

**Roger of Hereford's *Judicial Astrology*:
England's First Astrology Book?**

**Thesis submitted for the degree of Doctor of Philosophy
at the University of Leicester**

Chris Mitchell

Centre for English Local History

University of Leicester

November 2019

Abstract

The twelfth century saw a large number of Arabic texts on natural philosophy translated into Latin for the first time. Many of these texts were astrological, and had originally been translated into Arabic in the eighth and ninth centuries, shortly after the rise of Islam, from original Greek, Persian and Indian sources. Knowledge of astrology in Western Europe prior to the twelfth century was limited, although the need for Christians to calculate the date of Easter meant that an understanding of solar and lunar cycles was important, leading to the development of the science of computus, taught in secular cathedral schools, which were the main centres of learning in England in the twelfth century. One school with a reputation for scientific learning was the cathedral school at Hereford, and this research focuses on a text of a teacher there, Roger of Hereford, who compiled the newly-translated Arabic material on astrology into a single book, *Judicial Astrology*.

By the thirteenth century, astrology had become an established part of the curriculum taught in newly-established universities across Europe, and included studying works by Arabic astrologers that had been translated into Latin. What has not been researched in detail until now, though, is how astrology was taught in that century between the translation of Arabic texts and its establishment as part of the quadrivium in universities, and a detailed examination of Roger's seminal book.

This thesis examines his *Judicial Astrology* in detail, analysing the astrological techniques used, identifying Roger's sources, and looking at his teaching methods.

This thesis sets the context within which astrological texts were translated, and provides an analysis of every extant manuscript of *Judicial Astrology*. The conclusion examines Roger's claim that he compiled the first astrology book in England, and asks whether it still stands as a usable text today.

Acknowledgements

Undertaking a part-time PhD is a long journey, and I am indebted to many people for their help and support while I have been undertaking it. I am very grateful to Dr Bernadette Brady of the University of Wales Trinity St David for drawing my attention to Nicholas Whyte's MPhil dissertation on Roger of Hereford's astrological work, which set me on the road to undertaking this PhD research. Dr Nicholas Campion, Associate Professor in Cosmology and Culture at the University of Wales and Director of the Sophia Centre for the Study of Cosmology in Culture, has also been an inspiration to me for more years than I care to count. His determination to put the history of astrology firmly on an academic footing has made the type of research I am doing possible, and the MA course he initiated in Cultural Astronomy and Astrology, and of which I am both a graduate and tutor, is the reason I took up academic study again after a gap of nearly thirty years.

This research would also have been far more difficult without the availability of Arabic and Hebrew astrological texts that have been translated into English since the 1990s by both academics and astrologers, and so I am indebted to authors too numerous to mention, although I shall single out Dr Benjamin Dykes, whom I would like to thank profusely for his generosity in furnishing me with a copy of a highly relevant text that he had translated, and for allowing me to pick his brain at conferences on points where I had got stuck. I am also very grateful to the staff of numerous university libraries, especially the David Wilson Library at the University of Leicester, and the Warburg Institute in London. I would like in particular to thank the staff at the School of Oriental and African Studies at the University of London who cut through the red tape and allowed me into the store room to help locate and borrow their copy of a key text by ibn Ezra that had only been published a few months previously, and was not yet officially on their shelves.

I owe huge thanks to my supervisor, Dr Richard Jones, whose support, inspiration, prodding, and tolerance in my last-minute submissions of chapters has made undertaking this PhD research an absolute joy.

Lastly, I would like to thank my partner, Phil Shine, for his encouragement, support, love and patience in putting up with me disappearing to conferences and libraries for days on end, and hammering away on a keyboard in the small hours during the last eight years.

TABLE OF CONTENTS

Abstract.....	2
Acknowledgements.....	3
Nomenclature.....	5
List of Figures.....	6
List of Tables	8
Chapter One: Introduction	9
Chapter Two: Transmission of astrology and its arrival in England	35
Chapter Three: The manuscripts.....	69
Chapter Four: <i>Judicial Astrology: Prologue and Reference</i>	128
Chapter Five: <i>Judicial Astrology: Techniques</i>	211
Chapter Six: Conclusion	271
Postscript: <i>Judicial Astrology</i> as a teaching text	283
Appendix One: Codices containing <i>Judicial Astrology</i>	286
Bibliography	305

Nomenclature

Abbreviations have been kept to a minimum in this thesis; instead, a shortened form of an author and title is used in subsequent references. For example, subsequent references to:

L. Thorndike, *A History of Magic and Experimental Science* Volume 2 (New York: Columbia University Press, 1923).

will simply be:

Thorndike, *History of Magic*.

Abu Ma'shar is cited frequently, and his major work, *Great Introduction to the Science of the Stars*, was translated into Latin in the twelfth century. One translation was done by John of Seville, the other by Hermann of Carinthia, and these two translations are quite different. This thesis cites from both, and uses Richard Lemay's nine-volume critical edition, which contains both translations. The first reference is cited in full, and subsequent references are given as 'Abu Ma'shar, *Great Introduction*' with 'John' or 'Hermann' in brackets where it is necessary to distinguish.

The main topic of this thesis is a text by Roger of Hereford that is found in a number of manuscripts, but the text comprises two related parts, which are sometimes listed as separate works in catalogues. The first part comprises a prologue and reference material, and the second part comprises the main work itself with techniques. In this thesis, the work as a whole is consistently referred to as *Judicial Astrology*, and when necessary to distinguish between the two parts, the first part is referred to as *Judicial Astrology: Prologue and Reference*, and the second part *Judicial Astrology: Techniques*. The exemplar manuscript is primarily Oxford, Bodleian Library, Selden Supra 76 (designated 'A' in footnotes), but a few leaves are missing from this manuscript and where quotes are from that missing section, Cambridge, University Library, Ii 1.1 (designated 'B' in footnotes) is used.

List of Figures

- 1.1 Focus of texts published on medieval astrology
- 1.2 Breakdown of texts by category
- 1.3 Acrostic on computus manuscript
- 1.4 Incipit with an “Islamic” dedication
- 2.1 Planetary latitudes
- 2.2 Medieval map of Hereford
- 2.3 Breakdown of texts by category
- 3.1 Manuscript B layout
- 3.2 Manuscript A layout
- 3.3 Manuscript H layout
- 3.4 Manuscript B layout
- 3.5 Manuscript A headings
- 3.6 Identifying the start of the third book
- 3.7 Identifying the start of the fourth book
- 3.8 Manuscript A palaeography
- 3.9 Manuscript F palaeography
- 3.10 Manuscript E palaeography
- 3.11 Manuscript D palaeography
- 3.12 Manuscript G palaeography
- 3.13 Manuscript O palaeography
- 3.14 Manuscript C palaeography
- 3.15 Manuscript B palaeography
- 3.16 Manuscript H palaeography
- 3.17 Manuscript I palaeography
- 3.18 Diurnal and nocturnal hours errors
- 3.19 Manuscript A scribal confusion I
- 3.20 Manuscript A scribal confusion II
- 3.21 Manuscript D years of the planets
- 3.22 Tentative *stemma codicum* of some thirteenth-century manuscripts
- 3.23 Astrological chart in manuscript R
- 4.1 Tropical and sidereal zodiacs
- 4.2 Quadrant house system

- 4.3 Late ninth-century brass astrolabe from Syria
- 4.4 Latitude plate for 52 degrees
- 4.5 Calculating the Ascendant
- 4.6 House calculation: third house
- 4.7 House calculation: second house
- 4.8 House calculation: fourth house
- 4.9 House calculation: fifth house
- 4.10 House calculation: sixth house
- 4.11 Charts of spring equinox and summer solstice
- 4.12 Diurnal and nocturnal hours
- 4.13 North's diagram illustrating the Prime Vertical
- 4.14 Roger's approximation to a sine curve from Ptolemy
- 4.15 Ptolemy's four quarters
- 4.16 Maps showing attribution of countries to zodiac signs
- 4.17 Calculating the Part of Fortune
- 4.18 Slippage in Manuscript D
- 4.19 Table of planetary virtues
- 5.1 Example question: 'Will I marry this woman?'
- 5.2 Aries rising, Capricorn culminating
- 5.3 Cancer rising, 23°40' Aquarius culminating
- 5.4 Sextile aspect by house
- 5.5 Mercury translating from Mars to the Sun
- 5.6 Jupiter collecting from Mars and Venus
- 5.7 Duodenaria
- 5.8 Novenes
- 5.9 Duodenaria of 11° Scorpio
- 5.10 Chart example: duodenaria
- 5.11 Chart example: lord of the Ascendant
- 5.12 Chart example: house division
- 5.13 Intention from lord of the hour
- 5.14 Roger of Hereford's example horoscope
- 5.15 Modern format of Roger of Hereford's example chart
- 5.16 Roger's worked example

List of Tables

- 1.1 Breakdown of twelfth-century translated texts by author and category
- 3.1 Sections included in each manuscript of Judicial Astrology
- 3.2 Increments used in Roger's table of hours
- 3.3 Errors in table of hours
- 3.4 Some consistent errors in the table of hours entries for Leo
- 3.5 Consistent "ideal" values for times of the signs table
- 3.6 Errors in times of the signs table
- 3.7 Years of the planets
- 3.8 Discrepancies in manuscripts for the years of the planets
- 4.1 Representation of Roger's diurnal and nocturnal hours table
- 4.2 Attribution of countries to zodiac signs
- 4.3 Signification of each sign
- 4.4 Characteristics of planets
- 4.5 Signification of each house
- 4.6 Table of parts
- 4.7 Table of planetary characteristics
- 4.8 Joys of the planets
- 4.9 What testament a planet has in its dignities
- 4.10 Friendship and enmity between planets
- 4.11 Summary of Raymond of Marseilles' *Liber iudiciorum*
- 5.1 Intention from the lord of the Ascendant
- 5.2 Planetary days
- 5.3 Planetary Hours for Thursday
- 5.4 List of the first seven planetary hours for Tuesday
- 5.5 Intentions and hidden objects from lord of the hour

Chapter One: Introduction

Among the many astrological manuscripts available, it is easy to overlook the importance of any one specific work. This thesis focuses specifically on one manuscript, which this thesis designates *Judicial Astrology*, written by a scholar associated with the cathedral school at Hereford, Roger of Hereford, in the twelfth century. This text had never been examined and analysed in its entirety before this research, and various claims had been made about its content and originality that have been examined critically. As an essential part of this research, all extant manuscripts of *Judicial Astrology* have been examined for the first time. As a consequence, it has been possible to provide more information on their dates and places of origin, and for the first time a tentative *stemma codicum* – a “family tree” – of manuscript production has been created for the earliest manuscripts, demonstrating some likely routes by which the manuscript has been copied. A careful comparison between manuscripts has identified areas where errors had been made in previous analyses, and an analysis of the Latin text of *Judicial Astrology* has been made against a wider range of Latin translations of Arabic texts than had been done previously, identifying the provenance of the techniques described in Roger’s text, elucidating these techniques with examples, and using them to assess the purpose of the text.

The twelfth century saw a scientific revolution take place in Christian Western Europe. The separation between the Latin-speaking West and Greek-speaking East after the decline of the Roman Empire in the West meant that many scientific texts written in the Roman Empire, primarily those in Greek, were lost to Western Europe. Monasteries, where most learning took place, offered a limited curriculum in scientific topics such as medicine, astronomy, astrology and mathematics. This stagnation in scientific learning in the West contrasted with developments in the Islamic world, where texts from the Roman Empire, Persia and India had been enthusiastically translated into Arabic, studied, and subsequently developed since the rise of Islam in the seventh century. By the twelfth century, Latin scholars in the West were becoming aware of these new Arabic resources. The capture of Toledo, a major Islamic centre of learning in Spain, by the Christians in the late eleventh century made many Arabic texts available to scholars, and with it an incentive to learn Arabic so that these texts could be translated and then taught in Latin-speaking schools in the West.

The main focus of this thesis, though, is specific; it is not to investigate the translation of Arabic texts *per se*, a field that has already been amply covered, but to analyse a single text – Roger of Hereford’s *Judicial Astrology*. This particular astrological text carries great potential interest because it is not simply a translation of one particular Arabic source. The prologue of this text states that the rules of judicial astrology were already available in a variety of sources, but that the aim of *Judicial Astrology* was to collate these techniques into a single volume. In other words, Roger was claiming to have written the first judicial astrology textbook in England.¹ This thesis will examine this claim, focusing on the astrological techniques in the text to establish their origins and to examine the purpose of the text.

Background – the emergence of medieval astrology in academic enquiry

The translation of Arabic texts in the twelfth century meant that the rules of astrology were made known to Latin readers, particularly in the field of medicine.² However, although the subject was taught in cathedral schools and, later, in universities, it was not until the thirteenth century that astrology began to be disseminated to a wider audience, with the production of manuscripts that can be considered astrological textbooks by the likes of Michael Scot and Guido Bonatti. Scot was a translator and astrologer in the court of Frederick II, and introduced the ideas of Averroës to the Latin West, and wrote an astrology text, *Liber introductorius*.³ Bonatti’s legacy in particular has been long-lasting; Nicholas Campion described him as ‘the best known astrologer of his time – indeed, one of the most famous astrologers in European history.’⁴ His work was still being used and translated by English astrologers in the seventeenth century, and his major work, *Book of Astronomy*, was recently translated into English.⁵ However, despite the revival of interest

¹ The term “judicial” in this context is used to mean the art of making judgements or forecasts based on the position of planets in the zodiac at any given point. The terminology and how it compares to Arabic terms (from which much of the Latin literature was translated) is discussed in C. Burnett, ‘On Judging and Doing in Arabic and Latin Texts on Astrology and Divination’, *The Impact of Arabic Sciences in Europe and Asia*, *Micrologus* 24 (2016), pp.3-11.

² R. French, ‘Foretelling the Future: Arabic Astrology and English Medicine in the Late Twelfth Century’, *Isis*, 87.3 (1996), p.457.

³ L. Thorndike, *A History of Magic and Experimental Science Volume 2* (New York: Columbia University Press, 1923), pp.307-337; G.M. Edwards, ‘The *Liber introductorius* of Michael Scot’, Unpublished PhD Thesis, University of Southern California (1978).

⁴ N. Campion, *A History of Western Astrology Volume II - The Medieval and Modern Worlds* (London: Continuum, 2009), p.56.

⁵ G. Bonatti, *Book of Astronomy*, B.N. Dykes (trans.) (Golden Valley, Minnesota, 2007), p.26.

in thirteenth-century texts such as Bonatti's, there is a lack of material showing how astrology was used in England in the twelfth century.

This lack of material is to a large extent down to the negative view that modern academia has had, until recently, of astrology. The medieval worldview saw the universe organised as a 'Great Chain of Being', with God as the prime mover and creator at the top of the chain, who caused time to be created by setting stars and planets in motion, with humanity in the middle, and plants and minerals at the bottom of the chain.⁶ The terrestrial world was thus seen as a microcosm of the heavens, and therefore the idea that the movement of planets had an influence on human beings was a natural consequence of this model. This holistic understanding of science does not correspond with the modern definition, in which science requires repeatable and verifiable experiments to test a hypothesis, with a theory to explain the mechanism that causes an effect to occur. To the modern scientist, astrology is an uncomfortable combination of genuine science (the calculations required to determine a planet's position in the sky are testable and uncontroversial) and pseudoscience (the idea that a planet's position can have an effect on a human being is very hard to test, and there is no physical theory underlying it), and is therefore not worthy of serious investigation. Since the natural home for the study of medieval astrology would be in the field of the history of science, it has largely been modern scientists setting this agenda, and relegating the study of astrology to a backwater, although social scientists and historians have been equally dismissive. A few examples make this prejudice quite clear. Carl Boyer writing on the history of mathematics made a clear distinction between Ptolemy's *Almagest*, a work on astronomy from the second century CE, and his *Tetrabiblos*, a work on astrology, describing the latter as 'a kind of sidereal religion to which much of the ancient world had succumbed'.⁷ The sociologist Theodor Adorno was equally scathing, describing astrology as 'nefarious' and 'pretending to a higher level of scientificness'.⁸ In his book on the twelfth-century renaissance, Charles Haskins described astrology as a 'delusion of our ancestors', while recognising that it was a natural way of thinking in medieval terms.⁹ The scepticism that modern academia had towards astrology did not preclude academics from writing about the subject, though, and

⁶ R. Jones, *The Medieval Natural World* (Harlow: Pearson, 2013), p.21; Plato, *Timaeus*, R.G. Bury (trans.), Loeb Classical Library 234 (Cambridge, MA: Harvard University Press, 1929), p.79.

⁷ C.B. Boyer and U.C. Merzbach, *A History of Mathematics* (New York: Wiley, 1989), p.171.

⁸ T.W. Adorno, *The Stars Down to Earth* (London: Routledge, 1994), p.28.

⁹ C.H. Haskins, *The Renaissance of the Twelfth Century* (Cambridge, MA: Harvard University Press, 1933), p.317.

particularly in the role it played in medieval society. David Lindberg, writing in his history of science, pointed out this barrier and stated that ‘medieval astrology also had a serious scholarly side, and we must not allow our attitude toward it to be colored by the low regard in which astrology is held today’.¹⁰ Otto Neugebauer attempted to address the negative perception that astrology had in a very brief 1951 article explaining why ‘a serious scholar might spend years on the study of wretched subjects like ancient astrology’, but the quotes above – most from long after 1951 – show that the prejudice was still alive and well in the late twentieth century.¹¹

Lynn Thorndike’s magnum opus, *A History of Magic and Experimental Science*, provides details of the lives of various medieval astrologers and their works, but does not go into detail about the techniques that they expound. There were some translations of Arabic and Hebrew astrological texts into English made in the first part of the twentieth century: Al-Biruni’s *Book of Instruction in the Elements of the Art of Astrology* was translated by Robert Ramsay Wright from the Arabic in 1934, and ibn Ezra’s *Beginning of Wisdom* was translated by Raphael Levy and Francisco Cantera in 1939.¹²

However, it was left to modern astrologers, rather than academics, to undertake translations of medieval astrological texts. The Association for the Retrieval of Historic Astrological Texts (ARHAT) was founded in 1992 when four astrologers met at an astrology conference in Washington, DC, with the aim of translating the entire corpus of Greek, Arabic and Latin astrological texts.¹³ This ambitious project resulted in the first English language edition of Bonatti’s *Book of Astronomy* in 1998, translated by Robert Zoller, and edited by Robert Hand, both of whom are practising astrologers rather than academics.¹⁴

Academic attitudes towards the study of the history of astrology have changed in recent years, however. A survey of articles specifically on the topic of medieval astrology shows not only an increase in number since the 1990s (not in itself necessarily significant, since

¹⁰ D.C. Lindberg, *The Beginnings of Western Science* (Chicago: University of Chicago Press, 1992), p.274.

¹¹ O. Neugebauer, ‘The Study of Wretched Subjects’, *Isis*, 42.2 (1951), p.111.

¹² Al-Biruni, *The Book of Instruction in the Elements of the Art of Astrology*, R. Ramsay Wright (ed.) (London: Luzac & Co, 1934); A. ibn Ezra, *The Beginning of Wisdom: An Astrological Treatise*, R. Levy and F. Cantera (trans.) (Baltimore: The Johns Hopkins Press, 1939).

¹³ ‘The Early History of Project Hindsight’, <http://www.projecthindsight.com/archives/history.html> [2 November 2017].

¹⁴ G. Bonatti, *Liber astronomiae*, R. Zoller (trans.) and R. Hand (ed.) (Salisbury, Queensland: Spica Publications, 1998).

searches for non-astrological historical topics show a similar increase), but a change of focus to texts that engage with the astrological material itself, rather than simply providing background, or looking at medieval attitudes towards the subject. Figure 1.1 demonstrates this shift, based on a search of two databases, the *Bibliography of British and Irish History*, and the *International Medieval Bibliography*.¹⁵ This list is not exhaustive, and focuses on academic articles, but nevertheless does demonstrate the general themes that were being addressed in each decade. The articles published in the 1970s and 1980s in this sample were either related to medical astrology, iconography, or attitudes towards astrology, and these sometimes reflected the academic suspicion towards anything astrological. For example, Lynn White's article on medical astrologers begins by stating that the general view in the twentieth century was that the late medieval revival of astrology was 'deplorable' and a 'pseudoscience', and that 'most of us today' would protest its 'moral iniquity'.¹⁶ Other articles from this period examined the role of astrology in the medieval period, such as Hilary Carey's article on astrology at the English court.¹⁷ Some of these articles acknowledged the difficulty in reconciling such research with attitudes prevalent at the time; Richard Lemay pointed out the problem with the tendency to denigrate the study of astrology when it was integral to the medieval world-view, describing such views as 'treacherous factors working against a serious, unprejudiced effort to understand this history of astrology in medieval and Renaissance periods.'¹⁸

The 1990s saw a change in attitude towards the examination of medieval astrological texts, with a slightly stronger focus on the analysis of techniques. Abbas Hamdani used astrological techniques relating to conjunctions of the planets Jupiter and Saturn to date a medieval Islamic encyclopedia, pointing out that the purpose of his study is not to

¹⁵ Databases provided by Brepols Publishers Online at <http://www.brepols.net/>. For the *Bibliography of British and Irish History*, a search was made on an index term of 'Astrology' with a refinement search for 'renaissance' and 'medieval'. For the *International Medieval Biography*, a search was made on 'medieval astrology' and 'renaissance astrology'. The 168 hits were narrowed down to exclude works that were only tangentially related to astrology, such as those relating to astronomical instruments or the occult in general, resulting in a selection of 79 relevant works. In Figure 1.1, the number of works for the 2010s has been multiplied by 1.25 to adjust for the fact that this decade is, at the time of writing, not yet complete.

¹⁶ L. Whyte, 'Medical Astrologers and Late Medieval Technology', *Viator*, 6 (1975), p.295.

¹⁷ H.M. Carey, 'Astrology at the English Court in the Later Middle Ages' in P. Curry (ed.), *Astrology, Science and Society* (Woodbridge: Boydell Press, 1987), pp.41-56.

¹⁸ R. Lemay, 'The True Place of Astrology in Medieval Science and Philosophy: Towards a Definition' in P. Curry (ed.), *Astrology, Science and Society* (Woodbridge: Boydell Press, 1987), p.57.

discuss astrological opinions, but ‘only to determine the time of composition’.¹⁹ Edward Kennedy published a number of works on Islamic astrological and astronomical techniques in 1998, including topics on determining astrological houses and lots, calculating the ascendant, and an astrological history of Genghis Khan.²⁰ While books discussing the role played by astrology were still being written in the 1990s, they generally discuss this role objectively. For example, Michael Shank’s article describes how astrology was used in fifteenth-century Vienna both practically and intellectually without needing to make an explanation regarding why the topic is being discussed.²¹

The following decade saw an even larger number of books and articles on astrology published, and sometimes extending beyond the field of the history of science. For example, Mary Robbins wrote an article that analysed the astrological content of a Scottish poem, which was published in a journal relating to modern language studies.²² Josep Casulleras’ article on the medieval Arabic method of calculating astrological houses was published in a journal of classical Islamic civilisation.²³ Articles were also written on medical astrology, both in a specific context such as Joan Greatrex’s article on the use of astrology at Norwich Cathedral priory or Hilary Carey’s commentary on a specific medical manuscript, and in a general context as provided by various works by Carey on medical astrology and almanacs.²⁴ Articles on astrological symbolism appeared, both in the context of imagery and in literature.²⁵ Sophie Page examined the use of both

¹⁹ A. Hamdani, ‘A critique of Paul Casanova’s dating of the *Rasa’il Ikhwan al-Safa’* in F. Daftary (ed.), *Isma’ili History and Thought* (Cambridge: Cambridge University Press, 1996), p.145.

²⁰ E. Kennedy, *Astronomy and Astrology in the Medieval Islamic World* (Brookfield, VT: Ashgate, 1998).

²¹ M. Shank, ‘Intellectual Consulting in Fifteenth-Century Vienna: The Case of Astrology’ in E. Sylla and M. McVaugh (eds), *Texts and Contexts in Ancient and Medieval Science* (Leiden: Brill, 1997), pp.245-270.

²² M. Robbins, ‘Medieval Astrology and the *Buke of the Sevyne Sagis*’, *Forum for Modern Language Studies*, 38.4 (2002), pp.420-434.

²³ J. Casulleras, ‘Métodos para Determinar las Casas del Horóscopo en la Astrología Medieval Árabe’, *Al-Qantara* 30.1 (2009), pp. 41-67.

²⁴ J. Greatrex, ‘Horoscopes and Healing at Norwich Cathedral Priory’ in C. Barron and J. Stratford (eds), *The Church and Learning in Later Medieval Society*, Harlaxton Medieval Studies, XI (Donington: Shaun Tyas, 2002), pp.170-177; H. Carey, ‘Medieval Latin Astrology and the Cycles of Life: William English and English Medicine in Cambridge, Trinity College MS O.5.26’ in A. Akasoy, C. Burnett and R. Yoeli-Tlalim (eds), *Astro-Medicine: Astrology and Medicine, East and West*, Micrologus’ Library 25 (Firenze: SISMEL, 2008), pp.33-74. For Carey’s general works see for example H. Carey, ‘Astrological Medicine and the Medieval English Folded Almanac’, *Social History of Medicine*, 17.3 (2004), pp.345-363.

²⁵ See for example for astrological imagery D. Park and R. Pender, ‘Henry III’s Wall Paintings of the Zodiac in the Lower Ward of Windsor Castle’ in L. Keen and E. Scarff (eds), *Windsor: Medieval Archaeology, Art and Architecture of the Thames Valley* (Leeds: British Archaeological Association, 2002), pp.125-131; C. Harding, ‘Time, History and the Cosmos: The Dado in the Apse of the Church of the Eremitani, Padua’ in L. Bourdua and A. Dunlop (eds), *Art and the Augustinian Order in Early Renaissance Italy* (Aldershot: Ashgate, 2007), pp.127-142. For astrological symbolism in literature see for

astrology and magic in medieval manuscripts, and how astrology was used in late medieval England.²⁶ Nicolas Weill-Parot published his 1998 dissertation on medieval and Renaissance astrological imagery in 2002, and how talismans lay in the theologically ambiguous ground between acceptable natural science and dangerous superstition by the late fifteenth century.²⁷ Tim Hegedus examined the role of astrology and attitudes towards it in early Christianity.²⁸ The role that astrology played in various medieval contexts continued to appear in articles, such as Jean-Patrice Boudet's discussion of the role of astrology in courts.²⁹ Discussions of translations of astrological texts were published, on Hebrew medical astrology and the translation of Greek texts into Latin.³⁰ Paul Kunitzsch discussed the terminology relating to translation – what is meant by “Arabic” astrology, and how medieval translators from Arabic to Latin dealt with new terms.³¹

The 2010s have seen the publication of more articles analysing astrological texts, such as Gerold Hilty's analysis of ibn al-Rijal's *Judgement of the Stars*, Boudet's discussion of Pseudo-Ptolemy's *Centiloquium*, and a mathematical analysis of astrological techniques.³² The reception of astrology in medieval cultures is represented, such as Reimund Leicht's discussion of astrology in Ashkenazi culture, Shlomo Sela's review of medieval Jewish thought, and Boudet's article on the reputation and portrayal of

example M. Williams, 'Astrological Poetry in Late Medieval Wales: The Case of Dafydd Nanmor's "To God and the Planet Saturn"', *Culture and Cosmos*, 12.2 (2008), pp.3-22.

²⁶ S. Page, *Astrology in Medieval Manuscripts* (Toronto: University of Toronto Press, 2002); S. Page, *Magic in Medieval Manuscripts* (Toronto: University of Toronto Press, 2004); S. Page, 'Richard Trewythian and the Uses of Astrology in Late Medieval England', *Journal of the Warburg and Courtauld Institutes*, 64 (2001), pp.193-228.

²⁷ N. Weill-Parot, *Les "images astrologiques" au Moyen Âge et à la Renaissance : spéculations intellectuelles et pratiques magiques (XII. - XV. siècle)* (Paris: Champion, 2002), p.13.

²⁸ T. Hegedus, *Early Christianity and Ancient Astrology* (New York: Lang, 2007).

²⁹ J. Boudet, 'Les Horoscopes Princiers dans l'Occident Médiéval (XIIe-XVe siècle)', *Knowledge at the Courts*, *Micrologus* 16 (2008), pp.373-392.

³⁰ G. Bos, C. Burnett, and Y. Langermann, 'Hebrew Medical Astrology: David Ben Yom Tov, Kelal Qatan', *Transactions of the American Philosophical Society*, 95.5 (2005), pp.1-121; C. Burnett, 'Late Antique and Medieval Latin Translations of Greek Texts on Astrology and Magic' in P. Magdalino and M. Mavroudi, *The Occult Sciences in Byzantium* (Geneva: La Pomme d'or, 2006), pp.325-359.

³¹ P. Kunitzsch, 'Translations from Arabic (Astronomy/Astrology): The Formation of Terminology', *Archivum Latinitatis Medii Aevi*, 63 (2005), pp.161-168.

³² G. Hilty, '¿Existió una tercera versión latina del Libro conplido?', *Revista de Literatura Medieval* 23 (2011), pp.287-296; J. Boudet, 'Astrology Between Rational Science and Divine Inspiration: The Pseudo-Ptolemy's *Centiloquium*' in S. Rapisarda and E. Niblaeus (eds), *Dialogues Among Books in Medieval Western Magic and Divination*, *Micrologus' Library* 65 (Firenze: SISMELE, 2014), pp.49-75; J.P. Hogendijk and J. Casulleras, 'Progressions, Rays and Houses in Medieval Islamic Astrology: A Mathematical Classification' *Suhayl* 11 (2012), pp.33-102.

Ptolemy.³³ Medical astrology continued to be represented with specific analyses of medical texts.³⁴ Attitudes towards astrology and magic and their relationship with the Church were examined, with Weill-Parot's analysis of the difference between astrology and astral influences, Graziella Federici-Vescovini's examination of the definition of magic and its relationship to science and religion (and how astrology was seen to mediate between the two), and Page's work on how apparently magical practices were incorporated into religious life.³⁵

This shift in academic acceptance is also reflected in more recent texts, which have pointed out these earlier negative attitudes towards astrology. Gerd Mentgen, for example, expressed astonishment that German medievalists had neglected astrology since it is an important historic topic on which the cultural historian Aby Warburg from Hamburg had done much of the groundwork that would facilitate its study at the start of the twentieth century.³⁶ Monica Azzolini, writing about the role of astrology in the Renaissance court, stated that political historians (as well as historians of science and medicine) have dismissed astrological material in their archives as being 'marginal to their own discipline, often considering astrological counsel as an aberration, a regrettable form of superstition of little or no consequence'.³⁷ H. Darrell Rutkin summed up these

³³ R. Leicht, 'The Reception of Astrology in Medieval Ashkenazi Culture', *Aleph* 13.2 (2013), pp.201-234; S. Sela, 'Astrology in medieval Jewish thought' in G. Freudenthal (ed.), *Science in Medieval Jewish Cultures* (Cambridge: Cambridge University Press, 2011), pp.292-300; J. Boudet, 'Ptolémée dans l'Occident Médiéval: Roi, Savant et Philosophe', *The Medieval Legends of Philosophers and Scholars*, *Micrologus* 21 (2013), pp.193-217.

³⁴ See for example, H. Carey, 'Henry VII's *Book of Astrology* and the Tudor Renaissance', *Renaissance Quarterly*, 65.3 (2012), pp.661-710; L.E. Voigts, 'The medical astrology of Ralph Hoby, fifteenth-century Franciscan' in N. Rogers (ed.), *The Friars in Medieval Britain: Proceedings of the 2007 Harlaxton Symposium* (Donington: Shaun Tyas, 2010), pp.152-168; G. Toby, 'Dr Reason and Dr Experience: Culpeper's assignation of planetary rulers in *The English Physitian*' in C. Burnett and D. Gieseler-Greenbaum (eds), *From Masha'Allah to Kepler: Theory and Practice in Medieval and Renaissance Astrology* (Lampeter: Sophia Centre Press, 2015), pp.473-490.

³⁵ N. Weill-Parot, 'Astrology, Astral Influences, and Occult Properties in the Thirteenth and Fourteenth Centuries', *Traditio*, 65 (2010), pp.201-230; G. Federici-Vescovini, 'La storia astrologica universale. L'oroscopo delle religioni tra Medioevo e Rinascimento', *Philosophical Readings*, 7.1 (2015), pp.8-41; G. Federici-Vescovini, *Medioevo magico: la magia tra religione e scienza nei secoli XIII e XIV* (Torino: UTET, 2008), pp.xiii-xv; S. Page, *Magic in the Cloister* (University Park, PA: Pennsylvania State University Press, 2013).

³⁶ 'Die Sterndeutung und ihre Rezeption sind ein Gebiet, das von den Mediävisten in erstaunlichem Maße vernachlässigt wurde und wird - erstaunlich, weil erstens dieser Thematik eine nicht zu unterschätzende Bedeutung für die Kultur-, Mentalitäts-, Wissenschafts- oder die politische Geschichte eignet und zweitens sich vor allem der Hamburger Kunst- und Kulturhistoriker Aby M. Warburg (1866-1929) mit seinen Mitstreitern in den ersten Jahrzehnten des vergangenen Jahrhunderts große Verdienste um die Erforschung der Astrologie erwarb auf denen hätte aufgebaut werden können', in G. Mentgen, *Astrologie und Öffentlichkeit im Mittelalter* (Stuttgart: Anton Hiersemann, 2005), p.1.

³⁷ M. Azzolini, *The Duke and the Stars* (Cambridge, MA: Harvard University Press, 2013), p.7.

dismissals and consequent misunderstandings by saying that ‘very little of the historiography is fully reliable’, and urging scholars to engage directly with primary sources instead.³⁸

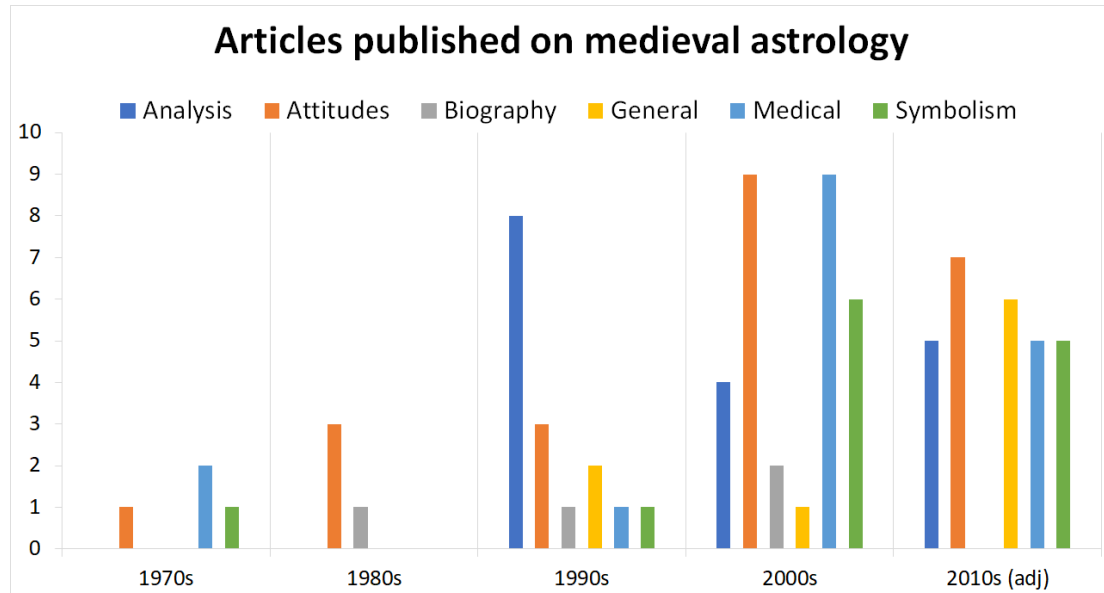


Figure 1.1 – Focus of texts published on medieval astrology.

This brief review is by no means exhaustive, and has not yet covered numerous authors who have discussed the transmission of astrology and attitudes towards astrology – this discussion is the topic of Chapter Two of this thesis. As stated earlier, the articles summarised in Figure 1.1 are simply those shown in a focused search of two databases. Some of the examples cited are chapters in books that cover various aspects of the history of astrology, and whose other chapters are also relevant to the historiography of the current academic landscape; however, a full bibliography is outside the scope of this thesis. Three books have had individual chapters cited above, but deserve mentioning again as contributing to the field as a whole: Patrick Curry’s 1987 set of essays *Astrology, Science and Society*, which places the study of astrology into an historical context; Kennedy’s 1998 work *Astronomy and Astrology in the Medieval Islamic World*, which focuses on astrological techniques; and *From Masha’Allah to Kepler*, edited by Charles Burnett and Dorian Gieseler-Greenbaum, published in 2015, which investigates surveys of astrologers and their craft in Islamic, Jewish and Christian contexts. In addition, Paola

³⁸ H.D. Rutkin, ‘Understanding the History of Astrology (and Magic) Accurately: Methodological Reflections on Terminology and Anachronism’, *Philosophical Readings*, 7.1 (2015), p.54.

Zambelli published a collection of articles, which together give an historic overview of the role of both astrologers and the subject of astrology.³⁹

In addition to an increasing number of articles about astrology, there has been a spate of more academically critical translations of medieval texts. Following his translation of Bonatti's *Book of Astronomy* in 2007, Benjamin Dykes has produced a number of translations of astrological texts from Arabic authors (from medieval Latin translations).⁴⁰ The Israeli academic Shlomo Sela has produced a series of parallel Hebrew and English texts of the twelfth-century Jewish astrologer Abraham ibn Ezra's entire corpus, completed in 2017.⁴¹ Above all, the topic of the twelfth-century renaissance and Arabic influences in Europe has been extensively researched by Charles Burnett, whose output in this field has been prolific. In addition to numerous papers on this topic, Burnett has produced critical translations from the Arabic of Abu Ma'shar's *Abbreviation to the Introduction* in 1994, Abu Ma'shar's *On the Great Conjunctions* in 2000, al-Qabisi's *Introduction to Astrology* in 2004, and Abu Ma'shar's *Great Introduction* in 2019.⁴²

Complementing the publication of astrological material, the relatively new field of cultural astronomy has recently arisen, which examines how societies interact with the sky. It is a field that combines astronomy, astrology, archaeoastronomy and anthropology, and places these disciplines into a relevant historic context. This inter-disciplinary

³⁹ P. Zambelli, *Astrology and Magic from the Medieval Latin and Islamic World to Renaissance Europe* (Farnham: Ashgate, 2012).

⁴⁰ B.N. Dykes, *Works of Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008); B.N. Dykes, *Introductions to Traditional Astrology: Abu Ma'shar and al-Qabisi* (Minneapolis: Cazimi Press, 2010); B.N. Dykes, *Hermann of Carinthia: The Search of the Heart* (Minneapolis: Cazimi Press, 2011); Al-Kindi, *The Forty Chapters of al-Kindi*, B.N. Dykes (ed., trans.) (Minneapolis: Cazimi Press, 2011).

⁴¹ A. ibn Ezra, *The Beginning of Wisdom: An Astrological Treatise*, R. Levy and F. Cantera (trans.) (Baltimore: The Johns Hopkins Press, 1939); A. ibn Ezra, *Book of the Beginning of Wisdom* in S. Sela (ed., trans.), *Introductions to Astrology* (Leiden: Brill, 2017); A. ibn Ezra, *Book of Elections* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011); A. ibn Ezra, *Book of Interrogations* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011); A. ibn Ezra, *Book of the Judgments of the Zodiacal Signs* in S. Sela (ed., trans.), *Introductions to Astrology* (Leiden: Brill, 2017); A. ibn Ezra, *Book of the Luminaries* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011); A. ibn Ezra, *Book of Nativities* in S. Sela (ed., trans.), *On Nativities and Continuous Horoscopy* (Leiden: Brill, 2017); A. ibn Ezra, *Book of Reasons*, S. Sela (ed., trans.) (Leiden: Brill, 2007); A. ibn Ezra, *Book of Revolution* in S. Sela (ed., trans.), *On Nativities and Continuous Horoscopy* (Leiden: Brill, 2017); A. ibn Ezra, *Book of the World*, S. Sela (ed., trans.) (Leiden: Brill, 2010).

⁴² Abu Ma'shar, *The Abbreviation of the Introduction to Astrology*, C. Burnett (trans.) (Leiden: Brill, 1994); Abu Ma'shar, *The Book of Religions and Dynasties (On the Great Conjunctions)*, K. Yamamoto and C. Burnett (trans.) (Leiden: Brill, 2000); Al-Qabisi, *The Introduction to Astrology*, C. Burnett, K. Yamamoto, and M. Yano (trans.) (London: Warburg Institute, 2004); Abu Ma'shar, *The Great Introduction to Astrology* (2 Vols), K. Yamamoto and C. Burnett (trans.) (Leiden: Brill, 2019).

approach has seen the development of courses such as the MA in Cultural Astronomy and Astrology in 2002 (now hosted at the University of Wales as part of the Sophia Centre for the Study of Cosmology in Culture), and the creation of organisations such as the European Society for Astronomy in Culture (SEAC). SEAC's president is Clive Ruggles, emeritus professor of archaeoastronomy at the University of Leicester, and its conferences include astrological papers. The Sophia Centre's conferences include talks by astrologers, anthropologists and astrophysicists. In 2014, a conference at the University of Groningen in the Netherlands entitled 'The Star of Bethlehem' had talks by astronomers, astrophysicists, theologians and historians of astrology investigating the myth of the Star of Bethlehem, and whether it was a physical event such as a comet, or an astrological configuration.⁴³

The last few decades, then, has seen a shift in attitude, with a willingness of traditionally sceptical academics to engage with the history of astrology. Günther Oestmann, H. Darrel Rutkin and Kocku von Stuckrad summed up the current state of play, saying 'We should no longer need excuses or apologies. The history of astrology as an important element of western science and culture has received much scholarly attention in recent decades, some of the highest quality'.⁴⁴

These developments have made it much easier to access the texts written in the Islamic world that were subsequently translated into Latin in the twelfth century. What has not been undertaken so far, though, is a thorough analysis of the astrological techniques in that seminal English astrology textbook, Roger of Hereford's *Judicial Astrology*. In part, this is because the techniques involved in astrology are complicated, and do not fall easily into categories that historians of science normally cover. The complex astronomical calculations that medieval astrologers needed to calculate planetary positions to draw up an astrological chart are a valid topic of research for astronomers, and the nature of the medieval debate about fate and free will in astrology is a topic for philosophers and theologians. The nitty-gritty of examining the astrological techniques used to interpret an astrological chart, though, does not fit into either of these categories. Indeed, it is not just the techniques in *Judicial Astrology* that have escaped the attention of scholars; as

⁴³ P. Barthel and G. van Kooten (eds), *The Star of Bethlehem and the Magi: Perspectives from Experts on the Ancient Near East, the Greco-Roman World, and Modern Astronomy* (Leiden: Brill, 2015).

⁴⁴ G. Oestmann, H. Rutkin and K. von Stuckrad, 'Introduction: Horoscopes and History' in G. Oestmann, H. Rutkin and K. von Stuckrad (eds), *Horoscopes and Public Spheres* (Berlin, New York: Walter de Gruyter: 2005), p.1.

Azzolini pointed out, little is known of the techniques used by astrologers, and of their relationships with their clients, in part because of the negative attitude that academia has had towards the study of astrology.⁴⁵ This lack of contemporary analysis makes the field ripe for research, and indeed work has recently been produced analysing specific astrological texts, such as the 2018 analysis of the thirteenth-century astrologer Henry Bates and his techniques.⁴⁶

If, until recently, astrology had been relegated to a backwater in academia, it is instructive to ask whether astrology was something of a fringe subject in the twelfth century, and whether Roger of Hereford was doing something unusual in studying and teaching astrology. This question is addressed in more detail in Chapter Two of this thesis, but it is worth setting the context for this here. The twelfth century saw numerous translations made of Arabic texts into Latin, and to put the corpus of works translated in the twelfth century into context, Table 1.1 below shows the breakdown of works by author and topic.⁴⁷ All of the authors in this table were twelfth-century translators of various texts relating to natural science, and some of them – those connected with the translation of astrological texts – will be discussed in more detail in Chapter Two. The purpose of introducing them here is to demonstrate, as shown in Figure 1.2, that astrological texts represented the biggest proportion of the translated texts, suggesting that Roger of Hereford writing an astrological manual cannot be seen as particularly unusual.

⁴⁵ Azzolini, *The Duke and the Stars*, p.3.

⁴⁶ C. Steel, S. Vanden Broecke, D. Juste and S. Sela (eds), *The Astrological Autobiography of a Medieval Philosopher: Henry Bate's Nativitas (1280-81)* (Leuven: Leuven University Press, 2018).

⁴⁷ The list of works translated into Latin in the twelfth century has been compiled from M. Steinschneider, *Die Europäischen Übersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts* (Graz: Akademische Druck u. Verlagsanstalt, 1956); F.J. Carmody, *Arabic Astronomical and Astrological Sciences in Latin Translation: A Critical Bibliography* (Berkeley: University of California Press, 1956); Thorndike, *History of Magic*; J. Rodriguez, *Muslim and Christian Contact in the Middle Ages: A Reader* (Toronto: University of Toronto Press, 2015); Al-kindī, *Forty Chapters*; C.H. Haskins, *Studies in the History of Mediaeval Science* (Cambridge, MA: Harvard University Press, 1924); C. Burnett (ed.), *Magic and Divination in the Middle Ages: Texts and Techniques in the Islamic and Christian Worlds* (Aldershot: Variorum, 1996); J.D. North, *Horoscopes and History* (London: Warburg Institute, 1986); C. Singer, 'Daniel of Morley. An English Philosopher of the XIIIth Century', *Isis*, 3.2 (1920), pp.263-269; and J.V. Tolan, *Petrus Alfonsi and his Medieval Readers* (Gainesville: University Press of Florida, 1993).

	Alc	Alb	Asg	Asn	Geo	Mth	Mdc	Phi	Qua	The	Oth	Tot
Adelard of Bath ⁴⁸	1	1	3	1		1		2	2		1	12
Bernard Silvester ⁴⁹			3									3
Daniel of Morley ⁵⁰								1				1
Zothorus Fendulus ⁵¹			1									1
Gerard of Cremona ⁵²	4		2	21	4	22	25	17			2	97
Gundissalinus ⁵³								2				2
Hermann of Carinthia ⁵⁴			3	2				1		1	1	8
Hugh of Santalla ⁵⁵	1		5		1						2	9
John of Seville ⁵⁶		2	14	1		1						18
John of Spain ⁵⁷			9	1		1		10			1	22
Petrus Alfonsi ⁵⁸			2	2						1	1	6
Plato of Tivoli ⁵⁹		2	10		1							13
Robert of Ketton ⁶⁰	1	1	1	1		1				1		7
Rudolph of Bruges ⁶¹		1										1
William of Conches ⁶²									2			2
Grand Total	7	7	53	29	6	26	25	33	4	3	8	201

Key: Alc=alchemy, Alb=astrolabe, Asg=astrology, Asn=astronomy, Geo=geomancy, Mth=mathematics, Mdc=medicine, Phi=philosophy, Qua=quadrivium, The=theology, Oth=other.

Table 1.1 – Breakdown of twelfth-century translated texts by author and category.

⁴⁸ Adelard of Bath (c.1080-c.1152). See discussion later in this thesis on Twelfth-century astrologers.

⁴⁹ Bernard Silvester (fl. 1140s), translated the astrological geomantic text *Experimentarius* from Arabic. See discussion in Thorndike, *History of Magic*, pp.99-123.

⁵⁰ Daniel of Morley (fl. 1170s), author of *De philosophia*. See discussion in Thorndike, *History of Magic*, pp.171-181.

⁵¹ Georgius Zothorus Zeparus Fendulus (late twelfth century) provided a summary of Abu Ma'shar's *Great Introduction*. See brief entry in Carmody, *Arabic Astronomical and Astrological Sciences in Latin Translation*, p.90.

⁵² Gerard of Cremona (c.1114-1187), prolific translator of Arabic works. See discussion later in this thesis.

⁵³ Gundissalinus, or Dominicus Gundisalvo (1115-1190), philosopher and archdeacon in Toledo. See discussion in Thorndike, *History of Magic*, pp.73-82.

⁵⁴ Hermann of Carinthia (1100-1160). See extensive discussion throughout this thesis of his translation of Abu Ma'shar's *Great Introduction*.

⁵⁵ Hugh (or Hugo) of Santalla (fl. 1141-1145). See discussion later in this thesis, in Thorndike, *History of Magic*, pp.85-87, and in Haskins, *Mediaeval Science*, pp.67-81.

⁵⁶ John of Seville (1100-1180). See discussion later in this thesis.

⁵⁷ John of Spain may have been the same person as John of Seville. Flourished from 1127-1153 and translator of numerous texts. See discussion later in this thesis.

⁵⁸ Petrus Alfonsi (1062-1140). See discussion later in this thesis.

⁵⁹ Plato of Tivoli (1110-1145), translator of astronomical and astrological works. See discussion in Thorndike, *History of Magic*, pp.82-83.

⁶⁰ Robert of Ketton (1110-1160) was a translator from Rutland who collaborated closely with Hermann of Carinthia. He may or may not have been the same person as Robert of Chester – Thorndike certainly thought so, and the figures in this table include works attributed to Robert of Chester. See discussion later in this thesis.

⁶¹ Rudolph of Bruges was a student of Hermann of Carinthia working with a group of scholars in Toledo according to Haskins, and relatively unknown apart from one work on the astrolabe. See Haskins, *Mediaeval Science*, p.56.

⁶² William of Conches (c.1090-c.1154), part of the School of Chartres. See discussion later in this thesis.

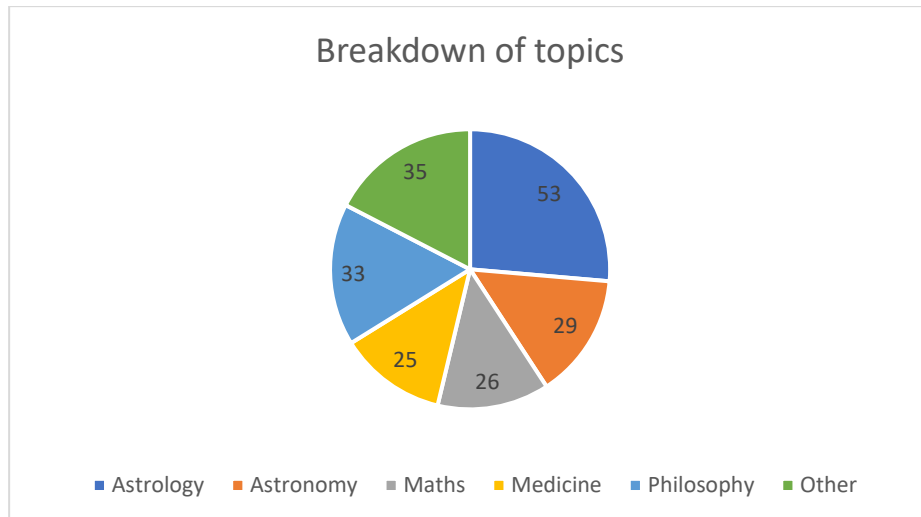


Figure 1.2 – Breakdown of texts by category.

The last study to be written about Roger of Hereford's *Judicial Astrology* was published over twenty-five years ago.⁶³ This did not focus specifically on the astrological techniques in the text, or on whether it was used as a teaching aid. Roger certainly compiled information from a variety of sources into a textbook for the first time, a century before Bonatti. Despite this, no comprehensive technical analysis of this textbook and its techniques has been undertaken before. The last quarter of a century has seen changes that make this research more relevant, and easier to achieve. First, as discussed above, the broader acceptance of astrology in academia means there are a wider range of sources on which to draw. Secondly, the advent of digital photography together with the online availability of some manuscripts means that the painstaking process of transcribing manuscripts is now easier, and makes it practical to access a wider range of manuscripts. Thirdly, the establishment of cultural astronomy and astrology as an academic field also opens up the insider/outsider debate, common in anthropology.⁶⁴ Previous analyses of Roger's works have been by academics working in the history of science, and so are outsiders as regards astrological techniques and teaching astrological subject matter. Examining a text from an astrological perspective, however, allows an alternative

⁶³ N. Whyte, 'Roger of Hereford's *Liber de astronomice iudicandi*: A Twelfth-Century Astrologer's Manual' (MPhil dissertation, Clare College, University of Cambridge, 1991), <http://www.nicholaswhyte.info/MPhil.rtf> [10 May 2017].

⁶⁴ See for example T.N. Headland, K.L. Pike and M. Harris, *Emics and Etics: The Insider/Outsider Debate* (Newbury Park, CA: Sage, 1990).

assessment to be made of Roger's text and in particular how it might have been used in a classroom setting.

Roger of Hereford

Roger of Hereford is a shadowy character about whom few details are known with any certainty. However, contemporary scholars do have access to manuscripts that he wrote, and so although it is difficult to find out much about Roger of Hereford the person, his ideas can be analysed and discussed. For someone who appears to have written the first influential textbook on astrology in the Christian West and been responsible for disseminating new Arabic ideas, it is remarkable that his name is not well-known among historians of astrology, and that he warrants merely a few paragraphs in biographies of medieval astrologers.

Haskins gave a brief biography of Roger of Hereford, in which he described Roger as 'a teacher and writer on astronomical and astrological subjects, who was still a young man in 1176'.⁶⁵ The fact that he was a teacher is surmised from a manuscript he wrote on *computus*, in which he stated that he had 'sweated for many years' as a teacher.⁶⁶ The same manuscript is dated within the text as being written in 1176, but the statement that Roger had taught for many years by then seems at odds with Haskins' claim that he was still a young man, which Haskins deduced from a phrase in the preface where Roger stated it may be presumptuous for one so young to rewrite such a topic.⁶⁷ The manuscript also starts with a preface that begins 'Prefatio magistri Rogeri Infantis in compotum', with a much later gloss (attributed to Leland) saying 'alias Yonge'.⁶⁸ However, it is hard to tell whether Roger really was a young man, or whether he was being somewhat tongue in

⁶⁵ Haskins, *Mediaeval Science*, p.126.

⁶⁶ Roger of Hereford, *Computus* Oxford, Bodleian Library, Digby 40, f.21r: 'S[ed] + otu[m] q[uod] m[ihi] [con]ting[it] p[ro] regimine scolar[um] q[ui]b[us] ia[m] pl[ur]ib[us] annis desudaui'.

⁶⁷ Dating: Digby 40, f.48r: 't[em]p[us] h[uius] [com]po[sitio]nis h[uius] t[ra]ctat[us] a[n]no s. d[o]m[in]i .m.c.lxx.vi° cicli dece[m]novenal[is] .xviii. q[ue] s in vulgari [com]poto d[icitu]r accensa .v. f[e]r[i]a a[n]ni illi[us] nona die septe[m]b[ris]'; Roger as a young man: Digby 40, f.21r: 's[ed] + p[re]su[m]ptuosu[m] videat[ur] iuvene[m] tot senu[m] sc[ri]pta ret[ra]ctare'.

⁶⁸ Digby 40, f.21r; attribution to Leland in T. Wright, *Biographia Britannica Literaria: Anglo-Norman Period* (London: John W Parker, 1846), p.89: 'Roger, who for some reason or other (perhaps for his precocity of learning) obtained the appellation of *Infans*, and to whom Leland without any reason has given the name of Yonge'.

cheek in his comment, and making a pun on his name, since Haskins also identified him with a Master Roger who attested a York charter between 1154 and 1163.⁶⁹

Thorndike also provided a brief biography of Roger in his *History of Magic*. He, too, noticed the apparent contradiction between Roger's own description of himself as 'iuuenis' while claiming he had sweated for many years teaching, 'so that we need not regard him as especially youthful at that time.'⁷⁰ One cannot, therefore, reasonably make any firm judgement about Roger's age in 1176 based on his appellation of 'Infans' or 'Yonge', or from a passing comment in his preface. The fact that he wrote on astrology is attested by a number of astrological manuscripts attributed to a 'Roger of Hereford' from roughly the same period, and it is reasonably certain that 'Roger of Hereford' and 'Roger Infans' are the same person since the computus manuscript has an acrostic, shown in Figure 1.3 below, with the dedication 'Gilleberto Rogerus salutes H D' in alternating red and green capital letters, almost certainly a reference to Gilbert Foliot, who had become bishop of Hereford in 1148.⁷¹ Thorndike also stated that it is not known 'whether any of his works were translations from the Arabic or whether he was ever in Spain, but some of them sound as if they might be at least adaptations from the Arabic.'⁷²

Wright disagreed with the attribution of Rogerus Infans to Roger of Hereford, claiming that an earlier author 'has fallen into an error with regard to the date at which he lived, and appears to have confounded him with Roger of Hereford. He tells us himself that his treatise on the Computus was published in 1124', but this is clearly incorrect; Haskins pointed out that Roger Yonge is Roger of Hereford, and the idea he wrote the manuscript in 1124 is flawed: '...the Dictionary of National Biography gave the date 1124, which is found on f.50 and indicated in a marginal gloss as the date of the work. This year, however, is used only in the course of a calculation of discrepancies, and the date 1176

⁶⁹ W. Farrer, *Early Yorkshire Charters* (Edinburgh: Ballantyne, Hanson and Co, 1915), Charter 158 pp.135-136: 'Grant by Walter de Hugate and Alice his wife to St. Mary of Watton of 1 carucate... Hiis testibus... magistro Rogero de Hereford...'

⁷⁰ Thorndike, *History of Magic*, p.182.

⁷¹ The other manuscripts are detailed in Chapter Three; the acrostic is in Digby 40 f.21v-f.22r. Gilbert Foliot's appointment in 1148 apparently ushered in 'easier relations between bishop and chapter': E. Crosby, *Bishop and Chapter in Twelfth-century England* (Cambridge: Cambridge University Press, 1994), p.288.

