# CHAPTER 5

# CONCLUDING COMMENTS

In this dissertation, I have attempted to provide the reader with expositions of two important texts of medieval astronomy and compotus, Robert Grosseteste's *De spera* and *Compotus correctorius*. In these expositions, I have combined aspects both of translation and of commentary so that the reader can best understand the topics with which Grosseteste dealt in these texts. I have also tried to place the texts within their contemporary context. Some topics, however, remain for further discussion.

What can we now say we know better regarding Grosseteste's life? As discussed in the second chapter, his early life is extremely difficult to piece together. In the attempt to create a plausible picture of his life, we must combine elements of textual production and the few external sources of information that we possess. We know that he had an early interest in astronomy, particularly in the practical benefits of astrological prediction, through his work, the *De artibus liberalibus*. Yet that text showed a lack of explicit awareness of the technicalities of astronomy.

We know that Grosseteste eventually overcame the dearth of quantitative sophistication. In his *De aeris*, he shows familiarity both with using astronomical tables and with various technical astronomical and astrological concepts. In the *Compotus correctorius*, he certainly dealt with quantitative measurements in the attempt to convey the basic elements of the science, as well as in the more difficult problem of correcting the calendar. So at some point in his life, he learned to deal with the complex, technical aspects

of the astronomical sciences, which included the consultation of Arabic texts in translation.

The problem of where he learned the Arabic science has not been solved definitively, but we do have some better ideas in light of the analysis of his life and texts in this dissertation. The period from the mid-1190s to the early 1220s is key. During this period, Grosseteste was in the Hereford and Oxford region, perhaps teaching, and certainly taking part in the duties of ecclesiastical households. This is also the period in which he is most likely to have begun his investigation of Arabic astronomy. Resources would have been available to him through Hereford, where scholars had actively pursued astrology and compotus in the generation before Grosseteste. He most likely composed his *De spera* and *De aeris* during this period, before he began a more intensive study of Aristotelian natural philosophy. The *Compotus correctorius* was also composed during this period, perhaps closer to the end of it, when he was engaged in more careful study of Aristotle. And, lastly, the provocative manuscript that contains his handwriting, Oxford MS Bodl., Savile 21, dates from before 1216, the date of a horoscope in the manuscript, but could date as early as the late 1180s based on the significance given to planetary alignments in the horoscope. And so it seems most plausible that the source of his increasing sophistication in astronomy and compotus was Hereford.

Giving more precision to the date and place of composition of the *De spera* is complicated by the fact that we do not know precisely from what textual sources he drew his material. Certainly some of it is similar to topics presented in Ptolemy's *Almagest*, but the differences in presentation—the general absence of both quantitative results and the geometric method, for example, as well as the negelct of certain central topics, such as the planetary motions—do not make it clear that his source was the *Almagest* itself.

The dynamic of the theological import behind the texts is also significant. It is not certain when Grosseteste began his university training in theology, but I favor Southern's scheme that he began this training in earnest after the masters returned to Oxford in 1214.

This date, though, does not preclude that he was interested in matters of a theological nature before that time; that his interests began earlier is reinforced by his presence within ecclesiastical households and his eventual holding of ecclesiastical offices himself. Thus the theological goals of the *De spera* and the *Compotus* do not require that they were composed only after his theological training began.

Yet I have also argued that both the *De spera* and the *Compotus* were texts intended for the instruction of students at an advanced level. After the *suspendium clericorum*, i. e., after 1214, Grosseteste is associated with the University of Oxford, either as a student or faculty member of the theological faculty, but also teaching in the arts. Before that time, it is possible that he had been teaching in Hereford, and perhaps even at Oxford before the *suspendium* began in 1209. He had been recommended to the Bishop of Hereford because of, in part, his knowledge of the liberal arts.

So based on these items, I propose the following scheme for dating these texts and modifying Grosseteste's biography. In the middle of the 1190s, he becomes a member of the household of William de Vere, Bishop of Hereford. While at Hereford, Grosseteste is able to increase his knowledge of the astronomical sciences, especially of the Arabs, from the resources there. When William dies in 1198, Grosseteste stays in the vicinity of Hereford and Oxford, probably teaching, as he had done before he entered William's household. Now, however, he does not have merely young students as a provincial master, but has become more adept in the field of astronomy. Some time over the next twenty years, he composes the *De spera*, and probably the *De aeris*. Some time before 1209, he becomes associated with Oxford, using the *De spera* and perhaps the *De aeris* to attract students interested in astronomy. His presentation of new theories of astronomy, such as Thebit's theory of the mobile and fixed zodiacs, is helpful to building his reputation. He is then able to find work there teaching in the arts, although his association with ecclesiastical households continues as well, and begins pursuing a theological degree after the masters

return in 1214. His *De spera* becomes the standard text through which at least a generation of Oxford students learn astronomy, and which helps to cement, in concert with his further work in natural philosophy and optics, his reputation among his students as a natural philosopher.

