on a conception of intelligible form existing as eternal and separate from sensible substances and their sensible accidents. It was Albert who first challenged this conflation of the Platonic and Aristotelian notions of form. He explicitly set out to recover a properly Aristotelian conception of form, carefully distinguishing it from that of the Platonists, as a foundation for empirical research in the natural sciences. Albert’s careful study of Aristotelian science and his revival of Aristotle’s research program in zoology made him keenly aware of a crucial error that many of his contemporaries had introduced into the interpretation of Aristotle’s works. Albert realized that this error threatened to undermine the very possibility of progress in the natural sciences that the recovery of Aristotle’s empirical studies and scientific method had promised.

Albert himself called this error the *error Platonis* or “the error of Plato.” Essentially, this error is the claim that the principles of natural substances and their observable accidents are the eternal separated forms of Plato. He rejected such an interpretation as both an interpretation of Aristotle’s thought and as a foundational account that could serve as an ontology grounding empirical studies, especially in the earth and the life sciences. Albert discussed this error in his commentaries on the various books of Aristotle devoted to the distinct sciences of nature. In these works, he is concerned to show that this error prevents the methodology of Aristotle from being properly applied to the natural subject in such a way as to produce truly scientific knowledge of the subject. In his commentary on Aristotle’s *Metaphysics*, however, Albert treats the error in a general way, recovering a distinctly Aristotelian conception of form.
Conclusion

The scientific renaissance initiated by the recovery of Aristotle’s books in the Latin West, with its promise of future scientific progress, presented great challenges and opportunities to scholars of that period—indeed, we have had time to tell only a very small part of the story here. Enough has been said, however, to demonstrate that Albert was at the center of the revolutionary intellectual developments of his time. His revival of the Aristotelian research program in the life sciences, along with his recovery of the Aristotelian concept of form, were crucial elements of the scientific revolution that stands as the remote origin of our modern scientific culture of today. By the time of his death in 1280, Albert had lived a long and productive life. Were he to have accomplished only those achievements I have outlined for you this evening, that alone would be enough to earn him his title of “Magnus.” In fact, there is more—much more—even if its narration must await a future presentation. Perhaps, however, enough has been said so that we can now say that, pace Professor Gilson, it is now not quite true that Albert is far less known than he is celebrated.

The bit of Albert’s history that has been addressed this evening prompts one final comment concerning the relationship of faith and reason. Among the achievements of Albert’s most talented student Thomas Aquinas was the demonstration that the naturalistic worldview found in the books of Aristotle, especially as interpreted by Albert, is entirely compatible with the true faith handed down in the apostolic tradition. That this goes to the heart of Albert’s life and work is a point that has not been lost on the church. It was in the dark days of World War II that Pope Pius XII declared Albert patron saint of those who devote themselves to research in the
natural sciences. Since that declaration, scholarship has deepened appreciation of Albert’s seminal intellectual achievements. This only confirms the wisdom of the Pope’s proposal that St. Albert can serve as a model of how, as the Pope himself put it, “science and faith can flourish harmoniously in men.”