⁷² Thorndike, *History of Magic*, p.181.

appears clearly in two other passages'.⁷³ Indeed, it is not merely the year 1176 that appears in one passage, but an actual date – 9 September 1176.⁷⁴

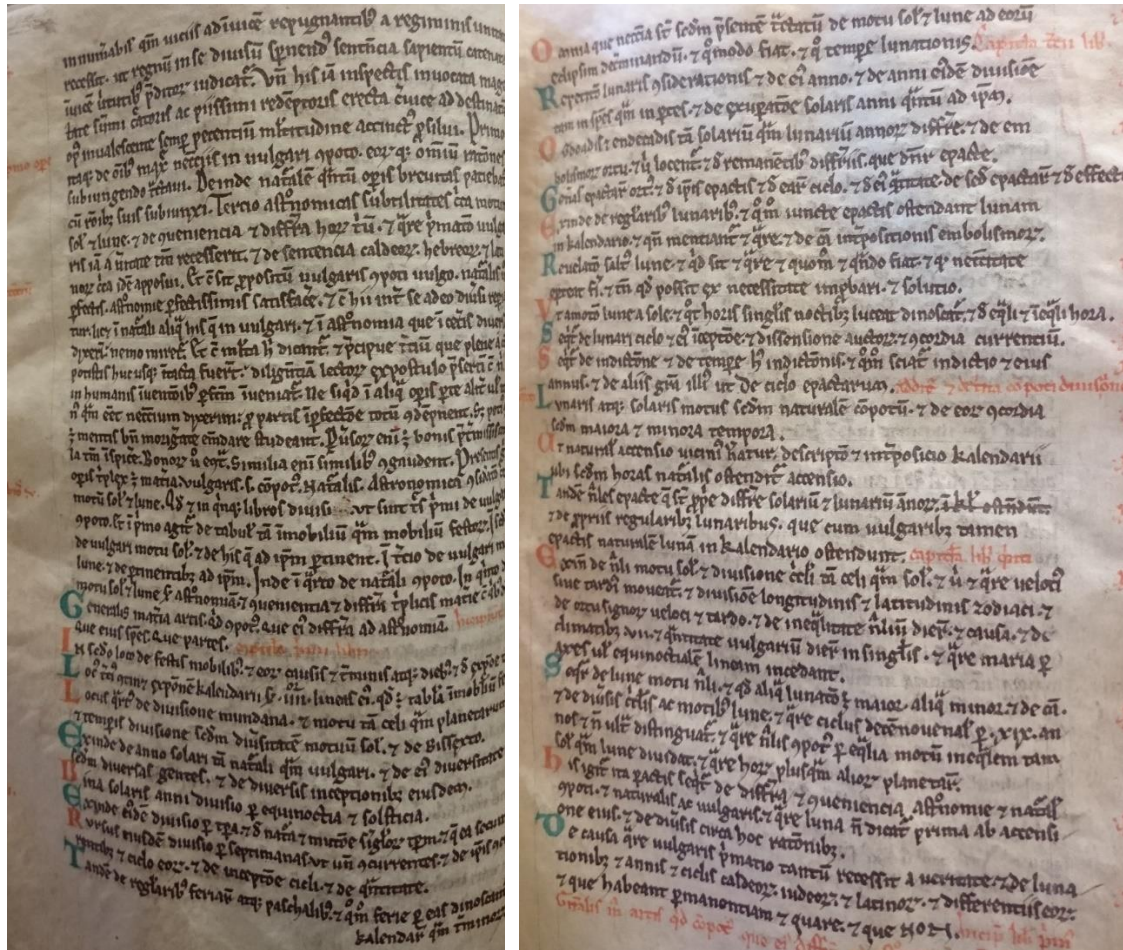


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 1.3 – Acrostic showing the phrase ‘Gilleberto Rogerus Salutes H D’ in the manuscript on computus, Oxford, Bodleian Library, Digby 40, f.21v-f.22r.

Hunt maintained that Roger was a canon of Hereford, while Thomson seemed divided on the issue, saying that Roger was ‘a canon until at least 1195’ in his *Catalogue of Manuscripts of Hereford*, while describing him as ‘a local man named Roger “Infans” or “of Hereford”, not a canon, [who] wrote a number of astronomical works...’ in his *Books*

⁷³ Wright, *Biographia Britannica*, p.90; Haskins, ‘Reception of Arabic Science’, p.125; ‘ab editione huius compoti’ appears as a margin note on Digby 40, f.50r.

⁷⁴ Digby 40, f.48r.

and Learning.⁷⁵ Hereford Cathedral itself does not have a firm answer. The Chancellor stated ‘we don’t know whether Roger was ever one of the canons; he doesn’t appear in our lists, but then they are incomplete for that era. He may well have been a member of the bishop’s household’.⁷⁶ This seems a reasonable assumption, since shortly before Robert Foliot was elected Bishop of Hereford, Roger of Hereford witnessed a letter from the Bishop of London to Foliot.⁷⁷ Roger was appointed an itinerant justice in 1185, together with Walter Map, who was, like Roger, ‘a protégé of Gilbert Foliot’s’, although Haskins pointed out that this is speculative, saying ‘How much longer his activity continued we cannot say, unless he is the Roger, clerk of Hereford, who acted as itinerant justice with Walter Map in 1185’.⁷⁸ The putative entry for Roger simply calls him a clerk: ‘In the course of the year the following Justices in Eyre, viz: ... Also Gilbert Pipard, Wm. fitz Stephen, Michael Belet, Roger (Clerk of Hereford), and Walter Map, or some of them, visited Gloucestershire, Worcestershire, Shropshire, Herefordshire, and Staffordshire’.⁷⁹ Burnett, however, considered this association unconvincing.⁸⁰ This evidence all suggests that Roger was not simply a minor teacher in a cathedral school, but clearly somebody of some influence. Whyte maintained that Roger cast a horoscope for the king’s wife, and hence ‘Roger’s connections with the royal court must have been good if he was in a position to cast a horoscope for Henry II’s wife, Eleanor of Aquitaine’, although this thesis will argue that Whyte’s attribution of Roger’s horoscope to Eleanor is unlikely to be correct.⁸¹

Roger’s association with Hereford may, then, have been a long one. Josiah Russell gave an example of a Hereford charter of 1195 with ‘a Master Roger Infans as a witness’, pointing out that this ‘prolongs his career nearly a score of years beyond the date of his

⁷⁵ R.W. Hunt, ‘English Learning in the Late Twelfth Century’, *Transactions of the Royal Historical Society*, 19 (1936), p.23; R.A.B. Mynors and R.M. Thomson, *Catalogue of the Manuscripts of Hereford Cathedral Library* (Hereford: D.S. Brewer, 1993), p.xvii; R.M. Thomson, *Books and Learning in Twelfth-century England: The Ending of ‘alter orbis’* (Hitchin: Red Gull Press, 2006), p.44.

⁷⁶ From a personal e-mail correspondence with the Chancellor of Hereford Cathedral, the Revd Canon Chris Pullin, 4 August 2016.

⁷⁷ Z.N. Brooke (ed.), *The Letters and Charters of Gilbert Foliot* (Cambridge: Cambridge University Press, 1967), Charter no 375, pp.421-422.

⁷⁸ Whyte, *Roger of Hereford*, pp.3-4; Haskins, *Mediaeval Science*, p.126.

⁷⁹ R.W. Eyton, *Court, Household and Itinerary of King Henry II* (London: Taylor, 1878), p.265.

⁸⁰ C. Burnett, ‘Mathematics and Astronomy in Hereford and its Region in the Twelfth Century’ in D. Whitehead (ed.), *Hereford: Medieval Art, Architecture, and Archaeology* (Leeds: British Archaeological Association Conference Transactions, 1995), p.55.

⁸¹ Whyte, *Roger of Hereford*, p.4.

treatise of 1178'.⁸² Russell further suggested that Roger may have been the 'Rogerus compotista' referred to in a manuscript that contains an acrostic reading 'Rogerus compotista et reginaldus de Walsingham monachi Sancti Edmundi reis', comparing it to the acrostic found in Roger's *Computus* (discussed and illustrated above), and claimed that 'Roger of Hereford probably ended his days as a monk of Bury St. Edmund'.⁸³ According to Nicholas Whyte's MPhil dissertation, this claim was disputed by Hunt, and is 'countered by evidence that the latter's work dates from c. 1360'.⁸⁴

In the 1990s, several other papers were written that relate to Roger of Hereford. Burnett presented an overview of science in Hereford in the twelfth century, in a short article that references Roger and stating that 'we know very little about his biography'.⁸⁵ In 2015, Alfred Lohr published three texts on computus, including a text by Roger of Hereford, and provided a biography of Roger.⁸⁶ This biography is very brief, and gives a summary of the secondary sources mentioned above, although it does add that one text attributed to Roger was, in fact, not his.⁸⁷

These very tentative biographies, which maintain that very little is known of Roger of Hereford, contrast strongly with Roger French's assertion that Roger of Hereford held lands in Sufton, in the parish of Mordiford, and that his descendants still live at Sufton Court, eight kilometres south-east of Hereford, a claim that he stated was from a personal correspondence with Major James Hereford. However, this claim appears to be based on family hearsay rather than solid evidence.⁸⁸

⁸² J.C. Russell, 'Hereford and Arabic Science in England about 1175-1200', *Isis*, 18.1 (1932), p.16.

⁸³ Russell, 'Hereford and Arabic Science', p.16.

⁸⁴ Whyte, *Roger of Hereford*, p.5; R.W. Hunt and M. Gibson, *The Schools and the Cloister* (Oxford: Clarendon Press, 1984), p.120: 'Rogerus Compotista, a monk at Bury, who is said to have flourished about 1360.'

⁸⁵ Burnett, 'Mathematics and Astronomy in Hereford', pp.50-59.

⁸⁶ A. Lohr (ed.), *Opera de computo saeculi duodecimi: Reinheri Paderbornensis computus emendatus, Magistri Cunestabuli computus, Rogeri Herefordensis computus* in *Corpus Christianorum Continuatio Mediaevalis* 272 (Turnhout, Belgium: Brepols, 2015), pp.xix-xxvi.

⁸⁷ This is discussed in the section on Roger's works.

⁸⁸ R. French, 'Roger of Hereford: Astrology and the School of Hereford' in D. Whitehead and J. Eisel (eds), *A Herefordshire Miscellany* (Hereford: Lapridge, 2000), p.248 and p.254 fn.1. French's claim appears to be derived from an entry in the 1838 edition of Burke's *Landed Gentry*, which describes 'Roger Hereford, "a famous philosopher"', lists his works, and claims that he flourished in around 1170 and described Roger as having 'left at his decease a son', and goes on to provide a complete genealogy right up to 'the present Richard Hereford, esq. of Sufton' (Entry for 'Hereford, of Sufton Court' in J. Burke, *History of the Landed Gentry*, Volume 3 (London: Henry Colburn, 1838), pp.343-346). That Richard Hereford was born in 1803, and the genealogy website ancestry.co.uk was able to fill in details past that date, up to Robert James Hereford, who died in 2001 ('Robert James Hereford', <https://www.ancestry.co.uk/family->

There are two papers, also written in the 1990s, that focus specifically on the text that this thesis addresses, Roger's *Judicial Astrology*. Nicholas Whyte's dissertation gives an excellent overview of the entire manuscript and its structure, and mentions several astrological techniques that Whyte suggested were unique to Roger and not part of the Arabic corpus. Whyte certainly provided the most comprehensive detail of all the papers on Roger, as he examined the entire manuscript of *Judicial Astrology*, and even provided a transcription of a few passages. His focus, however, was not to analyse specific astrological techniques, but to analyse a sample horoscope in the manuscript, which Whyte suggested was the birth chart of Eleanor of Aquitaine. Roger French, who was Whyte's supervisor, had also examined Roger's *Judicial Astrology* and drew on Whyte's paper in his own analysis of the text, but did not go into detail about specific techniques. French's focus was on why astrology would be seen as useful in the twelfth century, and its relevance to medicine.⁸⁹

It can be concluded, then, that Roger of Hereford was probably a teacher in the cathedral school at Hereford, part of the bishop's household, had a long association with the city, and was skilled in the arts of computus and astrology. There is little more that can be determined with certainty about Roger the person – as Haskins expressed it, 'Roger has been a source of confusion to bibliographers, who have made of him two or even three distinct persons'.⁹⁰

What can be examined with more certainty are the works that Roger wrote. Roger certainly authored texts on astronomy, astrology and computus. Haskins listed six works that he attributed to Roger, although the fifth in his list simply says 'One or more astrological works', which seem to have caused Haskins some confusion, as he combines *Judicial Astrology* with a separate text, *On the Four Divisions of Astronomy*, which will be discussed shortly. He also includes a work on metallurgy that may be a misattribution.⁹¹ Haskins' attribution of *Tractatus de ortu et occasione signorum* to Roger

tree/person/tree/10965519/person/6071538543 [12 April 2019]). A 2012 interview with the actor Henry Hereford, born in 1976, claims that 'his ancestors have resided at Sufton Court in Mordiford near Hereford since 1120' ('Actor Henry Hereford' in *Herefordshire and Wye Valley Life*, 14 September 2012, updated 20 February 2013, <https://www.herefordshirelife.co.uk/people/actor-henry-hereford-1-1572019> [12 April 2019]). While an interesting piece of family oral history, the evidence for relating this family to Roger of Hereford is highly speculative.

⁸⁹ French, 'Foretelling the Future'.

⁹⁰ Haskins, 'Reception of Arabic Science', p.124 fn.33.

⁹¹ Haskins, *Mediaeval Science*, p.124.

of Hereford has also been demonstrated to be wrong, since it uses a latitude of 51° to describe both ‘Churingia’ and ‘in... Herfordensi’, whereas Hereford has a latitude of 52°. Fritz Pedersen demonstrated that in fact the text relates to Thüringen and Erfurt, which are both at the latitude of 51° and that the author was, therefore, not Roger of Hereford.⁹² Another text, *Theorica planetarum*, is listed by Haskins but the attribution is questionable – Haskins lists this as possibly being Roger Bacon in the thirteenth century.⁹³ Thus there are four works that can be attributed to Roger with some degree of certainty.

Computus

Roger of Hereford wrote a treatise on computus dated 1176, currently in the Bodleian Library, which is analysed in detail in an article by Jennifer Moreton.⁹⁴ Computus was a topic that had exercised the minds of Christian scholars for centuries before Roger, and involved being able to calculate the date of Easter, which itself requires the determination of the date of a Full Moon. In 725, Bede wrote *Reckoning of Time*, discussed in more detail in Chapter Two of this thesis, which seemed to have settled the arguments about the correct calculation of the date of Easter, and established an accepted cycle. However, the method did have shortcomings as a result of trying to shoehorn a calendar, which necessitates using whole numbers of days, into astronomical cycles that involve fractions of days. By the twelfth century, it was assumed that the calendar had ‘the authority of the Council of Nicaea’, rendering it sacrosanct since, in the words of Roger, ‘We dare not change anything relating to the lunations of the ecclesiastical compotus’.⁹⁵ Bede’s method involved adding an extra 30-day lunar month every two or three years to make up for the 11-day annual slippage of the lunar calendar against the solar one. This addition would sometimes throw the reckoning out by a day, something that Bede was aware of.⁹⁶ The problem had been partially solved by the tenth century by the use of the **golden number**,

⁹² *Tractatus de ortu et occasione signorum*, Oxford, Bodleian Library, Bodl. 300, ff.84-90; F.S. Pedersen, ‘The Treatise on the Rising and Setting of Signs, Ascribed to Roger of Hereford’, *Cahiers de l’Institut du Moyen-Âge Grec et Latin*, 75 (2004), p.5.

⁹³ Roger of Hereford, *Theorica Planetarum*, Oxford, Bodleian Library, Bodl. 300, ff.1-19v; Oxford, Bodleian Library, Digby 168, ff.69v-83v; Bodleian, Savile 21, f.42.

⁹⁴ Digby 40, ff.25-51, ‘Prefatio magistri Rogeri Infantis in co[m]potum’; J. Moreton, ‘Before Grosseteste: Roger of Hereford and Calendar Reform in Eleventh and Twelfth-Century England’, *Isis*, 86.4 (1995), pp.562-586.

⁹⁵ Moreton, ‘Before Grosseteste’, p.570.

⁹⁶ Moreton, ‘Before Grosseteste’, p.570.

which marks on a calendar the dates that a New Moon occurs in each year of the 19-year cycle. However, the golden number did not completely solve the errors in the calendar.

Roger provided an example of where the standard tables break down: a New Moon in September 1176. The golden number tables showed that there was a New Moon on 9 September. Bede's tables also gave the same result, namely a one-day old Moon (first visibility) on 9 September 1176. Visually, however, this was not the case – the New Moon appeared on 6 September. Defining a New Moon always has a margin of error, since the definition of a New Moon observationally has always been the first sighting of the crescent Moon, which is not the same as the astronomical New Moon. However, there is an observable phenomenon that can only happen when there is an astronomical New Moon: a solar eclipse. Roger used a computus text that he attributed to Gerland, another Lotharingian computist who may have spent some of his time in England as his computus manuscript was in Worcester (and, according to Moreton, 'probably Hereford' too), who observed an eclipse in 1093.⁹⁷ Roger developed a 'natural computus' based on actual astronomical events, designing a new observational set of tables rather than the ecclesiastical tables developed by traditional computists. He used these to date the 1093 eclipse, to 23 September 1093 at about 09:00.⁹⁸ While the traditional computus can be as much as two days out from the astronomical reality, Roger's natural computus used fractions, which he rounded up to whole hours, providing a greater level of accuracy than the whole-day traditional 'vulgar' computus. It also more readily incorporated leap years, by using a 76-year cycle rather than a 19-year one.

Roger's treatise seems to have been hotly debated at the time – Roger refers to students 'locked in battle' over the differing models, which suggests that he not only wrote about computus but taught it too.⁹⁹ Moreton claims that his natural computus does not appear to have been widely known, despite Grosseteste making use of his tables subsequently: 'even if Grosseteste knew the calendar tables, he did not know Roger's explanation of them, despite the fact that he had spent some years in Hereford at the beginning of his career'.¹⁰⁰

⁹⁷ Burnett, 'Mathematics and Astronomy in Hereford', p.53; Moreton, 'Before Grosseteste', p.565.

⁹⁸ Moreton, 'Before Grosseteste', p.577. Moreton says that 'astronomical data appear to support this time.' Contemporary software (Solar Fire v9) shows maximum totality to have occurred at 10:47 Local Mean Time for Hereford.

⁹⁹ Moreton, 'Before Grosseteste', p.573.

¹⁰⁰ Moreton, 'Before Grosseteste', p.584.

Astronomical Tables for Hereford

Roger produced these tables in 1178, which he wrote following an eclipse, giving astronomical tables for the latitude of Hereford.¹⁰¹ The manuscript has a margin note showing observations of the altitude of the Sun when it enters each sign of the zodiac, and follows on from tables for Toledo.¹⁰² The manuscript only mentions Roger on one folio, though Haskins stated he was probably the author of the preceding folios, which give tables for Toledo in 1176.¹⁰³ In the preface, Roger stated that his tables for Hereford were based on earlier ones for Marseilles.¹⁰⁴ These earlier Marseille tables, composed by Raymond of Marseilles in 1141, were based on the tables of al-Khwarizmi.¹⁰⁵

On the Four Divisions of Astronomy

This manuscript, which Haskins calls *Liber de divisione astronomie atque de eius quatuor partibus*, is effectively a miscellany of astrology.¹⁰⁶ However, the structure differs very considerably from *Judicial Astrology*, which is discussed and analysed in Chapter Four and Chapter Five of this thesis. It begins with a very Islamic opening, shown in Figure 1.4: ‘In nomine dei pii et misericordis’; Chris Pullin, the current Chancellor of Hereford Cathedral, wrote that this suggested that ‘Roger – like many of his contemporaries – had acquired a facility for Arabic.’¹⁰⁷ Thorndike, too, said of it ‘The invocation of God the pious and compassionate in the *Titulus* and the list of countries and peoples in the first chapter have a Mohammedan and oriental flavor and suggest that the work is a translation.’¹⁰⁸

¹⁰¹ Haskins, *Studies in the History of Mediaeval Science*, p.125.

¹⁰² London, British Library, Arundel 377, f.86v; Whyte, *Roger of Hereford*, p.45.

¹⁰³ Haskins, *Mediaeval Science*, p.125.

¹⁰⁴ Arundel 377, f.86v.

¹⁰⁵ R. Mercier, ‘Astronomical Tables in the Twelfth Century’ in C. Burnett (ed.), *Adelard of Bath, an English Scientist and Arabist of the Early Twelfth Century* (London: Warburg Institute, 1987), pp.107-108.

¹⁰⁶ Roger of Hereford, ‘*Liber de divisione astronomie atque de eius quatuor partibus*’, Paris, Bibliothèque nationale de France, Lat. 10271, ff.179r-201v.

¹⁰⁷ C. Pullin, ‘Cathedrals as Centres of Learning’ in A. Johnson and R. Shoesmith (eds), *The Story of Hereford* (Woonton, Herefordshire: Logaston Press, 2016), p.83.

¹⁰⁸ Thorndike, *History of Magic*, p.184.

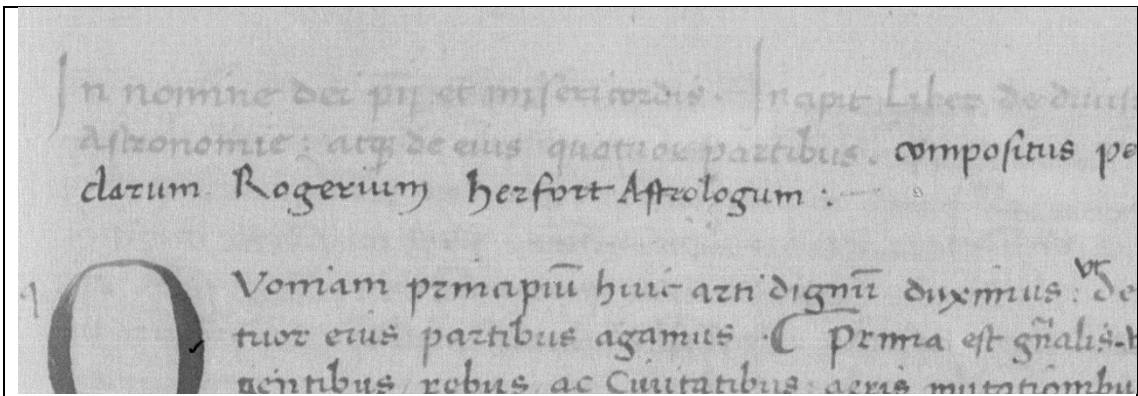


Image courtesy of Bibliothèque Nationale de France.

‘In nomine dei pii et misericordis. Incipit Liber de diuisione astronomie: atque de eius quatuor partibus. Compositus per clarum Rogerium Herfort Astrologum’.
Paris, Bibliothèque nationale de France, Lat. 10271, f.179r.

Figure 1.4 – Incipit with an “Islamic” dedication.

After the opening, the manuscript lists some signs and planets with associated countries (but misses some out), then lists a method for determining the strength of a planet, and is followed by very brief discussions on the natures of the planets, knowledge of rains and winds, lunar mansions, annual revolutions, and some predictive methods.¹⁰⁹ This is followed by sections on interrogations and elections, with specific examples, such as choosing an auspicious time to marry.¹¹⁰ In this text (and, as will be shown, unlike *Judicial Astrology*), Roger credited his sources (for example, Dorotheus, Ptolemy, and Masha’Allah). The descriptions of the twelve houses are very detailed, each house warranting a chapter in its own right, and listing the meanings of planetary placements within a house.

Judicial Astrology

This text is the main focus of this thesis. Haskins listed it by a commonly used title, *Liber de quatuor partibus iudiciorum astronomie*, but added that ‘A treatise beginning, ‘Quoniam regulas astronomie,’ seems to be part of the same work’.¹¹¹ Chapter Three will discuss in more detail the confusion that Roger’s text has caused compilers of catalogues

¹⁰⁹ BNF Lat. 10271, ff.179r-191r.

¹¹⁰ BNF Lat. 10271, ff.193r-199v.

¹¹¹ Haskins, *Mediaeval Science*, p.126.

of codices. Whyte, who addressed both texts in his MPhil dissertation, called it *Liber de [arte] astronomice iudicandi* in the title of his MPhil dissertation.¹¹²

The work is in two parts, and this thesis distinguishes between them by calling the first part *Judicial Astrology: Prologue and Reference*, and the second part *Judicial Astrology: Techniques*. When the discussion relates to both parts of the work as a whole, it is simply designated *Judicial Astrology*.

Thesis purpose and structure

This thesis will address three key research questions. First, what sources did Roger draw on to compile this book? Secondly, did Roger innovate by inventing new techniques, as Whyte claimed, or was he a compiler of existing techniques? Finally, was *Judicial Astrology* a textbook used for teaching students?

This chapter has provided an overview of the academic landscape regarding the history of astrology, and how changing attitudes have enabled Roger of Hereford's *Judicial Astrology* to be analysed in detail for the first time from an astrological perspective. Chapter Two will provide an overview of the translation, transmission and reception of astrological texts across Western Europe but with a focus on those which may have been available in twelfth-century England. Chapter Two will also examine attitudes towards astrology up to the twelfth century, particularly those attitudes expressed by the Church, and examine the role that Hereford played as a centre of learning. Chapter Three gives a description of all the extant manuscripts of *Judicial Astrology*, and thus provides the possibility of establishing chronology for the production of these manuscripts for the first time. Chapter Four analyses the prologue and reference section of *Judicial Astrology* and examines its probable sources, and Chapter Five offers a technical analysis of the astrological techniques described in the techniques section of *Judicial Astrology*, again identifying probable sources for the techniques. Chapter Six is the conclusion and addresses the question of how suitable *Judicial Astrology* would have been as a textbook for teaching judicial astrology to students. Finally, a short Postscript discusses whether its structure and approach could still work in a contemporary setting for teaching medieval astrology.

¹¹² Whyte's original title omitted the word 'arte', which he says he should have included to make the Latin grammatically correct: personal e-mail correspondence, 28 July 2016.

Methodology

In order to undertake the analysis of Roger of Hereford's *Judicial Astrology*, every extant manuscript of *Judicial Astrology* has been examined. This has never been done before and has been made possible because the advent of digital photography, together with the online availability of some manuscripts, has made such an undertaking feasible. The examination of all manuscripts not only highlights misreadings in earlier analyses, but also allows a tentative *stemma codicum* for the earlier manuscripts to be drawn up and a potentially canonical version to be identified.

The astrological techniques in *Judicial Astrology* have been analysed technically, from an astrologer's perspective. Since most of the techniques are described in Roger's text but examples are rarely given, this thesis provides worked examples to illustrate the techniques described through generated astrological charts.

Finally, a novel approach has been taken to determine the utility of *Judicial Astrology* as a teaching manual by canvassing current teachers of medieval astrology techniques within the astrological community to investigate the practical utility of the text as a manual for teaching horary astrology, the results of which are presented in the Postscript.

Chapter Two: Transmission of astrology and its arrival in England

As an essential precursor to the detailed examination of Roger of Hereford's *Judicial Astrology*, this chapter has four purposes: to summarise the history of translation and transmission of astrological texts up to the twelfth century; to identify the key players translating these texts into Latin and working with astrology in the twelfth century; to examine the role that Hereford played in this transmission; and to lay out the complex relationship that the Christian Church had with astrology.

This chapter must necessarily recognise the international nature of translation and transmission, casting its view broadly across Europe and beyond, but its focus is ultimately on England and on the period immediately prior to, or contemporary with, Roger.

Availability of astrological texts in Christian Europe

The decline of the Roman Empire in the West, and the associated lack of familiarity with the Greek language, initially meant that many texts from the classical world had become lost to scholars, leaving only a handful of texts on natural science. One of these texts was Pliny's *Natural History*, which discusses the planets' motion through the zodiac, the amount by which each planet deviates from the ecliptic, and explains the maximum elongation of Mercury and Venus from the Sun.¹ A letter from Alcuin of York to Charlemagne at the end of the eighth century shows that Pliny's work was being used as an authority, and there are existing fragmentary eighth-century copies of this work, and complete copies from the ninth century.² Barbara Obrist also discussed zodiac images in the Carolingian period and later, demonstrating a knowledge of zodiac signs and imagery, and dates when the Sun and Moon entered each sign.³ Eastwood's survey of astronomy in Christian Latin Europe shows that from the ninth century onwards, diagrams of planetary latitudes from Pliny can be found in manuscripts, but that these diagrams show 'no independent longitudinal element'.⁴ One such diagram is given in Figure 2.1, from a tenth-century manuscript where it can be seen that the longitude of Saturn in the zodiac

¹ Pliny, *Natural History, Volume I: Books 1-2*. H. Rackham (trans.), Loeb Classical Library 330 (Cambridge, MA: Harvard University Press, 1938), Book 2.XIII.64, 2.XIV.72.

² B.S. Eastwood, *Ordering the Heavens* (Leiden: Brill, 2007), pp.96-97.

³ B. Obrist, 'La Représentation Carolingienne du Zodiaque', *Cahiers de Civilisation Médiévale* 44 (2001), pp.8-9.

⁴ B.S. Eastwood, *The Revival of Planetary Astronomy in Carolingian and Post-Carolingian Europe* (Aldershot: Ashgate, 2002), p.243.

appears to vary at about the same rate of that of the Sun, despite in reality being nearly 30 times slower.⁵ Rabanus Maurus, writing in the ninth century, had some knowledge of astrological concepts but apparently not of the calculations needed for horoscopic astrology; the ‘absence of mathematical astrology is consistent with the limitations of ninth-century astronomy.’⁶

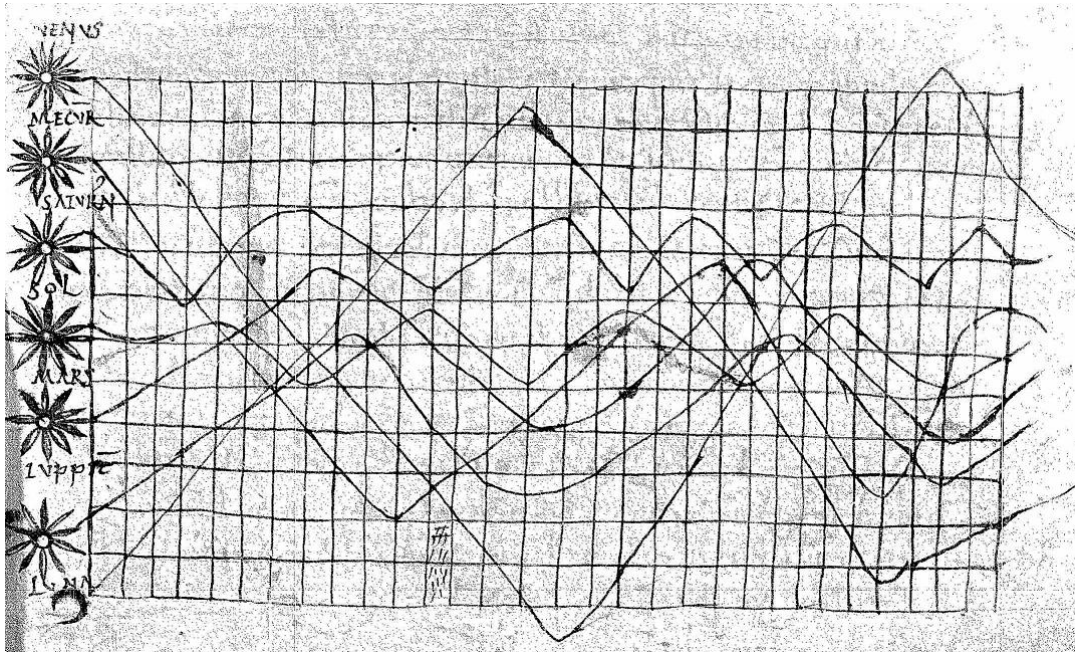


Image courtesy of Bayerische Staatsbibliothek München (for educational use).

Figure 2.1 – Planetary latitudes, Munich, Bayerische Staatsbibliothek, CLM 14436, f.61r.

There were some tentative contacts between the Islamic world and the Latin-speaking West by the tenth century, and by the eleventh century a few Arabic texts had made their way into Christian Europe.⁷ Two key astrological texts from this period were *Mathesis* by the fourth-century Hellenistic astrologer Firmicus Maternus, and the *Alchandreana*.

The *Mathesis* of Firmicus Maternus had made its reappearance in Christian Europe by the eleventh century.⁸ The manuscript was copied – and later printed – widely, and a

⁵ Munich, Bayerische Staatsbibliothek, CLM 14436, f.61r. The latitude is the vertical element, the longitude the horizontal element.

⁶ S. McCluskey, *Astronomies and Cultures in Early Medieval Europe* (Cambridge: Cambridge University Press, 1998), p.147.

⁷ This will be discussed later in this chapter.

⁸ Paris, Bibliothèque nationale de France, Lat. 7311, ff.4-49 is from the eleventh century.

critical edition in Latin was printed in 1897.⁹ An English translation was published in 1975 by Jean Rhys Bram.¹⁰ The first section discusses and refutes arguments against astrology, and Firmicus' text discusses the difficulty in calculating planetary positions – indeed, Bram, the translator of the English language edition, suggests that Firmicus himself did not fully understand the calculations involved, although he 'dabbled in the casting of charts'.¹¹ The book describes signs, houses, aspects, forecasting the length of life, planets, and numerous other techniques, and then gives interpretations for various placements – a useful astrology primer and handbook, in fact – but crucially does not give the details on how to calculate planetary positions, presuming that the reader already knows how to do this. Unless the reader knew how to calculate these and thereby draw up an astrological chart, much of the book would not be helpful; knowing that, for example, 'Mercury in the third house will make priests, magicians, healers, astrologers...' is of no use unless one knows how to calculate the position of Mercury in one's chart, and place it relevant to the rising sign.¹² The ability to calculate planetary positions had been known in the classical world – Ptolemy's *Almagest* and Ptolemy's *Handy Tables* provided the models and method to do so – but this knowledge had been lost by the Carolingian period.¹³

The lack of knowledge of the computation of planetary positions also arises in the *Alchandreana*, a compilation of astrological and astronomical material of apparently Arabic origin from the early eleventh century. This text exists in a number of manuscripts, and a modern critical edition of *Alchandreana* with a commentary has been produced by David Juste, based on seventy-two manuscripts.¹⁴ Juste described one of these manuscripts – the first to be discovered in 1931 by José Maria Millàs Vallicrosa, and containing a number of Arabic scientific texts – as one of the most famous manuscripts

⁹ Julius Firmicus Maternus, *Matheseos Libri VIII*, W. Kroll and F. Skutsch (eds) (Leipzig: Teubner, 1897).

¹⁰ Firmicus Maternus, *Ancient Astrology Theory and Practice: Matheseos Libri VIII*, J.R. Bram (trans.) (Park Ridge, NJ: Noyes Press, 1975).

¹¹ Firmicus Maternus, *Mathesis* I.IV.14, p18; Bram's comment, p.8.

¹² Firmicus Maternus, *Mathesis* III.VII.6, p100.

¹³ Ptolemy, *Ptolemy's Almagest*, G.J. Toomer (trans.) (London: Duckworth, 1984), Books IX-XI, pp.419-554; A six-volume critical translation of Ptolemy's *Handy Tables* by Anne Tihon and Raymond Mercier is in production of which the first volume has been released, and will include planetary tables – see review by J. Chabás, 'Πτολεμαίου Πρόχειροι Κανόνες. Les «Tables Faciles» de Ptolémée/Ptolemy's Handy Tables. Tables A1-A2 by Anne Tihon and Raymond Mercier', *Aestimatio* 10 (2013), pp.106-109; B. Obrist, *La Cosmologie Médiévale* (Firenze: SISMEL, 2004), pp.27-31 for a discussion on lack of specialist knowledge.

¹⁴ D. Juste, *Les Alchandreana Primitifs* (Leiden: Brill, 2007).

in the history of science.¹⁵ Like *Mathesis*, the *Alchandreana* assumes the ability to calculate a horoscope based on natal positions of planets (that is, their position at the time of a person's birth), but instead of using observation of astronomical tables, uses numerological procedures based on a person's name, rather than their date of birth.¹⁶ The text is a collection of disparate elements, incorporating Arabic, Jewish and Latin elements.¹⁷ The techniques themselves are quite confused as a result of mixing various traditions – for example, attributing letters of a name to a sign and planet can be done using a table, but the table includes both Hebrew and Arabic letters, which have become corrupted in the manuscripts.¹⁸ The text does subsequently give a technique for calculating the position of a planet, but – using Saturn as an example – this is based on taking the number of years since the creation of the world and dividing by thirty, since it takes thirty years for Saturn to make a complete revolution of the zodiac.¹⁹ This, of course, will not work since Saturn does not take exactly thirty years to make a revolution, and so the values will never be correct – even assuming one knew the position of the planets at the putative creation of the world.

Juste expanded on these problems in an article on an alternative way of computing planetary longitudes.²⁰ He stated that the ability to calculate the position of planets 'does not appear to have been known in the West before the Latin translations of the Arabic table of al-Khwarizmi and the Toledan Tables in the first half of the twelfth century.'²¹ There are examples of earlier texts listing planetary positions, but Juste pointed out it is impossible to know if these 'were observed or somehow computed', although clearly it is possible to calculate the position of Sun and Moon by well-known rules of computus, and for Saturn, Jupiter, and Mars by observation.²² Observation can only work at the time when a chart is to be drawn up, of course, so creating a natal chart retrospectively would not be possible. Juste described a text with the incipit 'In quo signo versetur Mars...', but

¹⁵ Juste, *Alchandreana*, p.1; Barcelona, Arxiu de la Corona d'Aragó, Ripoll 225.

¹⁶ Juste, *Alchandreana*, pp.9-10.

¹⁷ Juste, *Alchandreana*, p.34.

¹⁸ Juste, *Alchandreana*, p.47, fn.49.

¹⁹ Juste, *Alchandreana*, 25.1, p.464.

²⁰ D. Juste, 'Neither Observation nor Astronomical Tables: An Alternative Way of Computing the Planetary Longitudes in the Early Western Middle Ages' in C. Burnett, J.P. Hogendijk, K. Plofker and M. Yano (eds), *Studies in the History of the Exact Sciences in Honour of David Pingree* (Leiden: Brill, 2004), pp.181-222.

²¹ Juste, 'Neither Observation nor Astronomical Tables', p. 181.

²² Juste, 'Neither Observation nor Astronomical Tables', p. 189.

pointed out that ‘they do not correspond to anything ‘real’ and appear to be arithmetically based on multiples of six following the arrangement of the planetary week’.²³

Thus, although these earlier texts were available to scholars prior to the twelfth century, many of the techniques described in them could not be used without the knowledge needed to calculate the position of planets accurately, and thereby draw up astrological charts. This knowledge had been known in the Classical world in texts such as Ptolemy’s *Almagest*, and those texts had been enthusiastically translated into Arabic by scholars in the Islamic world. Thus Arabic scholars held the key to the ability to draw up astrological charts. The twelfth century saw those same texts become available to Christian scholars in the Latin-speaking West. Toledo, in Islamic Spain, was a major centre of learning for Arabic scholars, and in 1085 it returned into Christian hands and became a major centre of translation, although not the only one – translation activity was also taking place in Antioch, Syria, Byzantium, Sicily, and North Africa.²⁴ The translation movement in centres like Toledo became possible because there could be found Arabic books and Mozarabs – people who could speak both Arabic and Latin, both Arabic-speaking Christians and Jews.²⁵ As a result of this, the trickle of Arabic-influenced learning seen in previous centuries turned into a flood, and Grant referred to ‘an international brigade of translators to seek out the new Arabic learning in Spain and Sicily; similar motives led others to search after Greek manuscripts for translation into Latin’ and that ‘within a period of little over one hundred years, from approximately 1125 to 1230, the translators achieved monumental results.’²⁶ The activities taking place in these translation centres saw a huge corpus of Arabic and Jewish translations introduced into Europe, including in England. The translation movement that brought Arabic and Jewish learning from the Islamic world into Europe would go on to have a big impact on education in England and elsewhere in Europe. The large number of texts translated in the twelfth century was a blossoming that Haskins referred to as a ‘renaissance’ in the title of his book *The Renaissance of the Twelfth Century*. However, the idea of this period being some kind of renaissance is relatively modern, and in discussing Haskins’ use of the term, Burnett

²³ Juste, ‘Neither Observation nor Astronomical Tables’, p. 190.

²⁴ Haskins, *Mediaeval Science*, p.4; M. Marie-Thérèse d’Alverny, ‘Translations and Translators’ in R.L. Benson, G. Constable, C.D. Lanham (eds), *Renaissance and Renewal in the Twelfth Century* (Toronto: University of Toronto Press, 1999), pp.421-459.

²⁵ Haskins, *Mediaeval Science*, p.12.

²⁶ E. Grant, *Planets, Stars, and Orbs: The Medieval Cosmos, 1200-1687* (Cambridge: Cambridge University Press, 1994), pp.12-13.

pointed out that the twelfth century was not seen at the time as particularly relevant. ‘If a cultural renaissance was taking place in Latin Europe, it apparently was not noticed by its neighbouring civilizations... Nor was the twelfth century seen by Western scholars post-factum as a period of spectacular advance. Petrarch (1304-1374) defined it as part of the “dark ages”’.²⁷ Haskins had attributed this “renaissance” to the translation movement, and this was expanded on by Thorndike, which Carey stated ‘has now been quietly accepted as the new orthodoxy by contemporary scholars.’²⁸

Twelfth-century astrologers

The twelfth century did, though, see a new method of teaching developed by Bernard of Chartres (1070-1130) with a focus on natural philosophy.²⁹ The school at Chartres was founded in the late tenth century and its curriculum included science in addition to theology.³⁰ Bernard of Chartres was, according to Bolgar, an excellent teacher able to develop a systematic curriculum, and highly influential among his students.³¹ This new method of teaching was adopted by William of Conches, who had taught in Chartres, and whose work on natural philosophy, *Dragmaticon*, is presented as a dialogue between William and his patron the Duke of Normandy. The Duke in question was Geoffrey Plantagenet, who invited William to teach his son, the future Henry II of England. William had long been aware of the works of Adelard of Bath, who had written a work on philosophy, *De eodem et diverso*, in the first decade of the twelfth century.³² After spending seven years on a research trip learning Arabic and studying Arabic science, Adelard wrote a second text in the form of a dialogue between him and his nephew, *Questiones naturales*, incorporating his newly acquired Arabic science, and on which William drew for his *Dragmaticon*.³³ Adelard also had a connection with the future Henry

²⁷ C. Burnett, ‘The Twelfth-Century Renaissance’ in D. Lindberg and M. Shank (eds), *The Cambridge History of Science* (Cambridge: Cambridge University Press, 2013), p. 365.

²⁸ H. Carey, ‘Astrology in the Middle Ages’, *History Compass* 8.8 (2010), p.892.

²⁹ C. Burnett, *The Introduction of Arabic Learning into England* (London: British Library, 1997), p.33.

³⁰ R.R. Bolgar, *The Classical Heritage and its Beneficiaries* (Cambridge: Cambridge University Press, 1954), p.174.

³¹ Bolgar, *Classical Heritage*, p.175.

³² Adelard of Bath, ‘De eodem et diverso’ in C. Burnett (ed.), *Adelard of Bath, Conversations With His Nephew* (Cambridge: Cambridge University Press, 1998), pp.1-73.

³³ Adelard of Bath, ‘Questiones naturales’ in C. Burnett (ed.), *Adelard of Bath, Conversations With His Nephew* (Cambridge: Cambridge University Press, 1998), pp.81-227; Burnett, *Introduction of Arabic learning*, p.34.

II, dedicating a work on the use of the astrolabe, *De opere astrolapsus*, to him in 1150, around the same time that William had written *Dragmaticon*.³⁴

The transmission route of ideas between Normandy and the west of England at this time is fairly clear – Adelard dedicated his *Questiones naturales*, written around 1116, to the Bishop of Bayeux, so his work was already known in Normandy, and hence to William of Conches.³⁵ In addition, in the 1140s, Duke Henry (the future Henry II of England) was living in Bristol, which was close to Bath, prior to moving back to Normandy.³⁶ Burnett mentioned that the study of Arabic science developed ‘in the area of Bristol and Bath, further up the Severn Valley, and along the Welsh Marches’ and discussed the possibility of a ‘group of West Midland scholars who were working in Adelard’s circle.’³⁷ Adelard was writing many decades after the Conquest, but he made an intriguing reference to having got his information from ‘the books of Harold’, though Burnett, in quoting this, pointed out that he ‘cannot substantiate from other sources a legend that Arabic learning formed part of a pre-Norman “golden age” of Celtic or Anglo-Saxon philosophers.’³⁸ Indeed, it seemed that Anglo-Saxon England had a dearth of texts relating to judicial astrology, and, like all of the earlier sources mentioned above suffered from a lack of knowledge of how to calculate planetary positions. Although some basic concepts, such as the signs of the zodiac, were known, and various forms of prognostication were in use, László Chardonens claimed that ‘there is no evidence, documentary or otherwise, that judicial astrology was ever practiced in Anglo-Saxon England.’³⁹ Similarly, Roy Liuzza’s translation of Anglo-Saxon texts on prognostication makes reference to Moon phases and lunar mansions, but there is no mention of judicial astrology.⁴⁰

Jewish scholars were active in al-Andalus (Andalusia) in southern Spain in the eleventh century and relations between Jews and Muslims were generally good. However, when the more fundamentalist Almoravids took control of al-Andalus by the early twelfth century, some Jews moved to northern Spain and Provence. One such was the Spanish Jew Petrus Alfonsi. Little is known about his early life other than he was a Jew called Moses, and of some importance in his community, and that he converted to Christianity

³⁴ Burnett, *Conversations*, p.xii.

³⁵ Adelard, *Questiones*, p.82: ‘Ricardo Baiocensi episcopo Adelardus Bathoniensis salutem’.

³⁶ Burnett, *Introduction of Arabic Learning*, p.33.

³⁷ Burnett, *Introduction of Arabic Learning*, p.38 and p.36.

³⁸ Burnett, *Introduction of Arabic Learning*, p.2.

³⁹ L. S. Chardonens, *Anglo-Saxon Prognostics, 900-1100* (Leiden: Brill, 2007), p.113.

⁴⁰ R. Liuzza (ed., trans.), *Anglo-Saxon Prognostics* (Cambridge: Brewer, 2010).

in 1106 in Huesca.⁴¹ Shortly after his conversion, he wrote a polemic against Judaism, *Dialogi contra Iudaeos*, in the form of a dialogue between his former Jewish self, Moses, and his new Christian persona, Peter. According to John Tolan, ‘At some time between 1106 and 1116, Alfonsi emigrated from Aragon to England. He seems to have been associated with the group of scholars serving King Henry I of England and may have served as Henry’s private physician.’⁴² He was also associated with Walcher, the prior of Malvern.

Walcher was born in Lotharingia, with an interest in computus and astrology, and his interest in science extended to observation of astronomical events.⁴³ Southern provided a splendid example of the scientific process that Walcher employed in understanding lunar eclipses, noting a difference between his observation in Italy, where he was at the time, and a report of the same event but which had clearly happened at a different time of day when he returned to England.⁴⁴ This emphasis on calculation and observation indicates what would now be called the scientific method, when Walcher described how another eclipse occurred the following year, and he used his astrolabe and noted precise details about it.⁴⁵ Walcher met Alfonsi and collaborated with him, referring to him as ‘our teacher’, and whose work on eclipses, *Sententia de dracone* written in 1120, is often portrayed as a collaboration between Walcher and Alfonsi.⁴⁶ However, this is disputed; Burnett argues that ‘*Sententia* does not claim to be the work of Petrus. Rather, it purports to be Walcher of Malvern’s Latin version of an opinion (*sententia*) of Petrus... if this is so, then it is Walcher, not Petrus, who is responsible for the terminology and style of the *Sententia*’.⁴⁷ Philipp Nothaft, too, states that *Sententia de dracone* ‘must be classified as a treatise from Walcher’s pen’.⁴⁸

⁴¹ Tolan, *Petrus Alfonsi*, p.9.

⁴² Tolan, *Petrus Alfonsi*, pp.10-11.

⁴³ C.P.E. Nothaft, *Walcher of Malvern* (Turnhout: Brepols, 2017), pp.10-11.

⁴⁴ R.W. Southern, *Medieval Humanism and Other Studies* (Oxford: Blackwell, 1970), pp.166-167.

⁴⁵ Southern, *Medieval Humanism*, p.167; Haskins, ‘Reception of Arabic Science’, pp.114-117.

⁴⁶ Hillaby, J., ‘Alfonsi, Petrus’ in J. Hillaby, *The Palgrave Dictionary of Medieval Anglo-Jewish History* (Basingstoke: Palgrave Macmillan, 2013), p.41.

⁴⁷ C. Burnett, ‘The Works of Petrus Alfonsi: Questions of Authenticity’, *Medium Aevum* 66 (1997), pp.45-46.

⁴⁸ Nothaft, *Walcher of Malvern*, p.47.

Alfonsi is also associated with Walcher in the production of the astronomical tables of al-Khwarizmi in 1116, which were revised by Adelard of Bath in 1126.⁴⁹ Burnett initially suggested that Alfonsi may have taught Adelard: ‘The most economical explanation for the two Latin versions of the tables is that Petrus had a manuscript of the tables, and taught both Walcher and Adelard in the West Midlands of England’, but later revised his opinion.⁵⁰ The difference between the tables is that while Walcher converted Arabic dates to the Julian calendar and did not use Arabic terminology, Adelard did because he, unlike Walcher, had learned Arabic. King Henry I, Alfonsi’s patron, ‘took an active role in fostering the study of astronomy, both in his court and at the Cathedral School of Hereford’.⁵¹

While Petrus Alfonsi and Walcher of Malvern may have introduced more Arabic science to the Latin West, their younger contemporary, Adelard of Bath, is of relevance to this thesis since he had a particular interest in Arabic astrology.⁵² Little is known of Adelard himself, other than hints seen in his works; he was born around 1080 in Bath, and was probably of a wealthy or noble background since in his earliest work, *De eodem et diverso*, ‘he casually refers to playing the cithara for the queen’ and was ‘knowledgeable about falconry, a sport in which only those of royal or noble blood engaged’.⁵³ He completed his higher education at the cathedral school in Tours, and the investigation of Arabic science in the West of England was already well underway by the time Adelard was active. *De eodem et diverso* was probably written around 1109 while on his travels in Sicily.⁵⁴ The title was derived from Plato’s *Timaeus*, where God creates Soul from three materials, ‘Same’, ‘Other’ and ‘Being’ and then forging two circles from these

⁴⁹ D. Metlitzki, *The Matter of Araby in Medieval England* (New Haven: Yale University Press, 1977), p.25. For a discussion of how al-Khwarizmi’s tables were developed, see J. Samsó, *Astronomy and Astrology in al-Andalus and the Maghrib* (Abingdon: Routledge, 2007).

⁵⁰ Burnett, *Introduction of Arabic Learning*, p.40; C. Burnett, ‘Petrus Alfonsi and Adelard of Bath Revisited’ in C. de Hartmann and P. Roelli (eds), *Petrus Alfonsi and his Dialogus* (Firenze: Sismel, 2014), p.88: ‘In conclusion one may say that Adelard shows no clear indication of being a student of Petrus Alfonsi’.

⁵¹ Tolan, *Petrus Alfonsi*, p.42.

⁵² L. Cochrane, *Adelard of Bath: The First English Scientist* (London: British Museum Press, 1994), p.25.

⁵³ Cochrane, *Adelard of Bath*, p.25.

⁵⁴ Thorndike discussed the problem of dating this work (Thorndike, *History of Magic*, p.44) but Haskins gave a convincing argument that it was written no later than 1109, using Adelard’s reference to playing the cithara for the queen in France since ‘there was no queen of France between the death of Philip I in 1108 and the marriage of Louis VI in 1115, the treatise, unless the bishop of Syracuse [to whom the work was dedicated] was still alive in 1116, would not be later than 1109’ (Haskins, *Mediaeval Science*, p. 21). In addition, Adelard referred to his nephew as being ‘not yet free from boyhood’ (Adelard, ‘De eodem et diverso’, p.5) suggesting an early date.

materials to create Soul.⁵⁵ The outer circle was undivided, but the inner was divided into seven unequal circles in a precise mathematical division. Having created Soul as ‘an eternal Living Creature’, God made ‘the Universe, so far as He could, of a like kind’, but since Soul was eternal and anything generated is not, instead he made a ‘movable image of Eternity’, where the Circle of the Same represents the celestial equator and the regular motion of the fixed stars, and the Circle of the Other represents the ecliptic and the orbits of the seven planets.⁵⁶ *Timaeus* was well-known among Christian scholars in Western Europe, and Neo-Platonism, evident in Adelard’s work, was an important influence in cathedral schools.⁵⁷ Assuming the dating of around 1109 is correct, Adelard would have been a young man when writing *De eodem et diverso*. Apparently, his nephew had reproached Adelard as being ‘frivolous and capricious’ for recently having left Bath to travel, and this work is a dialogue between him and his nephew.⁵⁸ Haskins pointed out that he may have got no further than Sicily, and the work demonstrates Greek rather than Arabic learning.⁵⁹

This was to change; his next work, *Questiones naturales*, was written on his return to England after a seven-year stint abroad, during which time Adelard had learned Arabic. The dating of this is not proven, but if *De eodem et diverso* was written a year after Adelard departed on his travels and he was away for a total of seven years, this would date *Questiones naturales* at about 1115. This is also corroborated by an earthquake that Adelard mentioned, recounted by the nephew: ‘I took note of you attesting... that once, when you were crossing the bridge of the city of Mamistra in the region of Antioch, that bridge together with the whole of that region trembled with an earthquake’.⁶⁰ Cochrane pointed out that such an earthquake was attested in Anatolia in 1114, and is listed in a 1911 catalogue of earthquakes.⁶¹

As discussed above, around the same time Walcher, the prior of Malvern, was translating Arabic astronomical tables with the help of Alfonsi. As a Spanish Jew, Alfonsi had been brought up in an Arabic-speaking milieu, and it appears that Walcher did not know Arabic, or at least not well. Adelard, who translated these same tables ten years after

⁵⁵ Plato, *Timaeus*, p.71.

⁵⁶ Plato, *Timaeus*, pp.81-83.

⁵⁷ Cochrane, *Adelard of Bath*, p.35.

⁵⁸ Adelard, ‘De eodem et diverso’, p.5.

⁵⁹ Haskins, *Mediaeval Science*, p.21.

⁶⁰ Adelard, ‘Questiones naturales’, p.185.

⁶¹ Cochrane, *Adelard of Bath*, p.56.

Walcher and Alfonsi, had learned Arabic, studied with Arabic scholars while in Sicily and translated – or at least, paraphrased – Arabic texts. However, although Adelard may have learned Arabic, ‘there is no evidence that Adelard read Arabic. Nor did he claim to.’⁶² Instead, Adelard may have learned Arabic from a teacher who dictated texts from Arabic for him, since Adelard sometimes confused Arabic words that sound similar, but would have been obvious had he been working from written texts. Burnett surmised that his teacher dictated the Arabic for Adelard, who would write down the Latin.⁶³ Cochrane echoed Burnett in questioning the extent of Adelard’s Arabic, and referring to the same group of ‘West Country mathematicians’ with whom Adelard associated after his return to England, and said: ‘A high proportion of the scholars who went to Spain in search of Arabic science were English; help with Arabic must have been available. Adelard’s understanding of mathematics and astronomy was certainly as important as his understanding of Arabic.’⁶⁴ This is backed up by the corpus of Adelard’s works. In addition to his two early philosophical works, several astronomical and astrological works are attributed to him, including a translation of Abu Ma’shar’s *Abbreviation*, and *Liber prestigiorum*, a treatise on astrological images and horoscopes, by Thabit ibn Qurra.⁶⁵ His dedication of his work on the astrolabe to Henry II has already been mentioned, and a further connection to the royal household is also demonstrated by the discovery of a set of ten horoscopes, documented by John North, several of which he attributed to Adelard with horoscope dates from 1123 to 1151.⁶⁶ An early date on a horoscope does not imply it was created then, since it could be a birth chart, but the fact that most of the horoscopes have dates of 1151 do suggest charts drawn up around that time to answer specific questions, and one of them appears from the description of ‘a master and a devout pupil’ to relate to Adelard and Henry. North pointed out that ‘Henry’s star was emphatically in the ascendant in the summer of 1151, which seems to have been the time of casting... [most] of the horoscopes’, and suggested that these horoscopes are an ‘Adelard autograph’.⁶⁷

⁶² C. Burnett, ‘Adelard of Bath and the Arabs’ in J. Hamesse and M. Fattori (eds), *Rencontres de cultures* (Louvain-la-Neuve-Cassino: Institut d’Études Médiévales, 1990), p.105.

⁶³ Burnett, ‘Adelard of Bath and the Arabs’, pp.105-106.

⁶⁴ Cochrane, *Adelard of Bath*, p.86.

⁶⁵ Haskins, *Mediaeval Science*, p.30.

⁶⁶ North, *Horoscopes and History*, pp.96-107.

⁶⁷ North, *Horoscopes and History*, p.105 and p.107.

In all, at least twelve works can definitely be attributed to Adelard (Haskins added a few more possible works), covering mathematics, philosophy, the quadrivium, astronomy, astrology and even a work on falconry. Although Burnett modified his view that Alfonsi was Adelard's teacher, he pointed out that 'there are nevertheless some striking parallels between Petrus and Adelard'.⁶⁸ In this respect, Adelard may have picked up another innovation, too – the use of experimental method. Alfonsi, in his *Epistola ad peripateticos*, addressed to 'peripatetics... anywhere in France', says '...it is proven by experimental argument... that the Sun, the Moon and the other planets exercise their power in earthly things', which Thorndike saw as an example of the experimental method: 'The contrast which Pedro [Alfonsi] draws... is between dependence on a few past authorities and adoption of the experimental method.'⁶⁹ The wide range of his subjects, and what Cochrane described as 'a transition in Adelard's thinking from philosophy... to his increased interest in natural philosophy and the application of "reason" to scientific method in arriving at his conclusions', and his adoption of Alfonsi's insistence on experimental method, would seem to justify the subtitle of Cochrane's book in calling Adelard 'The first English scientist'.⁷⁰

Although the focus of this thesis has an English slant, investigating the work of Roger of Hereford, it is clear that nationality was no barrier to living and working abroad. Adelard was sometimes in Bath, sometimes in France, prior to his travels to Sicily and Syria. Petrus Alfonsi was in Spain and then in England working in association with Walcher of Malvern. Another Englishman abroad was Robert of Ketton, from Rutland, who was active at the same time as Adelard in the middle of the twelfth century, and was also 'almost certainly' the archdeacon of Pamplona in Spain.⁷¹ Robert collaborated closely with another scholar, Hermann of Carinthia (also known as Hermann of Dalmatia), in translating Arabic texts, with whom he enjoyed a deeply personal relationship.⁷² There also exist texts translated by one Robert of Chester, who may or may not be the same person as Robert of Ketton – earlier authors such as Thorndike and Haskins assumed they

⁶⁸ Burnett, 'Petrus Alfonsi and Adelard of Bath Revisited', p.89.

⁶⁹ Petrus Alfonsi, 'Epistola ad peripateticos' in Tolan, *Petrus Alfonsi*, p.179; Thorndike, *History of Magic*, p.71.

⁷⁰ Cochrane, *Adelard of Bath*, p.66.

⁷¹ C. Burnett, 'Ketton, Robert of (fl. 1141–1157)' in *Oxford Dictionary of National Biography* (Oxford: OUP, 2004), <http://www.oxforddnb.com/view/article/23723> [5 September 2017].

⁷² Dykes, *Search of the Heart*, p.30.

were the same person.⁷³ Burnett pointed out that ‘both Roberts are characterized by a tendency to abbreviate, to write idiomatic Latin, and to avoid Arabisms’ and ‘had some involvement with astronomical tables attributed to al-Battani’, but claims that ‘grounds for separating the two Roberts are strong’, particularly as ‘Robert of Chester is never associated with Hermann of Carinthia’.⁷⁴ The abbot of Cluny, Peter the Venerable, persuaded Robert and Hermann to undertake a translation of the Qur’an in 1141, although Robert required quite some persuading since his main interest was in translating Arabic astronomical texts.⁷⁵ Both Robert and Hermann worked with a third translator, Hugh (or Hugo) of Santalla, all of whom worked on astrological translations.⁷⁶

Although this section so far has looked primarily at translators who worked from Arabic texts, it must not be forgotten that Jewish scholars also acted as intermediaries, such as the association of Walcher of Malvern with Petrus Alfonsi. Jews were able to act as intermediaries since many of them in the twelfth century had been brought up in an Arabic-speaking milieu in southern Spain, but also had connections in the Latin West since most Christian countries had Jewish communities themselves. Alfonsi was a convert to Christianity, but another Jewish scholar, Abraham ibn Ezra, was a devout Jew who travelled across Europe and into England, where he stayed for several years. He was born in Muslim Spain and was brought up speaking Arabic, and wrote biblical commentaries and astrological texts in Hebrew.⁷⁷ At the age of fifty, he left his home and travelled in Italy, France and England and in terms of astrological contributions, ‘his most enduring and influential contribution in the field of science and astrology, to both Jewish and Christian readers, was the creation of the first comprehensive corpus of Hebrew astrological textbooks that address the main systems of Arabic astrology.’⁷⁸ He was born in Tudela in northern Spain, which at the time of his birth was under Muslim rule, but

⁷³ For example, Thorndike mentions ‘...a translation of the *Judgements* of the astrologer Alkindi by Robert of Chester, with an introduction to ‘my Hermann’, whom Robert commends...’ in Thorndike, *History of Magic*, p.83; also Haskins refers to ‘Robert of Chester’ and Hermann as constituting ‘a sort of literary partnership’ in Haskins, *Mediaeval Science*, pp.10-11.