Through his familiarity with Arabic astronomy, and his continued use of Arabic tables, as evidenced by the *De aeris* and the horoscopes in the Savile manuscript, and perhaps due to material he encountered at Hereford, Grosseteste at some point discovers that the calendar has a number of errors. His anxiety over this problem is heightened as he begins his education in theology and becomes more aware of the serious repercussions of a faulty calendar. In addition, at some point, he becomes dissatisfied with the text of the *Compotus ecclesiasticus*, either through teaching it (which would account for ascriptions of the text to him) or through consulting it in an attempt to solve the problems of the calendar. Eventually he decides to construct his own textbook and produces the *Compotus correctorius*, in which he both teaches the basic elements of the art and makes suggestions on how the calendar might be corrected. This probably occurred in the mid-1220s, when he was teaching in the arts and also beginning his investigation into Aristotelian natural philosophy. In this case, the text was clearly meant to instruct students at the University of Oxford.

The scenario I have just suggested has not been proven absolutely, but very little of Grosseteste's biography can be. Rather, as stated above, we are forced to fit together his texts and the little we can know for certain from external sources. The scenario I have proposed takes into account his astronomical and computistical texts and the purposes I have identified for them. I have thus constructed a narrative that is coherent and at the same time takes advantage of the new analysis of the texts that I have provided in this dissertation.

What, then, is the relationship of these texts to the teaching of astronomy and compotus at Oxford? We saw in the first two chapters of this dissertation that Oxford had a

strong reputation in natural philosophy by the middle of the thirteenth century. We also learned that this was due in large part to Grosseteste and his continuing influences on his students, especially among the Benedictines. And finally, we discovered that the statutes of Oxford, though the earliest are from a relatively late date, probably in the fourteenth century, explicitly require astronomy and compotus among the texts that students are to learn.

These texts fit neatly into a picture of the university in which astronomy and compotus were early taught as part of the basic education of undergraduates. At the same time, however, not all undergraduates were necessarily exposed to the same material. The *De spera* was clearly an introductory text. It did not include difficult quantitative material, nor did it incorporate many of the more complex ideas of astronomy that were available to one of Grosseteste's technical ability and scholarship. The *Compotus correctorius*, I have argued, could be taught at a variety of levels, either in more basic form for the general instruction in compotus, or in its more complex form for those students who exhibited an interest or aptitude in the art.

I have not provided a full analysis of the *De aeris*. It is possible, however, that this text, too, was taught at Oxford. According to Grosseteste's later, theologically sophisticated arguments against astrology of certain kinds, the *De aeris* remains a theologically acceptable text, because it speaks only of celestial influences on passive elements, not on the human will. Because more complex astronomical techniques are necessary to understand this text, it too may have been only for select students, as were portions of the *Compotus correctorius*. The astrological component never became a part of the statutory requirements, so far as we know, so it is plausible that the *De spera* was the basic text for all students, while the *De aeris* might have been reserved for the students with a special interest in astrology and aptitude in the manipulation of astronomical tables and astrological concepts.

The *De aeris* never became a companion piece to the *De spera*, or at least evidence for this is not available in the manuscripts I have consulted, so we cannot draw too close an

analogy between the way these two texts might have been taught and the way I suggest the *Compotus correctorius* was taught. But I do not believe that the astrological sciences ever became ensconced as a part of the curriculum in the way that astronomy and compotus did. This may explain in part why Oxford never faced the condemnations of Aristotelian science in the way that Paris did, because the threatening aspects of astrology were not promoted in the same way.

What can we say about the level of astronomical and computistical teaching at Oxford? With Grosseteste's text as a basis, we can characterize what teaching was like, at least in the first half of the thirteenth century while Grosseteste's influence was still fresh among his students and the following generation. The astronomy that was taught to every student was fairly basic, explaining some of the fundamental principles of astronomy and the physical constitution of the cosmos. Perhaps more sophisticated instruction in astrology, which would have necessitated instruction in at least the use of astronomical tables, might have been available to some students, but never became a common part of the curriculum. A fairly high level of sophistication in compotus was expected of students. At the very least, competency in arithmetic and a basic level of astronomical knowledge was assumed.

This emphasis on astronomy and compotus was important to the developments in natural philosophy at Oxford in a variety of ways. First, I have suggested that Grosseteste's reputation, which acted to draw students to Oxford (it was still a fledgling university, and the reputation of the masters was likely more important than that of the institution at this stage), was based at least in part in his ability in astronomy. Having a master who could teach these arts and who possessed such a degree of technical achievement must have fostered an environment in which natural philosophy more generally could flourish. And when the master himself turned to Aristotelian natural philosophy in earnest, his students naturally followed suit.

In fact, Grosseteste's turn towards Aristotelianism probably charted the path for

future endeavors at the university. Because certain aspects of this philosophy conflicted with the Christian understanding of the world, it required careful study to determine its proper use within the Christian environment. Astronomy and compotus, which already had competent texts, could persist at a fairly low level of technical sophistication because they accomplished their purposes: revealing God's activity in creation, providing information for biblical exegesis, and teaching the basics of the Christian calendar.

In certain circles, however, a greater level of ability led some scholars to greater achievements, eventually leading to a great deal of astronomical and mathematical research at Oxford in the fourteenth century.[1] Undoubtedly Grosseteste's work in the early years of the university contributed to this eventual situation.

The astronomical and computistical textbooks of Grosseteste had a lasting effect on the curriculum of Oxford, as well as the research into natural philosophy that took place there. These texts are now available to a broader modern audience than they were previously. Grosseteste's technical ability in these arts can be more fully appreciated, as can the content of what medieval undergraduate students learned. Although in the following decades astronomers would surpass Grosseteste's acheivements, his influence was a necessary precondition for the development of those arts at Oxford.

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[1]See North, "Astronomy and Mathematics."