⁷⁴ Burnett, ‘Ketton, Robert of’ in *Oxford DNB*.

⁷⁵ Haskins, ‘Reception of Arabic Science’, pp.120-121.

⁷⁶ Dykes, *Search of the Heart*, p.31.

⁷⁷ The basis of ibn Ezra’s philosophy is explored in M. Ratson, ‘Politics and Astrology in the Thought of R. Abraham Ibn Ezra’, *Journal of Jewish Studies*, 64.2 (2013), pp.326-346. A biography and overview of his works is given in R. Smithuis, ‘Science in Normandy and England under the Angevins: The Creation of Abraham Ibn Ezra’s Latin Works on Astronomy and Astrology’, in G. Busi (ed.), *Hebrew to Latin, Latin to Hebrew: The Mirroring of Two Cultures in the Age of Humanism* (Berlin: Institut für Judaistik, 2006), pp. 23-59.

⁷⁸ Sela, *Elections, Interrogations, and Medical Astrology*, p.1.

was conquered by Alfonso I in 1115. Tudela is on the banks of the river Ebro, which is where Robert of Ketton and Hermann of Carinthia were based by 1140. Burnett suggested that they would have met ibn Ezra, since he was in Tudela at the same time as them, and then moved to Béziers, where Hermann of Carinthia was to be found in 1143. Ibn Ezra also wrote a text on the astrolabe, in which he indicated that he collaborated with a Latin speaker; Burnett suggested that this Latin speaker was Robert of Ketton, whom ibn Ezra may have got to know earlier in the Ebro valley.⁷⁹

In addition to these scholars with an English connection, there were a variety of scholars from across Christian Europe working with Arabic texts. Thorndike called John of Spain ‘the chief and most voluminous translator of astrological works from Arabic into Latin in the twelfth century.’⁸⁰ However, as Thorndike pointed out, ‘So many Johns are mentioned in medieval manuscripts... that it is not easy to distinguish his works’.⁸¹ He was probably the same person as John of Seville. He appears to have been active from 1127 until at least 1153 – Carmody listed him as having translated Omar of Tiberius’ *De nativitatibus* in 1127, and Thorndike stated he translated the *Nativities* of Albohali in 1153.⁸² Haskins believed John to be Jewish, while Burnett was cautious about this, describing him as one of the main scholars ‘for the Latins’, but pointing out that some scholars thought his origins were Jewish.⁸³ Thorndike soundly rejected the notion, blaming it on a tendency to belittle Latin learning, and the idea that Christians could not translate from Arabic without Jewish assistance.⁸⁴ Moritz Steinschneider provided a comprehensive list of texts possibly attributed to John.⁸⁵ Further references from Carmody and Thorndike can be added to these, and assuming that John of Spain and John of Seville are the same person, a considerable list of works can be built up, containing works from several Arabic authors on astrology and philosophy.

⁷⁹ Burnett, *Introduction of Arabic Learning*, pp.57-58.

⁸⁰ Thorndike, *History of Magic*, p.73.

⁸¹ Thorndike, *History of Magic*, p.73.

⁸² Carmody, *Arabic Astronomical and Astrological Sciences in Latin Translation*, p.38; Thorndike, *History of Magic*, p.75.

⁸³ Haskins, *Mediaeval Science*, p.9; C. Burnett, ‘Hebrew and Latin Astrology in the Twelfth century: The Example of the Location of Pain’, *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 41.2 (2010), p.70.

⁸⁴ L. Thorndike, ‘John of Seville’, *Speculum*, 34.1 (1959), p.20.

⁸⁵ Steinschneider, *Die Europäischen Übersetzungen aus dem Arabischen*, pp.40-50.

Plato of Tivoli is ‘Next in importance to John of Spain as a translator of Arabic astrology in the first half of the twelfth century’ and although working independently of each other, translated many of the same works, primarily on astrology.⁸⁶

No account of the twelfth-century translation movement can fail to mention Gerard of Cremona, whose translations of Arabic texts were prolific. Grant picks out Gerard, together with the thirteenth-century William of Moerbeke who translated from Greek to Latin, claiming that by themselves they would ‘have transformed the course of Western science’.⁸⁷ Gerard went to Toledo in 1144 for ‘love of the *Almagest*, as described in a touching tribute by his own students in a posthumous account of his work.⁸⁸ Gerard’s translation of Ptolemy’s *Almagest* has a date added by a later copyist.⁸⁹ Duhem, believing the date to have been added by Gerard himself, stated that ‘contrary to his normal practice, this is a fortunate exception since this gives us knowledge of the date of an event of extreme importance in the history of astronomy – it tells us that in 1175, the Great Syntaxis (*Almagest*) became known to the Latins’.⁹⁰ The eulogy goes on to give a useful biography of his works, although the majority are on astronomy, mathematics and philosophy rather than the astrology on which this thesis focuses.

Thorndike mentioned another English translator, Daniel of Morley, who went to Spain and met Gerard, although Daniel left only one (non-astrological) work to posterity. Gerard apparently worked with a Mozarab, Galippus, in translating *Almagest*, which Gerard completed in 1175 and represented what Gerard considered his crowning achievement.⁹¹

⁸⁶ Thorndike, *History of Magic*, p.82.

⁸⁷ Grant, *Planets, Stars, and Orbs*, p.14.

⁸⁸ E. Grant, *A Source Book in Medieval Science* (Cambridge, MA: Harvard University Press, 1974), p.35.

⁸⁹ ‘Finit liber ptholomei pheludensis qui grece megaziti, arabice almagesti, latine vocatur vigil, cura magistri thadei ungari anno domini Millesimo C. LXXV^o toleti consumatus. Anno autem arabum quingentesimo LXX^o mensis octavi XI^o die translatus a magistro girardo cremonensi de arabico in latinum’, Ptolemy, *Almagest*, Florence Biblioteca Medicea Laurenziana, Plut. 89, sup. 45 1ra-183va.

⁹⁰ ‘Contrairement à son habitude, Gérard avait signé et daté cette traduction. Heureuse exception! Elle nous fait connaître la date d’un événement d’extrême importance en l’histoire de l’Astronomie; elle nous apprend qu’en 1175, la Μεγάλη σύνταξις parvint à la connaissance des Latins’ P. Duhem, ‘L’Astronomie Latine au Moyen Age’, *Le système du monde: histoire des doctrines cosmologiques de Platon à Copernic*, Volume 3 (Paris: Librairie Scientifique Hermann, 1959), p.219.

⁹¹ Thorndike, *History of Magic*, pp.88-89.

Hereford's unique role

Cathedral churches were divided into two categories: monastic, associated with an order of monks, and secular, and Hereford Cathedral was one of nine secular cathedrals in the twelfth century.⁹² The distinction was not fixed – Canterbury was a secular cathedral at various times between the eighth and eleventh centuries, as was Winchester Cathedral prior to 964.⁹³ The secular cathedrals developed schools, which taught a broader range of topics than monastic schools.⁹⁴ Secular schools took on more prominence after the Conquest, but Nicholas Orme stated that the question of whether these schools were new is hard to answer and that twelfth-century evidence implies that schools were already in existence.⁹⁵ Nevertheless, the twelfth century saw a significant expansion of schools in England, boosted by an edict from the Lateran Council of 1179 ordering cathedrals to employ schoolmasters.⁹⁶ Orme provided a list of about thirty schools that were active in the twelfth century, but as he pointed out, they are ‘merely examples’ since there are insufficient records to identify all of the schools, or to know in detail what they taught.⁹⁷

Secular and monastic schools differed in the contents of their libraries. Secular libraries, such as Exeter and Hereford, acquired books by gift and the canons could dispose of these as they saw fit, and they tended not to be passed on to the cathedral library.⁹⁸ The lack of records, therefore, does not necessarily reflect on the importance of a particular location as a centre of learning, and school books do not necessarily appear in cathedral collections, making it hard to judge objectively the influence of various centres of learning.⁹⁹ However, records from the twelfth century show how libraries were laid out, and by the fourteenth century catalogues show how these were stored in cupboards, or *armaria*. Using an example from 1350 in the library of Lanthony-by-Gloucester, near Hereford, there were five *armaria*, and ‘the shelf with the largest number of volumes

⁹² David Lepine lists nine secular cathedrals: Chichester, Exeter, Hereford, Lichfield, Lincoln, St Paul's, Salisbury, Wells, and York, D. Lepine, 'Cathedrals and Charity: Almsgiving at English Secular Cathedrals in the Later Middle Ages', *The English Historical Review*, 126.522 (2011), p.1066.

⁹³ A.F. Leach, *The Schools of Medieval England* (London: Methuen, 1915), pp.33-34, p.36.

⁹⁴ K. Edwards, *The English Secular Cathedrals in the Middle Ages* (Manchester: Manchester University Press, 1967), pp.185-205.

⁹⁵ N. Orme, *Education and Society in Medieval and Renaissance England* (London: Hambledon Press, 1989), p.4.

⁹⁶ N. Orme, *English Schools in the Middle Ages* (London: Methuen, 1973), p.167-174.

⁹⁷ Orme, *English Schools*, p.295 for list of schools; p.172 for the lack of records.

⁹⁸ N.R. Ker, *Books, Collectors and Libraries: Studies in the Medieval Heritage* (London: Hambledon, 1985), p.294.

⁹⁹ Thomson, *Books and Learning*, p.60.

(seventy-two) was the fourth shelf of the fourth armarium, which accommodated schoolbooks and works on the liberal arts', suggesting that school books relating to the liberal arts were important, even if not recorded formally in earlier catalogues.¹⁰⁰ The lack of evidence for books within a cathedral library itself in the twelfth century is also not unusual, as monasteries and cathedrals only introduced library rooms into their own buildings in the fifteenth century, including at Hereford.¹⁰¹

Robert of Losinga had become Bishop of Hereford in 1079. He was from Lorraine, like Walcher from neighbouring Malvern, and continued the tradition of the computus. Scholars from Lorraine seemed to have had a way of thinking that would today be described as scientific, and their influence will be discussed further later in this chapter.¹⁰²

Hereford's status as a centre of learning is well attested – Simon du Fresne, a canon there, wrote a poem to Gerald of Wales extolling the virtues of the quadrivium there, and it was well-known as a 'congenial centre for the fostering of Latin learning generally.'¹⁰³ Hereford was the first place in England for which there is evidence that astrology was studied, and the quadrivium did not appear to be taught at other secular cathedrals.¹⁰⁴ In particular, astronomy seems to have been restricted to English schools, especially Hereford, Malvern and Bath.¹⁰⁵ Burnett stressed the importance of Hereford in his analysis of science in Hereford from the eleventh century onwards, citing various scholars with an interest in medicine and natural philosophy into the thirteenth century, including Alfred of Sareshel and Robert Grosseteste, and Hugh de Mapenore who later became bishop.¹⁰⁶ The influence of Robert Losinga, who as Bishop of Hereford had an interest in computus, and the neighbouring Walcher of Malvern with his interest in natural science presumably helped to cement Hereford's reputation in this field. However, solid evidence regarding the teaching environment in Hereford is scant. Burnett cited Josiah Russell's

¹⁰⁰ E.S. Leedham-Green and T. Webber, *The Cambridge History of Libraries in Britain and Ireland* (Cambridge: Cambridge University Press, 2008), p.26.

¹⁰¹ Leedham-Green and Webber, *Cambridge History of Libraries*, p.38.

¹⁰² J. Barrow, 'A Lotharingian in Hereford: Bishop Robert's Reorganisation of the Church of Hereford 1079-1095' in D. Whitehead *Medieval Art, Architecture and Archaeology at Hereford* (Oxford: British Archaeological Association, 1995), p.29; Moreton, 'Before Grosseteste', p.565.

¹⁰³ Extract from poem: 'Urbs Herefordensis multum tibi competit, in qua proprius est trivii quadrivique locus' quoted in Hunt, 'English Learning', p.36; Mynors and Thomson, *Hereford Cathedral Library*, p.xvii.

¹⁰⁴ J.W. Thompson, *The Medieval Library* (New York: Hafner, 1957), p.365; Edwards, *English Secular Cathedrals*, p.190.

¹⁰⁵ Thomson, *Books and Learning*, p.48 and pp.94-98; Orme also singled out Hereford as being known for natural science: Orme, *English Schools*, p.295.

¹⁰⁶ Burnett, *Mathematics and Astronomy in Hereford*, p.50 and p.57.

paper as ‘the only study devoted to science at Hereford that I know of’.¹⁰⁷ However, Russell’s study is speculative: he concluded merely that the poem by Simon de Fresne ‘makes a rather clear statement that such existed’.¹⁰⁸ This poem contains a few lines relating to the topics taught at Hereford: ‘Astronomia docet ubi sol, ubi luna mouetur, solis et eclipsim precinit ante diem. Astrologus notat hic horas arcumque diei, quo brevis est et quo tempore longa dies’.¹⁰⁹ Russell concluded from this that ‘Since Roger probably used the schools in which he taught as an illustration it seems very likely that we have here a picture of the interests of the school at Hereford – probably a cathedral school.’¹¹⁰

Orme expanded on this, pointing out that Fresne’s poem implies the existence of a grammar school in the twelfth century and that grammar was taught at some secular cathedrals then, as well as developing theological schools.¹¹¹ Certainly by the thirteenth century, masters at Hereford Cathedral school had very limited religious duties, and most of their pupils were from outside the church and would have paid the master’s wages.¹¹² Orme also provided some information about the location of the school: ‘The buildings of such schools tended to be sited in the city too, rather than in the cathedral close. This was apparently the case in Hereford. There was a street in the city called ‘Scholestrete’ by about the late thirteenth century, and references occur to an ‘Oldescholestrete’ in and after 1397; perhaps the same street, from which the school had moved.’¹¹³ Figure 2.2 shows the location on a map.¹¹⁴

¹⁰⁷ Burnett, *Mathematics and Astronomy in Hereford*, p.57, fn.1.

¹⁰⁸ Russell, ‘Hereford and Arabic Science’, p.19.

¹⁰⁹ Hunt, ‘English Learning’, p.36.

¹¹⁰ Russell, ‘Hereford and Arabic Science’, p.21.

¹¹¹ N. Orme, ‘The Medieval Schools of Herefordshire’, *Nottingham Medieval Studies*, 40 (1996), pp.47-48.

¹¹² Orme, ‘Medieval Schools of Herefordshire’, p.50.

¹¹³ Orme, ‘Medieval Schools of Herefordshire’, p.50.

¹¹⁴ M.D. Lobel (ed.), *British Atlas of Historic Towns Volume 1* (London: Cook, Hammond and Kell, 1969), ‘Hereford’, p.15.



Figure 2.2 – Map of Hereford showing location of Cathedral and Oldeschole St.

There appears to be, then, evidence from secondary sources for the existence of a cathedral school at Hereford. Unfortunately, there are no details of exactly how this school was constituted, nor what subjects it taught. However, given that the roles played by cathedral schools were taken over by universities from the thirteenth century, early histories of the universities may offer clues about the state of learning at the time.¹¹⁵ There was no clear-cut handover from cathedral schools to universities, and although Oxford University did not become a legal entity until the early thirteenth century, there is evidence of teaching taking place in Oxford from the late eleventh century, and that Oxford was ‘only one of several towns’ with established schools in the twelfth century, including Hereford.¹¹⁶ At this stage, the teaching appeared to be relatively spontaneous,

¹¹⁵ See for example R.C. Dales, *The Intellectual Life of Western Europe in the Middle Ages* (Washington, DC: University Press of America, 1980), p.145 and 217 for a discussion of the quadrivium in schools and, later, universities.

¹¹⁶ L.W.B. Brockliss, *The University of Oxford: A History* (Oxford: Oxford University Press, 2016), p.3 and p.13.

with itinerant masters able to move between schools; the classroom was ‘simply a room in a rented house.’¹¹⁷ The distinction between schools such as Hereford and universities was not made until the thirteenth century; schools could be transitory, and ‘lasted as long as the teacher was able to attract pupils or cared to stay in the town’, while universities were teaching the same subjects but became self-governing and subsequently able to award degrees, allowing the graduate to teach in other universities in Europe.¹¹⁸

Chris Pullin, the current Chancellor of Hereford Cathedral, backed up Hereford’s special role with regard to astrology and astronomy. He related the story of Gerard, who studied astrology and was bishop of Hereford between 1096 and 1100, when he became archbishop of York:

Perhaps he was more acceptable in Hereford than in York (to which he was swiftly promoted) because he was suspected by the cathedral chapter there of being a necromancer on account of the fact that he would spend part of every afternoon reading a book of astrology (the *Mathesis* of Julius Firmicus). One day, feeling unwell in the garden, he sent his servants away so he could sleep; they later found him dead with the book of astrology under his pillow. The canons at York were so suspicious of the un-Christian practices of their archbishop that they refused him burial in York Minster, and ‘would hardly suffer a lowly clod of earth to be thrown on him outside the gates’. This story perhaps confirms our understanding that different cathedral communities specialized in different interests, so that the astronomy and astrology, which were considered unexceptional in Hereford, were a cause for scandal in York where pure theology was the focus.¹¹⁹

Although the information about a cathedral school at Hereford is scant, there does appear to be evidence for a school there, and that Hereford was a major centre of learning for the quadrivium, particularly astrology and astronomy after a large number of Arabic texts on these topics became available to Latin scholars.

Attitudes towards astrology

At first sight, it may seem curious that cathedral schools, given the Church’s traditional hostility to both divination and Islam, might be so ready to embrace texts on astrology

¹¹⁷ Brockliss, *University of Oxford*, p.13.

¹¹⁸ Brockliss, *University of Oxford*, p.124.

¹¹⁹ Pullin, ‘Cathedrals as Centres of Learning’, p.82.

from the Islamic world. The early Christian Church had a dilemma regarding astrology. Valerie Flint described astrology as coming ‘into the early Middle Ages under a very heavy cloud. It did so because it contained within it two especial insults to Christianity: one to the doctrine of human free will, the other, the more important I suspect, to the doctrine of divine providence and so to the human emotion of hope’.¹²⁰ St. Augustine of Hippo, writing in the late fourth century and early fifth century condemned astrology, having initially studied it.¹²¹ He argued against it on two main counts, one theological, one logical. The theological argument was that since most people considered “fate” to mean the influence of the stars at the moment of birth, and that ‘some make this independent of the will of God, while others maintain that it depends upon his will’, the former does away with the need for God, and the latter still assumes that God has handed over power: ‘how is any room left for God to pass judgement on the deeds of men, if they are subject to astrological forces?’¹²² The logical rejection of astrology was based on the observations that twins can be very different: ‘It commonly happens that in these respects the twins resemble many strangers more than they resemble each other. And yet in birth they were separated by a very brief interval of time, and in conception they were begotten at one moment, by one act of intercourse.’¹²³ A century later, Cassiodorus condemned astrology as causing ‘mental blindness’ through ‘dangerous calculations’.¹²⁴ Similarly, in the seventh century, St. Eligius of Noyon condemned various forms of divination, including natal astrology: ‘Nullus sibi proponat fatum vel fortunam aut genesim’.¹²⁵ In the eighth century, Bede described making ever smaller divisions of times until one arrives at the ‘atom’ and pointed out that astrologers use such divisions too, but warned

¹²⁰ V. Flint, ‘The Transmission of Astrology in the Early Middle Ages’, *Viator*, 21 (1990), p.2.

¹²¹ Augustine, *Confessions, Volume I: Books 1-8*, C. Hammond (trans.), Loeb Classical Library 26 (Cambridge, MA: Harvard University Press, 2014), 4.3.4: ‘To be sure I continued to consult those cheats known as astrologers, because it seemed to be the case that they practiced no sacrifice nor did they invoke any spirits in making their predictions. Even so, true Christian faith quite properly rejects and condemns that art’, p.137; *Confessions* 7.6.8: ‘By now I had already rejected the false divinations and blasphemous nonsense of astrologers’, p.309.

¹²² Augustine, *City of God, Volume II: Books 4-7*, W.M. Green, (trans.), Loeb Classical Library 412 (Cambridge, MA: Harvard University Press, 1963), 5.1, pp.135-137.

¹²³ Augustine, *City of God*, 5.1, p.139.

¹²⁴ Cassiodorus, *Institutions of Divine and Secular Learning, On the Soul*, J. Halporn (trans.) (Liverpool: Liverpool University Press, 2004), p.229.

¹²⁵ B. Krusch (ed.), *Vita Eligii Episcopi Noviomagensis* (Hannover: Hahn, 1902), II 16a, p.707.

against using such divisions for the purposes of divination, exhorting his readers ‘that these things are avoided, because such observance is futile and alien to our faith’.¹²⁶

Campion summed this up by saying ‘Simply, Christianity allowed little space for the horoscopic arts.’¹²⁷ However, Campion went on to maintain that there was another reason for astrology’s decline: a loss of function.¹²⁸ The astrological texts available in the Greek-speaking East were becoming lost to the Latin-speaking West, and pagan roots were not an automatic bar to classical learning – Plato was held in high regard by a number of Christian theologians, for example – but ‘stars... were no longer a path to salvation as they had been in the classical world.’¹²⁹ The loss of classical astrological texts such as Ptolemy’s *Tetrabiblos* made the study of astrology difficult even if one wished to ignore the edicts against it. Flint pointed out that because of this, ‘church councils were cursory in their rulings against astrology proper because in fact it posed no threat.’¹³⁰

However, there were cracks in the edifice of Christian condemnation. Even Augustine differentiated between celestial events as practical indicators, such as weather forecasting and navigation, and using those events for divination.¹³¹ Flint pointed out that this distinction may have been obvious to Augustine, but ‘had everyone indeed so understood, then Augustine would not have found it necessary to write these words’.¹³² Isidore of Seville, too, made a distinction between astronomy and astrology saying that astrology was ‘partly natural, and partly superstitious’, the latter being when astrologers attempt to make predictions.¹³³

Thus Christian objections to astrology tended to revolve around astrology’s predictive claims, rather than its practical use in the astronomical sense, but Flint’s point that not everybody understood the distinction is an important one. Flint expanded on this point, pointing out that apparent signs from the heavens, such as lightning flashes, comets, or

¹²⁶ Bede, *Bede: The Reckoning of Time*, F. Wallis (trans.) (Liverpool: Liverpool University Press, 1999), pp.15-16.

¹²⁷ Campion, *History of Western Astrology*, p.3.

¹²⁸ Campion, *History of Western Astrology*, p.3.

¹²⁹ Campion, *History of Western Astrology*, p.3.

¹³⁰ Flint, *Transmission of Astrology*, p.4.

¹³¹ Augustine, *The Letters of St. Augustine*, J.G. Cunningham (trans.) (Altenmünster: Jazzybee Verlag, 2015), Letter LV Chapter VIII.15, p.100.

¹³² V. Flint, *The Rise of Magic in Early Medieval Europe* (Princeton, NJ: Princeton University Press, 1994), p.96.

¹³³ Isidore of Seville, *Etymologies*, S. Barney, W.J. Lewis, J.A. Beach, O. Berghof (eds) (Cambridge: Cambridge University Press, 2006), 3.xxvii, p.99.

propitious rains could sometimes be reconciled with Christianity, and sometimes not, but that ‘to kill the second species of magic without dissipating the strength Christianity might derive from the first was a task of appalling difficulty, no matter with what precise type we have to deal; but in the case of the magic of the heavens the problem was especially severe’.¹³⁴ Indeed, the Bible itself contains numerous examples of celestial occurrences as signs, from God placing the Sun and Moon as signs for seasons and times, to God apparently moving the Sun for Hezekiah.¹³⁵ Deiter Harmening credits the survival of astrology in general to the acceptance of certain forms of it – namely natural astrology.¹³⁶ This contradiction was summarised by Campion: ‘Superstitious astrology was definitely condemned, but natural astrology was not, and that simple fact was bound to lead to later confusion.’¹³⁷

One area where natural astrology – what Isidore called ‘astronomy’ – was vital for Christianity was the need to determine the date of Easter. The etymology of the Latin word for Easter, Pascha, derives from the Hebrew word for the Jewish festival of Passover, פסח (pesach), and many early Christians celebrated Easter on the day before Passover, regardless of whether that happened to be a Sunday or not.¹³⁸ However, the Council of Nicaea in 325 declared this to be heretical, stating that Easter could not be celebrated ‘with the Jews’ on the eve of the Jewish Passover, so if the eve of Passover fell on a Sunday, Easter was postponed to the following Sunday.¹³⁹ Since the eve of Passover is the fourteenth lunar day of the Jewish month of Nisan, the first month of spring, calculating Easter is a matter of taking the first Sunday after the first Full Moon after the spring equinox. While other religions that use a lunar calendar (such as Judaism and Islam) can observe the sighting of the crescent Moon to announce a new month, Christians require advance notice of Easter in order to commemorate Lent.¹⁴⁰ This requires the ability to calculate the dates of the New Moon or Full Moon by synchronising solar and lunar cycles, which is not a trivial problem, rather than by simple observation.

¹³⁴ Flint, *Rise of Magic*, p.87.

¹³⁵ Genesis 1:15; 2 Kings 20:9-11.

¹³⁶ ‘Ein Grund für das Fortleben astrologischer Vorstellungen lag nicht zum wenigsten in der Scheidung einer *astrologia naturalis* (erlaubt) und einer *astrologia superstitiosa*, wie sie vor allem im Anschluß an Isidor von Sevilla immer wieder als legitim angesehen wurde’, D. Harmening, *Astrologie und Öffentlichkeit im Mittelalter* (Stuttgart: Anton Hiersemann, 2005), p.182.

¹³⁷ Campion, *History of Western Astrology*, p.14.

¹³⁸ The day before Passover was the date of Christ’s crucifixion according to John 19:14.

¹³⁹ Bede, *Reckoning of Time*, p.xxxviii.

¹⁴⁰ See for example Bede, *Reckoning of Time*, p.xx.

The necessity of calculating Easter in advance thus became an important topic for the Christian church, and the solution to the problem of calculating the date of Easter formed the basis of the subject of computus.¹⁴¹ In the early sixth century, a Scythian monk, Dionysius Exiguus (most famously known for introducing the *Anno Domini* system of numbering years that is still used across the world today) produced a table showing the dates of Easter, based on a 19-year cycle.¹⁴² Dionysius started his table from the year 532 according to his system of *Anno Domini*, replacing a system based on the accession of the Roman emperor Diocletian, which ran for a period of 95 years.¹⁴³ Debates about the correct calculation continued, but the essential method proposed by Dionysius won the day when Bede wrote his *Reckoning of Time* in 725, which according to Wallis ‘not only guaranteed the ultimate success of Dionysius’ system, but to have made computus into a science’.¹⁴⁴ Bede’s work was copied right up to the sixteenth century, although obvious problems with the calendar from the thirteenth century onwards, eventually leading to the Gregorian reform of the calendar, made Bede ‘rather obsolete’.¹⁴⁵

Bede’s work differed from earlier texts because not only did he produce a full table for the 532-year cycle between 532 and 1063, but he explained the various techniques needed to calculate Easter without the need to look up the date in his table.¹⁴⁶ As well as its practical use, Bede may have opened the door to a wider acceptance of science. Although Wallis’s commentary is careful to point out Bede’s wariness of anything that sounded like astrology, her commentary on chapter 24 (a chapter on the number of hours of moonlight, and not directly related to computus) claims that this demonstrates ‘Bede’s critical scientific mind’, and whose ‘importance for the history of science in the West is seriously underestimated’. She went on to say that ‘Bede’s vision of what computus could

¹⁴¹ ‘Computus’ is the generally accepted spelling of this subject in modern literature. However, many medieval manuscripts refer to the subject as ‘compotus’. Philipp Nothaft, a Post-Doctoral Research Fellow and specialist in computus at All Souls College, Oxford, postulated that the different spelling may have been a deliberate medieval pun on the words for ‘computing’ (computus) and ‘drinking together’ (compotus) as the task involved long hours of hard work and arguing the finer points of the technique over glasses of ale (from his lecture ‘Scandalous Error: Calendar Reform and Calendrical Astronomy in Medieval Europe’, given at All Souls College, Oxford, 16 October 2016).

¹⁴² A.A. Mosshammer, *The Easter Computus and the Origins of the Christian Era* (Oxford: Oxford University Press, 2008), p.72.

¹⁴³ Bede, *Reckoning of Time*, p.liv.

¹⁴⁴ Bede, *Reckoning of Time*, p.xvii.

¹⁴⁵ Bede, *Reckoning of Time*, p.xcvii. Nothaft also pointed out in his ‘Scandalous Error’ lecture that the Gregorian calendar broke the 532-year cycle of Bede, and that a new repeating cycle would need to be not 532 years, but several million years.

¹⁴⁶ For the full listing of Bede’s 532-year table, see Appendix Two of Bede, *Reckoning of Time*, pp.392-404.

encompass allowed monks like Gerbert and Abbo of Fleury, well before the arrival of Greek and Arabic astronomical texts, at least to pose questions and ponder problems which were purely scientific in character, independent of their applicability to the calendar'.¹⁴⁷

Bede's system was eternal – in chapter 65 of *Reckoning of Time*, Bede stated that although his table only goes up to the year 1063, one can, 'with unerring gaze, not only look forward to the present and future, but can also look back at each and every date of Easter in the past'.¹⁴⁸ However, his useful table of dates for the 532-year cycle in his book was coming to an end in the eleventh century, and various debates began, some of which criticised Bede.¹⁴⁹ Arguments about the correct calculation of dates were not restricted to Christianity; a controversy erupted between two rabbis about the date of Passover in 922, where two competing systems could result in a month's difference, and the calculation of the Hebrew calendar was recorded in Arabic texts too.¹⁵⁰ Thus the interest in calendrical issues, and of computus, was topical in both Christian and Arabic discourses. Interest in Islamic civilisation, too, had begun as early as the eighth century. John, Bishop of Seville, had the Bible translated into Arabic in 724, the year before Bede wrote *Reckoning of Time*, and by the ninth century, the bishop of Córdoba was lamenting the fact that 'our young Christians... are perfected in Arabic eloquence... Scarcely one in a thousand can be found in the Christian community who is able to compose a well-written Latin letter to a friend. But there are a great many among them who can expound the Arabic pomposity of language with the greatest erudition, and adorn the final clauses of verses more elegantly than the Arabs themselves!'¹⁵¹

English authors from Bede onwards were clearly aware of the Arab conquests that characterised the first century and a half following the rise of Islam. Bede referred to the appearance of two comets in 729 presaging the Umayyad attack on Aquitaine and the subsequent defeat of the Muslim army at the Battle of Tours in 732, saying that the 'Saracens, like a very sore plague, wasted France with pitiful destruction, and themselves not long after were justly punished in the same country for their unbelief'.¹⁵² Although

¹⁴⁷ Bede, *Reckoning of Time*, p.300.

¹⁴⁸ Bede, *Reckoning of Time*, p.156.

¹⁴⁹ Bede, *Reckoning of Time*, p.xcvi.

¹⁵⁰ C.P.E. Nothaft, *Medieval Latin Christian Texts on the Jewish Calendar* (Leiden: Brill, 2014), p.24.

¹⁵¹ Metlitzki, *Matter of Araby*, p.5.

¹⁵² Bede, *Ecclesiastical History, Volume II*, J.E. King (trans.) (Cambridge, MA: Harvard University Press, 1930), Loeb Classical Library 248, 5.23, p.369.

Bede made no reference to Arabic studies, a large library was subsequently amassed at York, described by Alcuin of York with references to ‘African’ works in addition to those in Greek, Hebrew and Latin, and Alcuin also made reference to a disputation between a Spanish bishop and a Saracen, which Metlitzki described as ‘a first hint of an interest in Islam’.¹⁵³ In 780, Alcuin met Charlemagne and was invited to his court at Aachen, in Lorraine, where there was a community of scholars.¹⁵⁴ Charlemagne himself had an interest in astronomy and was given an elaborate water clock by the caliph Harun al-Rashid in 807, showing further links between Muslim and Christian scholars.¹⁵⁵ Philipp Nothaft described Lorraine as a ‘seedbed for Arabic learning, which swept across the Pyrenees at an increasing rate, long before the same could be said about other parts of Christian Europe.’¹⁵⁶ This is explored in detail in an *Isis* article by James Thompson in which he claimed that ‘the intellectual avenue between Spain and Europe beyond the Pyrenees, which was as old as the Roman Empire, was never wholly closed.’¹⁵⁷

In addition to links between the Christian and Islamic worlds in the West, a similar situation applied in the East, too. Although the collapse of the Roman Empire had meant a practical split between Latin Western Europe and Greek-speaking Byzantium, there were regular lines of communication due to their shared Christian religion and the fact that while the Roman Emperor was based in Constantinople, the Pope was based in Rome. Byzantium had access to Greek texts, unlike Western Europe, and there were links between Baghdad and Constantinople, with astrology being used in Byzantium in the eighth century, ‘partly thanks to one Stephanus the Philosopher, a student of the caliph’s astrologer, Theophilus of Edessa [who] moved from Baghdad to Constantinople in 775.’¹⁵⁸ Another practitioner was Leo the Mathematician, one of whose students ended up at the court of a caliph translating Greek science texts into Arabic, while Leo became head of a school of philosophy and science in Constantinople.¹⁵⁹

¹⁵³ Metlitzki, *Matter of Araby*, p.15.

¹⁵⁴ Campion, *History of Western Astrology*, p.20.

¹⁵⁵ K. von Stuckrad, ‘Interreligious Transfers in the Middle Ages: The Case of Astrology’, *Journal of Religion in Europe*, 1.1 (2008), pp.49-50.

¹⁵⁶ C.P.E. Nothaft, *Dating the Passion: The Life of Jesus and the Emergence of Scientific Chronology (200-1600)*, (Leiden: Brill, 2012). pp.113-114.

¹⁵⁷ J. Thompson, ‘The Introduction of Arabic Science into Lorraine in the Tenth Century’, *Isis*, 12.2 (1929), pp.184-193.

¹⁵⁸ Campion, *History of Western Astrology*, p.20.

¹⁵⁹ J. Freely, *Aladdin’s Lamp: How Greek Science Came to Europe Through the Islamic World* (New York: Alfred A. Knopf, 2009), p.71.

Stephen McCluskey described the ‘reemergence of astrology’ in the ninth century, where Charlemagne’s son, Emperor Louis the Pious, asked his court astronomer for the omens relating to a comet. The astronomer described the position of the comet in terms of its position within constellations, and both the emperor and astronomer saw the stars as signs rather than causes – showing ‘if in rudimentary form, a reemergence of that traditional combination of astronomy and astrology which had flourished in the Roman Empire, but had left scarcely a trace in the historical record of the early Middle Ages’.¹⁶⁰ After Louis’ death, Rabanus Maurus (who subsequently became Archbishop of Mainz) wrote a treatise that demonstrated his understanding of basic astrological concepts based on Isidore of Seville and, while condemning various aspects of prognostication, does not single out astrology for specific attention.¹⁶¹

By the second half of the tenth century, Gerbert d’Aurillac (who subsequently became Pope Sylvester II) was using Arabic terminology and treatises translated from Arabic, and (according to William of Malmesbury) studied mathematics in Barcelona and Muslim Córdoba, although Nothaft suggests that ‘much of this is the stuff of legend rather than historical fact’.¹⁶² Gerbert took a keen interest in astrological and scientific texts and performed his own scientific observations – as Champion pointed out, ‘we could not have a clearer instance of a scientifically inquiring mind than in Gerbert.’¹⁶³

Marco Zuccato showed that Arabic works, including the *Alchandreana*, an astrological text of Arabic origin, had come to Christian Catalonia from al-Andalus in the tenth century, and he maintained that this transmission began not ‘through the mediation of Mozarabs (as has generally been believed) but through diplomatic channels’.¹⁶⁴ These diplomatic channels were established as the result of a peace treaty between al-Andalus and the Crown of León, facilitated by the caliph’s advisor, Abu Yusuf Hasday ben Ishaq ben Shaprut, the head of the Andalusian Jewish community.¹⁶⁵ Zuccato also claimed that Gerbert d’Aurillac studied in Spain where he ‘sought mathematical and astrological books from his Spanish acquaintances’ and later sent letters requesting various texts, two published by ‘Joseph Sapiens’ and the third, addressed to Lupitus of Barcelona asking for

¹⁶⁰ McCluskey, *Astronomies and Cultures*, p.145.

¹⁶¹ McCluskey, *Astronomies and Cultures*, pp.145-146.

¹⁶² Metlitzki, *Matter of Araby*, p.16; Nothaft, *Walcher of Malvern*, p.15.

¹⁶³ Champion, *History of Western Astrology*, p.32.

¹⁶⁴ M. Zuccato, ‘Gerbert of Aurillac and a Tenth-Century Jewish Channel for the Transmission of Arabic Science to the West’, *Speculum*, 80 (2005), p.743.

¹⁶⁵ Zuccato, *Gerbert of Aurillac*, p.751.

a ‘librum de astrologia translatum a te’; Zuccato suggested the ‘Joseph Sapiens’ may have been Abu Yusuf Hasday.¹⁶⁶ Although Zuccato claimed that the *Alchandreana* post-dated Gerbert, the establishment of channels between Islamic and Christian Spain for astrological texts may have enabled the transmission of the *Alchandreana*. This theory is strengthened by the observation that the text ‘includes several Jewish elements, for instance, the Hebrew names of the planets and zodiacal signs’.¹⁶⁷

Moreton showed connections between Lotharingia (the Carolingian kingdom occupying roughly the same territory as Lorraine did subsequently) and England, particularly the West Country, in the tenth century: ‘contacts between the West Country and Lotharingia, with its early interest in Arabic science, began before the Norman Conquest and reinforced interest in computus.’¹⁶⁸ The tenth century, then, saw what Flint described as ‘a rush toward respectability for astrology’, with texts on the use of the astrolabe and astrological material from Arabic sources.¹⁶⁹ Adrianna Borelli dealt with the early Latin texts on the astrolabe in detail, Juste and Drecker both examined the role of the eleventh-century monk Hermannus Contractus in explaining the use of the astrolabe in two manuscripts that he wrote, and Casulleras discussed the use of astrolabes in astrological issues.¹⁷⁰

By the twelfth century, the study of computus was superseded by newly translated Arabic works on mathematics and astronomy, although this can be seen as a development of computus rather than a replacement; Wallis called computus ‘the door through which ancient and Arabic astronomy and mathematics entered the West’.¹⁷¹ Flint and Wallis both agreed that the requirements of ecclesiastical computus provided an opening to more

¹⁶⁶ Zuccato, *Gerbert of Aurillac*, p.747 and 754.

¹⁶⁷ Zuccato, *Gerbert of Aurillac*, p.760; See also E.R. Truitt, ‘Celestial Divination and Arabic Science in Twelfth-Century England: The History of Gerbert of Aurillac’s Talking Head’, *Journal of the History of Ideas*, 73.2 (2012), pp.201-222 for a fuller discussion of Gerbert’s subsequent influence.

¹⁶⁸ Moreton, ‘Before Grosseteste’, p.565.

¹⁶⁹ Flint, *Rise of Magic*, p.142, which refers to the ‘perplexing MS Paris BN Lat 17686’ [sic] but which is actually a reference to the *Alchandreana*, Paris, Bibliothèque nationale de France, Lat. 17868.

¹⁷⁰ A. Borelli, *Aspects of the Astrolabe* (Stuttgart: Franz Steiner, 2008); D. Juste, ‘Hermann der Lahme und das Astrolab im Spiegel der neuesten Forschung’ in F. Heinzer and T. Zotz (eds.), *Hermann der Lahme: Reichenauer Mönch und Universalgelehrter des 11. Jahrhunderts* (Stuttgart: Kohlhammer, 2016), pp.273-284; J. Drecker, ‘Hermannus Contractus Über das Astrolab’, *Isis*, 16.2 (1931), pp.200-219; J. Casulleras, ‘The Instruments and the Exercise of Astrology in the Medieval Arabic Tradition’, *Archives Internationales d’Histoire des Sciences* 63.170-171 (2013), pp.517-540.

¹⁷¹ F. Wallis, ‘Medicine in Medieval Calendar Manuscripts’ in M.R. Schleissner (ed.), *Manuscript Sources of Medieval Medicine: A Book of Essays*, (Abingdon: Routledge, 2014), p.109.

overtly astrological practices, particularly from the tenth century onwards when works such as Manilius' *Astronomica* and Firmicus Maternus' *Mathesis* became available.¹⁷²

This increased level of knowledge of Arabic texts may have gone some way to addressing the loss of astrological knowledge in the Latin West, but it does not address the central concern of being careful to distinguish between allowable natural astrology and forbidden divinatory astrology. Yet astrology of both varieties makes an appearance from the tenth century onwards. Flint stated that 'One of the most spectacular rescues in the history of magic's rise in the early Middle Ages is the rescue of astrology.'¹⁷³ In part, Flint claimed this was that Isidore's distinction between the two forms of astrology 'made it possible for the terms *astronomia* and *astrologia* to become, under certain conditions, interchangeable', but that other non-Christian forms of magic existed that were seen as far more dangerous than astrology, and that by making an 'honest science' of astrology, astrology could be used to counter these ideas.¹⁷⁴ Among the more respectable uses of astrology were its use for medicine and agriculture, and a good antidote to the more pagan magical practices such as ligatures or charms for crops.¹⁷⁵ The obvious effect of the Moon on tides and the Sun on seasons meant the use of some form of natural astrology for agriculture was self-evident, which led to "prognostic" texts based on the Moon that seem to stray from natural astrology into magical territory. Flint provided an example for the fourth day of the Moon, when 'Boys born on this day will be fornicators and so will girls. If you have a dream on it, good or bad, it will come true'.¹⁷⁶

These prognostications were copied in monasteries, but condemned in sermons, which Flint saw as a division in the Church between a more rigid central authority, and local churches who were more prepared to compromise with older beliefs.¹⁷⁷ Carine van Rhijn also gave examples of lunar prognostications, but took issue with Flint's assumption that any form of prognostication is due to the reluctant incorporation of pagan practices into

¹⁷² Flint, *Rise of Magic*, p.141.

¹⁷³ Flint, *Rise of Magic*, p.128.

¹⁷⁴ Flint, *Rise of Magic*, pp.128-129.

¹⁷⁵ Flint, *Rise of Magic*, p.130.

¹⁷⁶ Flint, *Rise of Magic*, p.135, stating this is from a late eleventh-century Vatican codex, Vatican City, Biblioteca Apostolica Vaticana, Vat. Lat. 3101, quoting Emanuel Svenberg; E. Svenberg, *De Latinska Lunaria* (Göteborg: Elanders Boktryckeri Aktiebolag, 1936), p.13, claimed this dates from 1077. However, the Vatican Digital Library claims that the section in which this prognostic occurs (f.26r) dates from the thirteenth century, <https://digi.vatlib.it/mss/detail/Vat.lat.3101> [16 March 2019]. However, London, British Library, Cotton Titus D XXVII, ff.2r-8v, which Flint cited subsequently, does date from the eleventh century: <http://www.digipal.eu/digipal/manuscripts/946/> [18 March 2019].

¹⁷⁷ Flint, *Rise of Magic*, p.135.

Christianity, suggesting instead that the key issue was not the content but who practiced them, and that such ideas would not necessarily stand out as pagan.¹⁷⁸ In particular, computistic and medical material would have been perfectly acceptable, and that ‘There is not much that distinguishes some prognostics from extant computistical material, and as was the case with the medical material, it is rather unlikely that early medieval users of these manuscripts perceived much – if any – difference. Like *computus*, many prognostics centre on the age of the moon, ... which presupposes the ability to calculate the date of the new moon.’¹⁷⁹ Indeed, van Rhijn pointed out that by ignoring whether the origins of a practice were pagan or not, but instead focusing on what the practice did, they boil down to ‘predicting the future, observing the moon and the stars, and medicine, so practices remarkably similar to what highly learned clerics did.’¹⁸⁰

In addition to Christian concerns about the pagan origins of astrology itself, one might also expect the Christian West to be hostile to any ideas coming from the Islamic world. Scott Montgomery addressed this question, saying that the new texts were seen not as Islamic, but as hidden or lost texts that the Arabic scholars had safeguarded, and these scholars were seen as ‘exemplars of a way of thought medieval Europe desperately required. Yet what this meant, in effect, was that Arabic natural philosophy remained, in some sense, exempted from Islamic culture.’¹⁸¹ This theme was also taken up by José Martínez Gázquez in an anthology examining attitudes of medieval translators towards Islam and Arabic science.¹⁸²

If Christianity may have had reservations about astrology’s pagan roots, one might expect Islam – another monotheistic religion – to have had the same concerns, and yet Islam appears to have embraced astrology. The rapid rise of Islam in the seventh century, and the Muslim conquest of the Sassanian Empire, meant that Muslim scholars had access to a wide range of astrological texts from Byzantium, Persia and India. A century later, the caliph al-Mansur had set up his new capital of Baghdad, the foundation being laid on 30 July 762, a date elected by a team of astrologers, including the Persian Jewish astrologer

¹⁷⁸ C. van Rhijn, ‘Pastoral Care and Prognostics in the Carolingian Period’, *Revue Bénédictine*, 127.2 (2017), pp.277-284.

¹⁷⁹ Van Rhijn, *Pastoral Care*, p.283.

¹⁸⁰ Van Rhijn, *Pastoral Care*, p.288.

¹⁸¹ S. Montgomery, *Science in Translation* (Chicago: University of Chicago Press, 2000), p.165.

¹⁸² J.M. Gázquez, *The Attitude of the Medieval Latin Translators Towards the Arabic Sciences*, *Micrologus’ Library* 75 (Firenze: SISMEL, 2016).

Masha'Allah.¹⁸³ By 765 Baghdad had not only been established as the capital, but had become a centre of translation of books into Arabic from various languages, and the caliph employed astrologers in his court.¹⁸⁴ Freely described how 'the diaspora of classical learning... took root in the new civilizations that emerged in Western Europe, Byzantium, and the Islamic world, three streams of culture whose eventual confluence would produce a renaissance of science'.¹⁸⁵

Abu Ma'shar, writing in the ninth century, 'rejoices that his search in the realm of natural science... has led him to the discovery of the Creator' and his references to "God's will" are 'scarcely different' to Aristotle's concept of the "prime mover".¹⁸⁶ However, Richard Lemay questioned Abu Ma'shar's belief in the idea of divine providence, saying that 'Abu Ma'shar's cosmological system leaves as little room for the intervention of a Providence as that of Aristotle, perhaps even less'.¹⁸⁷ Little is known of the status of astronomy in very early Islam, although there was clearly an interest in sciences foreign to Islam with a large number of Greek scientific texts translated within a short period, often by Persian scholars.¹⁸⁸

Despite Aristotle's works being accepted in the new Islamic milieu of the eighth century, the ideas of planetary agency inherent within Hellenistic astrology left astrology open to attack, and Abu Ma'shar devotes a chapter to the defence of astrology in his *Great Introduction to the Science of the Stars*, and Peter Adamson discussed the complex relationship between Abu Ma'shar and al-Kindi.¹⁸⁹ Astrology is certainly part of Aristotelian thought, which made it harder for Muslim scholars to dismiss astrology while retaining their acceptance of Aristotle's works in general. For example, in talking about

¹⁸³ C. Burnett and D. Greenbaum, *From Masha'Allah to Kepler: Theory and Practice in Medieval and Renaissance Astrology* (Lampeter: Sophia Centre Press, 2015), p.65.

¹⁸⁴ Freely, *Aladdin's Lamp*, pp.72-73.

¹⁸⁵ Freely, *Aladdin's Lamp*, p.71.

¹⁸⁶ R. Lemay, *Abu Ma'shar and Latin Aristotelianism in the Twelfth Century* (Beirut: American University of Beirut, 1962), pp.68-69.

¹⁸⁷ Lemay, *Abu Ma'shar and Latin Aristotelianism*, pp.113-114.

¹⁸⁸ G. Saliba, 'The Development of Astronomy in Medieval Islamic Society', *Arab Studies Quarterly*, 4.3 (1982), p.212; G. Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge, MA: MIT Press, 2007), p.76.

¹⁸⁹ 'De confirmatione astrologie' in Abu Ma'shar, *Liber Introductorii Maioris ad Scientiam Judiciorum Astrorum*, Hermann of Carinthia (trans.), R. Lemay (ed.), Volume 8 (Napoli: Istituto Universitario Orientale, 1995), I.4, pp.14-21; G. Saliba, 'Islamic Astronomy in Context: Attacks on Astrology and the Rise of the Hay'a Tradition', *Bulletin of the Royal Institute for Inter-Faith Studies*, 4.1 (2002), pp.25-46; P. Adamson, 'Abu Ma'shar, al-Kindi and the Philosophical Defense of Astrology', *Recherches de Théologie et Philosophie Médiévales*, 69.2 (2002), pp.245-270.

the process of gestation, Aristotle said ‘the limits of these processes, both as regards their beginning and their end, are controlled by the movements of these heavenly bodies... And as for the revolution of these heavenly bodies, there may very well be other principles which lie behind them. Nature’s aim, then, is to measure the generations and endings of things by the measures of these bodies.’¹⁹⁰

Whatever the reason for the initial enthusiasm for foreign texts in early Islam, translation of philosophical, mathematical, astronomical and astrological texts into Arabic continued for several centuries. Masha’Allah was a prolific author of the late eighth and early ninth centuries, comprising ‘at least 26 works’ incorporating Indian and Persian astrological practices together with Hellenistic techniques.¹⁹¹ His contemporary Sahl bin Bishr produced what Dykes described as a ‘reader-friendly packaging of traditional material which made his work extremely influential for many centuries.’¹⁹² Abu Ma’shar’s *Great Introduction*, and his condensed *Abbreviation*, written in the ninth century, were translated into Latin and became standard texts in the Latin West.¹⁹³ In the tenth century, al-Qabisi wrote his *Introduction*, which ‘became one of the most popular introductions to astrology for many centuries’.¹⁹⁴ In the eleventh century, despite attacks on astrology by philosophers such as ibn Sina (Avicenna) and ibn Rushd (Averroës), ibn Sina’s contemporary, al-Biruni, compiled an astrological encyclopaedia in 1029.¹⁹⁵

Islam did not operate in a vacuum, and the Muslim conquest of much of Spain followed by Christian incursions into Muslim territory with the Crusades provided an interface between the Islamic world and the rest of Europe that was fertile soil for the transmission of both classical and Islamic ideas into Christian Europe. Borderlands are places of conflict, but also carry with them the potential for an exchange of ideas and trade. Haskins described Toledo, recaptured by the Christians in 1085, as a ‘natural place of exchange for Christian and Saracen learning.’¹⁹⁶ French explored the concept of borderlands in more detail, saying that ‘borders, too, are often places where such ideologies are learned so that they can be counteracted’ giving Sicily and Toledo as examples of exchanges

¹⁹⁰ Aristotle, *Generation of Animals*, A.L. Peck (trans.), Loeb Classical Library 366 (Cambridge, MA: Harvard University Press, 1942), p.482.

¹⁹¹ Dykes, *Sahl and Masha’Allah*, p.vii.

¹⁹² Dykes, *Sahl and Masha’Allah*, p.viii.

¹⁹³ Dykes, *Introductions to Traditional Astrology*, p.2.

¹⁹⁴ Dykes, *Introductions to Traditional Astrology*, pp.3-4.

¹⁹⁵ Al-Biruni, *Book of Instruction*.

¹⁹⁶ Haskins, *Mediaeval Science*, p.12.

between Christians and Muslims.¹⁹⁷ The combination of a flow of ideas from the Islamic world into Byzantium in the East and Spain in the West that had been taking place since the ninth century (and possibly earlier), and the opportunities and cultural mixing that were opened up as a result of two conflicts – the Crusades on the Christian-Muslim border and the Norman Conquest on the border between France and England – thus provided a rich environment for an exchange of ideas on a bigger scale than had been seen before.

After the Norman Conquest in 1066, Jews arrived in England. Jews had been established in the Islamic world for centuries, and many of the “Arabic” sources coming into Europe were from Jewish writers, some converts to Islam, and some practicing Jews. Towards the end of the first millennium, Jews became more Europeanised, preferring to live among Christians rather than Muslims.¹⁹⁸ Whether the move to Europe was positive is debatable, since many Jewish communities were persecuted in Europe, especially with the millennial fervour surrounding the coming of the years 1000 and 1033 (seen as the millennium of Christ’s birth and death, respectively, and with Jews frequently reviled on the assumption that it was the Jews who killed Christ). No Jewish communities were recorded in England prior to 1066, but Jews did arrive from Europe after the Conquest, when William ‘invited, probably even ordered, the Jews into England.’¹⁹⁹ This is significant, since Christian Europe (that is, all of Europe outside the Islamic parts of Spain) was religiously fairly homogeneous; there were not large numbers of Muslims living in Christian Europe at the time, so Jews would have been the only non-Christian group living there. Relations between Jews and the Christian authorities were rather variable, but in many cases were on good terms with friendly doctrinal debates, and the possibility of more formal transmission as suggested by Roger French, referring specifically to Jews in England: ‘We have little idea how learned such communities of Jews were, but their international connections provide a possible explanation for the dissemination of Arabic knowledge.’²⁰⁰

The early interest in science, and limited transmission between Christians and Muslims prior to the twelfth century, begs the question of whether a scientific impulse would have

¹⁹⁷ French, ‘Foretelling the Future’, p.464.

¹⁹⁸ O. Limor, ‘The Erection of Essential Boundaries: Christians and Jews’ in M. Rubin and W. Simons (eds), *The Cambridge History of Christianity Volume 4: Christianity in Western Europe, c.1100-c.1500* (Cambridge: Cambridge University Press, 2009), p.136.

¹⁹⁹ R. Huscroft, *Expulsion: England’s Jewish Solution* (Stroud: Tempus, 2006), p.23.

²⁰⁰ Huscroft, *Expulsion*, p.25; French, ‘Foretelling the Future’, p.465.

developed independently in Western Europe without the influx of literature from the Arabic world that was about to be unleashed.²⁰¹ The answer will never be known, because this trickle of early Arabic translations into Christian Europe became a flood in the twelfth century.

The foregoing discussion, though, shows how potentially hostile Christian attitudes to astrology were modified by practical considerations. In particular, there was a clear transition from computus to the study of Arabic science, where the need to develop accurate lunar tables resulted in the appreciation of the astrolabe, an Arabic instrument, and thence into an interest in Arabic techniques. By the twelfth century, both computus and astrology were acceptable topics for study in cathedral schools, such as the one at Hereford.

The first two chapters of this thesis have addressed the context in which Roger of Hereford was operating. The following chapters will focus on the primary task of analysing Roger of Hereford's *Judicial Astrology*.

²⁰¹ Grant, *Source Book*, p.12.

Chapter Three: The manuscripts

As discussed in Chapter One, the last analysis of Roger's *Judicial Astrology* was Nicholas Whyte's MPhil dissertation, published in 1991. Whyte relied primarily on two manuscripts from Cambridge University Library, with some additional material from a Bodleian Library manuscript (although he identified several more), while French, who also analysed some aspects of the text, relied primarily on a transcript he had made of one of the Cambridge manuscripts.¹ In what follows all twenty-two known extant manuscripts containing all or part of Roger's *Judicial Astrology* have been examined, and are summarised below, and are listed in order of relevance to this thesis; A is the oldest extant manuscript and is used as the exemplar in this thesis where possible. A few folios are missing from A, and for those folios, B, which is complete, is used instead. C is also complete, and features in some of the discussions relating to analysing the manuscript. D, E, F, and G are all thirteenth-century copies and are relevant to the development of the *stemma codicum* discussed later. Remaining manuscripts are listed in order of completeness. A full analysis of the palaeography of the manuscripts is beyond the scope of this thesis, but a brief palaeographical analysis has been undertaken in order to identify, tentatively, the possible location and date of the earlier manuscripts and in order to identify those manuscripts that might be considered to be as close as possible to Roger's non-extant original. In addition, those manuscripts that contain Roger's prologue and introduction have a number of tables, some of which contain errors. Examining the manuscripts to see where errors have been copied also provides a route to determining which manuscripts are likely to be closer to the original source. Professor Erik Kwakkel of the University of British Columbia very kindly narrowed down dates for some of the manuscripts for which a palaeographical analysis had been undertaken. These analyses are covered in a later section of this chapter. Finally, an examination of the contents of the manuscripts, together with a brief survey of other texts bound within the same codex, provides some possible information about the reception of Roger's *Judicial Astrology*.

¹ Whyte, 'Roger of Hereford', p.55. Whyte made use primarily of Cambridge, University Library, li 1.1, ff.40r-59r and Cambridge, University Library, Gg 6.3, ff.139r-153r with additional material from Oxford, Bodleian Library, Selden Supra 76, ff.3f-19v. French had apparently transcribed Cambridge li 1.1, which Whyte referred to.

A. Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v.

Parchment, 22.5 x 17.8cm, written in England in the thirteenth century.² It is written in a very neat miniscule hand. It has a few pages missing part way through the introduction section, but is otherwise complete. Kwakkel dated this as around 1250, making this the earliest known extant manuscript of *Judicial Astrology*.

B. Cambridge, University Library, Ii 1.1, ff.40r-59r.

Parchment, quarto, written in the fourteenth century in double columns.³ It is written in a neat cursive hand, and is complete.

C. Cambridge, University Library, Gg 6.3, ff.139r-153r.

Parchment, octavo, written in the fourteenth century.⁴ It is written in an untidy cursive hand, and is complete.

D. Oxford, Bodleian Library, Digby 149, ff.189r-194v.

Parchment, quarto, written in the last part of the thirteenth century.⁵ It is written in a neat miniscule, and is in two columns. It comprises the introductory section of the text only.

E. Oxford, Bodleian Library, Laud Misc. 644, ff.221r-224r.

Parchment, quarto, written in the fourteenth century, according to the catalogue.⁶ However, as described later in this chapter, the palaeography suggests a late thirteenth-century hand, and Kwakkel has narrowed this down to 1268-1272. It is highly decorated, in a neat miniscule hand, in two columns. It comprises the introductory section of the text, but finishes abruptly in the middle of a sentence, and is followed – on the same page and in the same hand – by an incipit for a different text.

² F. Madan, H.H.E. Craster and N. Denholm-Young, *A Summary Catalogue of Western Manuscripts in the Bodleian Library at Oxford*, Vol 2 Part 1 (Oxford: Clarendon Press, 1922), entry 3464, p.644.

³ Cambridge University, *A Catalogue of the Manuscripts Preserved in the Library of the University of Cambridge Vol III* (Cambridge: Cambridge University Press, 1858), entry 1693, p.312.

⁴ Cambridge University, *A Catalogue of the Manuscripts Vol III*, entry 1572, p.214.

⁵ 'Membranaceus... Pro maxima parte saec. xiii', R.W. Hunt and A.G. Watson, *Bodleian Library Quarto Catalogues IX Digby Manuscripts* (Oxford: Bodleian Library, 1999) (this is a reproduction of the 1883 catalogue by W.D. Macray), p.147.

⁶ H.O. Coxe, *Bodleian Library Quarto Catalogues II Laudian Manuscripts* (Oxford: Bodleian Library, 1973) (this is a reprint of the edition of the 1858-1885 catalogue), pp.465-466.

F. Oxford, Bodleian Library, Auct F III 13, ff.148r-151v.

Parchment, 26.7 x 20.3cm, written in the second half of the thirteenth century in England.⁷ It is written in a neat miniscule, and gaps at the start of sections suggest this manuscript was intended to be decorated. It comprises the introductory section of the text, and finishes abruptly at the same point that manuscript E above finishes.

G. Vatican City, Biblioteca Apostolica Vaticana, Pal. Lat. 1414, ff.220r-224r.

Parchment, thirteenth or fourteenth century of French origin, probably Paris, according to the online catalogue entry.⁸ However, the Ptolemaeus database narrows this down to probably having been written in 1266.⁹ It is written in a neat miniscule, and like manuscripts E and F above, it comprises the introductory section of the text, and finishes abruptly at the same point as E and F.

H. Erfurt, Wissenschaftliche Allgemeinbibliothek, Ampl. Oct. 84, ff.39r-52r.

Parchment, octavo, written in the first half of the fourteenth century, and of a southern German origin.¹⁰ It is written in a neat miniscule, in two columns.

I. Soest, Stadtbibliothek, Codex 24, ff.33r-45v.

Parchment, written in the middle of the fourteenth century, probably in England. It is written in a cursive Gothic script.¹¹

J. Paris, Bibliothèque nationale de France, Lat. 7434, ff.72r-79r.

Parchment, probably early fourteenth century, of French origin. It misses the prologue and starts rather abruptly, part way through a sentence about house division, but is otherwise complete.

K. Oxford, Bodleian Library, e Musaeo 181, ff.1r-31v.

⁷ Madan, *Summary Catalogue: Bodleian*, Vol 2 Part 1, entry 2177, p.245.

⁸ Vatican Digital Library, *Pal. Lat. 1414*, https://digi.vatlib.it/view/MSS_Pal.lat.1414 [6 October 2019].

⁹ D. Juste, 'MS Vatican, Biblioteca Apostolica Vaticana, Pal. lat. 1414' (update: 24.11.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/239> [7 December 2018].

¹⁰ W. Schum, *Beschreibendes Verzeichnis der Amplonianischen Handschriften-Sammlung zu Erfurt* (Berlin: Weidmannsche Buchhandlung, 1887), p.741.

¹¹ M. Bernd and T. Brandis, *Die Mittelalterlichen Handschriften der Wissenschaftlichen Stadtbibliothek Soest* (Wiesbaden: Harrassowitz, 1990), p.153.

Paper, 21.3 x 14.7cm, late fifteenth century.¹² Written in a cursive hand. Includes the prologue, reference section and misses the final brief sections on elections and method of judgment, but is otherwise complete.

L. Berlin, Staatsbibliothek Preußischer Kulturbesitz, Lat. fol. 54 (964), ff.87va-95vb.

Paper, appears to have been copied in 1440 – the Ptolemaeus database quotes this date as being written on f.69ra, and that ‘this date probably also applies to f. 74-137, copied by the same hand’; those folios include *Judicial Astrology*.¹³ It omits a paragraph in the reference section relating to terms and definitions, omits the tables at the end of the reference section, and misses the introduction to the book on Simple Judgements, but is otherwise complete.

M. Limoges, Bibliothèque Municipale, 9 (28), ff.124v-128v.

Paper, 28.3 x 20.1cm, fifteenth century, and originating from Limoges.¹⁴ It is written in a cursive hand with ascenders sloping to the left. It omits the prologue and reference section.

N. Dijon, Bibliothèque Municipale, 1045 (116), ff.172v-180r.

Paper, 29.2 x 21.5cm, fifteenth century. It was copied by Petrus Pebidic, and although no firm date is given for this codex, he also copied Dijon 449 in 1459 at the University of Dole, near Dijon, and BNF Lat 7408 in Besançon in 1483.¹⁵ It is written in a cursive hand. It omits the prologue and reference section.

¹² F. Madan, H.H.E. Craster and N. Denholm-Young, *A Summary Catalogue of Western Manuscripts in the Bodleian Library at Oxford*, Vol 2 Part 2 (Oxford: Clarendon Press, 1937), entry 3556, p.680.

¹³ D. Juste, ‘MS Berlin, Staatsbibliothek Preußischer Kulturbesitz, lat. fol. 54 (964)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/522> [11 March 2019].

¹⁴ Centre National de la Recherche Scientifique, ‘France – Limoge – Bibliothèque Municipale – 0009’, *Medium – Répertoire des Manuscrits Reproduits ou Recensés*, <http://medium-avance.irht.cnrs.fr/ark:/63955/md795712mn93> [13 October 2019]; D. Juste, ‘MS Limoges, Bibliothèque Municipale, 9 (28)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/213>

¹⁵ D. Juste, ‘MS Dijon, Bibliothèque Municipale, 449 (270)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/538> [11 March 2019] and D. Juste, ‘MS Dijon, Bibliothèque Municipale, 449 (270)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/538> [11 March 2019].

O. Paris, Bibliothèque nationale de France, Nouv. acq. Lat. 693, ff.135va-138vb.

Parchment, thirteenth to fourteenth century.¹⁶ However, the Ptolemaeus database identifies the date as between 1312 and 1325, with an English origin.¹⁷ It is in a neat miniscule, and omits the prologue and reference sections.

P. Oxford, Bodleian Library, Digby 57, ff.146-151v.

Parchment, quarto, fourteenth to fifteenth century.¹⁸ It is written in a miniscule hand. It is missing the majority of the large introductory section, and the only elements from this section are the nature of the twelve signs, seven planets, and the twelve houses, and it includes a summary of which houses are strong and weak that are absent in other manuscripts.

Q. Oxford, Bodleian Library, Digby 58, ff.33r-34v.

Parchment, quarto, fourteenth century according to the main Digby catalogue, although the online version suggests that the first part of the codex, in which Roger's text is bound, dates from the second half of the fifteenth century.¹⁹ It is written in a cursive hand with ascenders sloping to the left. It is incomplete, omitting the prologue and reference sections and stops abruptly part way through the remaining text.

R. Oxford, Bodleian Library, Digby 38, ff.96v-99v.

Parchment, quarto, fourteenth century.²⁰ It is written in a cursive hand. It omits the prologue and reference section, and the remainder misses out many sentences, providing a summary rather than the full text.

S. Oxford, Bodleian Library, Ashmole 1796, ff.36r-38r.

A small quarto written in a small half-text hand, of the end of the fourteenth or beginning of the fifteenth century, and adorned with rubrics and painted capitals, according to the

¹⁶ Bibliothèque nationale de France, *Archive et manuscrits*, <https://archivesetmanuscrits.bnf.fr/ark:/12148/cc713933> [5 October 2019].

¹⁷ D. Juste, 'MS Paris, Bibliothèque nationale de France, n.a.l. 693' (update: 04.01.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/503> [11 March 2019].

¹⁸ Hunt, *Digby Manuscripts*, p.59.

¹⁹ Hunt, *Digby Manuscripts*, p.62; 'MS Digby 58', *Medieval Manuscripts in Oxford Libraries*, https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4396 [13 October 2019].

²⁰ Hunt, *Digby Manuscripts*, p.34.

catalogue entry.²¹ However, the Ptolemaeus database suggests the codex was copied in 1349.²² It is fragmentary, and contains the prologue, and only the first six brief sections.

T. Oxford, Bodleian Library, Laud misc 594, ff.136r-137r.

Parchment, fourteenth to fifteenth century.²³ It is written in a neat miniscule, and omits the prologue and reference sections.

U. Oxford, Bodleian Library, Ashmole 192, pp.1-17.

Paper, quarto. It is written in the hand of Sir George Wharton, an English Royalist soldier and astrologer of the seventeenth century.²⁴ It starts at exactly the point where Q breaks off. It commences with a table of parts found in the introductory section before continuing with the text where Q ends. The section on elections and method of judgement are heavily abbreviated, just as for P and R.

V. Munich, Bayerische Staatsbibliothek, CLM 588, ff.137ra-137vb.

Parchment, quarto, fourteenth century.²⁵ It is extremely brief, comprising a single folio, f.137. It is written in a miniscule hand, but with a cursive heading of ‘utilitates astrolabii’. It contains part of the prologue, and then jumps to a section on using an astrolabe to calculate the ascendant.

Structure of the text

As there are a large number of manuscripts, it is useful to be able to select one manuscript to use as the canonical version when referencing the material later in this thesis. In the absence of a twelfth-century manuscript, an attempt can be made to reconstruct Roger’s original text by examining extant manuscripts and identifying similarities and differences. Fortunately, this task is simplified by the fact that the majority of manuscripts are virtually

²¹ W.H. Black, *Catalogue of the Manuscripts Bequeathed unto the University of Oxford by Elias Ashmole* (Oxford: Oxford University Press, 1845), p.1505.

²² D. Juste, ‘MS Oxford, Bodleian Library, Ashmole 1796’ (update: 15.10.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/657> [13 March 2019].

²³ Coxe, *Laudian Manuscripts*, p.422.

²⁴ Black, *Catalogue: Ashmole*, p.160.

²⁵ C. Halm and G. Laubmann, *Catalogus codicum latinorum Bibliothecae Regiae Monacensis* (Munich: Bibliothecae Regiae, 1868), Vol 1 Part 1, p.159; D. Juste, ‘MS Oxford, Bodleian Library, Ashmole 1796’ (update: 15.10.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/475> [13 October 2019].

identical in their text, other than the occasional change of word order within a sentence. Some manuscripts are heavily abbreviated, but this has generally been achieved by missing out entire paragraphs rather than rewording them.

Although the main text in each manuscript is very consistent, some of the tables in the manuscripts do differ. In many cases, these are obvious mistakes on the part of the scribe, but as these mistakes are sometimes duplicated in other manuscripts, these are useful for identifying which manuscripts may be copies of earlier ones.

The structure of the text designated here as *Judicial Astrology* has clearly been a source of confusion for cataloguers. For example, the catalogue entry for C lists folios 139 to 154a as ‘Liber Mgri Rogeri de Hereford de Iudiciis siderum et Astrologie’ with the incipit ‘Quoniam regulas artis Astronomie...’, while the entry within the same catalogue for B lists two entries covering the same material, one from folios 40 to 51 as ‘Liber Magistri Rogeri de Herfordia de iudiciis Astronomie’ with the incipit ‘Quoniam Regulas artis Astronomie iudicandi...’ and one from folios 51 to 59 as ‘Liber de Tribus generalibus Iudiciis Astronomie ex quibus cetera omnia defluunt editus a Magistro Rogero de Herfordia’ with the incipit ‘Quoniam circa tria sit omnis Astronomica consideratio...’.²⁶ Similarly, the work is represented by two entries in the catalogue for I, with folios 33r to 40va given the title ‘Rogerus Herefordensis: De iudiciis astronomiae’ and folios 40va to 45v given as ‘Rogerus Herefordensis: Liber de tribus generalibus iudiciis astronomiae ex quibus cetera omnia defluunt’.²⁷ The catalogue entry for H lists the entire work under the title ‘Liber de quatuor partibus iudiciorum (Rogeri Herefordiensis)’.²⁸

There is some justification for listing two separate entries for *Judicial Astrology*, since the first part of the text – just over half the whole – is a prologue and reference work, and some of the extant manuscripts only contain this section (D contains the entire first section, while E, F, and G contain parts of it). Other manuscripts either omit the first part entirely (M, N, O, Q, and T) or contain only a few elements from it (P, R, and U). However, it is clear that the two sections are linked, since the final part of the prologue

²⁶ Cambridge University, *A Catalogue of the Manuscripts*, entries 1572, pp.214-215 and 1693, pp.312-314.

²⁷ Bernd, *Handschriften: Soest*, p.155.

²⁸ Schum, *Handschriften: Erfurt*, p.741.

identifies four parts, and names them: simple judgements, intentions, elections, and the method of judging:

Opus v[er]o ip[su]m i[n] iiii divisim[us]. In primo agentes de simplici iudicio. In s[e]c[un]do de cogitatione. In tertio de electione. In quarto de ratione iudicii.²⁹

This brief description ends the prologue, but the text does not then immediately run into these four parts. Instead, it continues with a lengthy reference work, which is neither included nor defined in Roger's four parts.³⁰

Although this structure may seem confusing, this separation is common in medieval astrology texts; Wiebke Deimann and David Juste stated that introductions that explain basic concepts are a feature of medieval astrological texts, and that the information in them is a pre-requisite before one is able to interpret horoscopes.³¹

The second part of the text – listed, as has been shown, as a separate entry in some catalogues – does at first sight appear to fulfil the promise of a work in four parts, with manuscript A explicitly stating in a heading:

Incipit lib[er] de t[ri]bus g[e]n[er]alibus iudiciis astronomie ex quibus cet[er]a omnia defluu[n]t edit[us] a magist[r]o rog[er]o hereford. Incipit p[ro]logus p[ri]mi libri.³²

However, not all manuscripts have such clear headings, and in particular it is hard to identify where the fourth part of the work (on the method of judging) might begin, if indeed it was ever written – Whyte claims that it probably was not.³³

²⁹ A, f.3v.

³⁰ This reference work is examined in more detail in Chapter Four. It describes the fundamental principles of astrology such as the nature of the seven planets and twelve signs, and various terms and definitions, and is derived from Arabic texts that were available in Latin translation in the twelfth century.

³¹ W. Deimann and D. Juste (eds), *Astrologers and their Clients in Medieval and Early Modern Europe* (Köln: Böhlau Verlag, 2015), p.14.

³² A, f.10v.

³³ Whyte, 'Roger of Hereford', p.12.

Examining manuscript A, it can be seen that there are headings corresponding to Roger's four parts:

Roger's description in prologue	Heading in A
Simplici iudicio	Lib[er] de t[ri]bus g[e]n[er]alibus... Incipit... p[ri]mi libri ³⁴
De cogitatione	Incipit liber s[e]c[un]d[u]s de cogitate[i]o[n]e ³⁵
De electione	Incip[i]t lib[er] t[er]tius de el[e]ctio[n]e ³⁶
De ratione iudicii	De ratione iudiciorum ³⁷

This is not as clear-cut as it first appears. The scribe is at pains to point out the incipit of each book for the first three, and identifies them as the first, second and third books. There is no such incipit for the heading of 'De ratione iudiciorum', despite the similarity of the title to the fourth part promised in the prologue, so it could simply be part of the third book on elections. The lack of a heading claiming to be the start of book four might justify Whyte's claim that the fourth part was never written. Indeed, D, which contains only the prologue and reference work, finishes with an explicit reference to the 'next book' comprising three parts, making no mention of the fourth: 'Explicit p[ri]ma pars require in sexterno p[re]cedente p[ro]ximo libru[m] q[ui] sic incipit Quoniam c[ir]ca t[ri]a sit om[n]is astrono [etc] + su[n]t 3 libelli'.³⁸

However, one manuscript (R) stops at the point where A continues with the short section on 'De ratione iudiciorum', which may suggest that the material after this heading did act as the start of a separate book. The much later U also makes a distinction here, by missing out the bulk of this final section and simply summarising it in two lines. The strongest evidence, however, may be in H. Unlike A, the parts do not have clear headings, but there is a margin note in a different hand to the main text showing where the third book commences ('liber terti[us]'), and another margin note indicating the start of the fourth part ('4[e] p[ar]te') where A has the heading 'De ratione iudiciorum'.

³⁴ A, f.10v.

³⁵ A, f.14v.

³⁶ A, f.18r.

³⁷ A, f.18v.

³⁸ D, f.194v.

A few examples will illustrate the issue of identifying sections. Figure 3.1 shows the opening of the *Liber de tribus generalibus* section in B. There is a clear incipit, and the headings, although part of the main text, are highlighted with red marks. Figure 3.2 shows the same section in A, where the headings are very clearly defined. Figure 3.3 shows this section in H manuscript, where there are no headings at all.

Figures 3.4 and 3.5 illustrate another difference, where B misses out headings altogether, and they have been added as margin notes subsequently, while A maintains headings in red.

Figures 3.6 and 3.7 show an even starker contrast with attempting to identify the start of the fourth book. B has no break at all between the end of the third book and the start of the fourth. Where A ends the third part with ‘futuro’ and has a new heading, ‘De ratione iudiciorum’ as the fourth part, starting ‘Et cum sit’, B simply runs them together: ‘fut[ur]o + cu[m] sit’, so it is not at all obvious that a new part has been started. H starts a new paragraph here, but it is also identified explicitly as the fourth part in a margin note in a later hand.

Five sections to *Judicial Astrology* can therefore be identified. Firstly, a prologue and reference section, which, where present, make up slightly more than half the text. Secondly, the part on simple judgements; thirdly, intentions; fourthly, elections; and a final section on the method of judging.

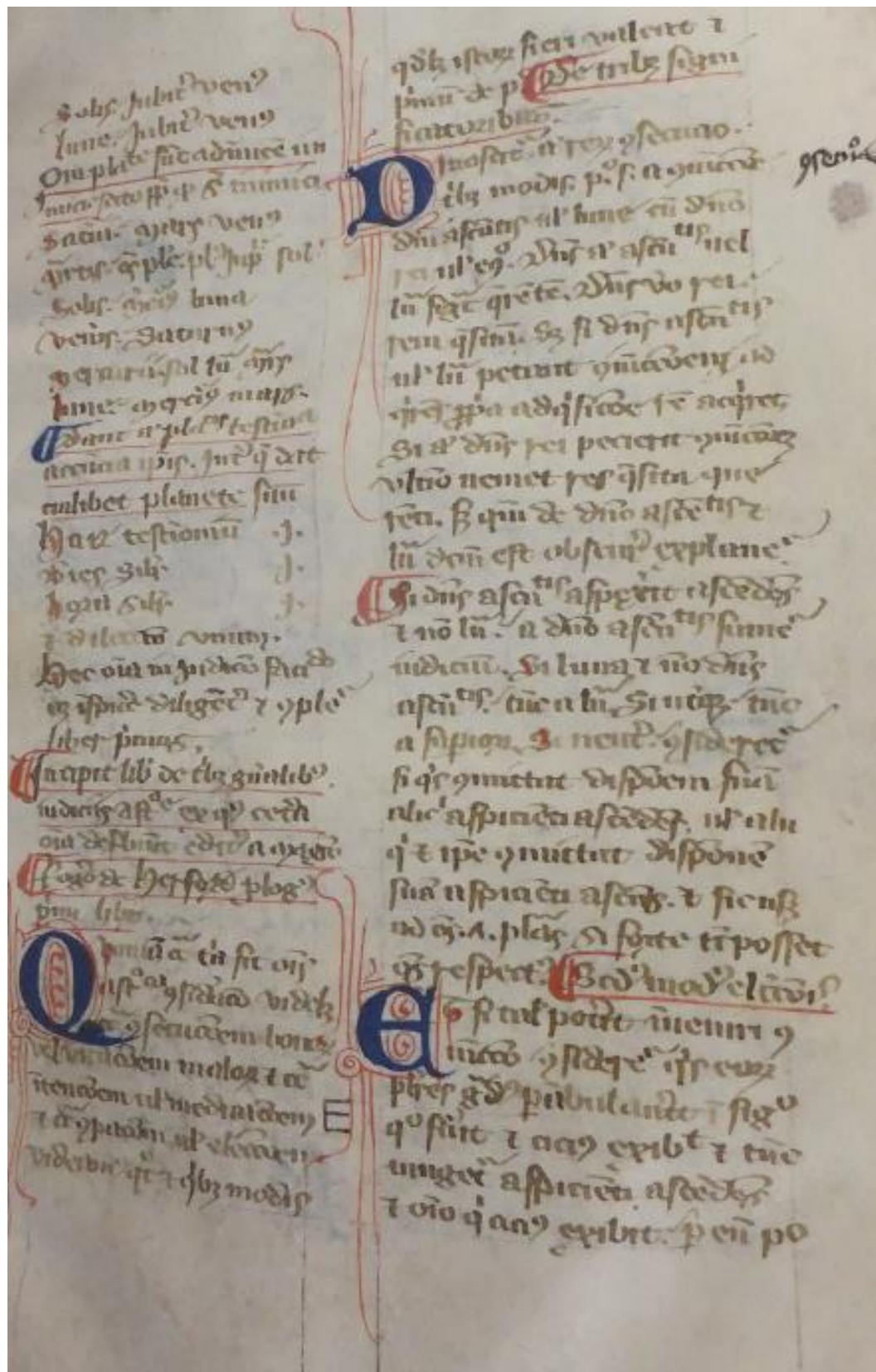


Image reproduced by kind permission of the Syndics of Cambridge University Library.

Figure 3.1 – B, f.51r.

Start of Liber de tribus generalibus, headings with red markers.

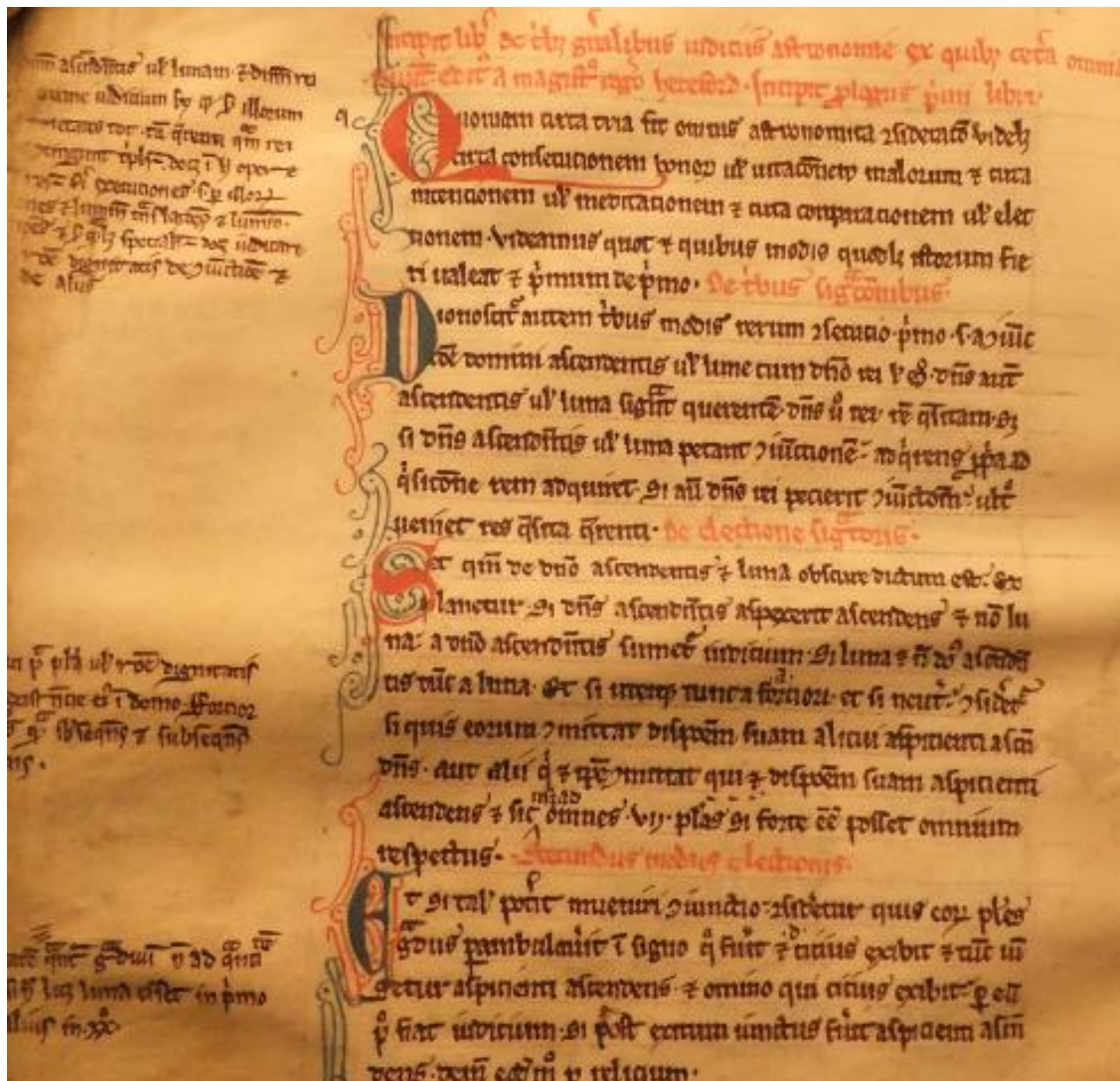


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.2 –A, f.10v. Start of Liber de tribus generalibus. Headings in red.

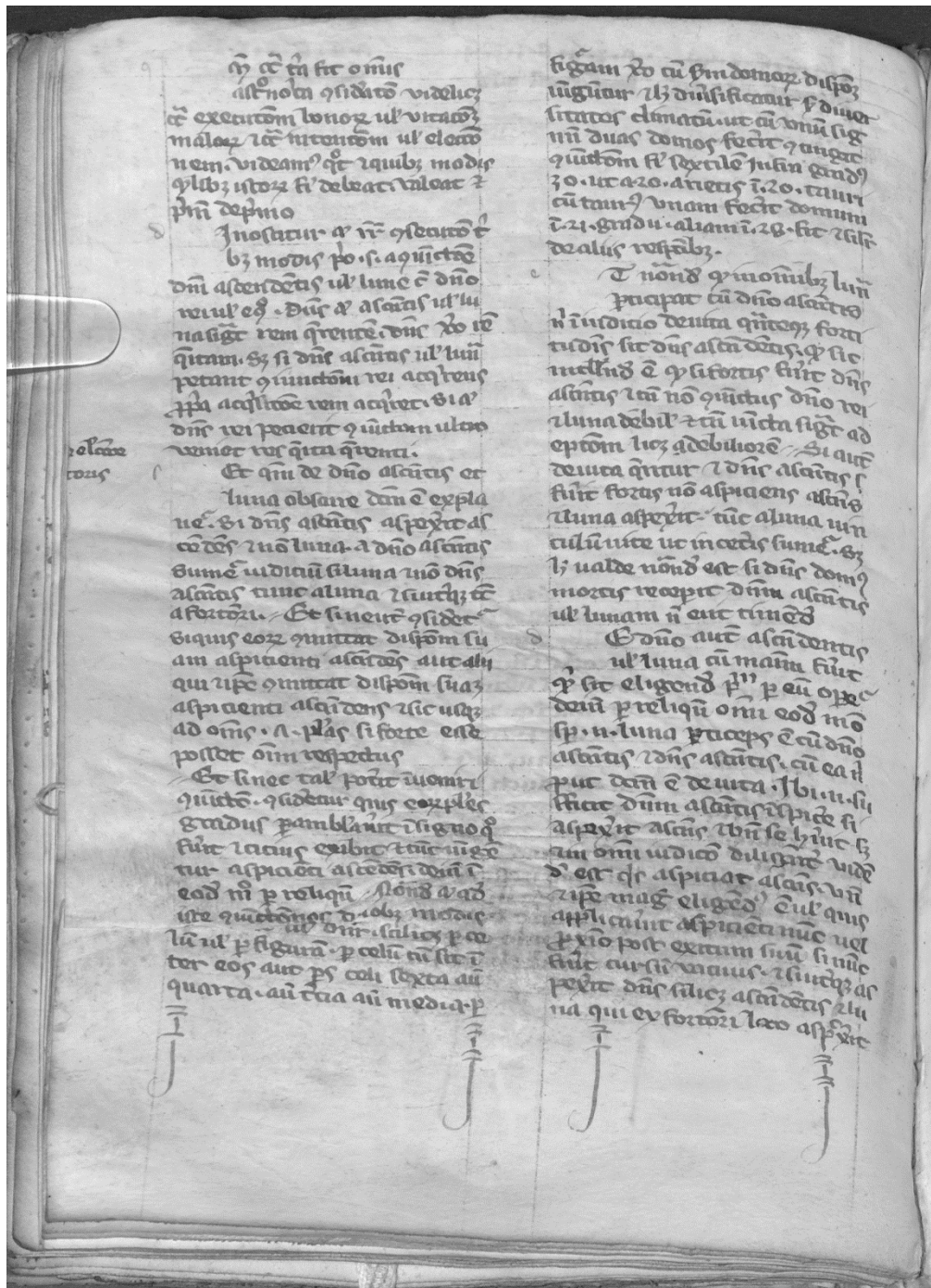


Image courtesy of Universität Erfurt (for educational use).

Figure 3.3 – H, f.46v. Start of Liber de tribus generalibus. No obvious headings.

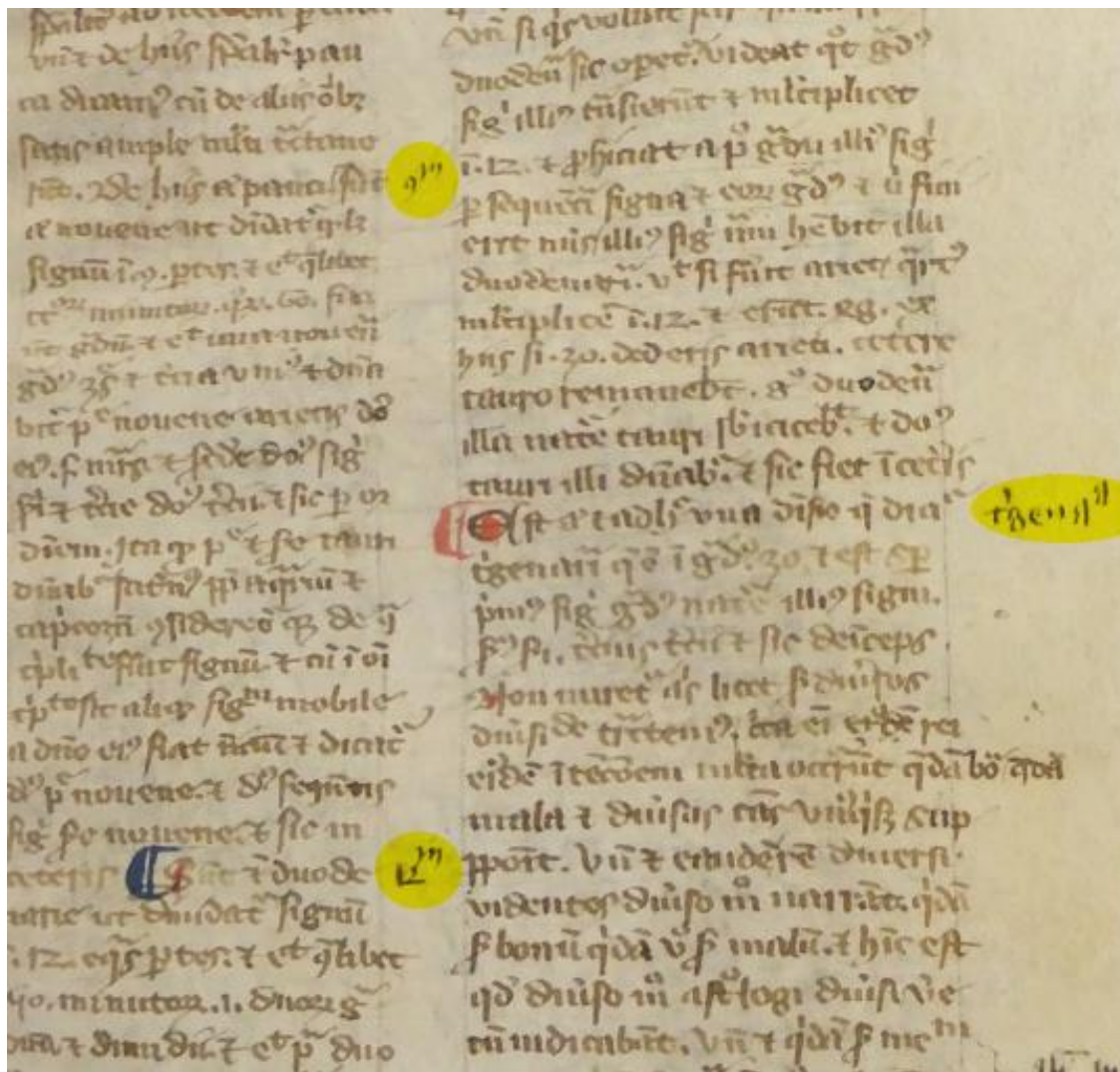


Image reproduced by kind permission of the Syndics of Cambridge University Library.

Figure 3.4 – B, f.55r.

No explicit headings, but margin notes (highlighted in yellow in this image) show '9', '12' and 'trigenaria' as headings.

Figure 3.5 – A, f.15r.
Headings for novenes, duodenaria and trigenaria (highlighted in yellow in this image) show clear headings for each in red.

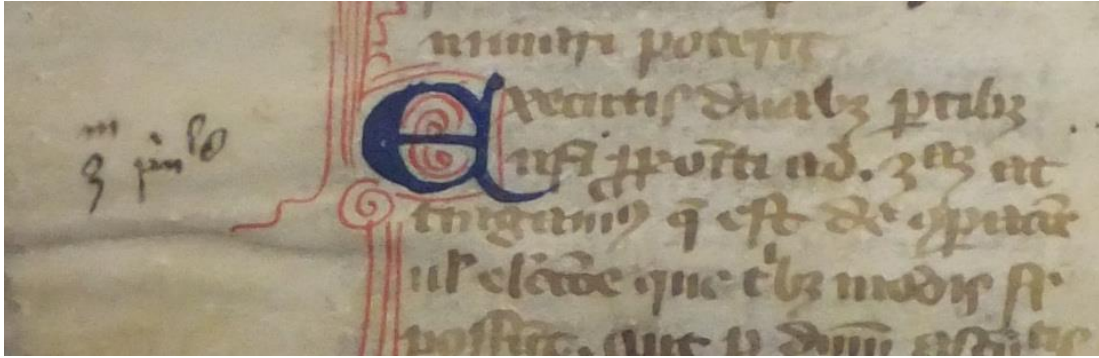


Image reproduced by kind permission of the Syndics of Cambridge University Library.

B, f.57va. Start of third book with margin note.

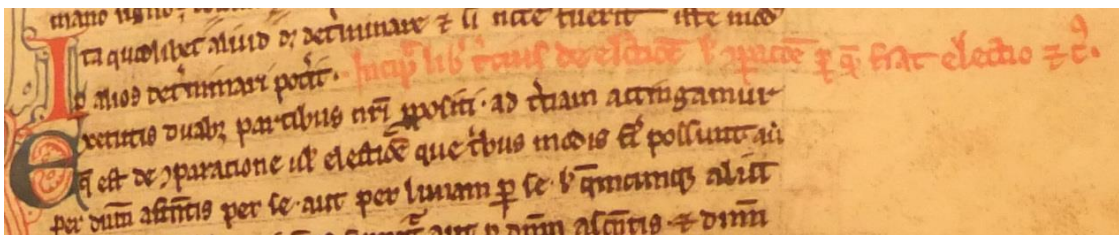


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

A, f.18r. Start of third book with red heading.

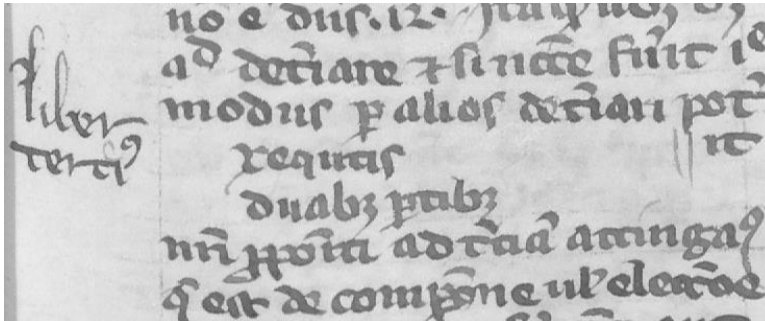


Image courtesy of Universität Erfurt (for educational use).

H, f.51ra. Start of third book with margin note.

Figure 3.6 – Identifying the start of the third book in three manuscripts.

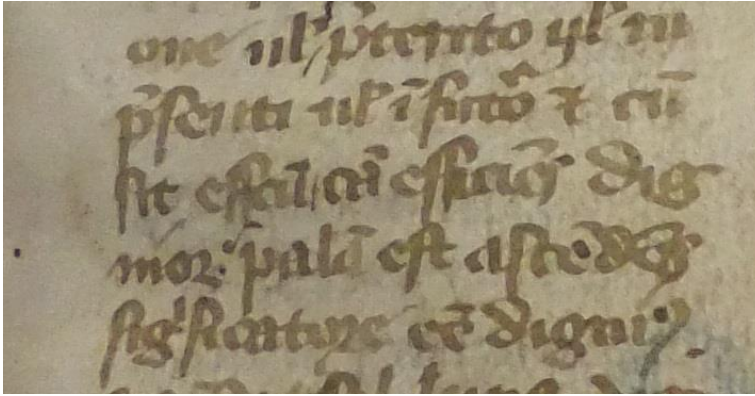


Image reproduced by kind permission of the Syndics of Cambridge University Library.

B, f.58ra. Start of fourth book with no break at all.

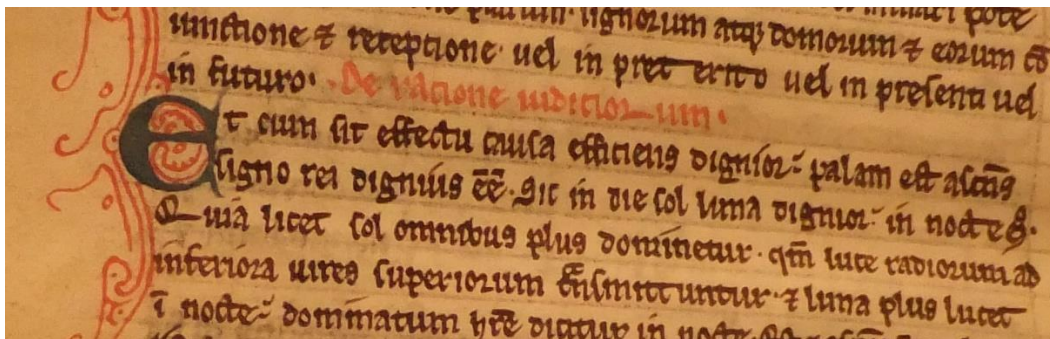


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

A, f.18v. Start of fourth book with red heading but no incipit.

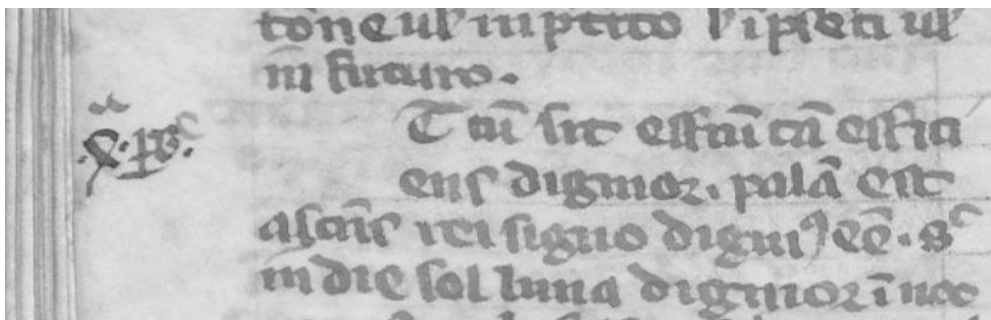


Image courtesy of Universität Erfurt (for educational use).

H, f.51va. Start of fourth book with margin note.

Figure 3.7 – Identifying the start of the fourth book in three manuscripts.

However, the word ‘medicine’ here is presumably from B, f.40rb, which Whyte stated was the main manuscript he used, which simply has the letter ‘m’ with a superscript ‘e’ by it, which Whyte transcribed as ‘medicine’. The abbreviation also occurs in several other manuscripts (K, f.1r; F, f.138va; E, f.221ra; V, f.137ra; I, f.33r; and H, f.39ra), but in three other manuscripts it appears as ‘mat’ followed by the contraction representing ‘er’, followed by ‘ie’ (C, f.139r; D, f.189ra; G, f.220ra; and L, f.87va), and in both A, f.3r, and S, f.36v, it appears, very clearly, with no contractions, as ‘materie’. Roger was, therefore, not talking about medicine at all, but about how astrology, with its seven planets and twelve signs, represent incorruptible principles not subject to the material world, with all its added complexity and confusion. Subtleties such as these can only be drawn out when access to several manuscripts is available, so that confusing contractions and uncertain words can be verified against several different texts. Similarly, the confusion that earlier analyses of these manuscripts have had regarding the way that *Judicial Astrology* was divided up can be clarified, and Whyte’s assertion that Roger probably did not produce the promised fourth section, can perhaps be countered by the evidence that some manuscripts do indeed appear to include this fourth section.

Palaeographical analysis

The twenty-two extant manuscripts containing Roger’s *Judicial Astrology* do not differ greatly from each other in the text, other than the fact that a few of them have been abbreviated and summarised. Nevertheless, it is useful to attempt to identify which manuscripts may be closest to Roger’s original, and to identify a “canonical” version from within the set of manuscripts, to be used within this thesis when citing text. As regards tentatively dating the manuscripts, a number of approaches have been adopted: dates given in the manuscript catalogue for the relevant library, a date suggested by the palaeography of the text, an analysis of where manuscripts have missing words and how sections are delineated, and an analysis of errors within the text (especially within tables) to see which manuscripts copy these errors.

Focus is placed here on the palaeographical examination of the manuscripts from the thirteenth and fourteenth centuries. It is of course possible that a later manuscript may have been copied from a much earlier one, so this analysis does not rule out the possibility that, for example, a fifteenth-century manuscript could be a more faithful version of the original, but a palaeographical analysis will not help in this situation. Instead, a

comparison of missing elements and scribal errors in the texts may help to identify which manuscripts are clearly copies of other extant manuscripts. An initial palaeographical analysis was undertaken with reference to Derolez' book on palaeography, and is described below.⁴¹ In order to confirm the palaeographical analysis of the earlier manuscripts, the palaeographical analysis relating to the thirteenth-century manuscripts was sent to Professor Erik Kwakkel at the University of British Columbia, who is a palaeography specialist, in January 2019. He very kindly provided his comments on the texts, which have been incorporated into the descriptions below.⁴²

A is listed in the catalogue as being written in England in the thirteenth century. It is the only extant manuscript to use Roman numerals consistently instead of Arabic numerals. The text is very neat Textualis, with decoration for initial letters of sections, and a number of features suggesting a thirteenth-century hand: the bow on the letter 'a' is invariably open, whereas these tended to be closed in the fourteenth century, the letter 'd' is what Derolez calls a 'falling d', and the letter 's' at the end of a word is sometimes a straight 's', especially in headings, all features of a thirteenth-century hand (see Figure 3.8).⁴³ Derolez further states that the shaft of the letter 't' projects above the headstroke 'from the middle of the thirteenth century'.⁴⁴ The letter 't' in manuscript A sometimes projects very slightly, but frequently does not, which may suggest the text is early to middle thirteenth century, rather than later. Kwakkel narrowed this analysis down further, dating it at around 1250, based on the writing being below the topline and thus after 1240, but lacking features found from 1250 onwards, and identified a number of features establishing the text as English.

⁴¹ A. Derolez, *The Palaeography of Gothic Manuscript Books: From the Twelfth to the Early Sixteenth Century* (Cambridge: Cambridge University Press, 2003).

⁴² Personal email correspondence with Erik Kwakkel, 12 January 2019.

⁴³ Derolez, *Palaeography of Gothic Manuscript Books*, p.84, p.87, p.92

⁴⁴ Derolez, *Palaeography of Gothic Manuscript Books*, p.93.

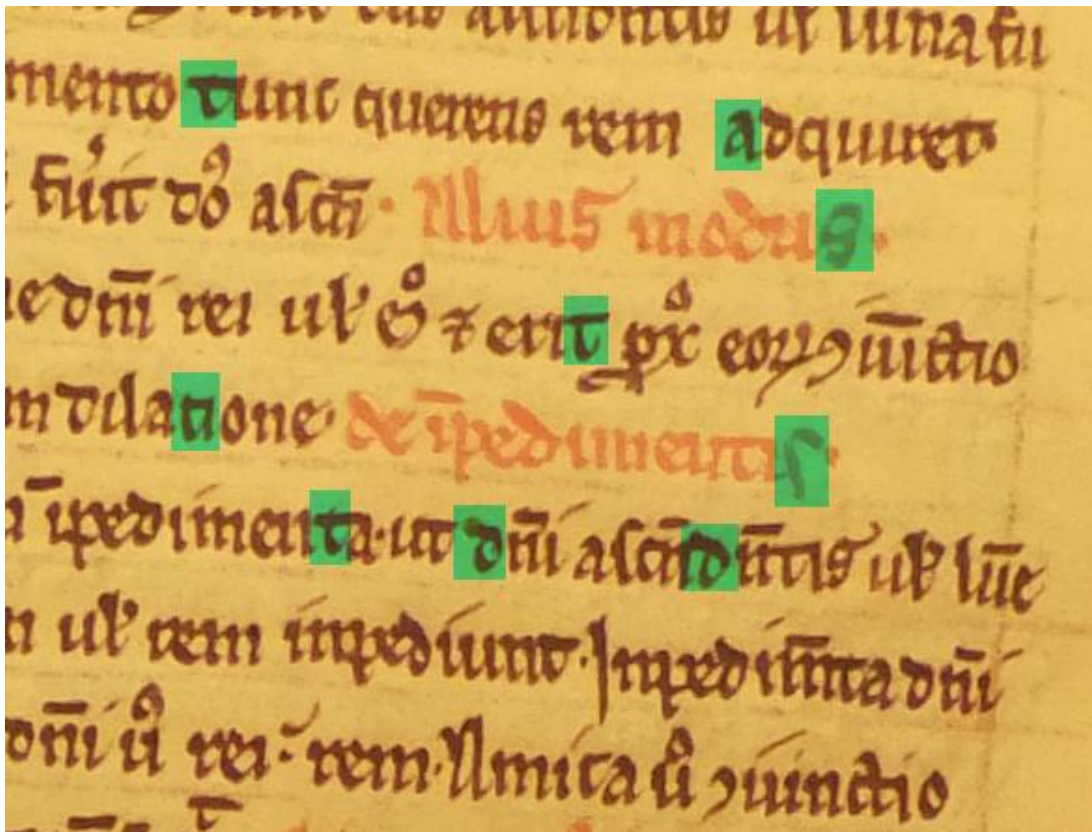


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.8 – A, f.11v.

Note the open-bowed ‘a’; ‘t’ sometimes with a slight projection, sometimes not; falling ‘d’; straight ‘s’ at the end of some words, but round ‘s’ for others.

D, E, F, and G are also listed as thirteenth century (in the case of G, the catalogue lists this as thirteenth or fourteenth century), and all bear a striking similarity to each other. D contains the entire prologue and introduction, while E, F, and G are all written in a very similar neat hand to D, but all three cover only about half the introduction and then stop very abruptly at about the same point, in the section about impediments of the planets. In the complete manuscripts, there is a section on the twelve houses, followed by a list of impediments of the planets; in F, the section on the twelve houses concludes, and this is followed by the impediments in an entirely different and less neat hand, and it is this hand that stops very abruptly after just six lines, and apparently half way through a word. It is then followed by a scribbled diagram of planetary spheres that does not relate to the text on the page. E is written in a very similar hand to F, although not an identical hand since the letter ‘x’ has a different style. This finishes at almost exactly the same point as F (in fact, two words before) and the manuscript continues on the same page with a completely different book (al-Qabisi’s *Liber de fructibus planetarum*) immediately afterwards and

on the same page, in the same hand. G finishes at exactly the same point as F, and is followed by a later cursive hand stating that this is the end of the book, and gives a date of 12 November 1266. In the case of F, it is conceivable that a different scribe had intended to complete the text that had, at least, finished at a logical point and then given up, but in the case of E and G, it is clearly a deliberate decision. Perhaps the manuscript that the scribe was copying had missing pages, and appeared to terminate here. E and G are highly decorated. F has no decoration, but large blank areas on the pages suggest an intention to add decoration at a later point. All three have a feature that Derolez associates with *Textus Quadratus*, where minims have feet at the baseline, ‘made with a separate penstroke which required great care’.⁴⁵ *Textus Quadratus* was generally reserved for liturgical books, which, together with the decoration, may at first sight suggest these two texts were written as a practice in copying texts. However, the minims are not as neat as the example given in Derolez, and the text is reasonably close, though neater, than an example of a late thirteenth-century ‘university script’ from Paris shown in a plate in Derolez.⁴⁶ Although at first glance all four hands appear similar, D is consistent in having the bow of the letter ‘a’ open, while E, F, and G all have a closed loop. This would, then, date the latter three scripts as late thirteenth century, with D perhaps somewhat earlier, and if the explicit in G is correct then the manuscript was compiled in 1266 – the *Ptolemaeus Arabus et Latinus* database suggests that this is a plausible date.⁴⁷ Kwakkel also considered 1266 to be a reasonable date, and he also considered it to be later than the date that A was copied. Kwakkel also dated D and F as between 1250 and 1300, though unlikely to be as old as 1250, and with a possible English origin for F and a French origin for D. He dated E a little later based purely on the palaeography – between 1275 and 1300, tending towards 1300 – but accepted that there were good reasons for a date between 1268 and 1277 as described in the *Ptolemaeus* database.⁴⁸ The fact that E, F, and G finish abruptly and immediately continue into a different work on the same page as the abrupt ending shows that these manuscripts cannot themselves have been a direct source for later manuscripts that do contain the information missing from these three

⁴⁵ Derolez, *Palaeography of Gothic Manuscript Books*, p.74.

⁴⁶ Derolez, *Palaeography of Gothic Manuscript Books*, Plate 24.

⁴⁷ D. Juste, ‘MS Vatican, Biblioteca Apostolica Vaticana, Pal. lat. 1414’ (update: 24.11.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/239> [7 December 2018].

⁴⁸ D. Juste, ‘MS Vatican, Biblioteca Apostolica Vaticana, Pal. lat. 1414’ (update: 24.11.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/191> [16 April 2019].

manuscripts. However, the fact they finish at the same point does suggest they may have been copied from an earlier manuscript that may have had missing pages.

Figures 3.9 to 3.12 illustrate these four examples.

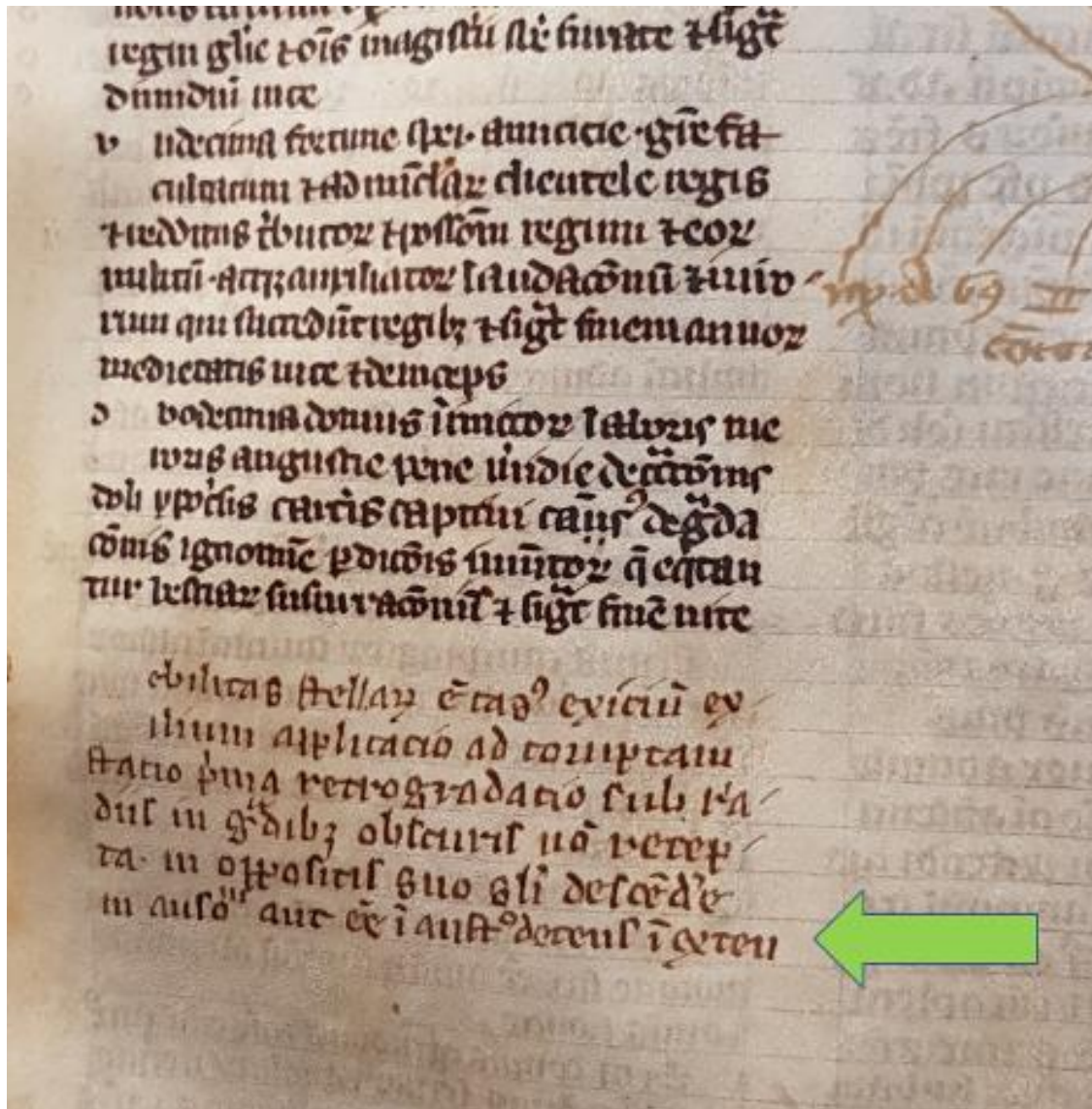


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.9 – F, f.151v.

Abrupt ending indicated by green arrow.

Note also the closed loop of the letter ‘a’.

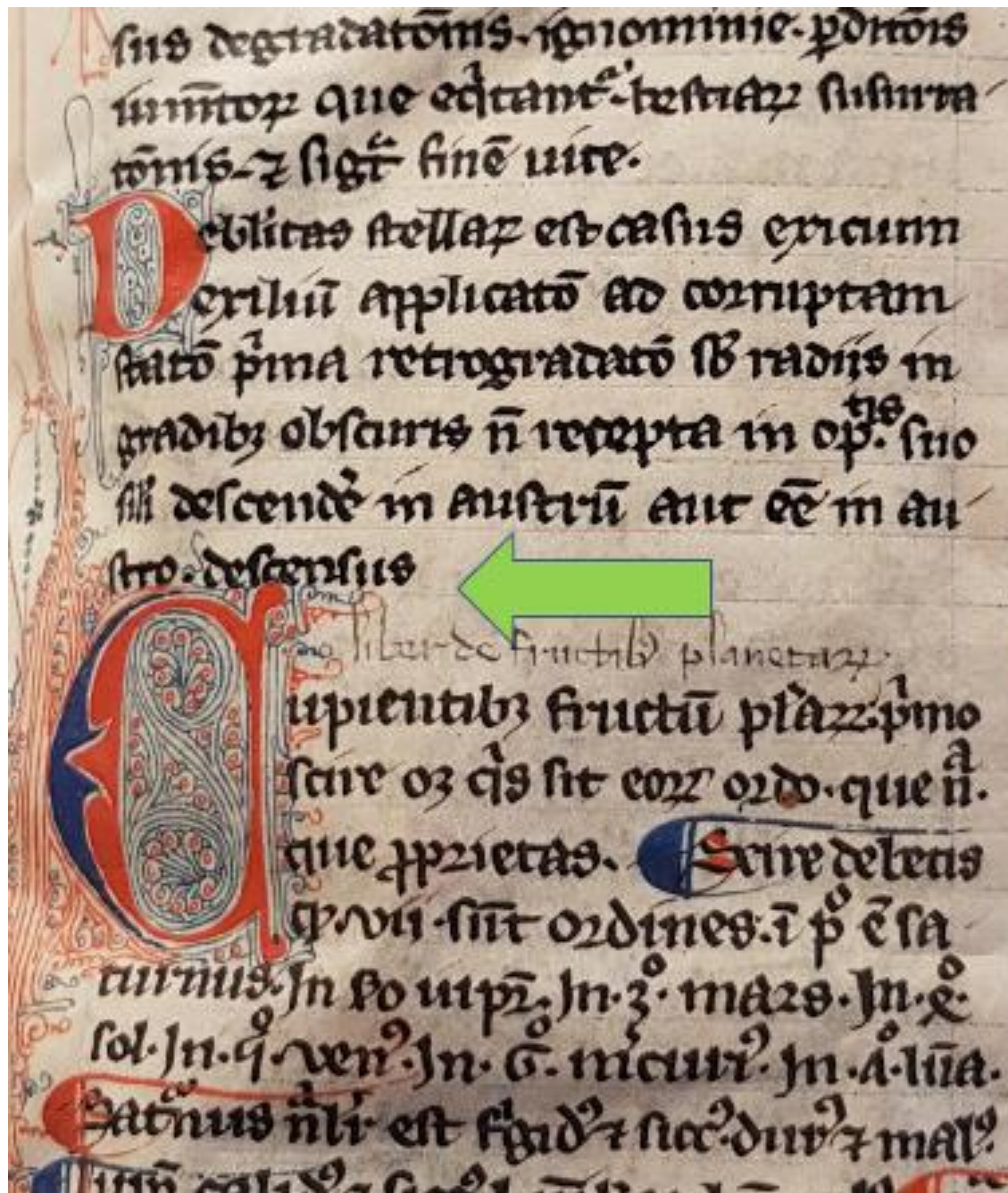


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.10 – E, f.224r.

Abrupt ending indicated by green arrow.

Note also the closed loop of the letter ‘a’.

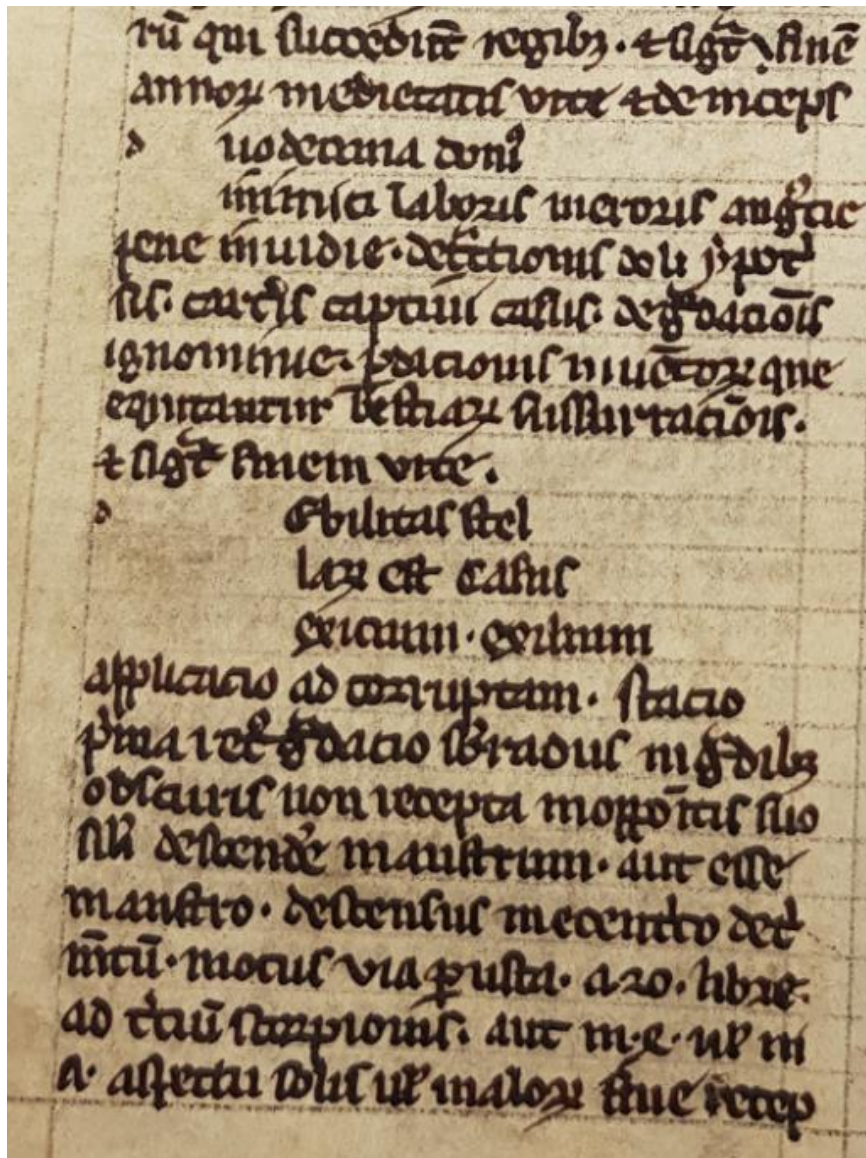


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.11 – D, f.192v.

Note the consistent open loop of the letter ‘a’, rather than a closed ‘a’.

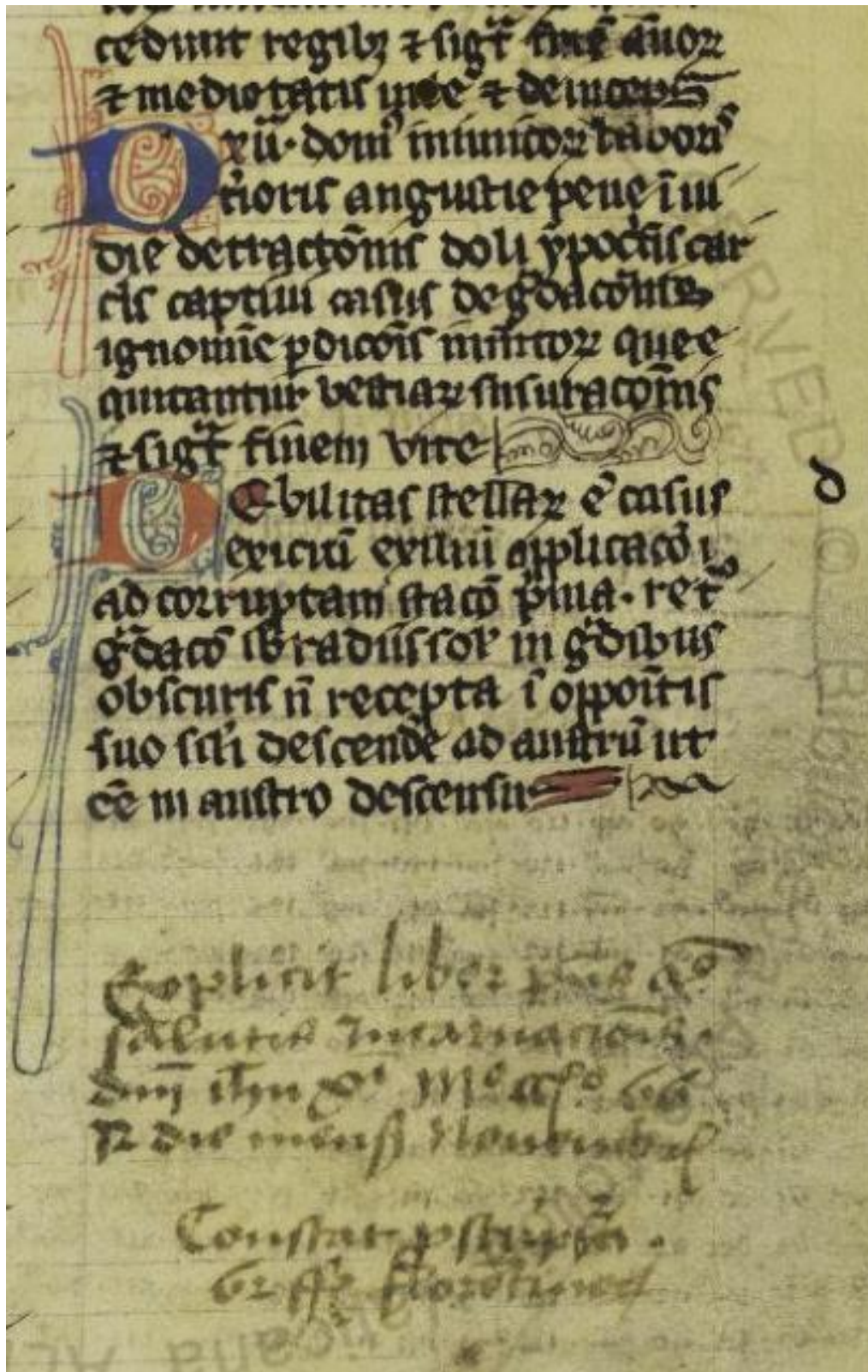


Image courtesy of Biblioteca Apostolica Vaticana.

Figure 3.12 – G, f.224rb.

Note the closed 'a', and date in the explicit.

O is listed in the catalogue as thirteenth to fourteenth century, and the cover of the manuscript states that it is from the library of the Earl of Ashburnham in 1897. It does not contain the prologue or introduction. The palaeography suggests various features that might date it to the middle of the fourteenth century, and possibly not English in origin. The letter ‘a’ is generally in box format, and its appearance at the beginning of words ‘does not appear before the second half of the fourteenth century’.⁴⁹ Like A, O uses both straight and round ‘s’ at the end of words, but a feature of O is a round s that has the appearance of a figure 8, which is ‘untypical of Anglicana’, suggesting a non-English origin.⁵⁰ There are contradictory palaeographical messages in this text; the straight final ‘s’, as was seen in A, disappears in the first half of the fourteenth century, but the initial boxed ‘a’ does not appear until the second half of the fourteenth century. A tentative dating might therefore suggest this document dates from the middle of the fourteenth century (see figure 3.13). Kwakkel, however, placed this somewhat earlier, describing it as a book script in a style that is usually seen around 1300, with long ‘s’ still common.

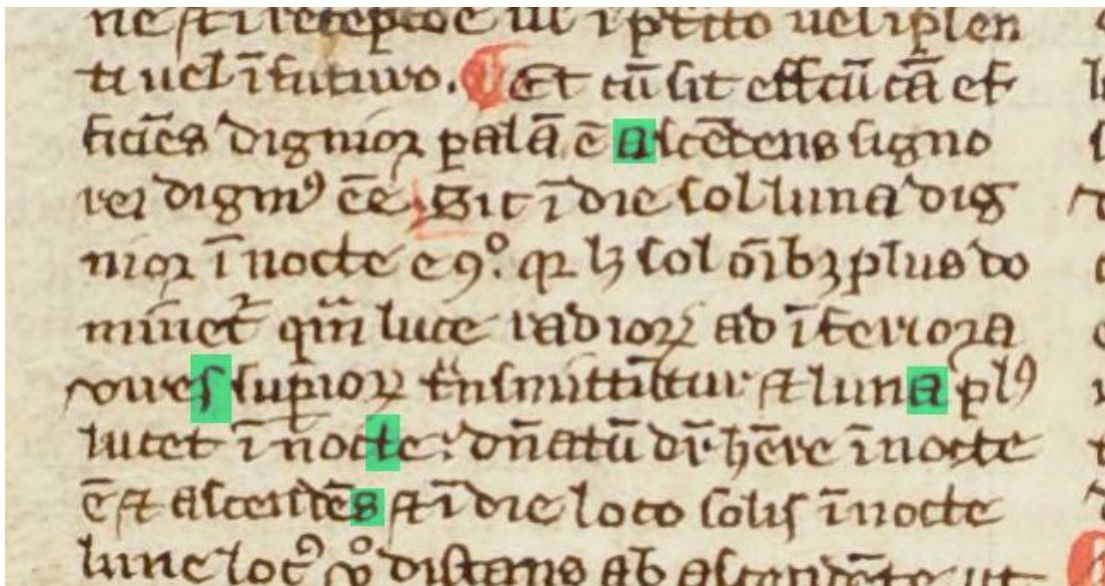


Image courtesy of Bibliothèque Nationale de France.

Figure 3.13 – O, f.138v.

Note the boxed ‘a’ even at the beginning of words; final straight ‘s’ in some words; round ‘s’ shaped like a figure 8.

⁴⁹ Derolez, *Palaeography of Gothic Manuscript Books*, p.85.

⁵⁰ Derolez, *Palaeography of Gothic Manuscript Books*, p.139.

The four complete manuscripts (B, C, H, and I) are all listed as fourteenth century. The catalogue entries for B and C give no more details than this, but the catalogue entry for I specifies the middle of the fourteenth century, probably in England, and the catalogue entry for H specifies the first half of the fourteenth century with a southern German origin, and later owned by Johannes de Wasia.⁵¹ Since de Wasia died in 1395, the manuscript cannot be later than fourteenth century.⁵² C (figure 3.14) is in a very untidy cursive hand, which makes it hard to identify many features; however, there is the use of a round ‘s’ at the beginning of words, which Derolez described as a ‘most noteworthy feature of Anglicana’ and the more v-shaped ‘r’ is common in fourteenth-century manuscripts, as by the fifteenth century the right-hand part had become much shorter.⁵³

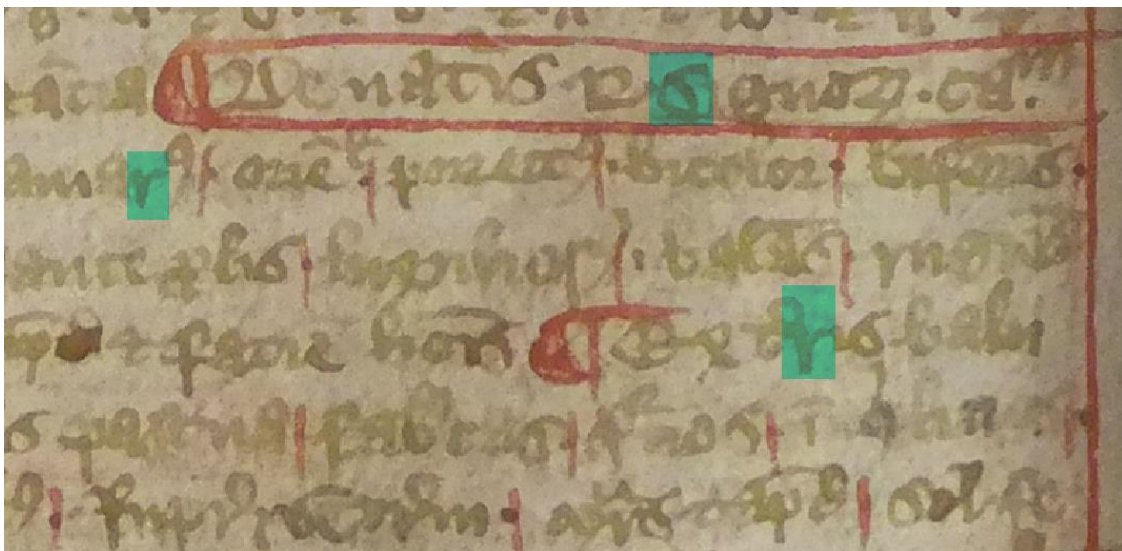


Image reproduced by kind permission of the Syndics of Cambridge University Library.

Figure 3.14 – C, f.140r.

Note the round ‘s’ at the start of a word, and the rather open ‘r’.

⁵¹ Cambridge University, *Catalogue of Manuscripts*, entries 1572 (pp.214-215) and 1693 (pp.312-314); Bernd, *Handschriften: Soest*, p.153; Schum, *Handschriften: Erfurt*, p.741.

⁵² D. Juste, ‘Johannes de Wasia, Notes on the Almagest’ (update: 06.05.2018), *Ptolemaeus Arabus et Latinus. Works*, <http://ptolemaeus.badw.de/work/75> [7 December 2018].

⁵³ Derolez, *Palaeography of Gothic Manuscript Books*, pp.138-139.

B (figure 3.15) has a hairline on the final r in some words, typical of Anglicana, and the long 'r' is much tighter than in C, and is more like a Textualis 'r', suggesting an early fourteenth-century origin.⁵⁴

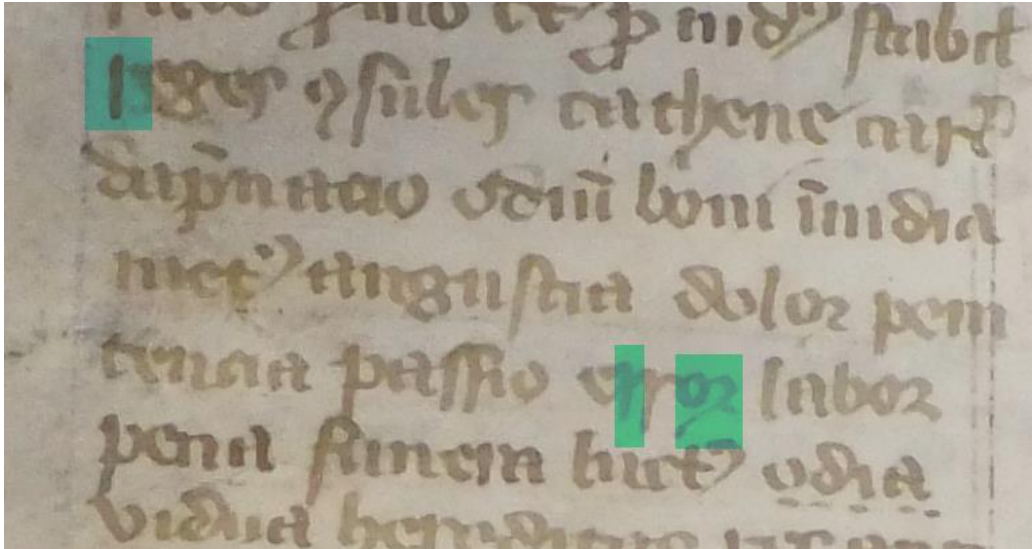


Image reproduced by kind permission of the Syndics of Cambridge University Library.

Figure 3.15 – B, f.44v.

Note the tight Textualis-style 'r', and the long tail on the final 'r' of 'error'.

H (figure 3.16) has features confirming the catalogue's early fourteenth century date. As has been seen in other manuscripts, the straight 's' at the end of words disappears in the first half of the fourteenth century, but is present here. The single-compartment 'a' may suggest the script developed at the University of Paris, *Littera Parisiensis*.⁵⁵

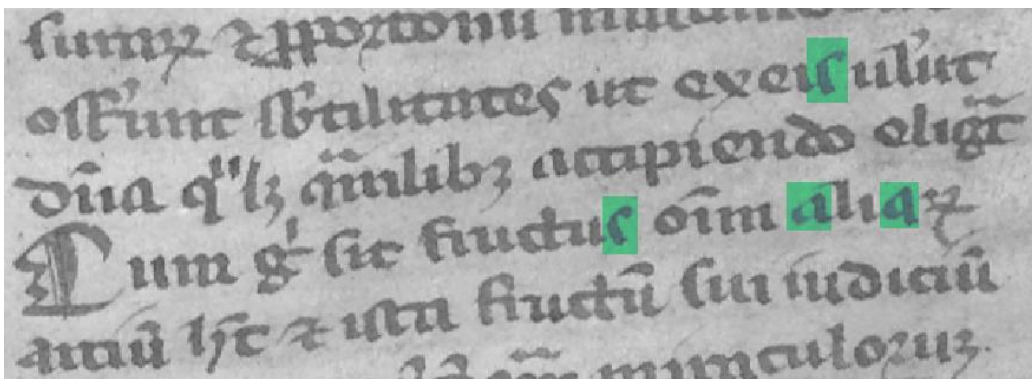


Image courtesy of Universität Erfurt (for educational use).

Figure 3.16 – H, f.39r.

Note the straight 's' at the end of words and the single-compartment 'a'.

⁵⁴ Derolez, *Palaeography of Gothic Manuscript Books*, p.138.

⁵⁵ Derolez, *Palaeography of Gothic Manuscript Books*, p.100.

I (figure 3.17) is written in an untidy cursive hand. The final ‘s’ of words is always round, and a always has a closed loop – a straight ‘s’ ending a word died out by the middle of the fourteenth century, and there is no evidence of such an s in this document, although that does not rule out an earlier date. The catalogue suggests this was written in England, although the consistent bifurcation of ‘b’ and ‘l’ may suggest a Bastarda script, more commonly used in the Low Countries.⁵⁶

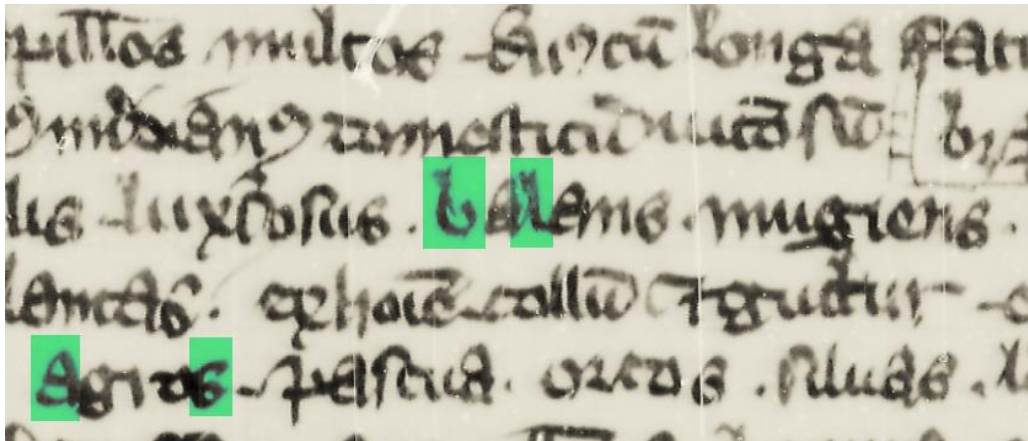


Image courtesy of Stadtbibliothek Soest (for educational use).

Figure 3.17 – I, f.34v. Note the bifurcated ‘b’ and ‘l’.

Missing parts and errors

Since the text is very consistent between manuscripts, missing words may identify manuscripts that were later copies of an original source. In addition, there are many tables in the introductory section, with figures that are predictable, making it relatively easy to spot errors in these tables. Where those errors have been duplicated in other manuscripts, this suggests a sequence and allows a *stemma codicum* of manuscripts to be developed.

The prologue shows three sentences that can be analysed in this way. Most manuscripts that include the prologue contain the following sentence:

Ad q[uo]d licet difficilimum ac humane operatione plene inexplicabile, nos huius artis incomparibilis [com]pult excellentia.⁵⁷

B, however, misses out the word ‘incomparibilis’.⁵⁸

⁵⁶ Derolez, *Palaeography of Gothic Manuscript Books*, pp.165-167.

⁵⁷ A, f.3r, lines 5-7.

⁵⁸ B, f.40ra, lines 12-16.

A contains this sentence:

Certissima quid[em], cu[m] q[ui]a omnium aliarum aut ut materia variabilis ut phisice v[e]l materie s[u]biecta ut patet in ceteris.⁵⁹

The various ways that ‘materia’ has been abbreviated was discussed earlier in this chapter – an abbreviation that has caused misunderstandings in previous analyses of this text. G, like many other manuscripts, abbreviates the word ‘materie’, and completely misses out the word ‘subiecta’.⁶⁰

A again is more complete with this sentence:

Cuius regulas univ[er]sales nullum philosophorum h[u]c usq[ue] simul collegisse invenim[us], unde eas in unum studuim[us] adunare.⁶¹

D and L both miss out the words ‘in unum’, and B misses out both ‘in unum’ and ‘simul’.⁶²

In the section ‘De prima’, a description is given of how to use an astrolabe to calculate the rising degree. At the bottom of the page, A has a more detailed description. This looks like marginalia, but appears to be in the same hand as the original, but with a narrower margin:

+ cu[m] [] uno ab ascendente cu[m] viii grad[ibus] additi fu[er]int super gradu[m] sol[is] + positi super eande[m] altitudine[m] h[er]ebitur ascendens vere v. g[radus]. Si gradus sol[is] fu[er]it primus arietis elevacio au[tem] sol sup[er] orizonte[m] xx. gradus posito g[ra]du sol sup[er] ei[us] altitudine[m] + additis sup[er] eius gradu[m] [?] supra primu[m] arietis. viii. g[ra]dibus ponatur. ix. arietis sup[er] ead[em] altitude[n]em et sup[er] xx. g[ra]dus + iudicentur hore s[ecundum] gradu[m] t[un]c asce[n]d[e]nte[m] + si t[un]c fuerit .xx. leonis asc[e]ndens ablatis in[de] .viii. [?] ei[us] [?] ascend[e]ns uere s[ecundum] figuram + h[ic] est s[ecundum] dicit.⁶³

⁵⁹ A, f.3r, lines 19-21.

⁶⁰ G, f.220r, lines 6-8.

⁶¹ A, f.3v, lines 14-16.

⁶² D, f.189r, lines 31-34; L, f.87vb, lines 19-21; B, f.40va, lines 26-28.

⁶³ A, f.4r.

In C, this example has not been added as a footnote, but incorporated into the main text, and slightly edited and heavily abbreviated, although the fact that the altitude is measured via the almucantar – an Arabic term for lines of similar altitude on an astrolabe – is missing from A:

V[er]o g[rad]u si g[rad]u sol fuerit p[er] g[rad]u arietis elevac[i]o aut[em] sup[er]
orizo[n]tem 20 g[rad]u po[sit]io g[rad]u sol sup[er] ei[us] altitude[n]em. I[n]
almuce[n]tara p[er] asce[n]de[n]s. Et additis sup[er] g[rad]u sol + sup[er] p[er]m
g[rad]u arietis 8 g[rad]u po[na]t[ur] 1 g[rad]u 8 g[rad]u arietis. Sup[er]
ead[em] alti[er] i[n] almucantur sup[er] 20 g[rad]u + iudic[e]nt[ur] hore
s[ecundum] g[rad]u t[unc] asc[en]dent. + si t[unc] fu[er]it 20 g[rad]u leonis ascendens.
Ablatis i[n]de 8 g[rad]u s[ecundum] 12 leo[n]is v[er]o ascend[er] s[ecundum] fig[ur]a[m]
et h[oc] s[ecundum] dicit.⁶⁴

Manuscript I has very similar text to A, and, like A, has this as a footnote at the bottom of the page with a narrower margin. The wording is almost identical to A, except for starting with the word ‘Inde’ rather than ‘Et cum’, but there is clear indication of copying from A at the end. A uses Roman numerals rather than Arabic numerals, and so has ‘+ si t[unc] fuerit .xx. leonis’. I has ‘+ si t[unc] fu[er]it xx 20 leo[n]is’.⁶⁵ The ‘xx’ has been underlined in the text, and is then followed by 20 in Arabic numerals, and yet nowhere else does I use Roman numerals, strongly suggesting either that A itself was being copied, or that I and A were copying from a source that had Roman numerals in.

One area where very clear evidence of copying can be seen are the various numeric tables in the introductory section. Some of these tables inevitably have errors in, and those same errors appear in several manuscripts.

The first, and largest, of these tables is a table that Roger provided of diurnal and nocturnal hours, expressed in degrees. A diurnal hour is one-twelfth of the time between sunrise and sunset, and will vary throughout the year – it will correspond to a modern hour only at the equinoxes. An equinoctial hour (which corresponds to a modern hour) can be expressed as fifteen degrees, since the celestial sphere rotates a full 360 degrees during the course of a day, equivalent to fifteen degrees per equinoctial hour. A full discussion of this table and its derivation is given in Chapter Four, but suffice it to say

⁶⁴ C, f.139v.

⁶⁵ I, f.33v.

here that it is a table showing the length of a diurnal hour, expressed in degrees, for any given date of the year (expressed as a degree of solar longitude). At the equinoxes, the diurnal hour will be fifteen degrees, and at the summer solstice, the diurnal hour will be longer – in the case of Hereford, it will be twenty degrees and fifty minutes. Since the table is symmetrical, it is not necessary to give separate tables for diurnal and nocturnal hours, nor to give all twelve signs.

There are two ways to spot errors in the tables. First, since Roger provided the rationale behind the table, it is possible to calculate an “ideal” table mathematically and compare this to the ones in the manuscripts. Roger gave a simplified rationale in the text, stating that there is a 700 minute difference between the winter solstice hour of 9°10’ and the summer solstice hour of 20°50’ and that a quarter of this will be made up in Aries, a sixth in Taurus and a twelfth in Gemini.⁶⁶ However, this is a simplification – as North pointed out, Roger actually used ten increments as shown in Table 3.2.⁶⁷

Sign	Range (°)	Increment
Aries	1-10	7’30’’
	11-20	5’40’’
	21-30	4’20’’
Taurus	1-10	4’20’’
	11-20	4’10’’
	21-30	3’10’’
Gemini	1-11	3’05’’
	12-17	2’05’’
	18-20	1’05’’
	21-29	1’04’’
	30	0’04’’

Table 3.2 – Increments used in Roger’s table of hours.

Using these values, an ideal table can be constructed, and compared against the tables in the various manuscripts. Additionally, since the table should be symmetric,

⁶⁶ ‘Compositionis autem h[ic] est r[at]io tabule subscripte. Maxima hora h[er]ford[ie] excedit minimam per undecim gradus + .xl. min, mediam vero per .v. gradus + .l. min. Id est excedit maxima mediam .cccl. min minimum uero dcc. Horum [?] quarta sunt .clxxv. min., sexta .cxvi. min. + .xl. s[e]c[un]da, duodecima .lviii. min. + .xx. s[e]c[un]da. S[ed] s[ecundum] Tholomeum in p[ri]mo mense, i[d est] dum fu[er]it sol in ariete addatur quarta predicta + erit quantitas hore diurne. In s[ecundo] aut[em] mense, i in tauro additur sexta. In tertio vero i in geminis duodecima + in sequentib[us] trib[us] subtrahantur ordine conuerso, i primo duodecima, inde sexta, tertio quarta. De reliquis uero sex mensibus erunt heedem et eodem num[er]o[rum] ordine hore nocturne’. A, f.5r. The scribe seems consistent in writing ‘s[ecundum]’ for ‘secundum’.

⁶⁷ North, *Horoscopes and History*, pp.39-40, n.122.

inconsistencies within a particular table can also be identified. For example, the value for 1 Aries should be the same as that for 29 Virgo ($15^{\circ}7'30''$), and the value for 2 Aries should be the same as for 28 Virgo ($15^{\circ}15'0''$). Thus, the values for 28 Taurus and 2 Leo should be the same ($19^{\circ}45'20''$ by calculation). However, in K, while the value for 2 Leo is indeed $19^{\circ}45'20''$, the value for 28 Taurus is $19^{\circ}41'20''$, indicating a scribal error, as shown in Figure 3.18.

The image shows two pages from a manuscript, likely a calendar or astronomical table. The tables are organized by zodiac signs and include numerical values. A specific value, 19 41 20, is highlighted in green in the bottom right section of the left page, indicating a scribal error.

Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.18 – K, ff.4v-5r.

Roger's table of diurnal and nocturnal hours, with the error highlighted.

The second method of identifying errors is to analyse the scribal errors in various tables, making it obvious when an error has been replicated elsewhere. There are numerous errors in the tables, and in some cases the reason for the error is obvious, as in the example above – the scribe had inadvertently copied the '41' from the row above, instead of the correct value of '45'. In this particular example, the error is in K only, and not copied elsewhere; this is not at all surprising, since K dates from the late fifteenth century, so is the latest manuscript that includes the table. In order to identify the origin of each manuscript, it is important to focus on those errors that have been propagated elsewhere, and also errors in earlier manuscripts that have not been propagated in later manuscripts.

The manuscripts containing the complete table of hours are B, C, D, I, J, K, and L.⁶⁸ A has the table for Aries, Taurus and Gemini only.⁶⁹ H contains all the sections referring to the table, and even refers to ‘Subsequens tabula’, but omits the table itself.⁷⁰ Table 3.3 illustrates the errors in the table of hours.

Entry	Manuscript	Correct value	Value in MS	Copied in
3 Aries	A	15°22’30”	xv xxiii xxx	I, K
5 Aries	A	15°37’30”	xv xxxviii xxx but see comment	I, K
2 Taurus	B	18°3’40”	17 3 40	
4 Taurus	C	18°12’20”	18 12 28	
6 Taurus	C	18°21’00”	18 22 0	L
27 Taurus	A	19°42’10”	xix xli· x but see comment	B, D, I, J (as 19 41 10), K, L
8 Gemini	B	20°16’20”	20 16 25	
9-29 Gemini	B		All seconds values have slipped one row	
11 Leo	B	19°15’50”	19 50 50	
19 Leo	I	18°42’30”	18 43 30	
29 Leo	B	17°59’20”	17 55 40	None, but all other MSS have 17 59 40
30 Leo	B	17°55’00”	17 59 0	
15 Virgo	C	16°43’20”	16 42 20	

Table 3.3 – Errors in table of hours

⁶⁸ B, f.42r; C, f.153r; D, f.190r; I, f.34v; J, f.72v; K, ff.4v-5r; L, f.88v.

⁶⁹ A, f.5v.

⁷⁰ H, f.40ra.

The entry in A for 5 Aries can be read ambiguously. The minutes column appears to be xxxviii, but there are only two dashes over the i's. It could therefore be that the scribe for A had indeed written 37 correctly, but it was interpreted as 38 by scribes of other manuscripts (see Figure 3.19).

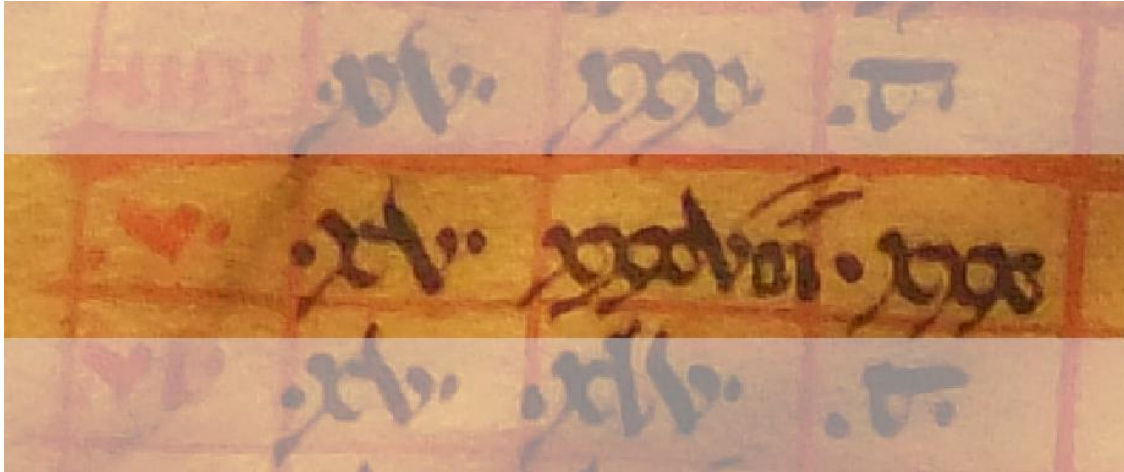


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.19 – A, f.5v. Value for 5 Aries: xxxvii or xxxviii?

A similar issue arises with the entry in A for 27 Taurus where the scribe has rather confusingly written xli with a thick dot after the i, as shown in figure 3.20. The scribe may have intended to write the correct value of xlii, but the value certainly looks more like xli. The incorrect value of 41 does appear in most other manuscripts.

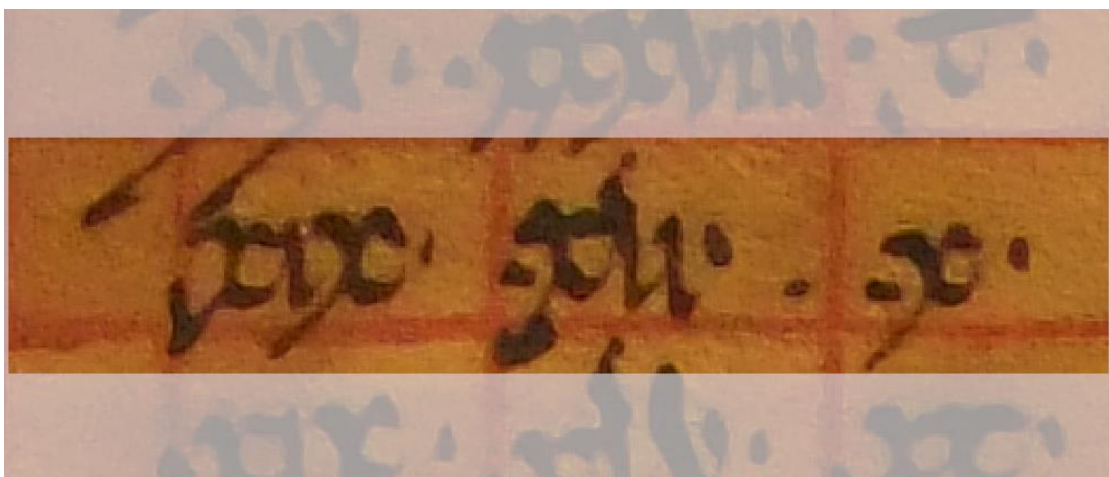


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.20 – A, f.5v. Value for 27 Taurus: xli or xlii?

B has various errors, which do not seem to have been repeated in other manuscripts, and not all of which are in the above table. In particular, the scribe appears to have slipped a row for the seconds column from 8 Gemini to the end of Gemini. The correct values for the seconds from 7 Gemini to 19 Gemini should be 15, 20, 25, 30, and so on, in five second increments until switching to a four second increment at 20 Gemini, but the scribe has instead written 15, 25, 30, 35, and so on. This error is not replicated elsewhere. In addition, the entry for 1 Taurus reads ‘G 59 20’, since the scribe has obviously copied the ‘G’ from the row above that has the heading ‘G M S’ (degrees, minutes, seconds). There are also numerous scribal errors in the I manuscript, which have only been included if they also occur elsewhere.

There are also examples where none of the manuscripts have the “ideal” value, using North’s reconstruction. For example, the values for 21 Leo to 29 Leo do not match the ideal value in any of the manuscripts, nor are they symmetric, since they should match the values from 9 Taurus to 1 Taurus (which do match the ideal values). Nor are the values used consistent with a slightly different increment, but nevertheless these incorrect values do appear in virtually all manuscripts, as can be seen in Table 3.4. The figures in red indicate incorrect values, which for the Leo values are mostly consistent across manuscripts. The shaded figures indicate additional errors that differ from these consistent errors. Since Table 3.3 above shows that some errors in A appear in later manuscripts, it is possible that A was also the source of these Leo value errors, since the folio for the second half of the table is missing from A.

Degree	Ideal	A	B	C	D	I	J	K	L
1 Tau	17 59 20	17 59 20	G 59 20	17 59 20	17 59 20	17 59 20	17 59 20	17 59 20	17 59 20
2 Tau	18 3 40	18 3 40	17 3 40	18 3 40	18 3 40	18 3 40	18 3 40	18 3 40	18 3 40
3 Tau	18 8 0	18 8 0	18 8 0	18 8 0	18 8 0	18 8 0	18 8 0	18 8 0	18 8 0
4 Tau	18 12 20	18 12 20	18 12 20	18 12 28	18 12 20	18 12 20	18 12 20	18 12 20	18 12 20
5 Tau	18 16 40	18 16 40	18 16 40	18 16 40	18 16 40	18 16 40	18 16 40	18 16 40	18 16 40
6 Tau	18 21 0	18 21 0	18 21 0	18 22 0	18 21 0	18 21 0	18 21 0	18 21 0	18 22 0
7 Tau	18 25 20	18 25 20	18 25 20	18 25 20	18 25 20	18 25 40	18 25 20	18 25 20	18 25 20
8 Tau	18 29 40	18 29 40	18 29 40	18 29 40	18 29 40	18 29 40	18 29 40	18 29 40	18 29 40
9 Tau	18 34 0	18 34 0	18 34 0	18 34 0	18 34 0	18 34 20	18 34 0	18 34 0	18 34 0
21 Leo	18 34 0	Missing	18 34 10	18 34 10	18 34 10	18 34 10	18 34 10	18 34 10	18 34 10
22 Leo	18 29 40	Missing	18 29 0	18 29 0	18 29 0	18 29 0	18 29 0	18 29 0	18 29 0
23 Leo	18 25 20	Missing	18 25 40	18 25 40	18 25 40	18 25 40	18 25 40	18 25 40	18 25 40
24 Leo	18 21 0	Missing	18 21 20	18 21 20	18 21 20	18 21 20	18 21 20	18 21 20	18 21 20
25 Leo	18 16 40	Missing	18 15 0	18 15 0	18 15 0	18 15 0	18 15 0	18 15 0	18 15 0
26 Leo	18 12 20	Missing	18 12 40	18 12 40	18 12 40	18 12 40	18 12 40	18 12 40	18 12 40
27 Leo	18 8 0	Missing	18 8 20	18 8 20	18 8 20	18 8 20	18 8 20	18 8 20	18 8 20
28 Leo	18 3 40	Missing	18 3 0	18 3 0	18 3 0	18 3 0	18 3 0	18 3 0	18 3 0
29 Leo	17 59 20	Missing	17 55 40	17 59 40	17 59 40	17 59 40	17 59 40	17 59 40	17 59 40

Table 3.4 – Some consistent errors in the table of hours entries for Leo.

Another table in the text is one showing the ‘times of the signs’. No explanation is given for the table, although it is the similar to the version given in Abu Ma’shar.⁷¹ The table appears in B, C, D, E, F, G, H, I, J, K, and L.⁷²

Although no explanation is given, and there are discrepancies even in the Latin translations of Abu Ma’shar’s Arabic text between Hermann of Carinthia and John of Seville, there is a mathematical relationship between some of the values that can allow consistency to be checked. In particular, the Anni and Menses columns are always the same. In the right hand half of the table, Puncta and Hore are mutually exclusive; in the Latin translations of Abu Ma’shar, only Hermann uses puncta – John of Seville simply gives hours, and Hermann’s puncta are derived by dividing sixty by the number of hours, so where John of Seville gives ‘iii dies et iii hore’, Hermann gives a table showing three dies, zero hore and twenty puncta. The consistency can be checked, after converting puncta to hore, by taking the Dies and Hore on the right hand column and converting to a number of hours, then dividing by five, and this value should be the same as the Menses column. For example, Aries has three dies and twenty puncta; converting puncta to hore gives three hore, so three days and three hours is 75 hours, and dividing this by five gives fifteen, the same as the value in the Menses column.

This consistency check allows an “ideal” table to be produced, which highlights any discrepancies in the tables in the manuscripts. This is shown in Table 3.5.

⁷¹ Abu Ma’shar, *Liber introductorii maioris ad scientiam judiciorum astrorum*, John of Seville (trans.), R. Lemay (ed.), Volume 5 (Napoli: Istituto Universitario Orientale, 1995)VI.8, p.247; Abu Ma’shar, *Great Introduction* (Hermann), VI.8, p.113. However, there are discrepancies between the two versions.

⁷² B, f.44r; C, f.141v; D, f.191rb; E, f.222v; F, f.150rb; G, f.222v; H, f.41v; I, f.35v; J, f.73r; K, f.8r; L, f.89v.

Sign	Anni	Menses	Dies	Hore	Dies	Hore	Puncta
Aries	15	15	37	12	3	0	20
Taurus	8	8	20		1	16	0
Gemini	20	20	50		4	0	15
Cancer	25	25	62	12	5	5	0
Leo	19	19	47	12	3	23	0
Virgo	20	20	50		4	0	15
Libra	8	8	20		1	16	0
Scorpio	15	15	37	12	3	0	20
Sagittarius	12	12	30		2	12	0
Capricorn	27	27	67	12	5	15	0
Aquarius	30	30	75		6	6	0
Pisces	12	12	30		2	12	0

Table 3.5 – Consistent “ideal” values for times of the signs table.

Table 3.6 shows discrepancies between this ideal table and the data in the manuscripts.

Entry	Manuscripts	Correct value	Value in MS
Aries	E, F, G	15 15 37 12 / 3 0 20	15 15 27 12 / 3 0 20
Taurus	E, F, G	8 8 20 / 1 16 0	8 8 20 / 1 19 0
Cancer	C	25 25 62 12 / 5 5 0	15 15 42 12 / 5 5 0
Leo	B	19 19 47 12 / 3 23 0	19 19 47 14 / 3 12 0
	C, D, F, H, I, J, K, L		19 19 47 12 / 3 32 0
	E, G		19 19 47 12 / 3 25 0
Virgo	All extant manuscripts	20 20 50 / 4 0 15	20 20 50 / 3 0 15
Libra	E, F, G	8 8 20 / 1 16 0	8 8 20 / 1 19 0
Sagittarius	K	12 12 30 0 / 2 12 0	12 12 19 0 / 2 12 0
Capricorn	B, C, D, H, I, J, K, L	27 27 67 12 / 5 15 0	27 27 68 12 / 5 15 0
	E, F, G		27 27 98 12 / 5 15 0
Aquarius	D, J, L	30 30 75 / 6 6 0	30 30 75 / 6 0 0
	E, F, G, H		30 30 75 / 9 9 0
Pisces	C, E, F, G, H, I, J, K, L,	12 12 30 / 2 12 0	12 12 30 12 / 2 12 0

Table 3.6 – Errors in times of the signs table.

The apparent discrepancy for Virgo also shows up in the two Latin translations of Abu Ma’shar’s *Great Introduction*; John of Seville gives the correct value of four days and four hours for Virgo, while Hermann of Carinthia gives three days and fifteen puncta, equivalent to three days and four hours.

The other point of interest in these discrepancies is a consistent error in mistaking the number six for nine, in E, F, and G. The entries for Taurus and Libra show 19 instead of 16, the entry for Capricorn shows 98 instead of 68, and the entry for Aquarius shows 9 9 0 instead of 6 6 0. This last discrepancy also shows up in H.

The final table in the introductory section is a table of the years of the planets. No explanation is given by Roger for the table or how to use it, although they in fact relate to predictive techniques relating to stages of a native's life, and the length of life. Very similar tables appear in Abu Ma'shar, but again there are a few discrepancies between John of Seville's translation and Hermann of Carinthia's translation.⁷³ There are major discrepancies between the various manuscripts, in particular for the 'magni anni' of Saturn. This table appears in B, C, D, F, H, I, J, K, and L.⁷⁴

Since there are so many discrepancies, it is hard to identify an "ideal" table for the years. However, the table given in Abu Ma'shar's *Great Introduction* makes a reasonable starting point. This is shown in Table 3.7, with Hermann of Carinthia's figures given, and, where they differ, John of Seville's figures are shown in brackets.

Planet	Firdarie	Magni	Maiores	Medii	Minores
Sun	10	1461	120	39½	19
Venus	8	1151	72 (82)	45	8
Mercury	13	480	76 (66)	48	20
Moon	9 (8)	520	108	39½	25
Saturn	11	265	57	43½	30
Jupiter	12	427	79	45½	12
Mars	8 (7)	284	66	40½	15
North Node	3				
South Node	2				

Table 3.7 – Years of the planets according to Abu Ma'shar.

⁷³ Abu Ma'shar, *Great Introduction* (John), Vol V, VI.8, pp.310-311; Abu Ma'shar, *Great Introduction* (Hermann), Vol VIII, VI.8, p.143.

⁷⁴ B, f.46r; C, f.142v; D, f.192rb; F, f.151rb; H, f.42va; I, f.36v; J, f.74r; K, f.10v; L, f.90v.

Comparing the manuscripts, a number of discrepancies are apparent, shown in Table 3.8.

Entry	Manuscripts	Usual value	Value in MS
Sun	B	10 1461 120 39½ 19	10 1421 120 63 19
	C, D, I, J, K, L		10 1461 120 61 19
	F		10 1461 120 69 19
	H		10 1461 120 39 19
Venus	H	8 1151 82 45 8	8 151 82 45 8
Mercury	B	13 480 76 48 20	13 480 76 40 20
	D, J, L		13 880 76 48 20
Moon	B	9 520 108 39½ 25	9 520 108 blank 25
	C		9 520 107 39½ 25
	D		9 520 108 39.3 25
	F, J		9 520 108 393 25
	L		9 520 108 39 25
	I		9 700 108 39½ 25
Saturn	B	11 265 57 43½ 30	11 205 57 43 30
	K		11 265 57 44½ 30
	D, J		11 225 57 43½ 30
	F		11 115 57 433 30
	L		11 125 57 43 30
	H		11 225 57 433' 30
Jupiter	B	12 427 79 45½ 12	12 427 79 46½ 2
	C, D, I, J, K		12 427 79 46½ 12
	F, L		12 427 79 46 12
	H		12 427 79 46½ 112
Mars	K	8 284 66 40½ 15	8 283 66 40½ 15
	F		8 284 66 401 11
	L		8 284 66 40 15
	H		8 284 66 40½ 11
North Node	D, F, J	3	31

Table 3.8 – Discrepancies in manuscripts for the years of the planets.

A number of features are noteworthy. Each planet has a greater, major, medium and minor number of years, and also a “firdaria”, which relates to a period of life in the native. The firdariae also apply to the North and South lunar node (Caput and Cauda Draconis). Three manuscripts – D, F, and J – all have this figure as 31, while all other manuscripts (and the Latin translations of Abu Ma’shar) have this as three. This suggests either that all three of those manuscripts have copied the error from another source, or that the error occurred in one of those manuscripts and that the other two have copied it.

One revealing feature, though, is shown in the table in D, shown in Figure 3.21, regarding the medium years of the Moon. The usual figure is 39½, and D generally represents the fraction one-half with a long ‘s’, with dots either side, although a cross is used for the figure of 43½ for Saturn. The curious ‘.3’ after the 39 does not match either of these

forms, and it can be seen that F and J both render this figure as 393. This strongly suggests that these manuscripts have been copied from D.

tabula annorum planetarum									
	ve	ch	lu	sa	re	ma	ca	ca	ca
	lit	mit	aut	ne	m	mt	at	pi	de
21m	10	8	13	9	11	12	8	31	2
furdaie	126	114	880	420	224	224	284	0	0
maxim	120	82	16	108	44	19	65	0	0
maior	67	24	28	39	33	26	20	0	0
medii	19	8	20	24	30	12	14		
annorum									

Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.21 – D, f.192rb. Years of the planets.

A number of key features show up with this analysis. B is very similar to A, but a few key words are missing, implying that B derives (directly or indirectly) from A rather than vice versa. C is also very similar to A, but has incorporated the footnote in A on the astrolabe into the main text, implying that C derives from A. I has also incorporated this footnote, and although it generally uses Arabic numerals, I has incorporated, somewhat redundantly, both the Roman numerals for twenty and the Arabic number twenty in the footnote. The rather unclear rendering of some Roman numerals in A has led to errors in a number of manuscripts, namely B, D, I, J, K, and L, implying these derive from A. B, O, and P all have similar text to A, but miss various sections out.

The striking fact of the abrupt endings of E, F and G at the same point, combined with the fact that they share many of the same errors, suggest that these were all copied from the same source. One telling feature of D is the curious ‘39.3’ figure for the years of the Moon, which appears to have led to a miscopying as 393 in F and J. However, one feature that appears in E, F, and G but not in D is the distinctive erroneous appearance of the number nine where a six should be in the times of Aquarius. It seems unlikely that three

presumably separate scribes would all make the same error, and all finish at the same point, so it is likely that the “nine instead of six” error occurred in a manuscript copied from D, no longer extant, from which E, F, and G all copied their text. This unknown manuscript may also have finished at the same point as E, F, and G, since the explicit in G certainly suggests the scribe considered this the end of the text. H has a number of errors that are also in D, but not in E, F, or G, and is complete, suggesting that this was copied directly from D and not from the unknown manuscript.

This analysis, particularly regarding the copying of specific errors, may indicate a number of relationships that may apply to fourteenth-century copies of *Judicial Astrology* and their derivation, and this would suggest a future area for research to build a firm *stemma codicum* showing the relationships between the various manuscripts of the text. At this stage, enough information appears to exist to devise a tentative and partial *stemma codicum* for the thirteenth-century copies of *Judicial Astrology*, which is shown in Figure 3.22. In this diagram, α represents the original twelfth-century manuscript, no longer extant. The similarities between D, E, F, and G strongly suggest a relationship, but the analysis of errors suggests a fifth manuscript may have existed in this family, no longer extant, labelled β in this diagram.

This analysis suggests, therefore, that A is the closest extant manuscript to the original, and this will be used in this thesis whenever possible when quoting from *Judicial Astrology*. There are a few pages missing from A within the introduction, and when quoting from this missing section, B will be used, as it is a complete manuscript and reasonably clearly written.

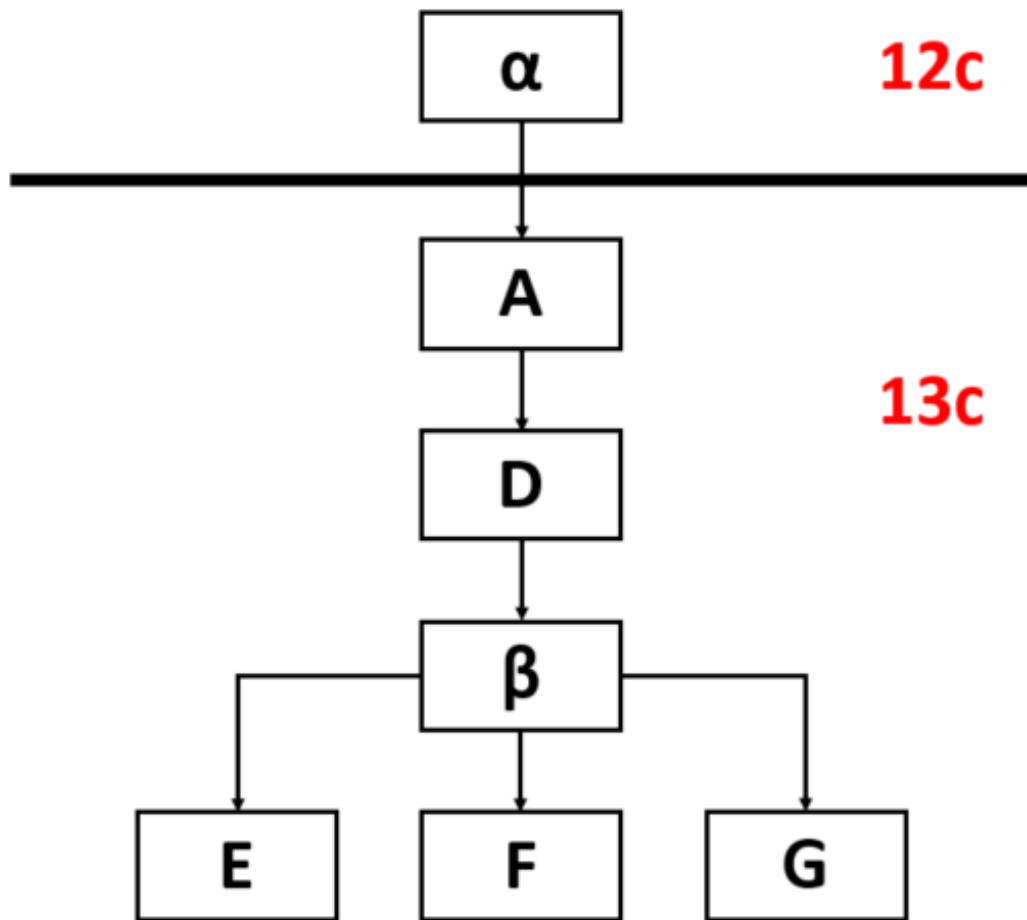


Figure 3.22 – Tentative *stemma* codicum for some thirteenth-century manuscripts.

Reception of *Judicial Astrology*

Roger's *Judicial Astrology* appears in twenty-two extant manuscripts, and the further research in this chapter suggests other manuscripts that may have existed. It was, then, a reasonably widely copied text, and yet the name of Roger of Hereford does not appear in independent texts written in the decades and centuries after *Judicial Astrology*. The reception of Roger's text, therefore, cannot easily be analysed by examining later primary sources. As mentioned in Chapter One, Azzolini pointed out that little is known of the techniques used by medieval astrologers – a lack that this thesis aims to redress – and the reason for this is that astrologers who may have been well known in their own time are not widely cited because much of their writing was to a narrow circle.⁷⁵ Indeed, the idea that authors were merely transmitters of ancient knowledge, with the implication that the authors themselves deserved no particular recognition, is found in other texts of the period; the twelfth-century author John of Salisbury wrote that he does not 'agree with those who spurn the good things of their own day, and begrudge recommending their contemporaries to posterity', suggesting that this was the norm.⁷⁶ He went on to say that the views from antiquity were accepted simply because they were ancient, and that 'correct opinions of our contemporaries are, on the other hand, rejected merely because they have been proposed by men of our own time.'⁷⁷ An equally modest prologue in a work by the Archbishop of Tyre likens his efforts to an artist adding finishing touches to a work of art whose foundations have already been laid.⁷⁸ This attitude is summed up by the image attributed by John of Salisbury to Bernard of Chartres, who 'used to compare us to [puny] dwarfs perched on the shoulders of giants. He pointed out that we see more and farther than our predecessors, not because we have keener vision or greater height, but because we are lifted up and borne aloft on their gigantic stature.'⁷⁹

⁷⁵ Azzolini, *The Duke and the Stars*, p.1.

⁷⁶ John of Salisbury, *The Metalogicon*, D.D. McGarry (trans.) (Berkeley: University of California Press, 1955), p.144.

⁷⁷ John of Salisbury, *Metalogicon*, p.145.

⁷⁸ William of Tyre, *A History of Deeds Done Beyond the Sea*, E.A. Babcock and A.C. Krey (trans.) (New York: Octagon Books, 1976), p.55.

⁷⁹ John of Salisbury, *Metalogicon*, p.167. The original Latin stated 'Dicebat Bernardus Carnotensis nos esse quasi nanos gigantium humeris insidentes, ut possimus plura eis et remotiora uidere, non utique proprii uisus acumine aut eminentia corporis, sed quia in altum subuehimur et extollimur magnitudine gigantea.', John of Salisbury, *Metalogicon Libri IIII*, C.C.I. Webb (ed.) (Oxford: Clarendon Press, 1929), p.136.

This twelfth-century modesty, then, may explain why authors whose ideas may have been influential are not necessarily well-known, and that their modern obscurity should not be taken as an indication of lack of importance. It also means that in order to examine the reception of *Judicial Astrology*, a more indirect approach is needed, by focusing on three areas: the distribution of the manuscripts, setting a context by seeing with what other texts *Judicial Astrology* was associated when bound into codices, and examining the manuscripts to identify their purpose by considering annotations, layout, headings, and to what extent a manuscript is abbreviated.

Regarding the distribution of *Judicial Astrology*, all extant texts are in various national and university libraries today. However, to get an idea of the distribution of this text prior to its arrival in modern libraries, a rough estimate can be determined by consulting the catalogues of medieval libraries, in addition to information available in current library catalogues and databases on provenance, such as the Ptolemaeus database cited extensively in this thesis, and recent extensive catalogues⁸⁰. Information is not available for all medieval libraries, so any attempt at measuring this is approximate. One measure is to see how many manuscripts are mentioned in the *Medieval Libraries of Great Britain (MLGB3)*.⁸¹ Other indications are given in contemporary library catalogues, where provenance has been determined by other clues in a particular codex. Since the collation of manuscripts into a codex may have taken place long after the original texts were written, this exercise does not reveal very much about the immediate transmission of *Judicial Astrology* in the decades following its original production, but does give some clues about its use in subsequent centuries.

The context shown by examining with what other texts *Judicial Astrology* was associated when bound into codices is presented in Appendix One.

A, identified as probably the earliest of the codices, has an English origin, and a list of thirty-eight monks of St. Swithun in Winchester suggests this as the location in the early sixteenth century.⁸² It is very neatly written with intricate decoration on the first letter of

⁸⁰ For example, D. Juste, 'The Impact of Arabic Sources on European Astrology: Some Facts and Numbers', *Micrologus*, 24 (2016), pp.195-226; C. Burnett and D. Juste, 'A New Catalogue of Medieval Translations into Latin of Astronomy and Astrology', in F. Wallis and R. Wisnovsky (eds), *Medieval Textual Cultures* (Berlin: De Gruyter, 2016).

⁸¹ MLGB3, <http://mlgb3.bodleian.ox.ac.uk/> [11 March 2019].

⁸² D. Juste, 'MS Oxford, Bodleian Library, Selden supra 76', *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/482> [11 March 2019]; MLGB3 gives a location of 'Winchester,

each paragraph, and has copious abbreviated margin notes in a different hand. These are not to delineate sections, but are additional explanatory comments for some of the techniques, suggesting that this was used as a practical text. *Judicial Astrology* is the first manuscript in the codex, and most of the other texts bound in the same codex relate to other astronomical and astrological texts. The hand appears to be the same throughout the codex, with the exception of a work by al-Kindi ('De radiis', ff.47r-60v), which is in a similar hand but smaller text.

B is in a fourteenth-century codex that originates from the Franciscan convent in Babwell, near Bury St. Edmunds in Suffolk. It is bound with other astronomical, astrological, and medical texts, including one with a clear date: a text by Robertus Anglicus on meteorology has a heading in a different hand to the main text stating 'Robertus Perscrutator de Impressionibus Aeris floruit Eboraci 1326'.⁸³ The codex has the inscription 'Ex dono fratris Nicholai de Hepworth', and was presented by John Rant, fellow of Caius, to the University of Cambridge in 1655.⁸⁴ Roger's text follows on from a text by Richard of Wallingford ('Exafrenon'), and appears to be in the same hand. It seems to be a practical text, having many margin annotations in a different hand whose sole purpose seems to be to identify particular sections.

C is in a codex listed as originating from the Benedictine cathedral priory of Holy Trinity, Norwich in MLGB3, an assumption shared by Greatrex as discussed earlier, although both Ptolemaeus and the catalogue entry dispute this and claims 'most probably Oxford'.⁸⁵ The catalogue entry states that it is a fourteenth-century codex, 'probably written in various stages', and it is bound with numerous other texts, virtually all relating to mathematics, astrology, and astronomy.⁸⁶ Anthony Rous, sixteenth century, is listed on f. 2r, and Ptolemaeus states the codex was given to the University of Cambridge by W. Crow in 1656. MLGB3 gives previous ownership as William David in the fifteenth century. Roger's text is written in a rather untidy hand, and has no annotations. It does

Hampshire, Benedictine cathedral priory of St Peter, St Paul, and St Swithun' with a shelf mark of B113.11.

⁸³ B, f.13r.

⁸⁴ MLGB3, <http://mlgb3.bodleian.ox.ac.uk/mlgb/book/308/> [11 March 2019].

⁸⁵ D. Juste, 'MS Cambridge, University Library, Gg 6.3 (1572)', *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/540> [11 March 2019]; MLGB3, <http://mlgb3.bodleian.ox.ac.uk/mlgb/book/4065/> [11 March 2019]; Cambridge University, *A Catalogue of the Manuscripts Vol III*, entry 1572, p.214.

⁸⁶ Cambridge University, *A Catalogue of the Manuscripts Vol III*, entry 1572, p.214.

have extra tables not present in other manuscripts – a multiplication table, an addition table, and a subtraction table on f.147v. This suggests that it was a practical text, designed for use rather than appearance. The inclusion of an addition table, showing how to add together two numbers less than ten, suggests it was used by those with very limited numerical experience. In her article discussing horoscopes at Norwich Cathedral priory, Greatrex pointed out that the codex as a whole is virtually a home made ‘reference library’, its neat tables contrasting with the untidy hand, and proposes that it was put together by monks who ‘not only possessed scientific inclinations, but had acquired some degree of learning and practical experience to enable them to put to good use the information they had compiled in this volume.’⁸⁷

The close relationship between D, E, F, and G was discussed earlier, in the section analysing the palaeography, although E, F, and G appear to have different origins: E appears to have an origin in Bayeux, F in England, and G in Paris, despite the similarities in text and the fact that E and G are highly decorated with evidence that F was intended to be similarly decorated. Apart from F, which has a few very brief annotations to delineate headings, all three are free of glosses, and are short excerpts, suggesting that these manuscripts were not used as practical texts, but possibly as a copying exercise. E is dated between 1268 and 1272 and is given a possible French origin by Ptolemaeus, perhaps Bayeux or Paris, and then subsequently a provenance of Charles of Orléans, who died in 1465.⁸⁸ F, written in the second half of the thirteenth century, is listed as having an English origin, possibly Oxford.⁸⁹ The provenance is given as ‘John Alward, fellow of Exeter College, Oxford, and rector of the church in Stoke Bruerne (d. 1457), who bequeathed the MS to the monastery of Kenilworth’. Stoke Bruerne is a small village in Northamptonshire, and the Latin dedication is given on folio 224v.⁹⁰ G has a note on f.224rb with a date of 12 November 1266. Ptolemaeus notes that this note is in a later hand but that 1266 is a plausible date.⁹¹ Ptolemaeus suggests a French origin, perhaps

⁸⁷ Greatrex, ‘Horoscopes and Healing’, pp. 172-173.

⁸⁸ D. Juste, ‘MS Oxford, Bodleian Library, Laud. Misc. 644’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/191> [11 March 2019].

⁸⁹ D. Juste, ‘MS Oxford, Bodleian Library, Auct. F.3.13 (2177)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/541> [11 March 2019].

⁹⁰ MLGB3, <http://mlgb3.bodleian.ox.ac.uk/mlgb/book/3316/> ‘Istum librum legavit magister Iohannes Alward quondam rector ecclesie de Stoke Bruere monasterio de Kelyngworth. in perpetuum pro quaterno sibi in Oxonia accomodato ...’ [11 March 2019].

⁹¹ D. Juste, ‘MS Vatican, Biblioteca Apostolica Vaticana, Pal. lat. 1414’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/239> [11 March 2019].

Paris, based on a star table for Paris, and notes on geographical coordinates, and adds that a note probably added in the fourteenth-century ‘lists some 37 species of fish found in the Meuse river’, and that Nikolaus Bruckner gave the codex to Elector Palatine Ottheinrich in May 1553, thence to the Bibliotheca Palatina in Heidelberg, and the Vatican library in 1623. All three are bound in codices of a scientific nature. The codex in which E is bound appears to be in the same hand throughout, apart from a single folio (not listed in the catalogue) with a table headed ‘Aspectus Luna’ in a neat cursive hand.⁹² F is in a codex of various hands.

All three have similarities to D, but the fact that they are all short and contain very similar excerpts from it implies that there was another codex, no longer extant (and labelled β in the *stemma codicum* in Figure 3.22) from which E, F, and G were copied. D is in a similar neat miniscule hand, although no clues are given in the catalogue entries regarding its origin and provenance. D is a complete copy of the prologue and reference material, but does not include the ‘four parts’ that comprise Roger’s main work (simple judgements, intentions, elections, and the method of judging) and, like E, F, and G, has only a few annotations to delineate headings; indeed, it finishes with a note that there is a subsequent book comprising three parts, and names the incipit, although this subsequent material is not bound within the codex.⁹³ This suggests that D was intended as a standalone reference book. D differs from the other three in another respect, too – the codex in which it is bound is a mixture of religious and scientific texts. However, even in this instance there is a curious anomaly: f.2r, which is part of a commentary on Genesis and has a large space at the bottom of the page, has a blank horoscope drawn in that space. This may suggest that this entire codex was seen as a set of texts on science and astrology, and even pages relating to religious texts were used to jot down notes relating to astrology.

H is in a neat miniscule, with red decoration on the opening word and gaps for subsequent decoration, and is complete. It has a few annotations. For example, one page has a footnote in a different hand with three wavy lines summarising some of the points made in a section on determining houses for a question; the following page has a sketch at the bottom listing the four cardinal signs, suggesting this was used as a teaching text. The manuscript is bound with other texts relating primarily to astrology, apart from one which

⁹² E, f.227v.

⁹³ ‘Explicit p[ri]ma pars require in sext[er]no p[re]cedente p[ro]ximo libru[m] q[ui] sic incipit quoniam c[ir]ca t[ri]a sit om[n]is astrono. [et]c et su[n]t 3 libelli’, D, f.194v

is a text on magic by Apollonius, and a few folios listed simply as ‘alio collection vaticiniorum’.⁹⁴

The provenance of I is not recorded, although the catalogue entry does suggest an English origin.⁹⁵ It is written in a rather untidy cursive hand, with sections delineated simply by underlining the words rather than using any line breaks. It is very heavily annotated in a different hand on virtually every page in an untidy hand that is very hard to read, which suggests this was used as a teaching text.

J dates from the fourteenth century, and was copied by the same scribe who copied texts in a different Vatican manuscript, attributed to Peter of Limoges.⁹⁶ Juste’s analysis of manuscripts in the Bibliothèque Nationale de France also states that Peter of Limoges had made annotations in the margin indicating the sources, particularly Abu Ma’shar, and as Peter of Limoges died in 1306 this would make the manuscript very early fourteenth century.⁹⁷ Peter of Limoges is probably the same person who was Dean of Medicine at Paris in 1270, and this suggests a provenance in Paris; this identification and his reputation as a copyist of astrological texts is discussed by Danielle Jacquart:

Whether or not this dean is also the famous astronomer and author of a *Tractatus moralis de oculo*, copyist, annotator and collector of books named Pierre de Limoges, is a matter of debate among historians. This latter Pierre de Limoges was Robert de Sorbonne’s friend, and belonged to the newly founded college of Sorbonne. He died in 1306, and the obituary of the Sorbonne alluded to him in the following terms: ‘Obiit magister Petrus de Lemovicis, quondam socius domus, canonicus Ebroidensis, qui refutavit duos episcopatus et bis prebendam Parisiensem, baccalarius in theologia, magnus astronomus.’⁹⁸

⁹⁴ Schum, *Handschriften: Erfurt*, p.742.

⁹⁵ Bernd and Brandis, *Handschriften der Stadtbibliothek Soest*, p.153.

⁹⁶ The Ptolemaeus entry for a different codex (Vatican City, Biblioteca Apostolica Vaticana, Reg. Lat. 1261) states that the Vatican manuscript was glossed by Peter of Limoges, and references BNF Lat 7434 stating that the same scribe copied ff.72r-101v of the BNF Lat 7434 manuscript: D. Juste, ‘MS Vatican, Biblioteca Apostolica Vaticana, Reg. lat. 1261’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/160> [11 March 2019].

⁹⁷ D. Juste, *Les Manuscrits Astrologiques Latins Conservés à la Bibliothèque Nationale de France* (Paris: CNRS Éditions, 2015), p.156; Death of Peter of Limoges cited in ‘Ramon Llull and Peter of Limoges’, *Traditio* 48 (1993), p.97.

⁹⁸ D. Jacquart, ‘Medicine and Theology’ in Michael R. McVaugh, *Crossing Boundaries at Medieval Universities* (Leiden, Brill: 2011), p.216.

It is very heavily annotated, with margin notes (by Peter of Limoges according to Juste, as described above) and numerous notes scribbled in the main text itself, in a different paler hand, including references to other texts – for example, in the section on debilities of the planets, the margin note refers to ‘Albumasar 7 ca. 6’, which is the section in Abu Ma’shar’s *Great Introduction* on the same material. This seems to be a very clear example of the manuscript being used as a teaching text. The codex in which it is bound contains astrological, computational, and scientific texts.

K has no annotations, and headings are fairly well marked in purple ink. It is the only manuscript in the codex.

L, M, and N are all written in a cursive hand, and all have very few annotations; annotations that are present are primarily to indicate headings. They all contain all four parts of Roger’s main work (the ‘four parts’), but the four parts run together and are not indicated by separate incipits (unlike, for example, A, which introduces the first three parts with an incipit), although a later margin note does mark the start of the third part in M. L was copied in 1440, and appears to have a provenance of the monastery of Maria Laach, a Benedictine Abbey in Rhineland-Palatinate, Germany. The codex was acquired by the Royal Library in Berlin in 1819.⁹⁹ M is attested as originating in Limoges, at the church of Sainte-Valérie, on folio 1r.¹⁰⁰ N was copied by Petrus Pebidic, and although no firm date is given for this codex, he also copied Dijon, Bibliothèque Municipale, 449 in 1459 at the University of Dole, near Dijon, and Paris, Bibliothèque nationale de France, Lat. 7408 in Besançon in 1483.¹⁰¹ All three are bound in codices dedicated to scientific texts, primarily astrological.

O is identified by Ptolemaeus as dating between 1312 and 1325, with an English origin.¹⁰² The cover of this codex states ‘From the library of the Earl of Ashburnham Appendix No CXX, May 1897’, and the Ptolemaeus database identifies this Earl as Bertram

⁹⁹ D. Juste, ‘MS Berlin, Staatsbibliothek Preußischer Kulturbesitz, lat. fol. 54 (964)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/522> [11 March 2019].

¹⁰⁰ D. Juste, ‘MS Limoges, Bibliothèque Municipale, 9 (28)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/213> [11 March 2019].

¹⁰¹ D. Juste, ‘MS Dijon, Bibliothèque Municipale, 449 (270)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/538> [11 March 2019] and D. Juste, ‘MS Dijon, Bibliothèque Municipale, 449 (270)’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/538> [11 March 2019].

¹⁰² D. Juste, ‘MS Paris, Bibliothèque nationale de France, n.a.l. 693’ (update: 04.01.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/503> [11 March 2019].

Ashburnham, the Fourth Earl of Ashburnham, who died in 1878. The Earl had acquired a number of manuscripts under questionable circumstances. He had purchased well over two thousand manuscripts in 1847 and 1849 from Guglielmo Libri and Joseph Barrois.¹⁰³ However, many of these manuscripts had been stolen from French public libraries. The Italian and French governments sought their return, and in 1887 the Bibliothèque nationale purchased 166 of the manuscripts claimed by France.¹⁰⁴ Many of these new acquisitions are listed in the 1888 catalogue of the Bibliothèque nationale, which has a long preface describing the thefts, and the subsequent trial of Libri, and states that the catalogue contains only a small portion of the stolen documents and that Ashburnham palace still held many of them, with a plea that they may be made available to scholars of all nations in the near future.¹⁰⁵ The codex in which O is bound is, of course, not listed in this catalogue as the 1897 date would testify, and it is not known if this codex was one originally stolen from a French library. O is neatly written but somewhat abbreviated, and has only a few annotations to mark out sections. It begins with a red heading with the description found in A, ‘Liber de tribus generalibus iudiciis astronomice ex quibus cetera omnia defluunt’ but skips the usual incipit (‘Quoniam circa tria...’) and jumps to the first section, ‘De tribus significationibus’. The first three sections have the same headings as in A, but after this point the text has no further headings in the main text, although a later hand has added a heading of ‘De cogitatione’ to mark the start of the second part, and a margin note of ‘De electione’ to mark the third part. The lack of the usual incipit caused confusion to Thorndike, who gave no author for the work but merely said ‘...we come at fol. 135va to the rubric, De tribus generalibus iudiciis astronomie de quibus cetera omnia defluunt, followed by the unfamiliar incipit, Dinoscitur autem rerum consecutio tribus modis...’ and goes on to attribute parts two to four of the work (the start of which is indicated by the heading, added later, of ‘De cogitatione’) to a work by Masha’Allah.¹⁰⁶ The codex in which O is bound contains texts dedicated to astrology, calendars, and medicine.

¹⁰³ S. de Ricci, *English Collectors of Books and Manuscripts: 1530-1930* (Cambridge: Cambridge University Press, 2011), Ch. XI ‘Lord Ashburnham and Libri’, pp.131-138.

¹⁰⁴ S. de Ricci, *English Collectors*, p.133.

¹⁰⁵ Léopold Delisle, *Catalogue des manuscrits des fonds Libri et Barrois* (Paris: H. Champion, 1888): ‘Ce qui en est resté à Ashburnham-Place renferme encore beaucoup de documents de la plus haute importance. Puissent-ils, dans un avenir rapproché, trouver un asile sur les rayons d’une bibliothèque accessible aux savants de toutes les nations!’, p.xlii.

¹⁰⁶ L. Thorndike, ‘Notes on Some Astronomical, Astrological and Mathematical Manuscripts of the Bibliothèque Nationale, Paris’, *Journal of the Warburg and Courtauld Institutes*, 20.1-2 (1957), p.161.

P deviates considerably from the full manuscripts. The majority of the large introductory section is absent, and the only elements from this part are the nature of the twelve signs, seven planets, and the twelve houses, and it includes a summary of which houses are strong and weak that are absent in other manuscripts. The bulk of the text relates to the four parts of the book mentioned in the prologue, but the version is heavily abbreviated. There are a few margin notes in a different hand, and the focus is on the first book after the introduction, with a margin note giving this a new heading of ‘concerning questions’, suggesting this is an abbreviated horary textbook with the bare minimum of information included. This would suggest it is a text for someone already familiar with the subject. The manuscript is bound in a codex dedicated to astrological texts.

Q is neatly written but stops abruptly; the much later seventeenth-century U manuscript appears to continue where Q stops. It starts at the first main book and does not include the introduction, and concludes just after the section on reception, which in most manuscripts is followed by a section on the principle of the houses. Q is unusual in that it is bound in a codex that appears to be in two distinct halves, although bound together. Folios 1v-37r (which includes Roger’s partial text in folios 33r-34v) are all astrological, and appear to be in the same hand. The remainder of the codex contains religious texts, in what appear to be an older fourteenth-century hand. The hand changes again, to what appears to be an older (possibly thirteenth-century) hand on f.97r, with the catalogue title ‘Constitutiones Johannis Peccham, archiep. Cantuar., anna 1281 editae’.¹⁰⁷ This gives credence to the suggestion in the online catalogue that the first part of the codex may date from the fifteenth century.¹⁰⁸

R, like P, is primarily a summary of the first book, with the introduction missing entirely. It has a different incipit to the other manuscripts, namely ‘Liber de adeptione, cogitacione et eleccione’, and various paragraphs are absent from the text, including some definitions. For example, in the section on determining intentions from a ‘duodenaria’, most texts describe the technique by first defining what a duodenaria is, namely that it divides a sign into twelve equal parts of 150 minutes (two and a half degrees), then go on to explain that the first duodenaria of Aries has the nature of Aries, the second of Taurus and so on, and finally describe the technique, which is to calculate the duodenaria to which the degree

¹⁰⁷ Hunt, *Digby Manuscripts*, p.62.

¹⁰⁸ ‘MS Digby 58’, *Medieval Manuscripts in Oxford Libraries*, https://medieval.bodleian.ox.ac.uk/catalog/manuscript_4396 [13 October 2019].

of the Ascendant belongs.¹⁰⁹ R simply describes the technique of calculating the duodenaria of the degree of the Ascendant, without the definition and subsequent explanation.¹¹⁰ A section on finding hidden objects from the lord of the hour is also absent in R. It ends after the third part on elections, which itself is heavily abbreviated, and does not include the fourth part on the method of judging. This heavy abbreviation, and the lack of detailed instruction for some techniques suggests, like P, a text for someone already familiar with the material. The catalogue states that the text is from the fourteenth century, but does not give a date. However, there is an astrological chart drawn in a different hand on f.99v, shown in Figure 3.23. It is not clear from the description what this chart represents, but the planetary positions in it correspond to a date of 4 August 1352 at about sunrise; this may provide a clue to the date of the manuscript if it is some kind of horary or electoral chart, rather than a natal chart.¹¹¹ The manuscript is bound in a codex dedicated to astrological texts.

¹⁰⁹ A, f.15r.

¹¹⁰ R, f.98r.

¹¹¹ Date derived from positions in manuscript using Solar Fire software.

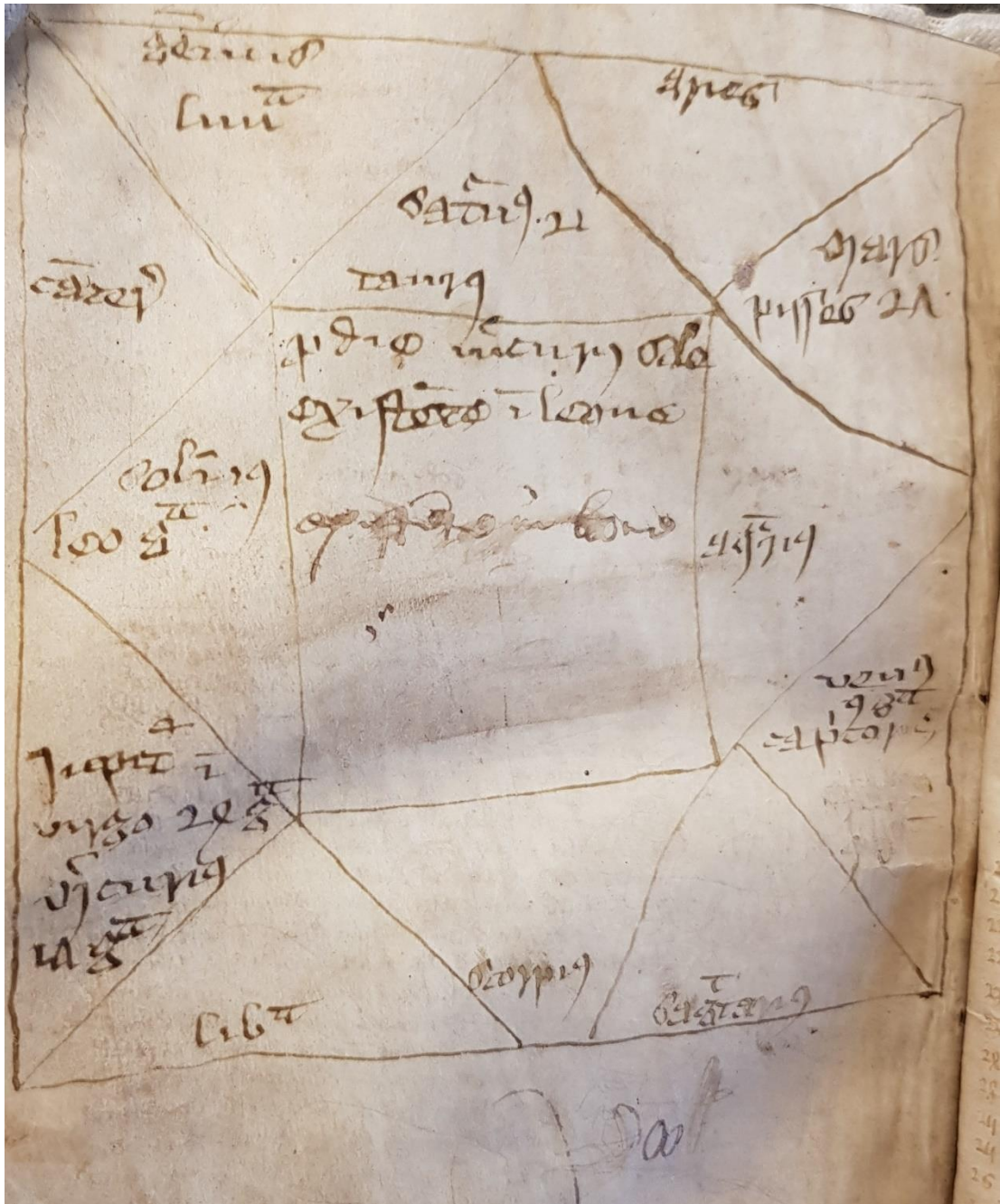


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 3.23 – Astrological chart in R, f.99v, corresponding to 4 August 1352.

S originated at St. Albans Abbey in Hertfordshire, probably copied in 1349 by Brother 'Iohannis Loukyn' and subsequently owned by Thomas Barton of Milton, near Sittingbourne in Kent (although the Ptolemaeus database incorrectly identifies this as

‘near Cambridge’).¹¹² It is fragmentary, and written in a neat miniscule. It contains the prologue, and only the first six brief sections, finishing at the end of ‘de secunda domorum distinctione’. It has no annotations, and headings are shown in red text that is part of the manuscript. The manuscript is bound in a codex containing scientific texts, primarily astrological.

T begins part way through the book on intentions, but a page has clearly been neatly cut out of the manuscript. The previous (intact) folio is on a paler parchment than T, so this suggests that the book was intended to have started at the beginning of the book of intentions, and it continues with the book of elections and method of judgement. It has no annotations relating to the text itself, but on f.136v and f.137r the bottom of the page has a drawing of a hand with palmistry lines on it. The fact that the first section of Roger’s four parts (on simple judgements) is absent suggests that this was intended for a reader already familiar with the main techniques of horary astrology, but not with the less well-known techniques relating to discovering the intention of the questioner, and elections. The manuscript is bound in a codex containing astrological and astronomical texts.

U is a very late copy, written in the hand of Captain George Wharton, a Royalist soldier and astrologer of the seventeenth century, and bears a relationship to Q as it starts at exactly the point where Q finishes. Wharton was well-known in astrological circles of the 1640s and was a friend of Elias Ashmole, and had launched an attack on the Parliamentary astrologer William Lilly.¹¹³ It begins with the table of parts found in the introductory section of most manuscripts, before continuing with the text where Q finishes, and has no annotations. The table of parts and the rest of the text are in the same hand and carry on without a break, so there is no suggestion that text has been missed or removed after being written. The section on elections and method of judgement are heavily abbreviated just as for P and R. It appears to have been copied for use in astrological work, since Wharton was an astrologer, and he added an explicit ‘Expliciunt iudicia Herfordensis multum bona et utilia’, suggesting he found it a useful text.¹¹⁴ The

¹¹² D. Juste, ‘MS Oxford, Bodleian Library, Ashmole 1796’ (update: 15.10.2018), *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/657> [13 March 2019]; ‘Ex dono Tho. Barton de Middleton iuxta Sittingbourne’ in MLGB3, <http://mlgb3.bodleian.ox.ac.uk/mlgb/book/4885/> [13 March 2019].

¹¹³ See for example, Sue Ward’s footnote in W. Lilly, *The Life of William Lilly, Student in Astrology* (ed. S. Ward) (Tradition Library, 2009): ‘Ashmole had met Wharton in Oxford in 1645. Ashmole had begun his studies at Brasenose College, and Wharton was already an established astrologer’, p.138 fn.17.

¹¹⁴ U, p.17.

other texts in the codex are all astrological, and they focus particularly on various Saturn/Jupiter conjunctions.

V, which has only a small fragment of *Judicial Astrology*, was, according to Ptolemaeus, probably copied between 1340 and 1350 with an origin in Bavaria or Austria and gives a provenance of Hartmann Schedel in 1571 at the library of the dukes of Bavaria in Munich.¹¹⁵ It is extremely brief, comprising a single folio, f.137. It is written in a miniscule hand, with a cursive heading (in a different hand to the main text) of ‘utilitates astrolabii’. It contains a highly abbreviated version of the prologue, and then jumps to a section on using an astrolabe to calculate the ascendant. f.137v continues with the section that in A is labelled ‘Quid sit domus’, which explains what a house is prior to a description of the table of hours – however, the description and table are missing, and the brief paragraph about houses is immediately followed by a description for Aries, but no other sign, at which point the text finishes abruptly, although it is followed by notes in a different hand giving more details on using an astrolabe. The catalogue misidentifies this as being possibly Masha’Allah.¹¹⁶ It seems clear that this text was concerned with the short section in Roger’s text on using the astrolabe, and would have been copied as a reference text for that use. The text is bound in a codex containing mainly astrological texts, although also with two geomancy texts.

In addition, MLGB3 gives details of copies of *Judicial Astrology* found in medieval catalogues that cannot be traced to an extant copy. Benedictine Canterbury St. Augustine’s fifteenth-century catalogue lists an entry, BA1.1135d, as ‘tractatus mag. R. de H. de iudiciis temporum’, which does not appear as an incipit in any extant manuscript. The 1382 York Austin Friars catalogue lists entry FA8.452f as ‘De iudiciis astronomiae’, but again does not identify this with an extant manuscript. The Leland catalogue of 1535 for the University and College Libraries of Cambridge: Peterhouse, UC49.62, gives an entry of ‘introduction mag. R. Herfordensis in artem iudiciariam astorum’. The Benedictine Winchester sixteenth-century catalogue also includes B113.11a and b, which is the manuscript now bound in A (Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v).

¹¹⁵ D. Juste, ‘MS Munich, Bayerische Staatsbibliothek, Clm 588’, *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/ms/475> [11 March 2019].

¹¹⁶ C. Halm and G. Laubmann, *Catalogus codicum latinorum Bibliothecae Regiae Monacensis* (Munich: Bibliothecae Regiae, 1868), Vol 1 Part 1, p.159.

Appendix One gives details of other manuscripts within the codices within which *Judicial Astrology* was bound, both in extant codices, and in medieval catalogues. This does show that the large majority of copies of *Judicial Astrology* were bound with other texts relating to natural science. The exceptions appear to be D and Q, with their combination of religious and scientific texts. However, as was shown, D has the curious anomaly of a blank horoscope in a religious text as described above, and Q appears to have been written in two parts, with the astrological texts having been written later and perhaps bound into an existing codex.

The description of each manuscript above also makes it clear that although there is a wide variety in styles and quality, many of the manuscripts were heavily annotated with what are clearly additional descriptions, and in some cases references to more detailed sources, such as Abu Ma'shar's *Great Introduction*. This is perhaps further evidence that these manuscripts were seen as textbooks, with notes clarifying particular passages, tables to help students make use of the text, and references to further texts. The particular usage of these textbooks varied, too – some are concerned with the reference material in the introduction, others with the techniques described in Roger's book 'of four parts', and one other (V) focusing solely on the use of the astrolabe. Many of these manuscripts certainly appear to have been written and annotated for practical use.

It is also clear that Roger's various texts were widely distributed, both in England and mainland Europe. This distribution is quite respectable; Adelard of Bath's two works on natural science merit thirteen entries in the MLGB3, and translations of Abu Ma'shar's highly influential astrological work *Great Introduction* (and on which, as will be shown, Roger drew heavily) have eight entries. Roger's single work merits four entries in MLGB3, in addition to the twenty-two extant manuscripts.

The second dimension to the copying of manuscripts relates to the longevity of the work. If a text is copied over a considerable length of time, that suggests the text was considered useful for a long period and had not been superseded. Dating the copying of a manuscript does require the manuscript to be extant and available for inspection, which reduces the sample size, but of the extant manuscripts for Roger's astrological works, five were dated

to the thirteenth century, twelve to the fourteenth century, four to the fifteenth century, and one to the seventeenth century.¹¹⁷

Judicial Astrology, then, was presumably seen as an important work, copied over several centuries and widely distributed. Although a handful of examples may have been used as a copying exercise for scribes, many of the manuscripts of *Judicial Astrology* strongly suggest a practical use for the text. The purposes of the manuscripts, then, may have varied – some perhaps were used as a copying exercise, some as reference books, and others as an aide-memoire for a reader already familiar with the subject. However, it does seem clear from the heavy annotations of a number of these manuscripts that they were intended to be used in a teaching environment, and the topic of how useful these texts may be for teaching astrology today will be investigated in more detail in the Postscript of this thesis.

¹¹⁷ See Table 3.1.

Chapter Four: *Judicial Astrology: Prologue and Reference*

As discussed earlier, *Judicial Astrology* is not an entirely consistent work – there are a number of manuscripts containing the text, and the wording within manuscripts differs. There is no single canonical text, although A appears to be the oldest, and mostly complete. For this reason, a full critical translation of *Judicial Astrology* is beyond the scope of this thesis. The purpose of Chapters Four and Five is to paraphrase Roger’s text and to explain each section in the text in comprehensible English, rather than provide a literal translation of Roger’s Latin. As discussed earlier, *Judicial Astrology* is comprised of several parts, and this has been a source of confusion to those people compiling catalogues of manuscripts. To recap what was said in that section, the first part of the text is a prologue and reference work with the incipit ‘Quoniam regulas artis astronomice iudicandi...’ and the second part has the incipit ‘Liber de tribus generalibus iudiciis astronomie ex quibus cetera omnia defluunt...’ The final part of the prologue identifies four sections, which are contained within the second part.

The style and apparent purpose of the two parts are very different. The first part, with the incipit ‘Quoniam regulas artis astronomice iudicandi’, will be designated *Judicial Astrology: Prologue and Reference* and is the subject of this chapter. The second part, with the incipit ‘Liber de tribus generalibus iudiciis astronomie ex quibus cetera omnia defluunt’, will be designated *Judicial Astrology: Techniques* and will be the subject of Chapter Five. In the case of *Judicial Astrology: Prologue and Reference*, the lengthy reference work bears many similarities to Arabic texts that had been translated into Latin in the twelfth century. This current chapter will therefore analyse the Latin translations of Arabic source texts on which Roger could potentially have drawn in *Judicial Astrology: Prologue and Reference*, and compare these with Roger’s text in an attempt to identify which particular sources he used. In the case of *Judicial Astrology: Techniques*, a direct comparison of Roger’s text with Latin translations of Arabic sources is less straightforward as Roger’s text in this section is describing how to use the techniques, and he had laid these out in a format that does not appear to have been directly copied from the format for the same techniques that are found in Arabic sources. However, it is still possible to examine the Arabic sources that may have informed Roger’s text in that section, and Chapter Five will analyse possible sources for the techniques described.

As discussed in Chapter Three, manuscript A (Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v) appears to be the oldest copy and is complete apart from a section missing in the middle of the reference material, and each section of text will be referenced against this manuscript, and designated as A in the footnote, where it exists. For the missing section in A, relevant text will be referenced against manuscript B (Cambridge, University Library, Ii 1.1, ff.40r-59r), designated as B in the footnote.

Prologue

Roger's prologue starts with a claim that the rules of judicial astrology could be found in a variety of scattered sources, but that he was compiling them into a single volume. He was driven to do this because of the importance of astrology – without astrology, he claimed, the other arts would be like the boughs of an unfruitful tree, and likens astrology to a mistress that gives meaning to those other arts. It is a useful art, too, since it predicts the future and gives those studying it power over others. It is, said Roger, the most important art, deriving from a knowledge of God.¹

The origins of astrology in the polytheistic classical world presented a potential threat of heresy to the monotheistic religions of Judaism, Islam and Christianity, and many authors of astrological works felt the need to justify their study.² French described Roger as being 'blunt' in his promotion of astrology, and that it is 'superfluous... to discuss any other use of the art' and that the ability of astrology to reveal things hidden from nature is secondary to the key point that 'astrology gives man power over other men'.³

The prologue then expands on the reasons for calling astrology the 'most defined, certain and excellent [art]'.⁴ This is because everything described by science can be narrowed down to seven planets and twelve signs, which move predictably and invariably. The text gives as an example investigating something apparently simple, like a rose: it is possible to learn something about a rose by experiment, but a rose changes its form and state, while astrology is more certain as it deals with heavenly bodies that do not change. Humans can use their senses to detect the whiteness of snow, the sweetness of honey and the warmth

¹ A, f.3r lines 1-16.

² See for example, al-Qabisi describing his defence of astrology against the refutation of Ali ibn Isa, Al-Qabisi, *Introduction* I.4, p.19.

³ French, 'Foretelling the Future', p.480.

⁴ 'Est aut[em] + h[ic] finitissima certissima excellentissima post creatoris cogitationem a qua + ip[s]a incipit', A, f.3r lines 14-16.

of wine, but these sensations are not necessarily universal. These same qualities, though, have astrological analogues – a planet may represent sweetness or warmth, and when a planet is rising the qualities associated with it get stronger. Analysing the movements of planets, which represent certain qualities, therefore provides a more definite picture.

Roger therefore explains that astrology uses universal rules, while other sciences look at individual effects, which may explain specific cases but cannot be universally applied. Astrology, on the other hand, provides a universal understanding of everything except the will of God himself, which always stands outside nature.⁵ This is, as French pointed out, a ‘Platonic understanding’ that ‘astrology, which treats the incorruptible heavenly bodies’ provides more certainty than specific investigations of the natural world.⁶

There are echoes here too with Adelard of Bath, who, as Tina Stiefel pointed out, emphasised ‘the knowability of nature, which is, he thinks, proved by its property of being limited. This has interesting implications: nature can be understood because it has limits, and quantification and measure are properties of all natural phenomena; and mathematics is an important tool for attaining knowledge of nature’.⁷

Roger ended his prologue by reasserting his claim that he was the first person to combine the rules of astrology into a single volume, and outlines the division of his work into four parts, although the structure is rather confusing, as discussed in Chapter Three. The prologue ends by describing the forthcoming text:

With this in mind, we have produced tables of hours, natures of the signs, times of the planets and houses, debilities of the planets, planetary conditions, strength of planets in signs and how strong. We have divided this work into four parts. In the first, explaining simple judgements. In the second, intentions. In the third, elections. In the fourth, the method of judging.⁸

The description in the text sounds as though ‘this work’ somehow includes the tables and the four parts, but in fact the tables described are part of what this thesis designates

⁵ A, 3r line 16 - 3v line 14.

⁶ French, ‘Foretelling the Future’ p.468.

⁷ T. Stiefel, ‘The Heresy of Science: A Twelfth-Century Conceptual Revolution’, *Isis*, 68.3 (1977), p.351.

⁸ ‘Ad q[ua]r[um] euidetiam tabulas de horis p[ro]posuim[us] + naturis signorum + te[m]porib[us] planetarum + eorum temporibus domorum debilitatis p[lanet]arum habitu[dine]s eorum ad invice[m] [s]patiu[m] v[ir]tutu[m] p[lanet]aru[m] + signis + qu[an]titatis v[ir]tutum. Opus v[er]o ip[su]m i[n] .iiii. diuisim[us] In primo agentes de simplici iudicio. In s[e]c[un]do de cogitatione. In tertio de electione. In quarto de ratione iudicii’, A, f.3v lines 17-23.

Judicial Astrology: Prologue and Reference, and the ‘four parts’ described in the text are what make up *Judicial Astrology: Techniques*. As has been shown earlier, these have often been treated by cataloguers as separate texts. The prologue is followed immediately by an astronomical discussion, described below, methods of performing various calculations, and then running into the tables described in the text. The ‘work in four parts’ is discussed in Chapter Five.

On the dual nature of the zodiac

The text continues with an astronomical discussion. In order to make an astrological judgement, the meaning of each sign needs to be understood, but there are two ways in which signs can be defined – thus it is important to understand the distinction between two different types of zodiac. Roger was therefore aware of the distinction between the constellations and the precisely-defined zodiac signs, and described the basic model of the night sky, with the celestial equator intersected by the ecliptic being the starting point of the tropical zodiac, while the figures of the animals in the constellations can be used to define a second zodiac, the sidereal zodiac. Due to the precession of the equinoxes, these two zodiacs slip at a rate of about one degree every 72 years, although the figure used by Ptolemy, and still accepted in the twelfth century, was one degree every 100 years.⁹ These two zodiacs coincided during the period when Hellenistic astrology was being developed, but have gradually separated. Twelfth-century Arabic texts on astrology generally use the tropical zodiac, while the astrology practised in India used the sidereal zodiac. The text states that the difference by Roger’s time was eight degrees, so that a planet measured in the first degree of Aries using fixed stars would appear to be in the ninth degree using the method of measure along the ecliptic.¹⁰

⁹ Ptolemy, *Almagest* VII.2, p.327 states that the fixed stars ‘do not maintain the same distances with respect to the solstitial and equinoctial points in our times as they had in former times’ followed by the comment ‘From this we find that 1° rearward motion takes place in approximately 100 years, as Hipparchus too seems to have suspected’ on p.328.

¹⁰ A, f.3v line 23 - 4r line 25.

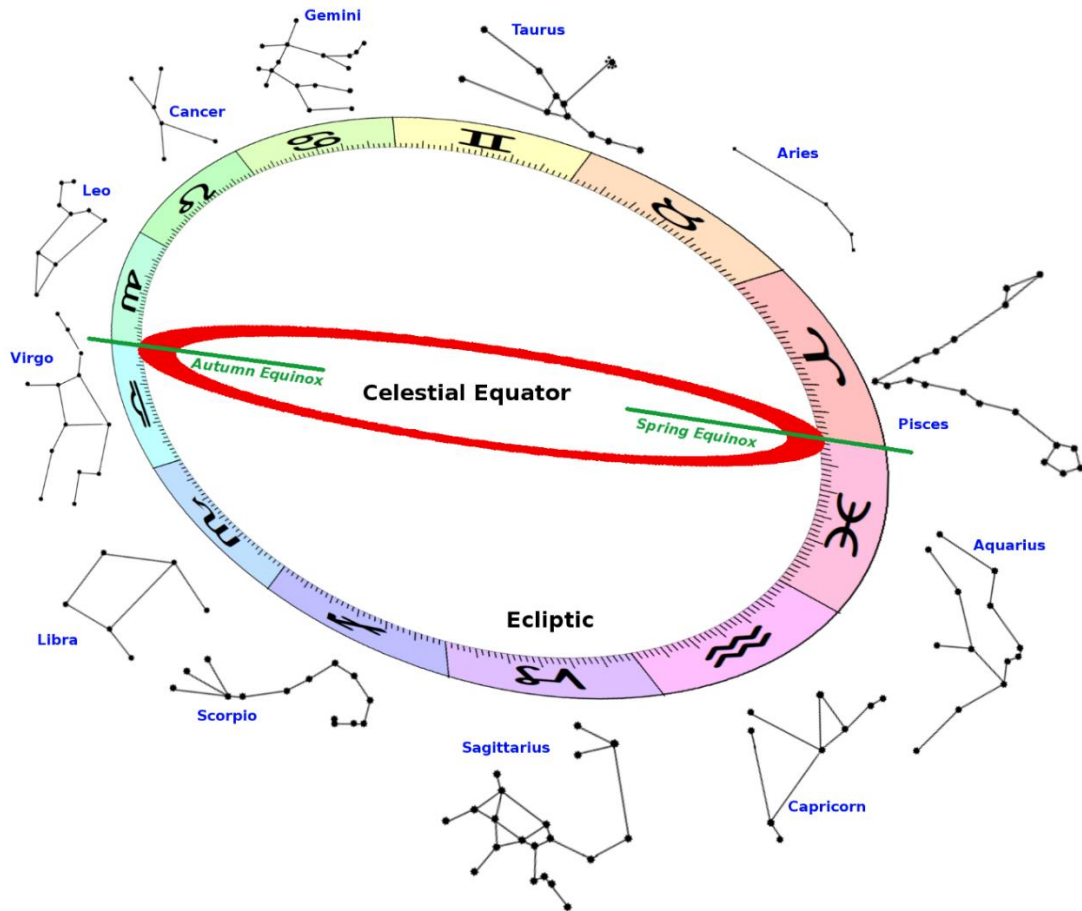


Figure 4.1 – Diagram showing the tropical zodiac and the sidereal zodiac.

This distinction has continued to the current day; astrology in the West generally uses the **tropical zodiac**, where the start of Aries is defined as the point where the ecliptic crosses the celestial equator.¹¹ The astrology practised in India is based on the **sidereal zodiac**, where the constellations are used to represent the zodiac signs.¹²

Figure 4.1 illustrates these two zodiacs as they appear today.¹³ The spring equinox, shown at the point where the celestial equator crosses the ecliptic, defines the start of Aries in

¹¹ See for example, K. Riske, *Llewellyn's Complete Book of Astrology* (Woodbury, MN: Llewellyn, 2008), p.12: 'The zodiac used by most Western astrologers is called the tropical zodiac.' and p.34: '...the Sun enters Aries on the spring equinox'.

¹² See for example, N. Campion and R. Dreyer, 'Indian Astrology' in D. Kim (ed.), *Religious Transformation in Modern Asia* (Leiden: Brill, 2015), p.168: 'Indian astrologers, then as now, utilize the sidereal (nirayana) zodiac, which maintains a fixed relationship with the stars over time, unlike the seasonal, or tropical (sayana) zodiac, which maintains a fixed relationship with the Vernal Equinoctial Point'.

¹³ The reason for choosing a diagram set for the twenty-first century rather than the twelfth century is that the discrepancy between the two zodiacs is very obvious with a 24° difference; it was far less obvious in the twelfth century, with a difference of about 8°.

the tropical zodiac. The ecliptic is divided into twelve equal signs of 30° each. The sidereal zodiac is indicated by the constellations behind the signs. These have now slipped by about 24° from the tropical signs, so the constellation of Taurus occupies more of the tropical sign of Gemini than of Taurus. As can be seen, some constellations occupy more space than others and the boundaries are not obviously defined – for instance, the constellations of Capricorn and Aquarius overlap somewhat. As a result, there is some disagreement about how the position of a planet within a constellation is to be precisely measured (since sidereal astrologers in India still use precise 30° signs, but those signs are based on constellations). The difference in degrees between the sidereal and tropical zodiacs is known by the Sanskrit word *ayanamsa*, and various *ayanamsas* are in use. The official one adopted by the Indian Calendar Committee in 1956 is called the Lahiri *ayanamsa*, and is based on the star Spica being at 0° Libra. The value of the Lahiri *ayanamsa* was 23.85° in 2000 CE, and increases at the rate of about one degree every 72 years.¹⁴

Roger was using a widely-accepted value for the precession of the equinoxes of one degree every 100 years used by Ptolemy, so by the twelfth century the zodiacs would differ by several degrees. The historic year in which the two zodiacs coincided is a matter of contention. Whyte claims that Roger was using a figure reflected in the tables by al-Khwarizmi, which places this date at 563 CE, and goes on to say that ‘by the middle of the twelfth century there would indeed have been a bit more than 8° difference, so direct observation would have found this figure’.¹⁵ While it is true that using the currently understood value of one degree per 72 years for precession would amount to about eight degrees in the six centuries since 563 CE, it is clear from the text that Roger was assuming the ancient value of one degree per century, which would only have amounted to six degrees. Whyte points out that ‘Another source of Roger’s 8° correction could be Thabit

¹⁴ This can be verified from the document from the Indian Ministry of Earth Sciences, <http://www.packolkata.gov.in/history.php> [11 September 2017]. The sidereal longitude of the Sun at midnight on 21 March 2017 is given as $336^\circ 27' 48.9895''$ in this official document, which is $24^\circ 06'$ short of the tropical longitude of $0^\circ 33'$ at 00:00 UT on 21 March. The definition of the Spring Equinox is when the tropical longitude is 0° , which happened at 10:28 UT on 20 March 2017. Hence, at the date of accessing that website, there was a difference of $24^\circ 06'$ between the two zodiacs, which corresponds to 0.25 degrees since 2000 CE.

¹⁵ Whyte, *Roger of Hereford*, p.16.

b. Qurra, who gave a difference of $8^{\circ}12'37''$ between the two systems', which seems the more likely explanation.¹⁶

On the twofold division of the houses

Having discussed the two separate zodiacs, the text continues with two methods of defining the division of houses. A house is another division of the ecliptic into twelve, but instead of starting at the point where the ecliptic crosses the celestial equator, the first house begins at the point of the ecliptic rising over the observer's horizon – this point is called the **Ascendant**. The point opposite the Ascendant is called the **Descendant**; the point of the ecliptic that is culminating (at its highest point) is called the **Midheaven** (usually abbreviated to MC); and the point opposite the MC is called the **Imum Coeli** (usually abbreviated to IC). These four points divide the chart into four quadrants. Unlike signs, houses do not have to be thirty degrees in extent, and Roger's text provides two methods of calculating houses, one using an astrolabe, and the other using a table of hours.¹⁷

A number of methods of dividing a chart into houses were in place by the twelfth century, and many of these house systems resulted in houses of different sizes. For example, Figure 4.2 below shows a hypothetical example (not in Roger's text) to illustrate this using modern software – it is a chart drawn up for the latitude of Hereford, for 6 April 1175 at 07:30 LMT. This chart has an Ascendant of 17° Gemini, and an MC of 11° Aquarius (for any given latitude, a particular Ascendant will always have the same corresponding MC – so although the time of day when 17° Gemini is rising will vary throughout the year at Hereford, when it is rising 11° Aquarius will always be culminating and be the MC). It can be seen that the quadrant from the IC to the Descendant has three houses, but the fifth house is very slightly bigger than the fourth house, and all the houses in that quadrant (fourth, fifth, and sixth) are much bigger than the first, second, and third houses. Other house systems, such as Campanus, have more dramatic differences. The method of house division was based on various ways of dividing the celestial sphere.¹⁸

¹⁶ Whyte, *Roger of Hereford*, p.16 fn.73.

¹⁷ A, f.4r lines 16-21.

¹⁸ For full details, see Part One, 'The mathematical principles and their history' in North, *Horoscopes and History*, pp.1-69.

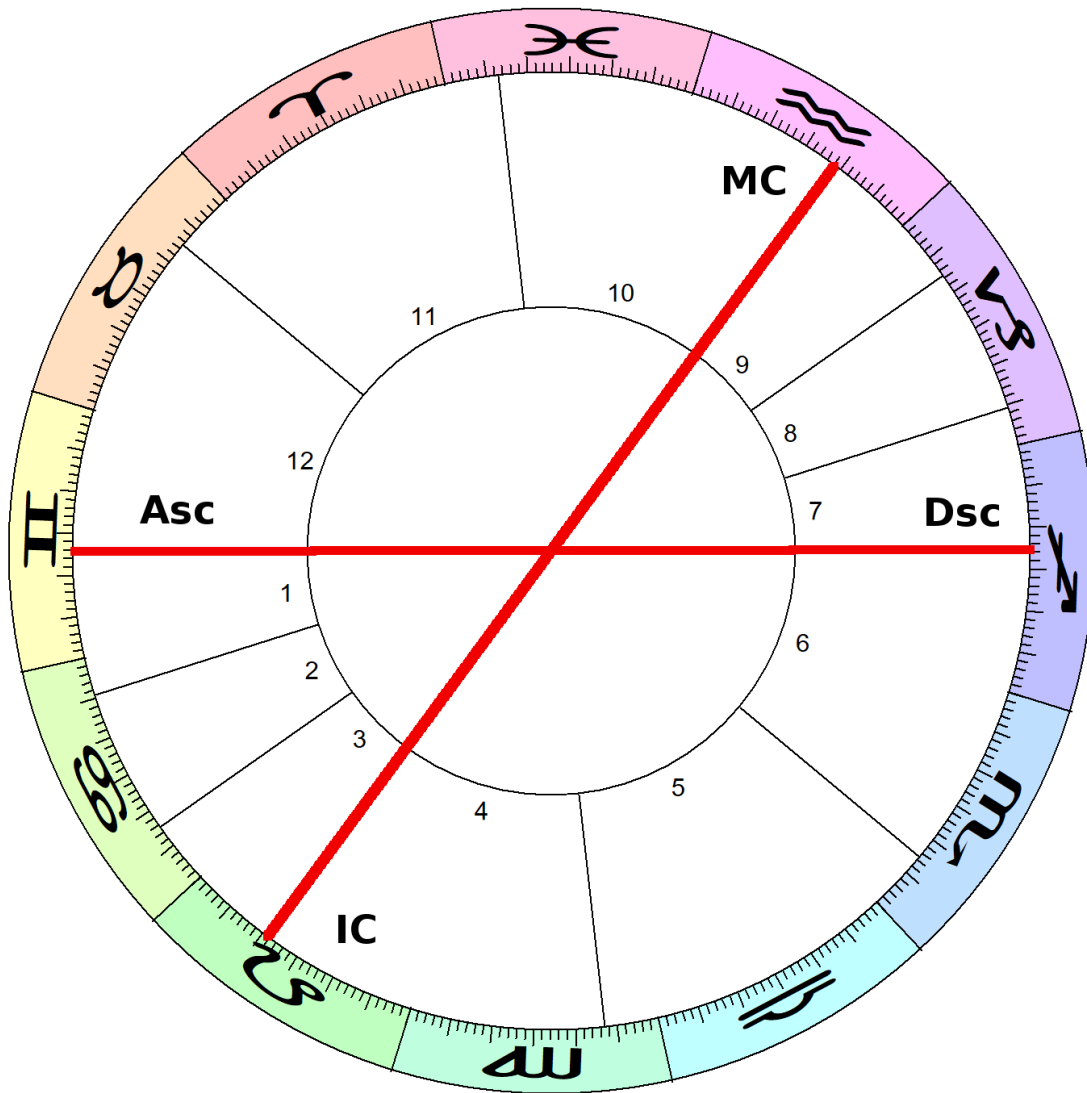
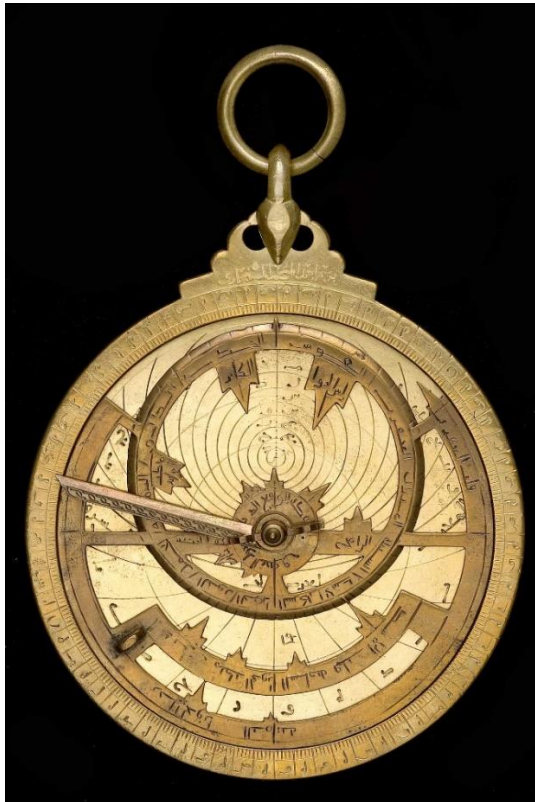


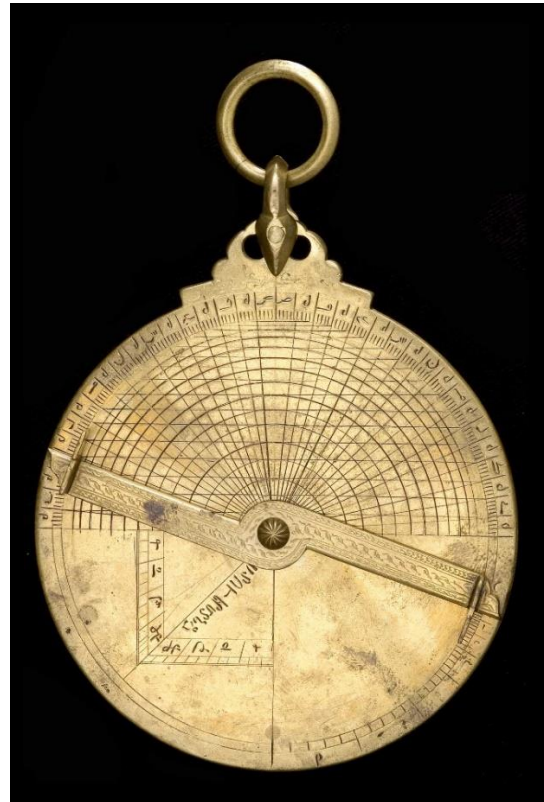
Figure 4.2 – Quadrant house system.

Roger's text cannot be understood without a working knowledge of the astrolabe, which represents a projection of the sky for a particular latitude onto a fixed plate, usually made of brass. This plate is overlaid by a movable disc that is cut away so the underlying plate is visible. This movable disc is called a **rete** with representations of key fixed stars on it. On top of this is a moveable ruler, which could be used to measure the elevation of stars and planets, or the Sun. The back of the plate has a variety of useful calendrical scales on it, and charts for determining where the Sun is on any given date. It can be used for determining the time, finding directions (for example, the direction to Mecca) and as it is a model of the sky it can also be used to work out where various circles on the celestial sphere intersect, and so can be used to calculate key points on an astrological chart such as the Ascendant, MC, and house cusps. Since the plate is specific to a particular latitude,

the plates are designed to be easy to remove. Historically, astrolabes came with a range of plates allowing a traveller to insert the plate relevant to their own latitude. An example is shown in Figure 4.3 below.¹⁹



Front view



Back view

Images reproduced by permission, © Museum of the History of Science, University of Oxford.

Figure 4.3 – Late ninth-century brass astrolabe from Syria.

Roger used Arabic terminology in his description, and did not give a worked example for a specific chart which makes the texts hard to follow. To demonstrate Roger's technique from his text, therefore, the following paragraphs will use Roger's text and show them being applied to a specific chart, namely, the hypothetical one shown in Figure 4.2 above. The templates used to illustrate the technique are taken from a Cambridge University website demonstrating how to build a home-made astrolabe.²⁰

¹⁹ 'The astrolabe: an online resource' with images at <http://www.mhs.ox.ac.uk/astrolabe/images/47632/> [11 November 2017].

²⁰ 'The way to the stars: build your own astrolabe' at <http://www.joh.cam.ac.uk/way-stars-build-your-own-astrolabe> [9 November 2017].

The Ascendant is found by finding out the position of the Sun in the zodiac from the table on the back of the astrolabe, visually measuring its altitude with the **alidade** (the ruler), and then aligning the rete such that the degree of the zodiac lines up with the circle representing the altitude. The Ascendant can then be read off the rete.

Using as an example the chart shown in Figure 4.2, the astrolabe would be equipped with the latitude plate for 52°, the latitude of Hereford. Figure 4.4 shows a photograph of a latitude plate for 52°, from a brass astrolabe made in the thirteenth century in Spain.²¹ The arcs at the top of the plate are the altitude lines, and the arcs at the bottom are the hour lines, used for house calculations (see below).

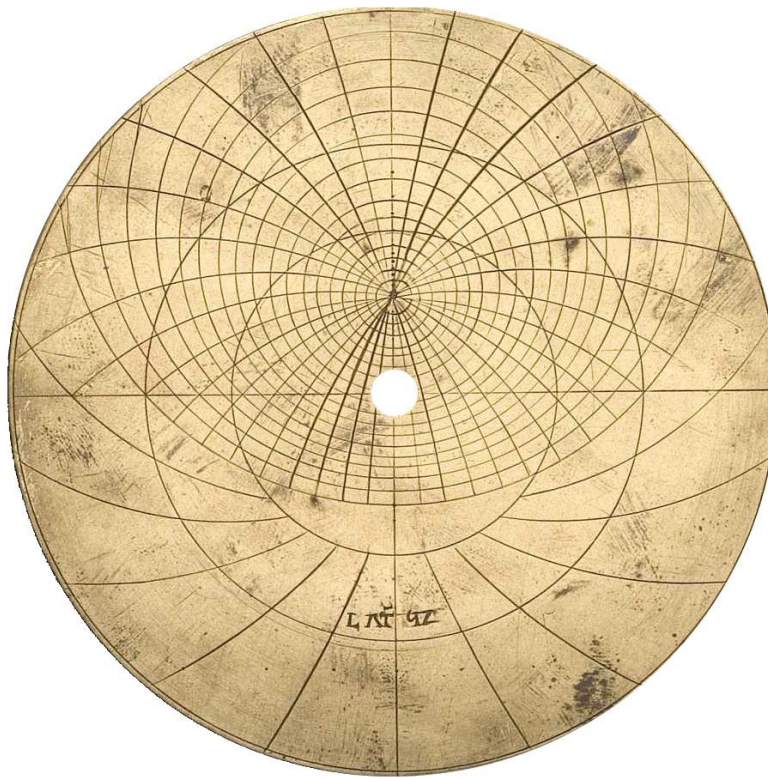


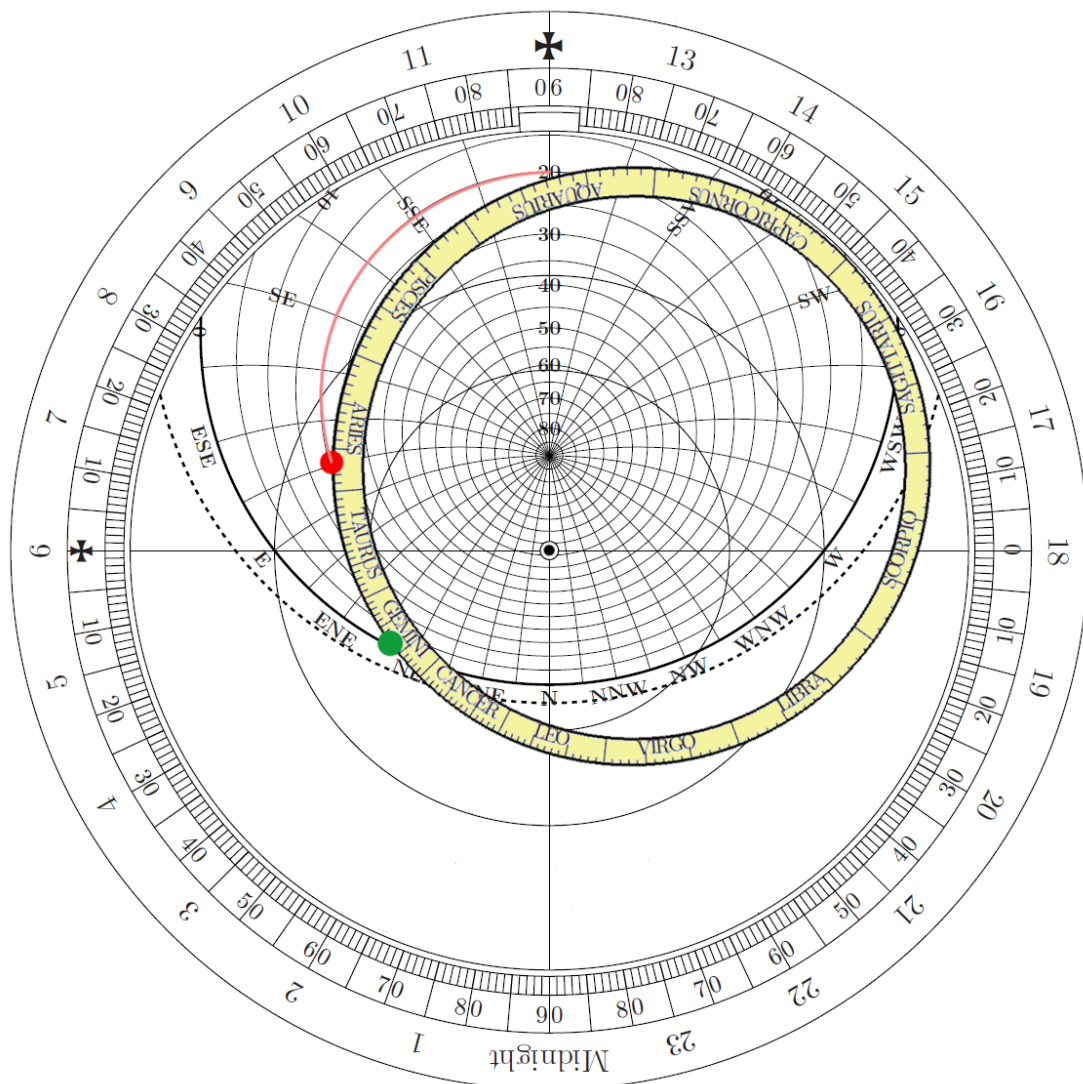
Image reproduced by permission, © Museum of the History of Science, University of Oxford.

Figure 4.4 – Latitude plate for 52 degrees.

Figure 4.5 shows a diagram of the astrolabe, following Roger's instructions, which tell the reader to align the degree of the Sun on the ecliptic circle with the position in the almucantar corresponding to its altitude (as measured by the alidade). In this case, the

²¹ 'Astrolabe catalogue', http://www.mhs.ox.ac.uk/astrolabe/catalogue/imageReport/Astrolabe_ID=179.html [11 November 2017].

reader would know that the Sun was at 22° Aries on this date, either by using the guide on the back of the astrolabe, or from tables. By observing the height of the Sun above the horizon visually at 07:30 LMT, using the alidade, the elevation of the Sun could be measured; in fact, on this date (6 April 1175) it would be seen that the Sun was at an altitude of 20° at 07:30 LMT.²² The altitude line representing 20° is marked in red on the diagram, and 22° Aries is shown as a red dot. The rete is movable, so the rete is adjusted until 22° Aries is on the 20° altitude line as shown. The degree rising on the 0° altitude line (the almucantar) is the Ascendant, shown by a green dot. This is about 17° Gemini.



Template image used by permission of the Master and Fellows of St John's College, Cambridge.

Figure 4.5 – Calculating the Ascendant.

²² The figure of an altitude of 20° on 6 April 1175 in this example was derived from modern software, *Solar Fire 9.0.16*.

For a modern astrolabe, no adjustment is necessary. However, Roger stressed that an adjustment is necessary when calculating a chart. He stated that if one wishes to construct an astrological chart, it is necessary to add eight degrees to the degree of the Sun before placing that degree on the relevant altitude on the almucantar, and warns the reader that it is necessary to take care in casting an astrological chart for judgements.²³

This implies that the astrolabe available to Roger had a table on the back that was calibrated to a sidereal zodiac, not a tropical one. Thus, to draw up an astrological chart using the tropical zodiac, it is necessary to add eight degrees to the position given before calculating the Ascendant.

Whyte claimed that ‘It is clear that for Roger the signs of the zodiac used for interpretation of horoscopes are sidereal’ and went on to say that ‘The planetary positions of the horoscope included later in the book are given in tropical co-ordinates, as indeed in all other horoscopes of the period, although they must have been first calculated in sidereal co-ordinates and then converted’.²⁴ Whyte backed this up later with an analysis of a set of tables attributed to Roger in a British Library manuscript.²⁵ This manuscript gives a set of readings, presumably done by astrolabe, of the altitude of the Sun as it enters each sign. Whyte demonstrated that these measurements are consistent with the start of each sign being defined in the sidereal zodiac, as the values given for the start of each zodiac sign are between eight and ten degrees less than the tropical position. This can be verified this with more up to date software, which shows that the start of each sign in the manuscript is indeed approximately nine degrees less than the tropical position.²⁶

In light of this current analysis, Whyte’s conclusion that Roger was therefore using the sidereal zodiac for chart interpretation appears to be mistaken. Roger’s instruction to add eight degrees prior to calculating the Ascendant suggests that the table on the back of his astrolabe showed sidereal positions of the Sun, and therefore it was necessary to make the conversion to tropical coordinates before doing the calculations. The fact that Roger instructed the reader to make this conversion prior to calculating the Ascendant, and thereby yielding a tropical Ascendant, and the fact that his later horoscope, as Whyte said, uses tropical coordinates, suggests that he was aware that his astrolabe used sidereal

²³ A, f.4r lines 21-24.

²⁴ Whyte, *Roger of Hereford*, p.16-17.

²⁵ Arundel 377, f.86v.

²⁶ This was confirmed using *Solar Fire* software.

coordinates on its reverse for observational purposes, but that for chart calculations it was necessary to use tropical coordinates.

Calculating the cusps of other houses

Having calculated the Ascendant, the text gives instructions on using the astrolabe to calculate other house cusps, stating that the rete should be moved across two hour lines in the eastern part of the astrolabe, and the start of the third house is the degree shown on the middle hour line.²⁷

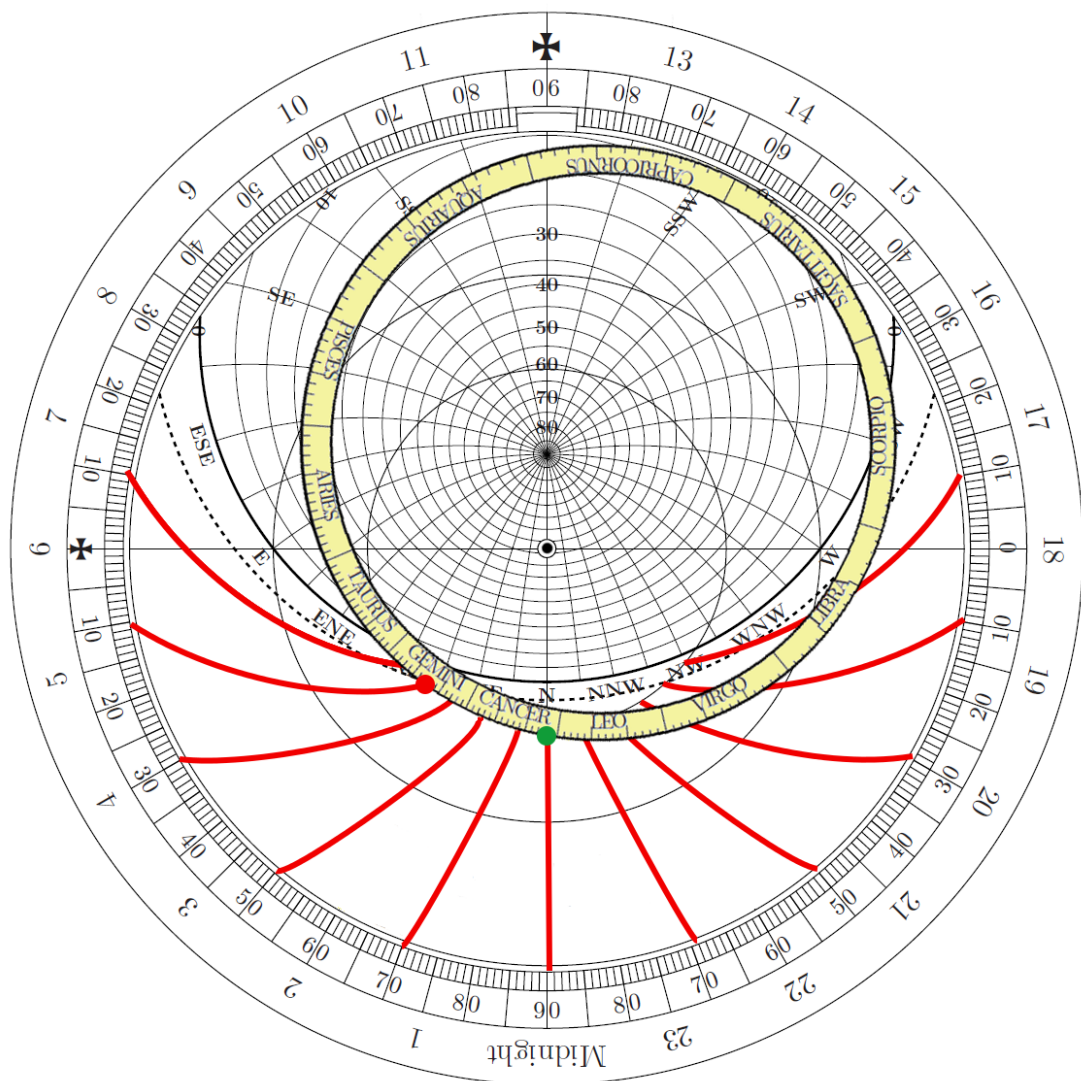


Figure 4.6 – House calculation: third house.

²⁷ A, f.4r lines 25-26.

The initial measurement already ascertained that the Ascendant is 17° Gemini, so this point, indicated by the red dot, is moved to the second hour line (shown as red arcs in the bottom half of the diagram). The middle hour line then shows the cusp of the third house, indicated by a green dot at about 25° Cancer, as shown in Figure 4.6.

In a similar way, the cusp of the second house can be determined by moving the Ascendant across a further two hour lines.²⁸

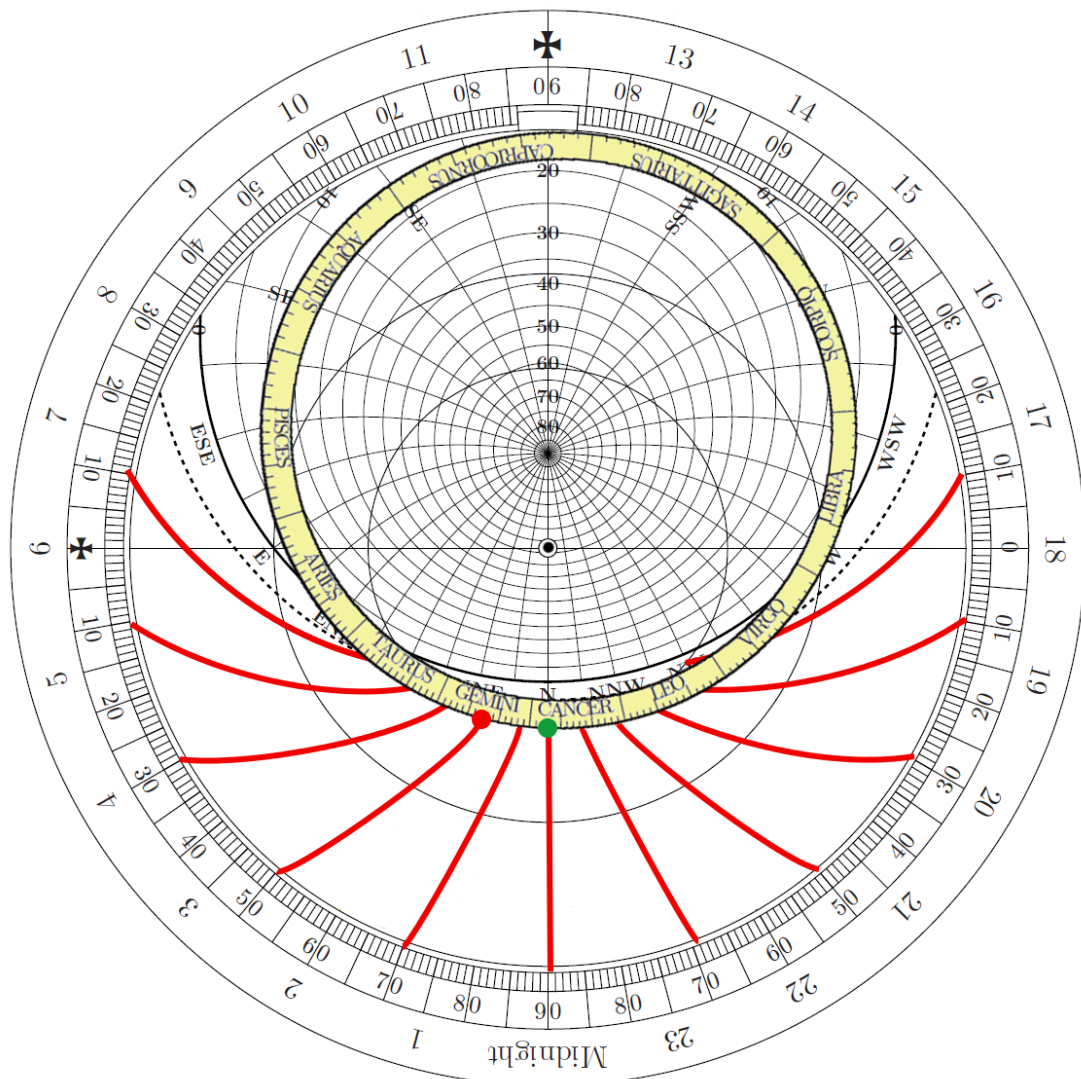


Figure 4.7 – House calculation: second house.

²⁸ A, f.4r lines 26-27.

Now the rete is moved so that 17° Gemini is on the fourth hour line. The middle hour line then shows the cusp of the second house, indicated by a green dot at about 5° Cancer as shown in Figure 4.7.

Then the text gives the instruction to place the degree of the Ascendant back on the first almucantar (the eastern horizon), at which point the middle hour lines shows the fourth house, and the last almucantar (the western horizon) shows the seventh house, which is opposite the Ascendant.²⁹

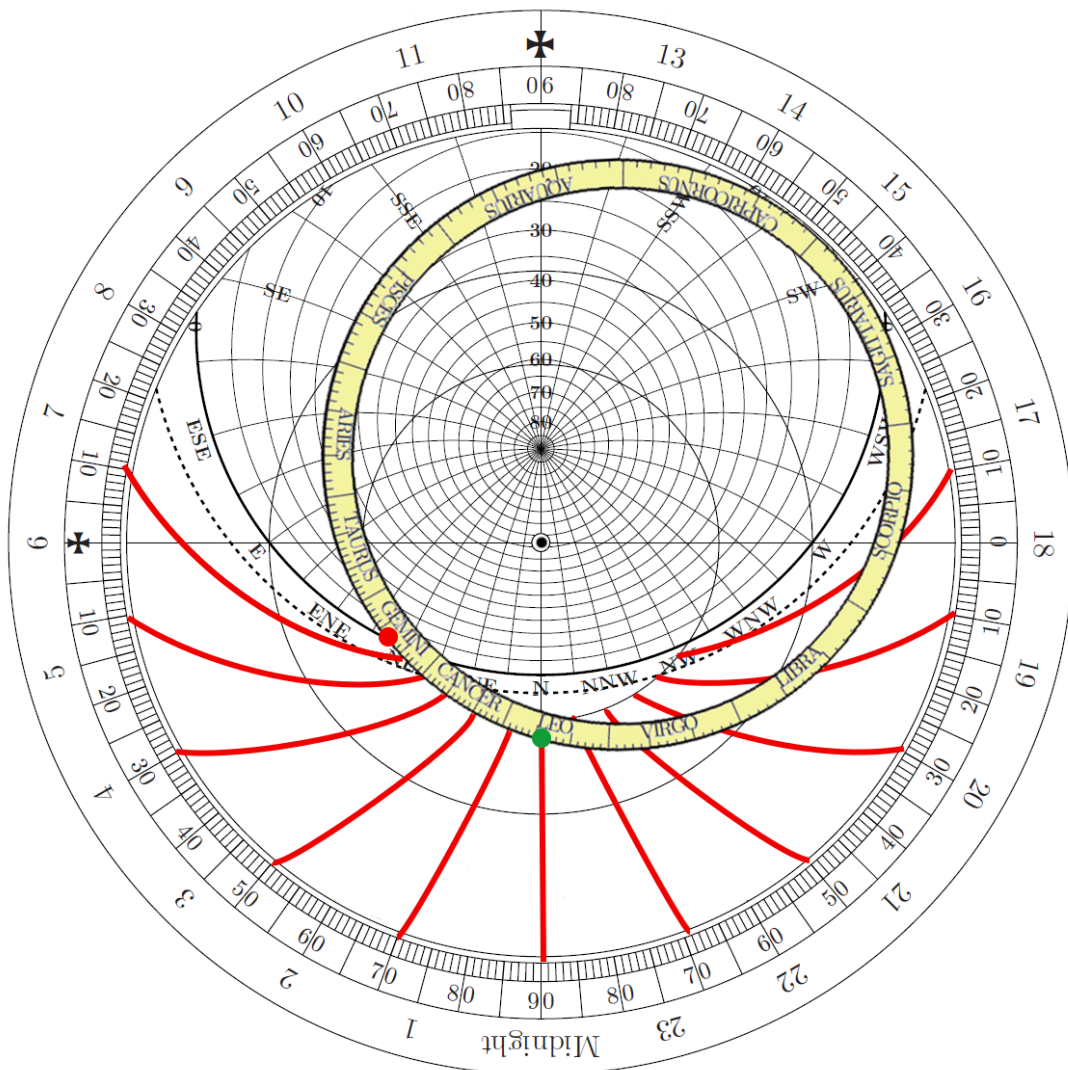


Figure 4.8 – House calculation: fourth house.

Thus, the rete is moved backwards so that 17° Gemini is on the almucantar. The middle hour line then shows the cusp of the fourth house, indicated by a green dot at about 11°

²⁹ A, f.4r line 27 - 4v line 2.

Leo as shown in Figure 4.8. In fact, since the Ascendant was on the almucantar when it was first calculated, the position of the fourth house could have been read immediately at that point (see Figure 4.5 above).

The text then gives instructions for calculating two more houses – the fifth and sixth. Moving the degree of the seventh house by two hour lines gives the start of the fifth house, and moving it a further two hour lines yields the sixth house. Thus three houses are determined by the degree of the ascendant, and three by its nadir [opposite point].³⁰

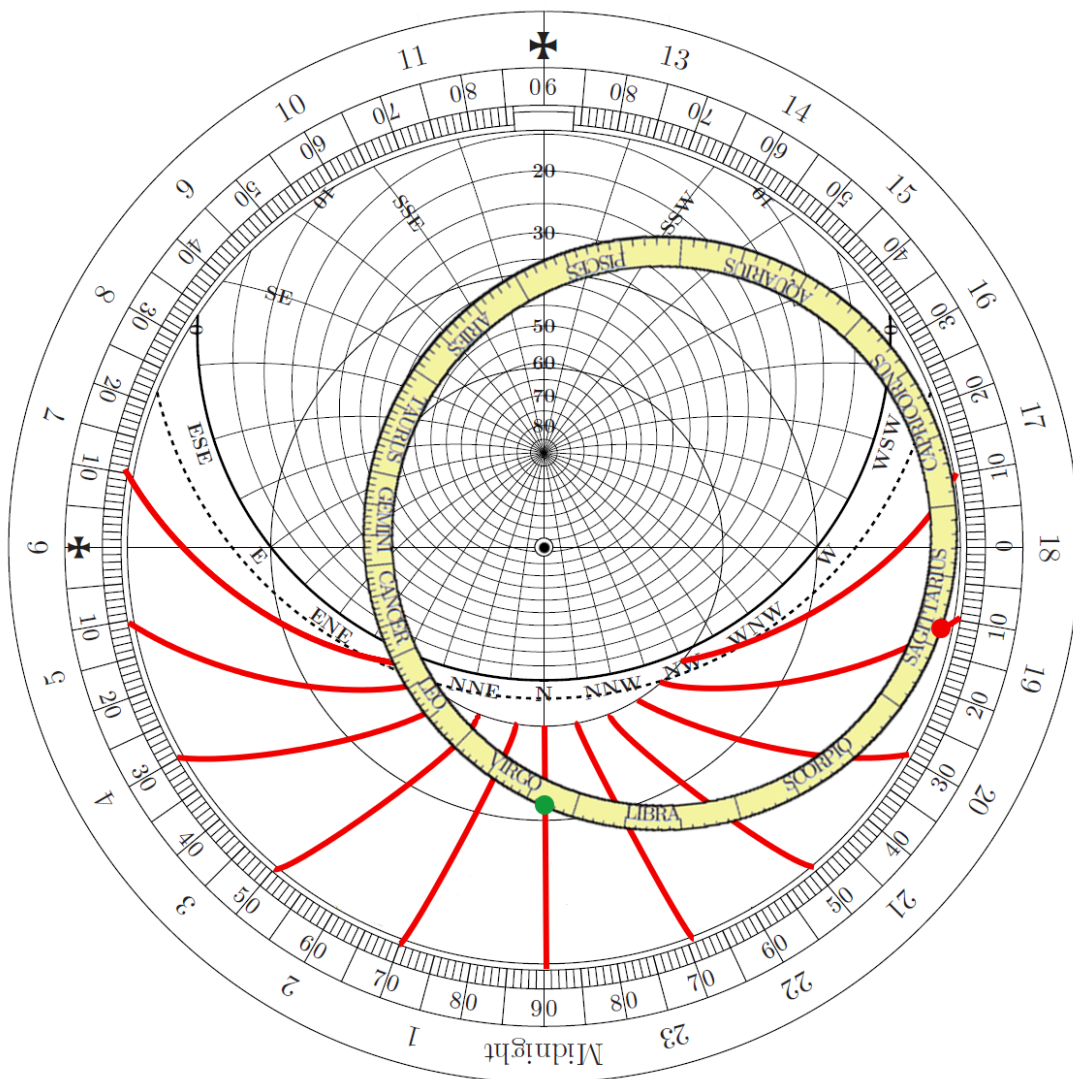


Figure 4.9 – House calculation: fifth house.

³⁰ SS76, 4v lines 3-6.

The Ascendant is 17° so the seventh house cusp is opposite that, at 17° Sagittarius. By moving this point two hour lines from the seventh house (the almucantar on the right hand side of the astrolabe), the middle line shows the cusp of the fifth house, indicated by the green dot at about 23° Virgo (Figure 4.9).

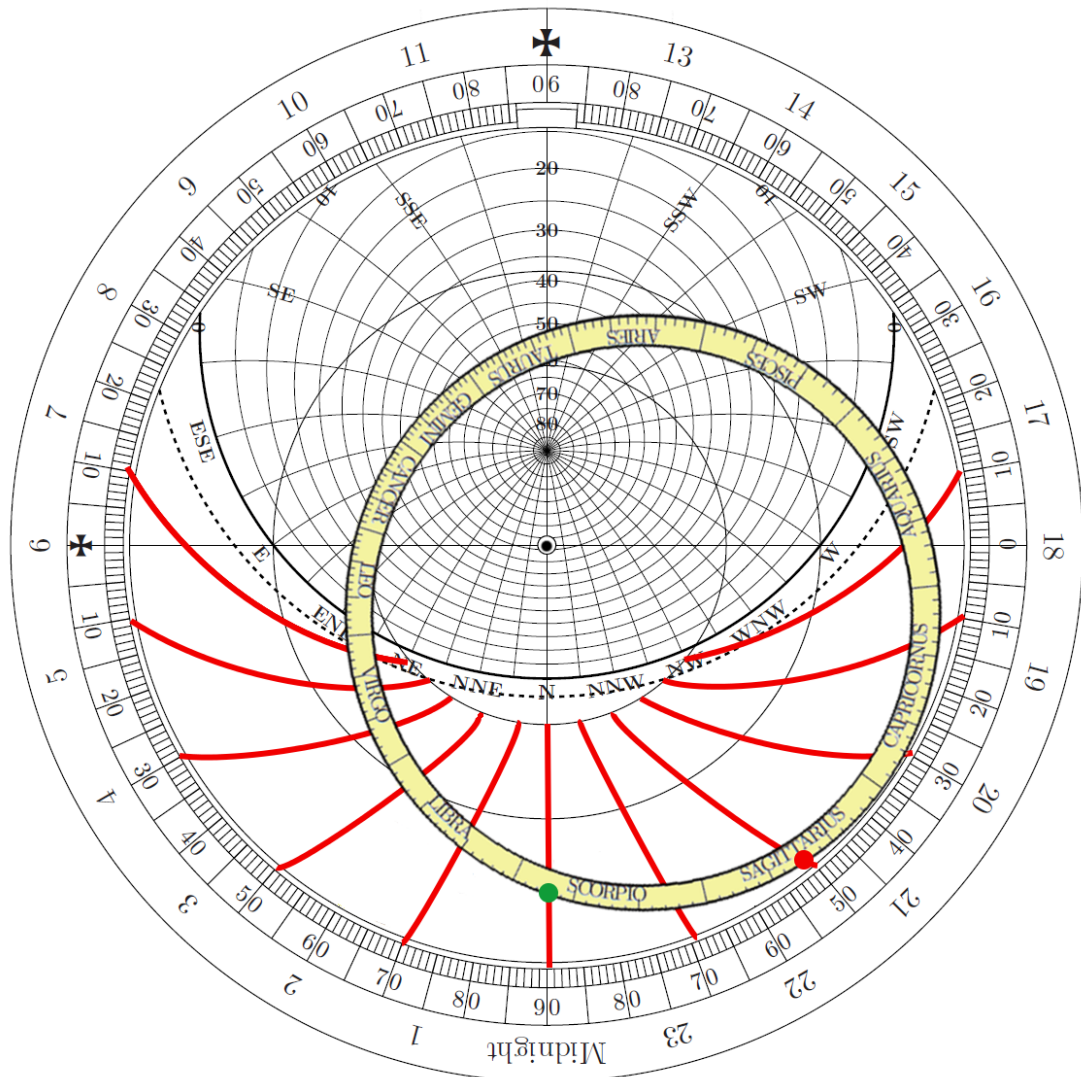


Figure 4.10 – House calculation: sixth house.

Now moving 17° Sagittarius a further two hour lines, the middle line shows the cusp of the sixth house, indicated by the green dot at about 7° Scorpio (Figure 4.10).

Following these instructions has now yielded the cusp of the first six houses, and the remaining six house cusps are simply opposite the first six.³¹ This method yields a quadrant house system that North refers to as the ‘Standard Method’, and which is equivalent to the Alcabitus house system, named after the Arabic astrologer al-Qabisi.³² This original chart drawn up in Figure 4.2 was calculated with Alcabitus houses, showing that the astrolabe method matches this quite closely.³³

On the second method of calculating the houses

For those without an astrolabe, Roger provided a **table of hours**, saying that the length of two nocturnal hours (from the table) is the distance between the first and second houses, and also the distance between the second and third, and third and fourth houses. The length of two diurnal hours similarly provides the extent of the fourth, fifth, and sixth houses. Once these have been determined, the other houses are simply opposite points to ones just calculated.³⁴

Since a modern reader is familiar with an hour as a unit of time, while the extent of a house should be measured in degrees, the idea of two hours being a distance between two houses sounds confusing, and requires some explanation. While the modern definition of an hour is one twenty-fourth of a day (from midnight to midnight), there were two definitions of the term “hour” in the twelfth century. The usual definition was that the period from sunrise to sunset was divided into twelve equal **diurnal hours**, and the period from sunset to the following sunrise was divided into twelve equal **nocturnal hours**.³⁵

The length of an hour would, then, depend both on the time of year and whether it was day or night. At the summer solstice in Hereford, there are 16 hours and 40 minutes of daytime (between sunrise and sunset), and 7 hours and 20 minutes of night-time (between sunset and sunrise). A diurnal hour at the solstice would, therefore, be 83 minutes and 20 seconds, and a nocturnal hour would be 36 minutes and 40 seconds.

³¹ Whyte, *Roger of Hereford*, p.18 also explains this method, although there is an error at the end of step a: ‘again, add 8° to get the ascendant’s sidereal longitude’; 8° has already been added earlier in this step, and to get the sidereal longitude of the ascendant, one would need to subtract, not add, 8°.

³² North, *Horoscopes and History*, p.4.

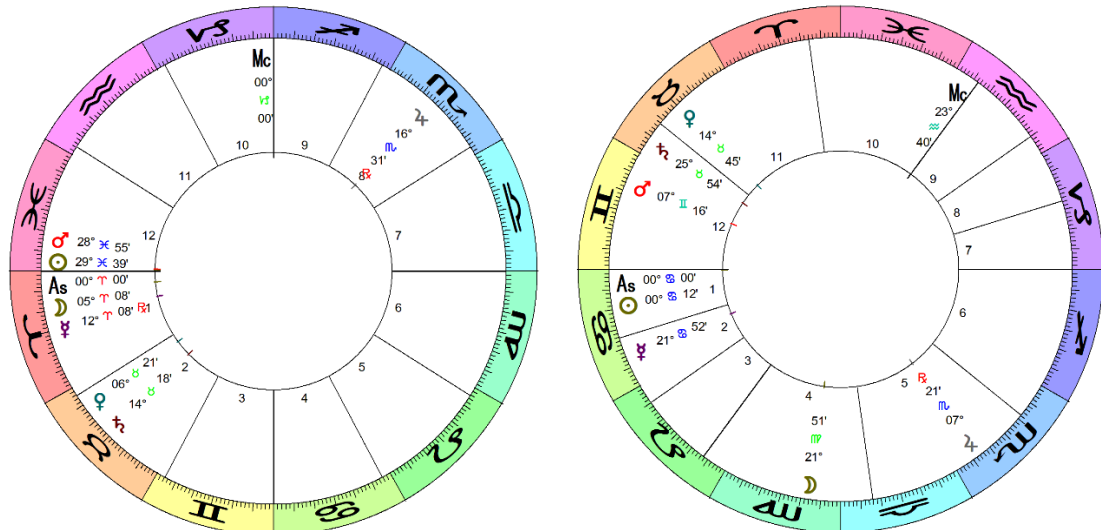
³³ The chart in Figure 4.2 was drawn up using *Solar Fire* software.

³⁴ A, f.4v lines 6-18.

³⁵ See for example Wallace’s commentary on different types of “hour” in Bede, *Reckoning of Time*, p.267.

At the equinoxes, daytime and night-time are equal, and the hour is 60 minutes. Thus these hours – the division used today of the day into twenty-four equal hours – were called **equinoctial hours**.

At the spring equinox, anywhere in the world, the Sun rises at 06:00, culminates at 12:00 and sets at 18:00 (all times are Local Mean Time as measured by a sundial and are approximate).³⁶ A sunrise chart for the equinox would have 0° Aries as the Ascendant, 0° Capricorn as the MC, 0° Libra as the Descendant, and 0° Cancer as the IC. Each quadrant would be 90°. At the summer solstice at Hereford, the Sun rises at 03:43, culminates at 12:00 and sets at 20:16.³⁷ A sunrise chart for the summer solstice would have 0° Cancer as the Ascendant, 23°40' Aquarius as the MC, 0° Capricorn as the Descendant and 23°40' Leo as the IC. In this case, the quadrant from the Ascendant to the IC (houses 1 to 3) only occupies 53°40', while the quadrant from the IC to the Descendant occupies 126°20'. That example is for a sunrise chart, but in fact even in mid-winter there will be a time of day when 0° Cancer is rising (at the winter solstice, for example, that will happen at sunset), and when that happens, the MC will always be 23°40' Aquarius. This is illustrated in the two example charts (not in Roger's manuscript) in Figure 4.11.



Spring equinox at Hereford
13 March 1176 06:09
Asc 0° Aries, MC 0° Capricorn

Summer solstice at Hereford
15 June 1176 03:43
Asc 0° Cancer, MC 23°40' Aquarius

Figure 4.11 – Charts of spring equinox and summer solstice.

³⁶ These figures are not precise as sundial time and clock time vary according to what is now called the “equation of time” – the concept is described in Ptolemy, *Almagest* III.9, pp.171-172.

³⁷ Times are Local Mean Time (LMT) for the year 1176, and will vary slightly from year to year.

For this reason, Roger's 'table of hours' does not provide the length of each diurnal and nocturnal hour for a given date, but instead is given in a nominal number of degrees that describes distances between houses for any given Ascendant. For example, for 30° Gemini rising (this really means 0° Cancer, but there is no number zero in the table), the table gives a value of 20°50' for the diurnal hour. Multiplying this figure by six shows the distance from the Ascendant to the MC, namely 125°. Multiplying it by two shows the distance between the fourth and fifth houses.

The image shows an open manuscript with two pages of handwritten tables. The left page is titled 'diurnal' and the right page is titled 'nocturnal'. Both pages contain tables of numbers in degrees and minutes, organized in columns and rows. The handwriting is in a historical script, likely from the 14th century. The left page has a table with 12 columns and 30 rows. The right page has a table with 12 columns and 30 rows. The tables are organized in a way that allows for easy calculation of diurnal and nocturnal hours for any given date and Ascendant.

Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 4.12 – Roger's table of diurnal and nocturnal hours: K, ff.4v-5r.

The table has only six columns; it is not necessary to have two sets of tables, one for diurnal hours and one for nocturnal, nor to make the table for all twelve signs. This is because the year is symmetric – the number of daytime hours on the longest day (the summer solstice) is the same as the number of night-time hours on the shortest day, and for any date the number of nocturnal hours will always be the number of diurnal hours

subtracted from 24 hours.³⁸ When converted to arcs of the circle, as this table is, the length of a nocturnal hour is the length of the diurnal hour in degrees subtracted from 30 degrees.

As was demonstrated in Chapter Three, the values in Roger's table of hours vary between manuscripts as there are copying errors. However, the values in manuscript K, shown in Figure 4.12 as this is the neatest example of the table, are correct for the following example. In this example, using the chart that was examined in the section on using the astrolabe to calculate house cusps, it can be seen in that example (which was set for 07:30 local time on 6 April 1175) that the Ascendant was just over 17° of Gemini.³⁹ Since the concept of the number zero was novel in the twelfth century and not widely used, tables generally started from one rather than zero, and one would say that the Ascendant was in the eighteenth degree of Gemini. Looking for Gemini in Table 4.1, one can see that is in the list of signs at the top, by the heading 'diurnal hours', so the degrees of arc will represent the size of houses based on diurnal hours. Looking at the entry for the eighteenth degree of Gemini, one can see the diurnal hour length is 20°38'10" of arc, so the nocturnal house length is this value subtracted from 30°, or 9°21'50".

Using Roger's instruction to find the length of two nocturnal hours and using this as the distance between the first and second house, the second and third, and the third and fourth houses, two nocturnal hours are twice this value, namely 18°43'40" of arc. Thus, since the Ascendant is at 17° Gemini, the second house cusp will be 18° beyond this (minutes and seconds shall be ignored for this example), or 5° Cancer, the third house cusp a further 18°, namely 23° Cancer, and the fourth house cusp a further 18° at 11° Leo. The Ascendant has already been calculated before applying this method, and the house cusps for the second, third and fourth houses have now been derived by this method. By definition, this means positions of the opposing eighth, ninth and tenth houses are also known. The same method can be used for the diurnal hours, again following Roger's instructions to use the length of two diurnal hours to make the distance between the fourth and fifth house, the fifth and sixth, and the sixth and seventh houses. The length of the diurnal hour in the previous example was 20°38'10" of arc, so the distance between the cusps of the fourth and fifth, the fifth and sixth, and the sixth and seventh houses will be

³⁸ The terms 'daytime' and 'night-time' are used in the astronomical sense of the Sun being above or below the horizon, respectively – dawn and twilight are considered to be night if the Sun is below the horizon, even if it is light.

³⁹ This can also be worked out from astronomical tables available in the twelfth century, although the details are too involved to deal with in this thesis.

twice this, or about 41° each, and the same for the opposing houses (tenth, eleventh and twelfth).

This method of using tables is only approximate and can be a couple of degrees out, but nevertheless it can be seen that this matches the results calculated by the astrolabe quite closely. However, this method by definition yields identically sized houses within each quadrant, while the Alcabitius system derived from the astrolabe often yields houses within quadrants of slightly different sizes.

Diurnal hours																							
°	Aries				Taurus				Gemini				Cancer				Leo				Virgo		
1	15	7	30		17	59	20		19	54	45		20	49	56		19	48	30		17	50	40
2	15	15	0		18	3	40		19	57	50		20	48	52		19	45	20		17	46	20
3	15	23	30		18	8	0		20	0	55		20	47	28		19	41	10		17	42	0
4	15	30	0		18	12	20		20	4	0		20	46	44		19	38	0		17	37	40
5	15	38	30		18	16	40		20	7	5		20	45	40		19	35	50		17	23	20
6	15	45	0		18	21	0		20	10	10		20	44	36		19	32	40		17	29	0
7	15	52	30		18	25	20		20	13	15		20	43	32		19	29	30		17	23	40
8	16	0	0		18	29	40		20	16	20		20	42	28		19	26	20		17	20	20
9	16	7	30		18	34	0		20	19	25		20	41	28		19	23	10		17	16	0
10	16	15	0		18	38	20		20	22	30		20	40	20		19	20	0		17	11	40
11	16	20	40		18	42	30		20	25	35		20	39	15		19	15	50		17	6	0
12	16	26	20		18	46	40		20	27	40		20	38	10		19	11	40		17	0	20
13	16	32	0		18	50	50		20	29	45		20	37	5		19	7	30		16	54	40
14	16	37	40		18	55	0		20	31	50		20	36	0		19	3	20		16	49	0
15	16	43	20		18	59	10		20	33	55		20	33	55		18	59	10		16	43	20
16	16	49	0		19	3	20		20	35	0		20	31	50		18	55	0		16	37	40
17	16	54	40		19	7	30		20	37	5		20	28	45		18	50	50		16	32	0
18	17	0	20		19	11	40		20	38	10		20	27	40		18	46	40		16	26	20
19	17	7	0		19	15	50		20	39	15		20	25	35		18	42	30		16	20	40
20	17	11	40		19	20	0		20	40	20		20	22	30		18	38	20		16	15	0
21	17	16	0		19	23	10		20	41	24		20	18	25		18	34	10		16	7	30
22	17	20	20		19	26	20		20	42	28		20	16	20		18	29	0		16	0	0
23	17	24	40		19	29	30		20	43	32		20	13	15		18	25	40		15	52	30
24	17	29	0		19	32	40		20	44	35		20	10	10		18	21	20		15	45	0
25	17	33	20		19	35	50		20	45	40		20	7	5		18	15	0		15	38	30
26	17	37	40		19	38	0		20	46	44		20	4	0		18	12	40		15	30	0
27	17	42	0		19	41	10		20	47	48		20	0	55		18	8	20		15	23	30
28	17	46	20		19	41	20		20	48	52		20	57	50		18	3	0		15	15	0
29	17	50	40		19	48	30		20	49	56		20	54	45		17	59	40		15	7	30
30	17	55	0		19	51	40		20	50	0		20	51	40		17	55	0		15	0	0
	Libra				Scorpio				Sagittarius				Capricorn				Aquarius				Pisces		
Nocturnal hours																							

Table 4.1 – Representation of Roger’s table from K. Copyist errors are shown in grey and italicised.⁴⁰

North claims that ‘it is of some interest that we find the Prime Vertical method of domification explicitly described’ by Roger, which is a method generally ascribed to Campanus a century later.⁴¹ However, the wording above suggests that Roger was simply

⁴⁰ A, f.5v has the first half of the table only. Figure 4.2 is derived from K, ff.4v-5r. Different manuscripts give slightly different values, and Whyte gives a table he collated from five manuscripts, with all errors highlighted, Whyte, *Roger of Hereford*, p.19.

⁴¹ North, *Horoscopes and History*, p.39.

describing the much simpler Porphyry system here, where each quadrant is divided into three equal houses. Whyte points this out too, when he says ‘In fact the method as Roger describes it will not give the same result as his first method, although he clearly thinks it will; he has forgotten to include instructions for converting the distances between houses from right ascension to ecliptic longitude.’⁴²

Having described two methods of calculating house cusps, Roger’s text gives a brief description of what a house means in a celestial context, stating that for any latitude one should see where the north/south meridian intersects the horizon and make a circle from the zenith to the eastern horizon, and divide into equal portions. If one draws lines from the horizon through the meridian to the east, those lines intersecting the zodiac create the twelve houses.⁴³ It is this that North refers to when he says that Roger was using the Prime Vertical method a century before Campanus, and says ‘This is explained in words, but the scheme is unambiguously that of my [diagram]. The chapter is brief, and one wonders whether Roger thought that the figure he described tallied with the other explanations he was offering, which of course it does not.’⁴⁴

This explanation does indeed seem to tally with North’s diagram in Figure 4.13.⁴⁵ However, it may not be entirely fair to criticise Roger for not having noticed the difference between his astrolabe method and the table method. Both methods can give an error of a couple of degrees. Since the difference between the two methods at the latitude of Hereford is minimal, it is hardly surprising that Roger did not notice the difference.⁴⁶

⁴² Whyte, *Roger of Hereford*, p.19.

⁴³ A, f.4v lines 18-27.

⁴⁴ North, *Horoscopes and History*, p.39.

⁴⁵ North, *Horoscopes and History*, p.27 fig. 6.

⁴⁶ The difference does become more marked at much more northern latitudes.

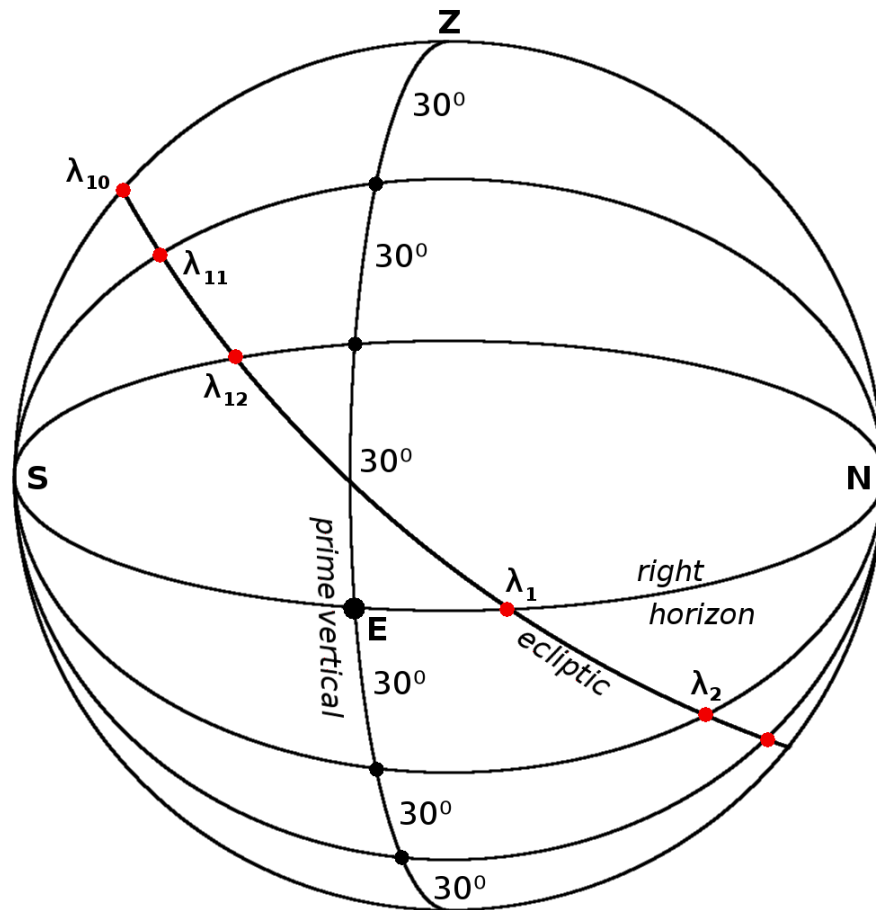


Image based on figure in J.D. North, *Horoscopes and History*, with permission from Marion North.

Figure 4.13 – Based on North’s diagram illustrating the Prime Vertical.

Reasoning behind the table

Roger’s text then describes the methodology behind his table of hours. As described above, the longest arc of a diurnal hour, at the summer solstice, is $20^{\circ}50'$. This is $5^{\circ}50'$ more than the equinoctial hour of 15° , so the difference between the maximum and minimum will be twice this value, namely $11^{\circ}40'$ or 700 minutes of arc. Near the equinoxes, the amount of daylight hours increases or decreases rapidly and is noticeable on a day by day basis, while near the solstices there is barely a noticeable difference in the number of hours of daylight from one day to the next. A graph of the number of hours of daylight for any given latitude plotted against the date will yield a sine curve, but as trigonometry was not widely known in the twelfth century, Roger explained how this can be approximated: of the 700 minutes of arc, a quarter (175 minutes) is added in Aries, a sixth (116 minutes and 40 seconds) in Taurus, and a twelfth (58 minutes and 20 seconds)

in Gemini; in the following three months, the reverse amounts are subtracted.⁴⁷ Figure 4.14 shows just how close this simple approximation is to a sine curve. Roger made explicit reference to ‘Tholomeum’ (Ptolemy), so was calculating his table in accordance with the rules set out in Ptolemy’s *Almagest*, which had been translated into Latin by the time Roger was writing his book.⁴⁸ However, these rules, using chords rather than trigonometry are general for any latitude, and the handy approximation Roger used appears to be his own. Despite his simple description of adding a quarter, a sixth or a twelfth part to approximate this curve, he was actually using ten increments as discussed in the analysis of his table in Chapter Three.

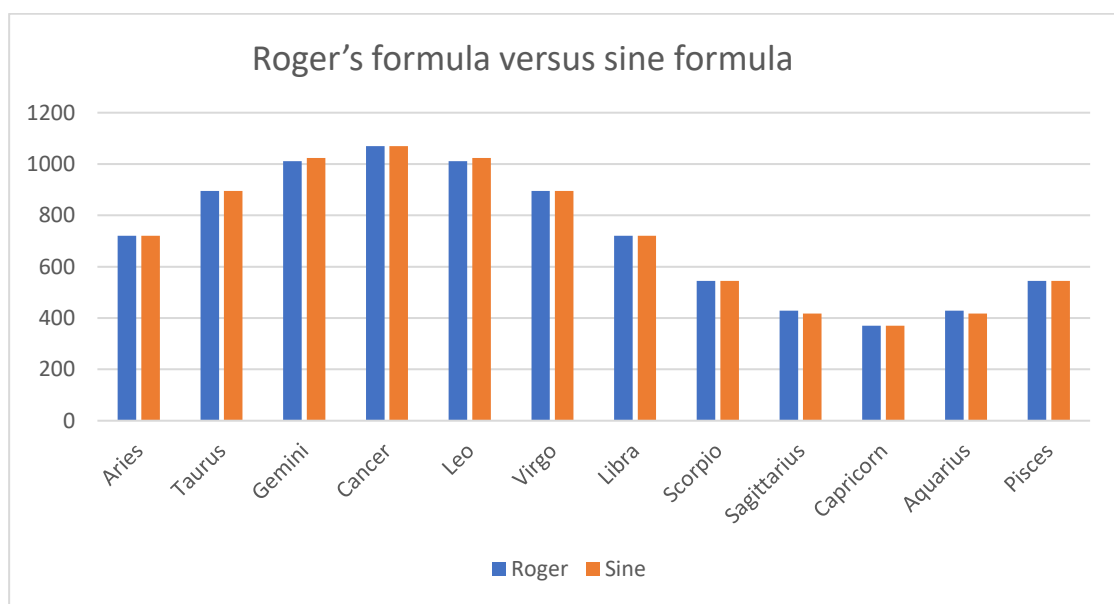


Figure 4.14 – Roger’s approximation to a sine curve from Ptolemy.

This section completes the part of Roger’s text that covers what today would be called astronomy rather than astrology. The text then continues with a reference guide to astrological principles. Manuscript A is missing part of this and, indeed, the second half of the table of hours just described, and continues later on in the reference guide. It is this reference section that, in some places, closely mirrors some Latin translations of Arabic texts and so a textual analysis of Roger’s text and the sources will be examined for some of these sections.

⁴⁷ A, 4v line 27 - 5r line 14.

⁴⁸ Ptolemy, *Almagest*, II.7, pp.90-99.

On the nature of the twelve signs

Although planets are generally seen as the active agents in an astrological chart, and the signs in which the planets are placed are primarily used to indicate planetary strength, signs are seen as having characteristics of their own, particularly in respect to using astrology for weather forecasting, diagnosis of illnesses, geographical locations in which events will take place, and for describing the physical appearance of a person. This section lists all twelve signs, in zodiacal order from Aries to Pisces, with the characteristics for each sign. Some of these characteristics are purely descriptive based on the animal that the sign represents, others relate to the type of terrain associated with the sign, geographical locations, medical associations and a physical description of a person linked to the sign. For example, for Aries, Roger's text states that its nature is fiery, bitter tasting, oriental, of two colours, domesticated, aggressive, having few offspring, bleating, angry, and having half a voice. It represents the head and face in a human body, and is associated with the lands of Babylon, Persia, and Palestine. It is related to the cultivation of pasture, places of construction, furnaces, baths, and wooden forts. Planets within this sign are associated with parts of the body: Saturn in Aries is associated with the breast, Jupiter with the stomach, Mars the head, Sun the thighs, Venus the feet, Mercury the legs, and the Moon the knees. In describing a person's appearance, a person with planets emphasised in Aries will have a lot of hair, be a short person with a long face, heavy eyes, protruding ears and a long neck.⁴⁹

Aries is a fire sign, and all fire signs have certain characteristics listed by Roger: they are hot and dry, have a bitter taste and are associated with the east. Aries is a ram, which gives rise to the description of the sign being domesticated, vicious or aggressive and bleating. The reference to Aries having half a voice applies to animals, who can make sounds but have no speech.

In terms of sources, it is instructive to look at Arabic authors giving similar lists, and to compare Roger's text with the Latin translations of those Arabic texts. Chapter Two addressed the issue of which Arabic astrological texts had been translated in the twelfth century, although the existence of a Latin translation of an Arabic text does not imply that Roger necessarily had access to that Latin text. However, obvious similarities between Roger's text and various Latin translations will provide evidence of what texts were

⁴⁹ B, f.42va line 20 - 42vb line 5 for the description of Aries – other signs continue to Pisces at f.44rb.

available to Roger, and so this thesis will examine a few key passages of Roger's text for the purposes of comparison.

Roger's text starts with a general description for the sign of Aries:

Aries n[atura] igneus, gustu amar[us], orie[n]t[alis], porrect[us], bicolor, biformis, domestic[us], vicios[us], tortuous[us], pauce p[ro]l[is], lux[ur]ios[us], bala[n]s, rugie[n]s, ira[cun]d[us], vocis medioc[ri]s h[abe]ns caput + facie[m] ho[mi]nis.⁵⁰

This is a very brief summary, with single words used to summarise the nature of Aries. There appears to be no single Arabic text that Roger drew on for this description, but it is immediately obvious that some identical wording is used in various Latin translations of Arabic texts.

Abu Ma'shar's *Great Introduction* was translated into Latin by two authors, as discussed in Chapter Two. John of Seville's translation was a fairly literal word-by-word translation of the Arabic, while Hermann of Carinthia's rather shorter version was more of a paraphrasing of the Arabic.⁵¹ Hermann's description of Aries begins:

Est igitur ARIES natura igneus, gustu amarus, stature porrecte, bicolor, biformis, augmentans diem ultra horas xii., ortu minor xxx. gradibus.⁵²

The same section in John of Seville's translation is rather different:

Arietis natura est ignea colerica, gustus eius amarus, <oblique forme>, duorum colorum ac duarum <imaginum>, augens diem super XII horas et minuens ascensiones ex XXX.⁵³

The similarity between Hermann's translation and Roger's is very obvious and Roger's text is an almost exact copy up to 'biformis'. There are, however, additional adjectives to describe Aries in Roger's text that are not in Hermann's translation of Abu Ma'shar's *Great Introduction*.

⁵⁰ B, f.42va lines 20-26.

⁵¹ See for example C. Burnett, 'The Arrival Of The Pagan Philosophers In The North: A Twelfth-Century Florilegium In Edinburgh University Library' in *Knowledge, Discipline and Power in the Middle Ages* (Leiden: Brill, 2011), pp. 79-93. The issues involved in translation and an examination of John of Seville's technique is given in C. Burnett and P. Mantas-España (eds), *Ex Oriente Lux* (Córdoba: UCO Press, 2016).

⁵² Abu Ma'shar, *Great Introduction* (Hermann) VI.1, lines 102-103.

⁵³ Abu Ma'shar, *Great Introduction* (John) VI.1, lines 164-166.

Abu Ma'shar's summary of this work, *Abbreviation*, was translated into Latin by Adelard of Bath. Adelard's description of Aries includes a few extra descriptions:

Natura eius calida et sicca, ignea, colerica; sapor amarus; sexus masculinus; die gaudens; ad nova germina convertibilis; diem supra horarum equalitatem augens; ortus eius .xxx. gradibus minor, idemque indirectus. Figura autem imperfecta; iracundum; bicolor; biforme; libidinosum; paucorum liberorum, quandoque nullorum; regale; quadrupes; cornipes; vocis imperfecte. Pars eius in homine caput et facies.⁵⁴

Here it can be seen that some of the adjectives in Roger's text that are missing from Hermann's translation of *Great Introduction* are in Adelard's translation of the *Abbreviation*. Roger's 'iracundus', 'vocis mediocris', and 'pauce prolis' are very similar to Adelard's 'paucorum liberorum' and 'vocis imperfecte'. It is also clear that even if Roger was using Adelard's translation, he was not using exactly the same words – Roger's was not a *verbatim* copy. Roger used 'viciosus', which can mean faulty or imperfect, echoing Adelard's 'imperfecta'.⁵⁵ Roger's reference to Aries being associated with 'caput et faciem hominis' corresponds to Adelard's translation, too.

Roger's next description of Aries gives descriptions of territories and types of place associated with the sign:

ex t[er]ris babilonia[m], p[er]sida[m], palestina[m]; ex culturis paschua; ex locis fab[ri]cas, furnos, termas + castr[a] lignea.⁵⁶

This is very similar to Hermann's description of locations:

Sunt igitur ARIETIS de regionibus quidem Persia, Media, Babilonia, Philistina. De culturis vero prata, pascua, fabrice, furni, pistrine, inquilines, turme, edificia quoque lignis tecta.⁵⁷

⁵⁴ Abu Ma'shar, *Abbreviation* I.11-13.

⁵⁵ R.K. Ashdowne, D.R. Howlett, and R.E. Latham (eds), *Dictionary of Medieval Latin from British Sources* (Oxford: British Academy, 2018), 'vitiosus'.

⁵⁶ B, f.42va lines 26-30.

⁵⁷ Abu Ma'shar, *Great Introduction* (Hermann) VI.9, lines 757-759.

Roger's unusual spelling 'Persidam' for Persia is reflected in another source, translated into Latin by John of Seville in the twelfth century: al-Qabisi's *Introduction*. The description of Aries and its territories in John's translation of al-Qabisi reads as follows:

Aries habet ex corpore hominis caput et faciem, et ex regionibus Bebil et Feriz, *id est Babyloniam et Persidam*, et Adrabigen et Falastin.⁵⁸

The spelling in Roger's text is far closer to al-Qabisi, especially as 'Falastin' is written as 'Falastin id est Palestinam' in some manuscripts.⁵⁹ Thus Roger's source for territories could have come from either Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction*, or from John of Seville's translation of al-Qabisi's *Introduction*.

One reason for considering al-Qabisi as a source is from Roger's next sentence:

H[abe]t i[n] eo sat[ur]n[us] pect[us], iub[ite]r ve[n]tre[m], m[a]rs caput, sol femora, ven[us] pedes, m[er]c[ur]i[us] crura, luna genua.⁶⁰

Al-Qabisi said 'Since some of the planets indicate pain, and in every sign the planet has a limb that is special to it, let us mention the pains of the planets in the signs'.⁶¹ His text gives exactly the same list as Roger, namely:

In Ariete Saturnus habet pectus, Iupiter ventrem, Mars caput, Sol femora, Venus pedes, Mercurius crura, Luna genua.⁶²

Roger's final associations for Aries describe the appearance in a person:

H[abe]t + capillos m[u]ltos. Ei[us] e[nim] ho[mo] curt[us] cu[m] lo[n]ga facie, ocul[is] g[ra]vib[us], aurib[us] p[ro]nis, lo[n]go collo.⁶³

This wording appears almost verbatim in a text entitled *Iudicia*, attributed to Ptolemy:

Aries itaq[ue] m[u]ltos capillos, curtu[m] corpus faciem longam h[a]b[et] oculi graues sunt ei aures paruas h[abe]t lo[n]go collo n[on] indig[et].⁶⁴

⁵⁸ al-Qabisi, *Introduction* l.25.

⁵⁹ al-Qabisi, *Introduction*, p.242 fn.11.

⁶⁰ B, f.42va line 30 - f.42vb line 1.

⁶¹ al-Qabisi, *Introduction* l.37.

⁶² al-Qabisi, *Introduction* l.37.

⁶³ B, f.42vb lines 2-5.

⁶⁴ Pseudo-Ptolemy, *Iudicia*, Paris, Bibliothèque nationale de France, Lat 16208, f.59va.

In addition to similar text, the rationale for some of these associations is given by al-Qabisi. For example, for fire signs al-Qabisi said ‘each of them is masculine, diurnal, hot, dry, having choler and a bitter taste; this triplicity is eastern’.⁶⁵ He defined some signs as rational, because the form of the zodiac sign is human; some have many children, while others are sterile (based on obvious imagery, such as the sign of the virgin being childless); human signs have a full voice, animal signs have half a voice as they are ‘in the forms of beasts that utter sounds’.⁶⁶

The types of place associated with a sign mostly fit the imagery of the sign. For example, Aries is associated with pasture land because Aries, as a ram, is domesticated livestock; there is an association with furnaces because Aries is a fire sign.

The association of each sign with parts of the body is consistent; the order followed from Aries to Pisces is from the head down to the feet, and the image of the zodiac signs superimposed on the human body is widely used in later medieval astrology for medical purposes.⁶⁷ As well as the link between a sign and parts of the body described above, the secondary system described above if a particular planet is to be found in a sign has a certain logic to it, in that the ruling planet for the sign always represents the head. Roger simply listed the body parts, as he did for the general body part for the sign, without giving any reasons behind it, while al-Qabisi explained that these represent the ‘pains of the planets in signs’.

One area that does seem to be a source of confusion in Roger’s text is the allocation of signs to territories. Roger allocated Aries to ‘ex t[er]ris babilonia[m], p[er]sida[m], palestina[m]’ which broadly agrees with Abu Ma’shar and al-Qabisi, but left out Azerbaijan, which underwent various changes in its translation to Latin; John of Seville translated this as ‘Adrabigen’ in his translation both of Abu Ma’shar and al-Qabisi, Adelard translated it as ‘Derebingen’ in his translation of Abu Ma’shar’s *Abbreviation*, and Hermann of Carinthia translated it as ‘Media’, the land of the Medes (part of which corresponds to modern-day Azerbaijan).⁶⁸ Some of the place names are rather obscure in the Arabic originals, and the Latin translations are not always obvious. Roger certainly

⁶⁵ Al-Qabisi, *Introduction* l.16, p.25.

⁶⁶ Al-Qabisi, *Introduction* l.24, p.33.

⁶⁷ Al-Qabisi, *Introduction* l.25, p.35.

⁶⁸ Abu Ma’shar, *Great Introduction* (John) VI.9 lines 1210-1212, p.248; al-Qabisi, *Introduction* l.25, p.242; Abu Ma’shar, *Abbreviation* l.14, p.94; Abu Ma’shar, *Great Introduction* (Hermann) VI.9 line 757.

seems to have abbreviated the list of countries that Abu Ma'shar and al-Qabisi attributed to signs quite heavily, as shown in Table 4.2. In most cases, he seems to have followed Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction*, although the addition of 'Egyptus' to Gemini, 'Hyspania' to Virgo, and 'Arabia' to Scorpio may have come from John of Seville's translation of al-Qabisi's *Introduction*, as may 'Ethiopia' and 'India' to Sagittarius, rather than Hermann's 'Yspahen'.

Sign	Roger	al-Qabisi	Abu Ma'shar <i>Abbreviation</i>	Abu Ma'shar
Aries	Babylonia, Persida, Palestina	Bebil, Feriz (ie Babylonia, Persida), Adrabigen, Falastin	Babil, Feriz, Philistin, Derebingen	Persia, Media, Babilonia, Philistina
Taurus	<none given>	Ezeuuet, Almehin, Handen, Alacrad	Eschewed, Henden et Civitates, Elhewez	Mauritania, Hemedan
Gemini	Armenia, Egyptus, Capadocia	Iurgen, Armenia, Adrabigen, Gilen, Egyptus, Barcha	Harran, Armeniam, Derebingen, Mezr, Varkan	Armenia Maior cum Media, tum Hyberia et Albania, Capadocia, Vergen cum Memphitica provincia ac civitas Barca
Cancer	Armenia minore, Balach	Armenia minore, orientale plaga Hurachen, Acin, Balech, Adrabigen	Armenium Parvam et Escin, part. Terrae Balk et Helewez et aliquarum Affrice	Minor Armenia, Numidia, Aracusia, Scithia sicque in Media atque Beledne, Balac
Leo	Mesopotamia	Alturuk usque in finem regionis habitabilis	Insulas et Atork usque ad finem habitacionum et Nicabor et loca regia et Elmefewiz et Elkila	Parthi parsque Mesopotamie
Virgo	Iudea, Galilea, Hyspania, Eufraten	Algeramica, Assem (ie quedam regio circa Ierusalem), Alforaz (ie Eufraten) et insulam que est Yspania, Feriz	Civitates, Affricam, Shem, Arabiam	Iudea et Galilea cum confinio Eufratis atque Insula quadam Persie

Libra	Grecia, Ytalia, Affrica	Terram Romanorum vel Grecorum et que succedunt eius fines usque ad Affricam, Azait ad finem Ethiopie, Barcha, Carmen, Segesten, Kebul, Tabrasten, Barach, Hau Warah	Romaniam usque ad Affricam et Shahid Medie usque ad Ethiopiam et Karmen et Segesten et Kebil	Roma cum Grecia, Histria et Italia, indeque usque, ad Affricam et Memfim, unde ad Barkam, Keremen, Chebil, Balach
Scorpio	Arabia, Assyria	Terram Alhigez, rura Arabum et fines eius usque Aliemen, Tangeth, Cumus, Elyeth, et habet in Acint participationem	Elhegez, rura Arabie usque ad Elieman et Tangen et Feruz	Assiria, Nabathea, Tingis
Sagittarius	Ethiopia, India	Ethiopia, Maharoben, Acint, Halint que est India	<none>	Yspahen.
Capricorn	Ethiopia cum orientalibus Grecie et Italie	Ethiopia, Hanna, Harawen, Acint, Umen usque ad Duo Maria et usque ad Acint et Halint que est India	Ethiopiam et ripas Elden et Scind et Hind usque ad Hegez, et loca Arabum.	Ethiopia orientalis, Tingria cum medio eius maris, mariaque duo ad Indiam et Ethiopiam cum orientalibus Italie et Grecie partibus
Aquarius	Egyptus, Ethiopia	Hazaweth id est nigredinem, Alcupha et partes eius et terram Helfigez et partem terre Egypti et occidentalem plagam terre Acint	Kufan usque ad Affricam et Mediam	Nigellorum Tinctorumque regio versus montes et Alkufam, Egyptus cum Ethiopia occidentali
Pisces	<none>	Tabrasten, septemtrionalem plagam terre Iurgen et participationem in Romanis usque ad Essem, et habet insulam et Egyptum et Alexandriam et mare Elyemen.	Tarasten, partes Gallie et Romanie et Soliman et Insulam et Alexandriam et mare Ellieman	India et Mare Rubrum, insule Italie et Grecie versus Siriam cum Alexandria

Table 4.2 – Attribution of countries to signs by various authors.

Roger did not give geographical attributions to all signs – they are missing for Taurus and Pisces – and most of the attributions he does give tend to relate to Mediterranean and Middle Eastern countries, and perhaps his heavily abbreviated list reflects a lack of geographical knowledge of some of the place names translated from the original Arabic sources.

The concept of associating a sign with parts of the world dates back to Ptolemy, who gave a rationale for these attributions based on four quadrants of the known world being ruled by four winds as shown in Figure 4.15.

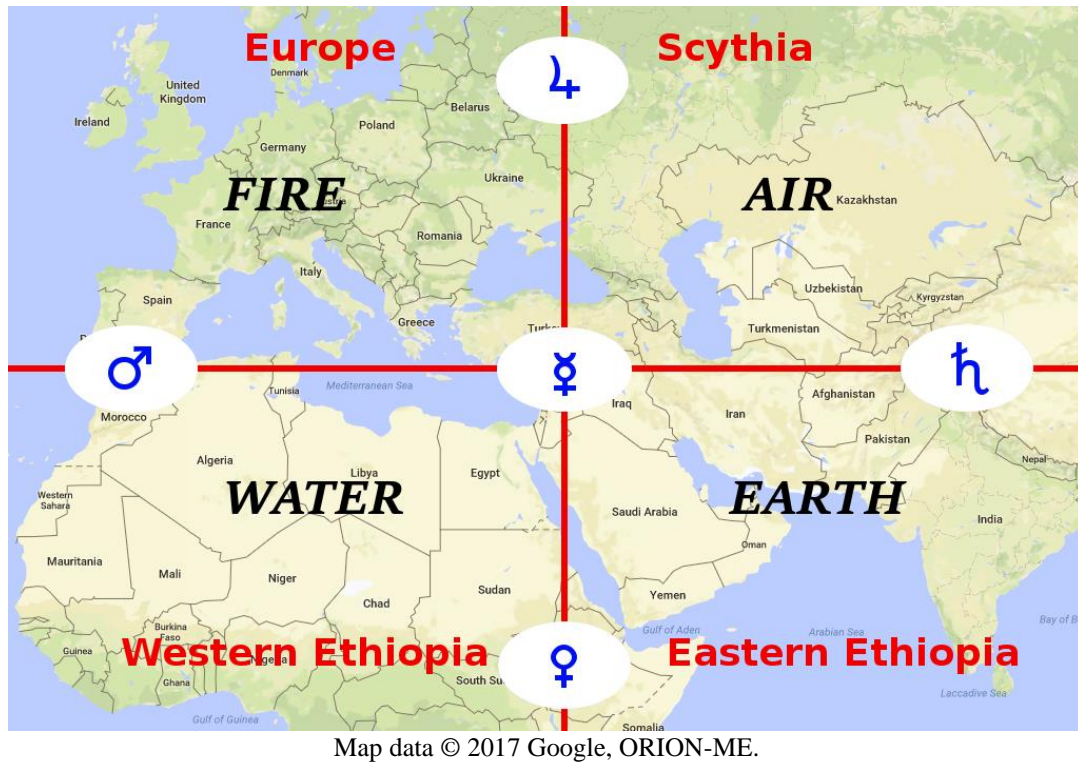


Figure 4.15 – Ptolemy’s four quarters.

In Ptolemy’s model, Jupiter ruled the north wind, Mars the west wind, Saturn the east wind and Venus the south wind.⁶⁹ By dividing the known world into four quadrants, the latitude dividing line being around 36° North through the Straits of Hercules (Gibraltar) and the longitude dividing line being the Pontus (Black Sea) and Lake Maeotis (Sea of Azov), each quarter was ruled by a triplicity (fire, air, water or earth). The parts away from the centre of the map were ruled by one of the three signs in the relevant triplicity, but Ptolemy considered that the parts of the world near the centre of the map shared in some of the characteristics of the opposite quadrant, so that a smaller triangle of territories just to the north-west of the centre was ruled by the earth signs, normally associated with the south-east.

⁶⁹ Ptolemy, *Ptolemy Tetrabiblos*, F.E. Robbins (ed., trans.), Loeb Classical Library 435 (Cambridge, MA: Harvard University Press, 2001), II.3, p.129.

However, the world's geography and geo-politics had changed between the second century and the Islamic period, and so although Arabic writers were using some of Ptolemy's attributions for places, most of these had shifted to parts of the world more relevant to Arabic authors by the time of Abu Ma'shar and al-Qabisi. There is no consistent agreement between all Arabic authors and locations, though, and later Arabic authors such as al-Biruni used different associations again. The work of al-Biruni, although he predated Roger by two centuries, would not have been known to Roger as his works were not translated into Latin and would not have been available to Latin scholars in the twelfth century. However, the work of other scholars working in the Islamic milieu – such as al-Biruni and ibn Ezra – is relevant to this discussion, since it provides evidence that there was no general agreement among Arabic authors for the attribution of signs to territories, which seemed to be in a state of flux. For example, while Abu Ma'shar, al-Biruni and al-Qabisi agreed that Aries was also associated with Azerbaijan, ibn Ezra associated it additionally with Ardekan, in modern-day Iran, while al-Biruni additionally associated it with Alan, in modern-day Dagestan.⁷⁰ Some descriptions are mythical, or vague; Abu Ma'shar and al-Qabisi both gave Leo to 'The land of the Turks to the end of the inhabited world' while al-Biruni associated Leo with 'Gog and Magog and ruined cities there', which is impossible to identify.

Identification of obscure place-names in Arabic is facilitated by the fact that a number of Arabic astrolabes have these places marked, making it possible to identify them in terms of latitude and longitude. A very useful catalogue has been compiled using these sources, and relating each Arabic place to its geographical coordinates.⁷¹ Longitude presents something of a problem, since the choice of prime meridian is arbitrary. Some used a location in the Atlantic Ocean, others used a Greek tradition of using the Canary Islands.⁷² By noting the author and correlating their longitude with the author's determination of a known place (such as Baghdad), it has been possible to map the bulk of the 155 place-names mentioned in Arabic texts to specific locations, shown in the maps in Figure 4.16. These illustrate the argument above that Roger was virtually always in agreement with

⁷⁰ All geographical references can be found in the following: Roger: II1.1, 42va-44rb; Abu Ma'shar, *Great Introduction* (Hermann) VI.9 lines 757-793, pp.115-116; al-Biruni, *Book of Instruction*, 365 p.220; al-Qabisi, *Introduction* I.25-36, pp.35-37; ibn Ezra, *Beginning of Wisdom* (Sela, ed.), 2.2.17, p.59.

⁷¹ E.S. Kennedy and M.H. Kennedy, *Geographical coordinates of localities from Islamic sources* (Frankfurt: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 1987).

⁷² See for example the discussion in S.N. Sen, 'Al-Biruni on the Determination of Latitudes and Longitudes in India', *Indian Journal of the History of Science*, Vol 10 No 2, 1975, pp.185-197.

Abu Ma'shar, since for some signs none of the Arabic authors other than Abu Ma'shar allocate these signs to the same locations as Roger. In particular, Roger allocated Gemini to Cappadocia, Virgo to Judea and Galilee, Scorpio to Assyria, and Libra and Capricorn to Italy and Greece; only Abu Ma'shar has the same attributions.⁷³ However, Roger also had allocations not used by Abu Ma'shar. Roger allocated Sagittarius to Ethiopia and India, and al-Qabisi gave Ethiopia as associated with Sagittarius, but Abu Ma'shar did not.



Aries: Roger agreed with all authors on Palestine, Babylon and Persia.

⁷³ Abu Ma'shar, *Great Introduction* (Hermann) VI.9 lines 763, 770, 773, 776, and 783.



Taurus: Roger gave no location for Taurus.



Gemini: Roger agreed with all authors on Egypt, but also has Cappadocia, which only Abu Ma'shar had.



Cancer: Roger agreed with all authors on Balkh and Armenia Minor.



Leo: Roger had Mesopotamia, agreeing only with Abu Ma'shar, and ibn Ezra's Babylon.



Virgo: Roger agreed with all authors on Euphrates, (al-Biruni has Andalusia), but also had Judea and Galilee, which only Abu Ma'shar had.



Libra: Roger agreed with all authors about Africa, but has Greece and Italy, which only Abu Ma'shar had.



Scorpio: Roger agreed with all authors on Arabia.
Also had ‘Asuria’, which may mean Assyria, which only Abu Ma’shar had; al-Biruni had Nahrawan, near Baghdad.



Sagittarius: Roger agreed with al-Qabisi on Ethiopia, but did not concur with the majority of authors on locations in the Middle East. He also had India, which no other author had.



Capricorn: Roger had Eastern Ethiopia, while Abu Ma'shar, al-Qabisi and ibn Ezra had Ethiopia. Roger had Greece and Italy, which only Abu Ma'shar had.



Aquarius: Roger agreed with all authors on Egypt, and with ibn Ezra and Abu Ma'shar on Ethiopia.



Pisces: Roger gave no location for Pisces.

Figure 4.16 – Maps showing attribution of countries to signs by various authors.

This analysis has only examined in detail Roger’s description of the sign of Aries, with the exception of analysing territories in the discussion above, but very similar arguments and the same sources can be found in Roger’s text for the other eleven signs.

Table 4.3 summarises the main characteristics of each sign in *Judicial Astrology*.

It can be seen, therefore, that Roger did not simply copy one author in this section of *Judicial Astrology*. Instead, he appears to have drawn on a number of sources, and in particular the Hermann of Carinthia translation of Abu Ma’shar’s *Great Introduction*, John of Seville’s translation of al-Qabisi’s *Introduction*, Adelard of Bath’s translation of Abu Ma’shar’s *Abbreviation*, and Pseudo-Ptolemy’s *Iudicia*.

Sign	Description	Terrain	Locations	Medical	Physical
Aries	Fiery, bitter-tasting, oriental, extended, of two colours, double form, domesticated, vicious, tortuous, few offspring, luxurious, bleating, bellowing, angry, half-voiced	Pasture land, places of construction, furnaces, baths, wooden forts	Babylon, Persia, Palestine	Saturn: breast, Jupiter: stomach, Mars: head, Sun: thigh, Venus: feet, Mercury: legs, Moon: knees	Short man, long face, heavy eyes, protruding ears, long neck, abundant hair
Taurus	Earthy, dry, bitter, southern, domestic, vicious, few offspring, luxurious, bleating, loud, half-voiced, melancholy, honest, vain	Places of trees and seedlings, mountain caves, dry fields, pasture land, woods		General: neck and throat, Saturn: stomach, Jupiter: back, Mars: neck, Sun: knees, Venus: head, Mercury: feet, Moon: legs	Large forehead, long nose, large nostrils, heavy eyes, high hairline, thick neck, abundant hair
Gemini	Airy, sweet, occidental, rational, beautiful voice, barren	Deserts, wooded glades, amphitheatres	Armenia, Egypt, Capadocia	General: shoulders, arms, hands, Saturn: stomach, Jupiter: genitals and nether regions, Mars: breast, Sun: legs and ankles, Venus: neck, Mercury: head, Moon: legs	Tall, handsome
Cancer	Watery, salty, wild, many offspring	Underwater shores, striped rocks	Armenia Minor, Balkh	General: chest, heart, stomach, flank, spleen, lungs and all defects of these, Saturn: genitals and nether regions, Jupiter: thighs, Mars: chest, Sun: feet, Venus: arms, Mercury: eyes, Moon: head	Large body, feverish skin, bad teeth, small eyes

Leo	Fiery, choleric, luxurious, oriental, of medium voice, cunning, brave, venerable	Valleys, fast-flowing rivers, mines, quarries, royal palaces, fortified towns with caves	Mesopotamia	General: stomach, heart, side and back, Saturn: private parts, Jupiter: thighs and knees, Mars: belly, Sun: head, Venus: heart, Mercury: shoulders and throat, Moon: neck	Large, long and slender legs
Virgo	Earthy, in two parts, southern, sweet voice, barren		Judea, Galilea, Hispania, Euphrates	General: belly and intestines, Saturn: feet, Jupiter, the knees, Mars: belly, Sun: neck, Mercury: heart, Moon: shoulders	Beautiful character, eyes and countenance
Libra	Sanguine, double-formed, assured, western, rational, beautiful voice, generous soul, good	Tall trees, cultivated places, wild places of hawks	Greece, Italy, Africa	General: loins, lower back, heart, navel, breast, private parts, loins, hips, Saturn: knees, Jupiter: eyes, Mars: private parts, Sun: shoulders, Venus: head, Mercury: belly, Moon: heart	Beautiful countenances, average body, amorous
Scorpio	Phlegmatic, watery, many offspring, defective, mute, generous good soul	Vineyards, prisons, places with snakes	Arabia, Asuria	General: private parts, testicles, bladder, anus, thighs, Saturn: ankles, Jupiter: feet, Mars: head, arms, thighs, Sun: heart, Venus: private parts, Mercury: back, Moon: belly	Beautiful countenance, abundant hair, small eyes, small face, long legs, long feet, deceitful, angry

Sagittarius	Fiery, choleric, two-coloured, oriental, few offspring, medium-voiced, first half rational, second half quadruped and mute, clever, shrewd	Mountainous places, rocky plains, places of cows and bulls	Ethiopia, India	General: thighs, Saturn: feet, Jupiter: legs, head, Mars: feet, hands, Sun: belly, Venus: thigh, arms, Mercury: private parts, Moon: back	Long hips, thick legs, long face, fine chin, fine hair
Capricorn	Earthy, round, imperfect, two-formed, southern, luxurious, vicious, bellowing voice, domestic, few offspring, angry, gloomy, south wind	Forts with gates, water wheels, pools and pits, coasts and banks where ships land, places of dogs, foxes, serpents, wild animals and strangers, poor peoples' dwellings, fire terraces	Eastern Ethiopia, Greece, Italy	Saturn: head, Jupiter: knees, eyes, Mars: legs, shoulders, Sun: back, Venus: thighs, heart, Mercury: private parts, Moon: thigh, private parts	Slim body and legs, dry body, face like a he-goat, abundant hair
Aquarius	Airy, occidental, few offspring, west wind, laying waste and ruinings	Places overflowing with rivers and canals, wells, the open sea, lonely places, places supporting vines and vessels	Egypt, Ethiopia	General: lower legs, ankles, Saturn: head, neck, Jupiter: shoulders, breast, feet, Mars: ankles, heart, Sun: private parts, Venus: knees, Mercury: thighs, Moon: heart and private parts	One leg bigger than the other, beautiful face
Pisces	Double, aquatic, northern, many offspring, north wind, gluttonous, crafty, mixed with many colours, sluggish, mute	Coastal basins and pools with shores and fish, temples with rituals		General: feet, Saturn: shoulder, arms, neck, Jupiter: heart, head, Mars: ankles, belly, Sun: thighs, Venus: neck and back, Mercury: legs, private parts, Moon: thighs	Large breast, small head, magnificent beards in the middle of the face

Table 4.3 – Signification of each sign.

On the nature of the seven planets

This section has fuller descriptions for the planets than for the signs, since much of *Judicial Astrology* is concerned with identifying the most relevant planet (significator) for a particular situation. For each planet, Roger's text provides a summary of its nature, jobs and tasks associated with the planet, the type of people associated with it, events, and – just as for signs – physical characteristics of a person associated with the planet. For example, for Saturn, the text states that it has a cold and dry nature but nevertheless can be damp, severe, weighed down, stinking, devouring, retentive, and clinging. It is associated with agriculture and habitations that are earthy and watery and heavy, masons, those who dig the ground, cartwrights, the destitute, ships, long journeys, outcasts, evil attacks, fraud, wickedness, loneliness, deliberation, determined conversation, forethought, stability, kings, consuls, chains, prisons, obligations, hatred of anything good, spite, fear, solemnity, sorrow, penitence, suffering, deception, punishment, funerals, hatred, lamentations, widows, inheritances, old things, fathers, grandfathers, slaves, mercenaries, eunuchs, the notorious, and criminals. It is also associated with study, infrequent conversation, inexhaustible knowledge, the right ear and spleen. Saturn is melancholy and masculine, evil, diurnal. In a man it describes someone who has few hairs in his beard, is unattractive, serious, dull, gloomy, has a grey complexion, slim, coarse hair, who is dressed in stinking black clothes, and looks evil.⁷⁴

Saturn as the furthest planet from the Sun has a number of negative associations in medieval astrology, including its association with death and all things evil. The traditional image of Saturn is of an old man dressed in black with a scythe bringing death. The scythe also represents agriculture and farming, and the Greek name for Saturn, Chronos, is related to timekeeping. The keywords in Roger's description fit Saturn due to its various associations: as the planet furthestmost from the Sun, it is cold; its association with old age and death makes it generally dry; but the association with death and putrefaction also makes it damp and stinking. It is retentive and clinging because of its slow motion and association with timekeeping and the other generally negative keywords emphasise the fact that Saturn is seen as the greater malefic planet, bringing misfortune.

⁷⁴ B, f.44va line 1 - f.44vb line 2 – other planets continue to end of f.45vb.

Saturn has already been described as cold and dry, so the association with melancholy comes directly from the four Galenic temperaments associated with each element. Each planet also has a physical description of a person strongly influenced by this planet. The basic attributes are simply the descriptions from Ptolemy, such as whether it is moist or dry, and hot or cold, which planets are masculine, which are good and evil and which are diurnal and nocturnal.⁷⁵

In the discussion on the twelve signs, a comparison of Roger's text with known Latin translations of the time gave an indication of his sources. The same technique can be used to analyse Roger's text regarding the seven planets.

For Saturn, Roger wrote:

Saturn[us] q[ui]de[m] natura frigid[us] est, + sicc[us], qu[umque] t[ame]n obscure[us], hu[m]id[us], asp[er], g[rav]i[d]us, fetid[us], vorax, tenax, m[u]ltu[m] cogitans, firmit[er] retine[n]s, s[i]q[ui]de[m] magn[us], aliis p[ar]u[us]. Ei[us] su[n]t ag[ri]cultura + habitatio t[er]ra[rum] + aq[uarum] pond[us], ceme[n]tarii, fossores, carpentarii, i[n]opia, navigia, lo[n]ga via, exiliu[m], inc[ur]sus malo[rum], fraudis, neq[ui]tie, solitudo, deliberat[i]o, s[er]mo c[er]t[us], p[ro]vid[us], stabil[is], reges, [con]sules, cathene, carc[eres], da[m]pnatio, odium boni, i[n]vidia, met[us], angustia, dolor, penitentia, passio, error, labor, pena, funera, luct[us] odia, vidua, hereditas, res antique, senes, patres, avos, servos, m[er]cenarii, eunuchi, vulg[us], infamia, malefici. Cu[m] suo studio, rar[us] s[er]mo, i[n]exhausta sapi[enti]a. Auris dext[ra], splen, mela[n]cholia, + est masc[u]l[in]us, mal[us], diurn[us]. Ei[us] e[st] ho[m]o paucos pilos h[abe]ns i[n] barba, no[n] pulcher, iniquis, gravis, piger, tristis, habens i[n] calcaneo ragadias, colore [smudged in A, but E has glauc[us], s[u]btilis pectore], capillis asp[er], fetid[us], vestime[n]tis nig[ra] indue[n]s, si[m]ilis malivolio.⁷⁶

Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction* has a slightly longer section than the above paragraph for Saturn, but virtually every word in the first

⁷⁵ Ptolemy, *Tetrabiblos*, I.4-I.7, pp.35-43.

⁷⁶ B, f.44va line 1 - f.44vb line 2; lacunae and uncertain words clarified by E, f.223r.

paragraph above is also in Hermann's translation. The words in bold in the following passage by Hermann are those which also appear in Roger's list:

Saturnus quidem natura frigidus siccus, nonnumquam accideret **humidus**, **obscurus**, **asper**, **gavis**, **fetidus**, **vorax**, **tenax**, **multe cogitationis firmeque memorie**, **sibi magni aliis parvi**. **Eius est agricultura**, **habitatio terrarum et aquarum**, rerum dimensio et **pondus**, fundi particio multaue interdum possessio, tum et manualium pars artificiorum ut **cementarii**, **fossores**, **carpentarii** atque id genus. Tum summa **inopia** et egestas, **navigacio**, **longa via** et difficilis, **longum exilium**, **inprovisus difficultatum atque periculorum incursus**. Tum **fraudes**, **nequitia**, doli, proditio, noxa, facinora, abhominatio, **solitudo**, **deliberatio** quoque et intellectus, **sermo certus**, amicitia **stabilis**, longa providentia. Tum et **regum consules** omnisque malitia, iniquitas et violentia, captivitas, **cathene**, compedes, **carceres**, **damnatio**, instantia, perfidia, pertinacia, difficilis ira nec tamen effrenis omneque **boni odium et invidia**. Tum **metus**, **angustia**, **dolor**, **penitentia**, **passiones**, dubitatio, **error**, involucrum, **labor**, **pena**, lesio, **funera luctusque funebrii**, orfani, **vidui** et orbi, **hereditates resque antique**. Tum **senes**, **patres**, **avi**, proavi eiusque patris parentes. Tum **servi**, mancipia, **mercenarii**, **eunuci**, **vulgus atque hominum genus infame**, sterile, ignavum, detracticum. Corporis partes **auris dextra et splen** omneque **melancolie** cronicum. Tum malefici, fures fossoresque monumentorum et spoliatores, omneque magice omnisque maleficii studium. Postremo longa cogitacio, **rarus sermo**, altus secretorum intellectus, occulta profundorum atque **inexhausta sapientia**.⁷⁷

Roger's second paragraph is also represented in Hermann's passage above: 'Auris dext[ra], splen, mela[n]cholia', and the phrase following this, '+ est masc[u]l[in]us, mal[us], diurn[us]' is in John of Seville's translation of al-Qabisi's *Introduction* verbatim: 'Saturnus est masculinus, malus, diurnus'.⁷⁸

Roger abbreviated his sources quite heavily. The description for each planet is a list of keywords, and misses some of the depth that al-Qabisi provides. For example, both Roger and al-Qabisi gave the link between Saturn and dampness and bad smells, agriculture,

⁷⁷ Abu Ma'shar, *Great Introduction* (Hermann) VII.9, lines 602-623.

⁷⁸ Al-Qabisi, *Introduction* II.2, p.267.

eunuchs, and trades involving navigation and river management (rather than the shipping mentioned by Roger). However, where Roger simply listed keywords without distinction, al-Qabisi distinguished between Saturn being in a good condition astrologically, and a poor one: ‘of professions it has noble activities involving water, like cultivation and management of lands and rivers when it is fortunate; but vile activities when it is harmed’.⁷⁹

Roger’s statement ‘Ei[us] e[st] ho[mo] paucos pilos h[abe]ns i[n] barba’ is replicated in al-Qabisi’s longer statement, which is attributed by al-Qabisi to Masha’Allah:

Et dixit Messehalla quod significat de figuris hominem nigrum et croceum qui, cum ambulaverit, mergit oculos suos in terram, ponderosus in incesso, adiungit pedes, et qui fuerit macer, recurvus, habens oculos parvos et siccam cutim, venosus, raram habens barbam in maxillis, labia spissa, callidus, ingeniosus, seductor et interfector.⁸⁰

However, the final part of Roger’s second paragraph, ‘no[n] pulcher, iniquis, gravis, piger, tristis, habens i[n] calcaneo ragadias, colore [smudged in A, but E has glauc[us], s[u]btilis pectore], capillis asp[er], fetid[us], vestime[n]tis nig[ra] induc[n]s, si[mi]lis malivolio’, does not appear in Abu Ma’shar or al-Qabisi, but it does appear in Pseudo-Ptolemy’s *Iudicia*:

Sat[ur]nus itaque e[st] hom[ine] fuscus + paucos pilos i[n] barba h[abe]t. N[on] e[st] pulcher. Oper[atur] iniqu[us] g[ra]vis. Piger no[n] ridet ragadias q[ui]d[em] sepe h[abe]t in calcaneo. Color e[ius] glauc[us]. Pectus q[uo]q[ue] i[n] e[st] ei subtile capilli s[un]t asp[er]i fetida vestim[en]ta s[un]t ei nig[ra]. Libe[n]ti[us] induit. Et est simil[is] h[abe]nti mala[m] volu[n]tate[m].⁸¹

A similar description for Saturn appears in Raymond of Marseilles’ *Liber iudiciorum*, which led Burnett to believe that Roger’s *Judicial Astrology* was derived from Raymond’s work. However, a discussion later in this Chapter argues against this, and suggests that both Roger and Raymond were paraphrasing from this same source, now identified as Pseudo-Ptolemy’s *Iudicia*.

⁷⁹ Al-Qabisi, *Introduction* II.2, p.63.

⁸⁰ Al-Qabisi, *Introduction* II.6, p.270.

⁸¹ Pseudo-Ptolemy, *Iudicia*, BNF Lat. 16208, f.59vb.

Table 4.4 summarises the main characteristics of each planet in *Judicial Astrology*:

Planet	Nature	People and situations	Physical
Saturn	Cold, dry, dark, damp, severe, weighted down, stinking, devouring, retentive, clinging, holding fast to the powerful, melancholy, masculine, evil, diurnal	Agriculture, earthy and watery habitations, masons, those who dig the ground, cartwrights, the destitute, ships, long journeys, outcasts, frauds, evil people, solitude, deliberation, establishing a nest, kings, consuls, prisons, obligations, hatred of the good, spite, fear, solemnity, sorrow, penitence, suffering, error, deception, punishment, retribution, funerals, hatred, lamentations, widows, inheritances, old things, fathers, grandfathers, slaves, mercenaries, eunuchs, the notorious, criminals, infrequent conversation, inexhaustible knowledge	Right ear, spleen, few hairs in his beard, unattractive, serious, dull, gloomy, grey complexion, slim, coarse hair, dressed in stinking black clothes, resembling an evil person
Jupiter	Handsome, diurnal, warm, humid, sweet, temperate nature	Leading offspring, laws, temples, festivals, sometime ill-advised, attacked by deliberation, expectation of supremacy, joy, elegance, generosity, skill, judgement, eloquence, grandeur, magnanimity, light-heartedness, erotic, charming, indulgent, good, prophetic, healthy	Left ear, pupil of eye, round beard, beautiful voice, two upper teeth are large and separated, beautiful red robes mixed with white and brown, beautiful mind, long and beautiful hair
Mars	Masculine, nocturnal, malevolent, cunning, dry, sharp, violent, fierce, vigorous adolescence, warm, erotic, passionate, burned up, perverse	The brave, military men, forts, protection, fighting, daring, glorification, sexual passion, sedition, robbers, stonemasons, wounds, immodest speech, incautious love, terror, deceitful, disgraceful, indecent, spiteful, disorganised, contaminated, impudent, shameless, defiled, illegitimate, siege engines, abortions, vulgar, protection of sheep, injuries, surgery, mortal sin, trades associated with death, calamities, lands associated with sowing	Red face, sparse red hair in the beard like a eunuch's, small eyes, a great sower of discord
Sun	Fortunate if in a good aspect, evil if conjunct a planet, hot, fiery, bright, clear, yellow	Victory, honesty, splendour, greatness, good reputation, fame, ambition, desiring gold, serious speech (but when negative, a sinner), magnificent, intelligent, powerful, vengeful	Right eye, plump body, beautiful face, big eyes, white face mixed with yellow, beautiful beard, a full head of long hair

Venus	Cold, wet, temperate	Women, births, younger sisters, clothes ornamented with gold or silver, frequenters of bath houses, beauty, aptitude, wit, love, music, joy, jokes, melody, betrothals and weddings, friendship, justice, marriage, sweetly spoken, effeminate, indignant, false, sweet wine, luxury, illegitimate descendants, respect, charity, loyalty, credulity, pleasure, good health, fertile, tendency to be fat, cutting hair, supporting trade, market tents, knowledge of the temple, wills and testaments, equitable	Beautiful eyes and eyebrows, sweet mane of hair, body of medium stature
Mercury	Promiscuous, advancing, productive, masculine with masculine planets, feminine with feminine planets, oriental when rising before the Sun, occidental when setting after the Sun	Childhood, descendants, territories, love of boys, divinity, faith, prophecy, eloquence, teachers with students, tricks, reasoning, perception, observation, highest knowledge, study (especially mathematics), prophecy, discriminating, study of secrets and hidden things, patient, rare, silly rumours, questions with two possible answers, chemists, formal complaints in a court of law with great costs, participation, business, fraud, laziness, fear, variable mood, meek obedience, love of brother, speaking the truth, pleasing voice, good aptitude, craftsmanship, arts of justice, confident in all professions, sewing, shearing, combing (of wool), handwriting, bubbling springs, fountains, being in a hurry, irrigation	Talkative, rational mind, beautiful sparse beard, small slender lips, slender nose
Moon	Changing, cold, emitting light	Gentle, trade, joy, fame, influencing emotions, conscience, guilt, eager in knowing law, listening to prayers, movement, zeal in reasoning, measuring lands, watery, memories, wedlock, pregnancy, suckling and nourishing, ancestors, sisters, messengers, entrusted fugitives, fraud, accuser, controlling habits, concealing bodies, health, salvation, gluttonous	Sexual activity, non-violent, wandering, round face, medium stature, one eye smaller than the other

Table 4.4 – Characteristics of planets.

On matters of the houses

Having described two methods of calculating house cusps and what houses are from an astronomical point of view, Roger's text then describes the astrological significance of each house. Each house represents both an area of life (for example, travel) and also governs a part of a person's life. This is a very short section with a few basic keywords, summarised in Table 4.5 below.

An analysis of Roger's text again shows that he was drawing on both Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction*, and al-Qabisi's *Introduction* as the description of the first two houses makes clear:

Prima dom[us] vite cor[pori]s a[nim]i + o[mn]is orig[in]is + mot[us] or[atio]nis
loc[uti]o[n]is rumo[rum] + initiu[m] vite. 2' dom[us] s[u]b[stanti]e q[ue]st[us]
luc[ra] poss[essi]on[um] + mutuandi + accipie[n]di vict[us] ministo[rum]
militu[m] adiuto[rum] + sig[nifica]t fine[m] iuventutis.⁸²

Roger's text is formulaic. It gives a brief description of each area that the house represents, and then a brief description of the stage of life it represents. The areas that the house represents is almost identical to Hermann's translation:

Preest igitur ORIENS vite, corpori, animo omnique rerum origini et motui.
Secundum domicilium substantie ad questus, lucra, possessiones, mutua dandi et
accipiendi officia ducens.⁸³

The brief descriptions of the stages of life ('initiu[m] vite', 'sig[nifica]t fine[m] iuventutis') are taken directly from al-Qabisi:

Et unaqueque istarum domorum significat aliquid de esse hominum... et significat initium vite. Secunda domus est domus substantie ac victus et ministrorum; et significat finem annorum vite, id est finem iuventutis.⁸⁴

⁸² B, f.46ra lines 1-9 – other houses continue until f.46va line 27.

⁸³ Abu Ma'shar, *Great Introduction* (Hermann) VI.26, lines 965-967.

⁸⁴ al-Qabisi, *Introduction* I.57-58, p.255-256.

House	Areas of life	Stage of life
1 st	Life, body, soul and anything originating, and provoking eloquence and speech, rumours	Start of life
2 nd	Substance/wealth, the quest for money, possessions, things to be lent and taken, nourishment, aides, knights/soldiers, deputies/accomplices	End of youth
3 rd	Brothers, sisters, neighbours, legal discussions, trials, controversies, small roads, orders, messengers, dreams, movement, beloved things ⁸⁵	Life before death
4 th	Father, parents, ancestors, water sources, fields, farms, citizens, forts, buildings, secrets, subterranean places, treasure troves, the end of the matter, death and remains, the end, imprisonment and heirs	What happens after death
5 th	Offspring, announcements of births in the household, pleasure, fun, enjoyment/reward, honours, friendship, hopes of a free person and the rewards of inheritance and all trust	No description given ⁸⁶
6 th	Illnesses and their causes, servants, maids, wickedness of injustice, local participation, movement, small animals that are not ridden	Events before old age
7 th	Women, marriage, bridegroom's attendants, adversaries, disputes, participating in dealings with opponents and all complaints, thieves, abandoned territory and roads built through these, all contentions, loss	The middle of the end of life towards old age
8 th	Death, poisons, fear and all irrecuperable lost things, sloth, idleness, fraud, inactivity/ignorance, frenzy, desperation, anger and inheritances of the deceased, labour, sadness, wars and signifies servants and helpers of adversaries	Last years of life after old age
9 th	Journeys, exiles, honour, justice, truth, virtue, religion, laws, temples, ceremonies, philosophy, all sciences, writings, faultlessness, visions, rumours, stories, faith, the past	Middle of life

⁸⁵ The Latin is 'dilectorum', which is also used in the Latin translation of al-Qabisi. Burnett translates the Arabic word والودة, 'and affection', as 'love', Al-Qabisi, *Introduction* I.59, p.51.

⁸⁶ However, al-Qabisi gives this as 'reputation after death', Al-Qabisi, *Introduction* I.61, p.53.

10 th	Worth/rank, sovereignty, rule, judges, eloquence, expression, craftsmen, works, mothers, covenants with kings, glory and all majesty, plundered goods	Middle of life
11 th	Good fortune, friendship, favours, support, patronage of the king, tributes and possessions of the king and his soldiers and auxiliaries, commendations of men who follow the king	The end of the years of the first half of life and the start of the second half of life
12 th	Enemies, grief, toil, restriction, penalty, envy, slander, treachery, prisons, captives, calamities, degradation, disgrace, ruination, mules, animals that are ridden, mutterings	End of life

Table 4.5 – Signification of each house.

On impediments

These are two very brief sections, headed ‘On the impediments of the planets’ and ‘On the impediments of the Moon’. It is a section that describes the ways in which planets can become unfortunate in a chart, but is simply a very brief list with no explanation in the text. For the debilities of the planets the text lists fall, cadent, detriment, applying to an unfortunate planet, in the first station, retrograde, under the rays, in dark degrees, peregrine, out of sect, descending to the south or being south and still descending, slow-moving, in the *via combusta* between 20 Libra and 3 Scorpio, in a square or opposition aspect to the Sun or a malefic where there is no reception, conjunct the head or tail within twelve degrees, and besieged by malefics. For the impediments of the Moon it states that the Moon can be damaged in twelve ways: eclipsed, under the rays, opposite the Sun within twelve degrees, conjunct an unfortunate planet, in the duodenaria of Saturn or Mars, in fall or detriment, within twelve degrees of the node, descending in the south, in the “*via combusta*”, at the end of a sign, being slow of movement, and in the ninth house from the Ascendant. Many of these terms are quite technical, and do require a basic understanding of medieval astrology – Roger’s text does not go into detail about what these mean, and a full understanding of these impediments is not relevant to the discussion in this thesis, although some of the specific terms will be defined in Chapter Five when they become relevant to the techniques that Roger described. In this chapter, though, the aim is simply to discover the sources on which Roger drew for this reference material. In this case, Roger’s brief text is taken almost verbatim from Hermann of Carinthia’s

translation of Abu Ma'shar's *Great Introduction*, as can be seen here. Roger's text for the impediments of the planets reads:

Debilitas stella[rum] e[st] cas[us], exit[us], exiliu[m], applicatio ad corrupta[m], statio p[ri]ma, ret[ro]g[ra]dat[i]o, sub radiis, i[n] g[ra]dib[us] obscuris, no[n] recepta, i[n] oppo[s]itis suo si[mi]li, descendere in austru[m] aut e[ss]e i[n] aust[r]o, descens[us] i[n] e[c]c[en]tr[ic]o, dec[re]me[n]tu[m] mortis, via p[er]u[st]ra, a 20 gradu libre ad 3 scorpio[n]is, aut i[n] 4 v[e]l 7 aspectu[m] sol[is] v[e]l malo[rum] sine recept[i]o[n]e, i[n] capite v[e]l cauda i[n]f[ra] 12 g[ra]d[us], aut obsessio v[e]l a malo i[n] malorum sine recep[c]io[n]e ad malum tendens.⁸⁷

Hermann's translation reads:

Debilitas stellarum est casus, exitium, exilium magisque cum solitudine, applicatio ad retrogradam aut corruptam, prima statio, retrogradatio, sub radiis, tum ut sint in gradibus obscuris nec recepte, aut in oppositis haizehe, descendere ad austrum aut esse in austro, descendere in circulo excentri, motus detrimentum, remotio et aversio, tum via perusta a xx libre usque ad tercium Scorpii.⁸⁸

This is almost identical to Roger's text. Roger went on to give a few more cases of impediment, which Whyte claimed 'is not in AM and was presumably inserted by Roger. 4th and 7th aspects (presumably meaning 90° or 180°) are new terms', but in fact this was just Roger's abbreviated rewording of the following section in Hermann's translation:

Infortunium stellarum et ut sint infortuniis coniuncta aut in oppositione eorum sive tetragono aut etiam trigono vel exagono, aut ut sint in terminis infortuniorum sive domiciliis aut superemineant infortunia ut ex x.o aut xi.o a stelle loco, peiusque nec recepte infortunio, tum ut coniuncte sint Soli aut in tetragono eius sive oppositione peiusque infra iiii. gradus, tum ut capitibus draconum suorum aut caudis iungantur aut Capiti Draconis aut Caude idque infra xii. gradus.⁸⁹

Roger's text for the impediments of the Moon is again a very brief list:

⁸⁷ B, f.46va line 27 - f.46vb line 12.

⁸⁸ Abu Ma'shar, *Great Introduction* (Hermann) VII.6, p.140, lines 496-501.

⁸⁹ Whyte, *Roger of Hereford*, p.31; Abu Ma'shar, *Great Introduction* (Hermann) VII.6, p.141, lines 505-511.

Lune a[utem] vitia su[n]t 12: eclipsis, s[u]b radiis, oppos[iti]o[n]e soli[s] i[n] f[r]a[n]c[i]s 12
g[r]ad[us], i[n] i[n]f[ort]unis, i[n] duodenar[ia] saturni aut m[ar]tis, i[n] casu v[e]l
exilio, aut i[n] f[r]a[n]c[i]s cauda[m] 12 g[r]adib[us], aust[ra]l[is] desce[n]de[n]s, via
p[er]usta, i[n] fine signo[rum], cu[m] min[us] medio i[n]cedit, i[n] novo ab
orie[n]te.⁹⁰

This is very similar to Hermann's translation:

Impedimenta Lune seu corruptiones singulares xi. sunt. Prima est eclipsis,
validissima in signo radicali seu in trigono eius aut tetragono. Secunda sub radiis.
Tercia inter ipsam et oppositionem Solis minus xii. gradibus. Quarta cum
infortuniis aut in respectu eorum. Quinta in duodenaria Saturni aut Martis. Sexta
circa Caput aut Caudam minus xii. gradibus. Septima cum australis est magisque
descendens. Octava via perusta. Nona in fine signorum. Decima cum minus medio
suo incedit. Undecima in nono ab oriente.⁹¹

On the conditions of the planets

Roger's text then lists eighteen conditions of the planets: aspect, application, separation, support, solitude, aversion, translation, collation, collection, prohibition, reflection, contradiction, impediment, evasion, interception, compassion, repaying, and reception.⁹² This is quite a long technical section, but is again taken almost verbatim from Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction*. It gives a list of ways that planets can relate to each other, and will not be described in detail in this thesis apart from a textual comparison; a general technical overview is given in Dykes' commentary on Abu Ma'shar.⁹³ Abu Ma'shar gave a list of twenty-five in his *Abbreviation*, and twenty-one in his *Great Introduction*, but Hermann's translation points out that as there are different ways of counting them, he was dividing the conditions of the planets into eighteen categories:

Stellarum habitudines alii generaliter, alii specialiter ordinantes numero variant.
Sic enim Abuma'xar cum alibi XXV scribat, hic XXI, nos autem Tullii nostri
memores ut, posito genere, in eadem particione speciem annumerare non

⁹⁰ B, f.46vb lines 12-21.

⁹¹ Abu Ma'shar, *Great Introduction* (Hermann) VII.6, p.141, lines 525-532.

⁹² B, f.46vb lines 22-30.

⁹³ Dykes, *Introductions to Traditional Astrology*, pp.112-216.

consuevimus, eas XVIII generali complexione enumeramus, specialiter ut mos est ordine subdividentes: <1> Respectus, <2> Applicatio, <3> Separatio, <4> Parilitas, <5> Solitudo, <6> Alienatio, <7> Translatio, <8> Collectio, <9> Collatio, <10> Prohibitio, <11> Redditio, <12> Contradictio, <13> Impeditio, <14> Evasio, <15> Interceptio, <16> Compassio, <17> Remuneratio, <18> Receptio.⁹⁴

Roger's text reads:

Sunt 18 pla[net]a[rum] ad i[n]vice[m] h[ab]it[udines]: Respect[us], applicatio, sep[ar]at[i]o, parilitas, solitudo, alienat[i]o, t[ra]nslat[i]o, collat[i]o, collect[i]o, p[ro]hibit[i]o, reditio, [con]t[ra]dictio, i[m]pedit[i]o, evasio, i[n]ter[c]ep[ti]o, [com]passio, remun[er]atio, recept[i]o.⁹⁵

John of Seville's translation of the same text, using Abu Ma'shar's twenty-one, reads:

Volumus narrare in hac differentia esse planetarum XXI, que sunt: (1) Aspectus (2) Coniunctio (3) Separatio (4) Vacuatio cursus (5) Feralitas (6) Translatio (7) Collectio (8) Redditus luminis (9) Prohibitio (10) Pulsatio nature (11) Pulsatio fortitudinis (12) Pulsatio utrarumque naturarum, et (13) Pulsatio dispositioinis (14) Redditus (15) Refranatio (16) Accidentalibus eventus (17) Evasio (18) Abscisio luminis (19) Largitio (20) Retributio et (21) Receptio.⁹⁶

Clearly, Roger's text uses exactly the same eighteen as Hermann's, and Roger's text for most of the items is virtually identical to Hermann's translations, too, right down to a possible spelling variation: Lemay's transcription of Hermann's text uses the word 'impeditio' in the list of eighteen conditions, but 'inpeditio' in the actual paragraph about impediments, and this same spelling is seen in manuscript A (which restarts part way through this list after missing a few folios) too. Two short examples will illustrate these similarities. This is Roger's text for numbers 12 and 13, Contradictio and Impeditio:

Contradictio est cum stella stelle applicat + anteq[ua]m ad ea[m] p[er]veniat fit ret[ro]grada i[d] firmata negare.

⁹⁴ Abu Ma'shar, *Great Introduction* (Hermann) VII.5, p.135, lines 314-322.

⁹⁵ B, f.46vb lines 22-30.

⁹⁶ Abu Ma'shar, *Great Introduction* (John) VII.5, p.292, lines 714-721.

Inpeditio est ut int[er] tres stellas q[ua]rum g[ra]vior in q[uo]tl[ibet] g[ra]dib[us] levior i[n] pl[ur]ib[us]. Levissima in paucioribus q[ue] dum graui applicare facit parat anterior illa retrogradiento g[ra]ue[m] t[ra]nseat. H[ic] applicans inpeditur.⁹⁷

Hermann's translation is almost identical:

Contradictio est ut cum stella stelle applicans, antequam perveniat retrograda fit. Id enim est firmata negare.

Inpeditio est ut inter tres stellas quarum gravior in quotlibet gradibus, levior in pluribus, levissima in paucioribus que dum gravi applicare paret, anterior illa retrogradando gravem transeat. Hic ergo applicantem inpediri necesse est.⁹⁸

The exception to this is the section on reception, which describes how two planets relate to each other, where one planet is in a sign in which the other planet has dignity. In *Judicial Astrology: Techniques*, reception is widely used as a technique, and Hermann's abbreviated description does not cover the points that Roger wished to emphasise, so in this reference section Roger's text deviates from Hermann's after the first few sentences.

Hermann's text reads as follows:

Receptio est cum stella stelle applicat ut vel applicans in recipientis sit dignitatibus, aut recipiens in applicantis. Firma quidem de domicilio aut principatu, de ceteris debilis nisi pluribus simul. De quo genere est receptio ex respectu sine applicatione, aut ex amica figura, aut ex prima et secunda signorum cognacione quas superius tractavimus. Sic etiam fortunate sese invicem recipiunt, sic infortunia duo, coniunctione tantum aut amica figura. Est itaque receptio quidem alia fortis, alia debilis, alia mediocris. Fortis quidem inter Solem et Lunam omni ex loco preter oppositionem que cum ex dignitatibus fortissima est, eiusdem generis est receptio apud Mercurium ex Virgine mediocris vero ex singulis dignitatibus de primis duobus generibus, de ceteris vero debilis nisi pluribus simul ut dictum est.⁹⁹

Roger's text starts off identically, but after the second sentence the text deviates. Hermann's text explains that reception is strong when the dignities relate to domicile and

⁹⁷ A, f.6r lines 19-24.

⁹⁸ Abu Ma'shar, *Great Introduction* (Hermann) VII.5, p.139, lines 440-445.

⁹⁹ Abu Ma'shar, *Great Introduction* (Hermann) VII.5, pp.139-140, lines 460-471.

rulership, but are weaker for other dignities unless several dignities are involved. Roger's text identifies what this means, by adding 'Ut ex t[ri]plicitate et t[er]mino. Vel ex t[ri]plicitate + facie. Vel ex t[er]mino + facie.' after 'pl[ur]ib[us] simul'.¹⁰⁰ In other words, reception is stronger if a planet is not just in the triplicity, terms or face of the other planet, but in at least two of these. This distinction also occurs in John of Seville's translation of Abu Ma'shar's *Great Introduction* (but not in Hermann's translation), where John writes:

Et fortior his erit dominus domus vel exaltationis. Cum autem fuerit coniunctio cum domino termini aut domino triplicitatis, vel cum domino faciei tantum, erit receptio debilis, nisi iungantur terminus et triplicitas, vel terminus et facies, aut triplicitas et facies.¹⁰¹

However, Roger had not copied John of Seville here. The wording is different, and deviates from both Hermann and John. Hermann and John went on to give specific rules that reception is stronger where the Sun and Moon are involved provided the aspect is not by opposition, and to mention the specific unique case of Mercury in Virgo, where reception is stronger than for other planets since Mercury has both domicile and exaltation rulership there. Roger's text, though, stresses the importance of seeing whether an aspect between two planets is going to become exact by degree, or will be frustrated:

Set q[uonia]m huius artis vis p[rae]cipua t[er]tia [con]iunctione[m] ac p[ro]hibit[i]o[n]em [con]sist[er]e uid[etur]. De hiis latius p[er] t[ra]ctand[um] e[ss]e censem[us]. G[e]n[er]al[ite]r omne iuditiu[m] sume[n]tum est illum i[n] p[ro]ximo fiet [con]iunctio de g[ra]du in g[ra]dum vel corpore vel aspectu.¹⁰²

Although Abu Ma'shar does not emphasise the importance of an applying aspect, Masha'Allah, in his *On Reception*, does emphasise the importance of an applying aspect rather than a separating one for the purposes of prediction, although Roger's text does not quote him verbatim: 'Indicabitque planeta cum iuerit ad coniunctionem alterius id quod nondum est. Et qui separatur ab ea, indicabit quod transierit et iam factum est.'¹⁰³

¹⁰⁰ A, f.6v lines 10-14.

¹⁰¹ Abu Ma'shar, *Great Introduction* (John) VII.5, p.303, lines 1112-1116.

¹⁰² A, f.6v lines 15-18.

¹⁰³ Masha'Allah, *Liber receptionis*, John of Seville (trans.), J. Heller (ed.) (Nürnberg: Johannes Montanus & Ulricus Neuberus, 1549), Ch. 1, translated as 'And a planet, if it were going to the conjunction of another, will indicate what does not yet exist. And the one who is being separated from will indicate what is past and is already done.' in Masha'Allah, *On Reception*, in Dykes Sahl and Masha'Allah, p.443.

The concepts become important in *Judicial Astrology: Techniques*, and are expanded on in Chapter Five.

Table of parts

Roger's text continues with a table of parts. The format differs slightly between manuscripts, but the parts are always the same, and are presented in a particular order. First, there are seven parts that relate to the planets; 72 parts relating to areas of life, linked to houses; and eleven general parts.¹⁰⁴ These are presented in Table 4.6 below, but a discussion about what parts represent is useful before examining the table. This discussion will include an example, but this example is not in Roger's text: it is for illustrative purposes only.

Hellenistic astrology had, in addition to the seven planets, various calculated points on an astrological chart, called **lots**. The most widely used lot was the **Lot of Fortune**, and is described by Ptolemy and other Hellenistic authors.¹⁰⁵ Arabic astrology developed the idea of Hellenistic lots further, inventing new lots for horary questions and for forecasting how well an agricultural crop would grow in a given year. Latin authors, having seen the concept in Arabic texts, generally referred to these lots as **Arabic parts**, with the lot of fortune being called the **Part of Fortune**, or sometimes simply **Fortuna**, and the most commonly used lot in a chart.

Arabic parts, or lots, work by considering two planets that represent something – it may be natural talents (Part of Fortune), or may be related to an issue (Part of Father, for instance) or even a crop (such as the Part of Watermelons). One then works out the distance between the two planets in degrees, and projects this onto the Ascendant. The Ascendant represents physicality, so the idea is that a concept (a question about one's parents, fortune, a crop and so on) is made real by bringing it to the Ascendant.

Fortune – whether that represents good luck or natural talents – is related to the two luminaries, Sun and Moon. These are the planets that most define one's vitality, so bringing this to the surface (the Ascendant) shows how one's natural talents manifest. Most parts have two different but similar formulae – one for daytime charts, one for night time. For the Part of Fortune, if it is a daytime chart, one starts from the Sun – the daytime

¹⁰⁴ A, ff.48v-49v.

¹⁰⁵ Ptolemy *Tetrabiblos* III.10, p.275.

luminary – and measures the distance from there to the Moon. For example, Figure 4.17 shows the Sun at 20° Leo, and the Moon at 22° Gemini. To get from the Sun to the Moon in this chart, one goes backwards 58° (or forwards 302°, which has the same end result). To project this onto the Ascendant, which is at 2° Scorpio, one goes 58° backwards from the Ascendant, which leads to 4° Virgo. Thus, 4° Virgo is the Part of Fortune.

In a night-time chart, one starts from the Moon and measures the distance from there to the Sun. This is known as ‘reversing the formula’, and most medieval authors did do this for the Part of Fortune, although some did not (following the example of Ptolemy, who did not). Other Arabic parts are calculated in a similar manner, namely taking the distance between two points (usually planets) and projecting this onto the Ascendant. In a few rare cases, this distance is projected from some other point, such as the degree of Saturn. In Table 4.6, ‘Lord’ means the ruler of a house cusp or point, thus ‘Lord 2’ is the ruler of the second house. Syzygy means the previous Full Moon or New Moon (whichever of the two was the more recent).

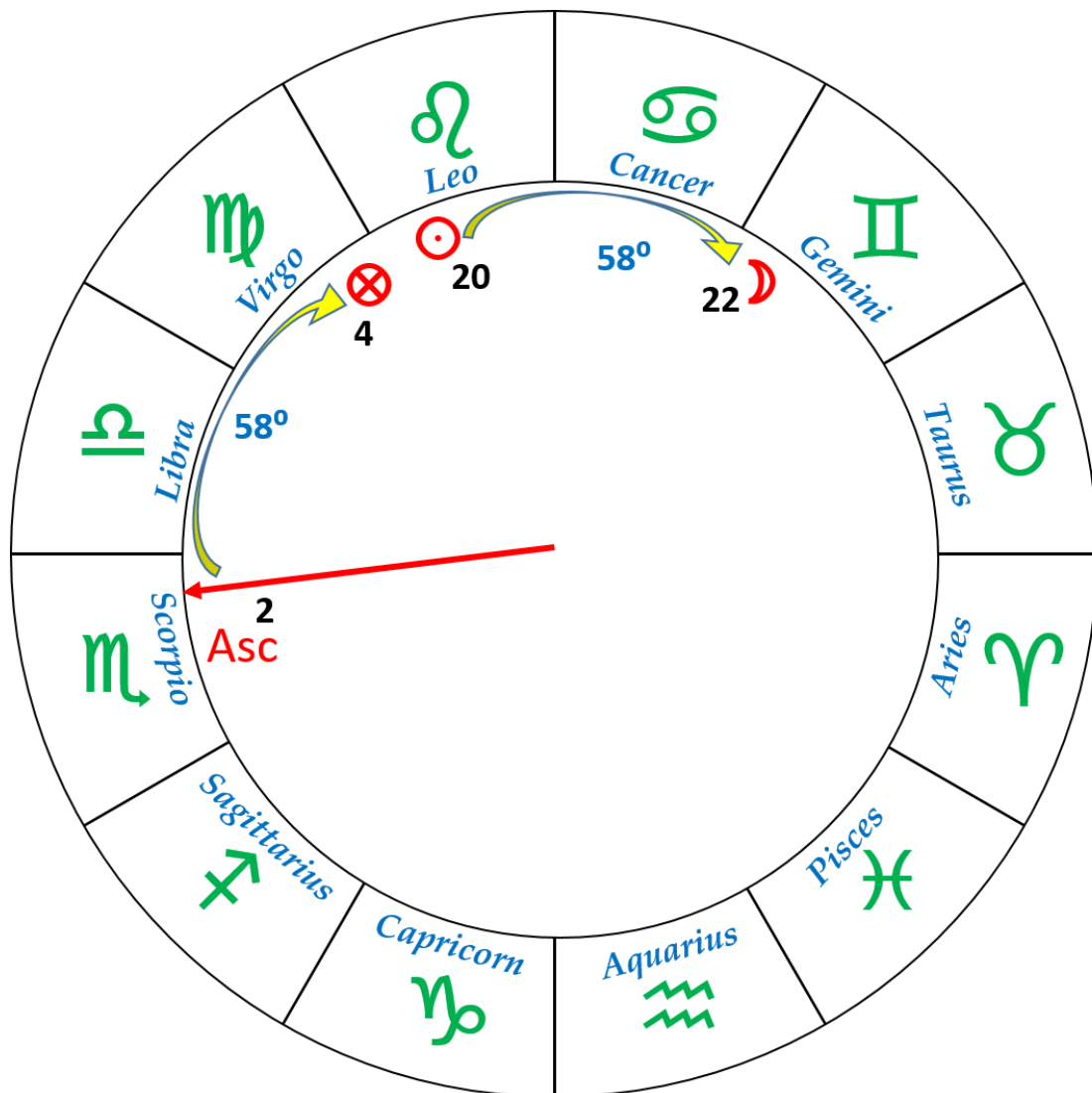


Figure 4.17 – Calculating the Part of Fortune.

Roger's table of parts, shown in Table 4.6, is derived in almost precise order from Hermann's translation of Abu Ma'shar's *Great Introduction*.¹⁰⁶ Even where Roger's text deviates from Hermann's, the very few differences are still attributable to Abu Ma'shar. For example, Roger's text lists the Part of Servants (associated with the sixth house) as being from Mercury to the Part of Fortune. Abu Ma'shar's text initially gives two views, with Mercury to the Moon associated with Hermes, but Mercury to the Part of Fortune associated with 'Zedamfroch': 'Tercia pars servorum... Hermeti placet ut die noctuque a Mercurio ad Lunam sumatur sicque ab oriente incipiat... Zedamfroch die a Mercurio ad partem fortune, nocte converso legit'.¹⁰⁷ Al-Qabisi quoted the Persian astrologer al-Andarzagar as using this formula, too: 'Al-Andarzagar said that it is taken by day from Mercury to the Lot of Fortune, by night the opposite'.¹⁰⁸ In fact, it is reasonable to assume that 'Zedamfroch' and al-Andarzagar are the same person; Pingree described 'The one Persian astrologer of the Sassanian period... to whom Arabic authors frequently refer... was al-Andarzagar, that is, the advisor (from Pahlavi *handarzgar*), a scholar named Zadanfarrukh.'¹⁰⁹

Occasionally, Roger's text uses 'Pars futurorum' (the Part of the Future), when Hermann's text uses 'Pars celati' (the Hidden Part). In fact, both of these terms refer to Pars solis, the Part of the Sun. Hermann's translation of Abu Ma'shar's *Great Introduction*, in its description of the Pars solis, states 'Hec est itaque pars quam quoniam solis est cuius animi felicitas zahm algaib vocant, i.e. partem celati, quod est intrinseci boni.'¹¹⁰ Hermann's text makes no mention of 'Pars futurorum', but John of Seville's translation does use this term in its section on Pars Solis: 'Et hec pars dicitur pars futurorum'.¹¹¹ John of Seville also translated al-Qabisi's *Introduction*, and uses the same term there, instead of 'Pars solis': 'Pars futurorum accipitur in die a Luna usque in Solem, et in nocte converso...'¹¹²

The names of the parts, and the order in which they are listed, are mostly identical to Hermann's text with the exception of the list of parts relating to the seventh and tenth

¹⁰⁶ Abu Ma'shar, *Great Introduction* (Hermann) VIII.2 - VIII.5.

¹⁰⁷ Abu Ma'shar, *Great Introduction* (Hermann) VIII.4 lines 396-402.

¹⁰⁸ Al-Qabisi, *Introduction* V.9 p.145.

¹⁰⁹ D. Pingree, 'Classical and Byzantine Astrology in Sassanian Persia', *Dumbarton Oaks Papers*, 43 (1989), p. 235.

¹¹⁰ Abu Ma'shar, *Great Introduction* (Hermann) VIII.2 - VIII.3 lines 161-162.

¹¹¹ Abu Ma'shar, *Great Introduction* (John) VIII.3 line 330.

¹¹² Al-Qabisi, *Introduction* V.4 p.351.

houses, and to the list of general parts associated with neither planets nor houses. For the seventh house, Hermann's text (and John of Seville's) list sixteen parts, while Roger's text lists only nine. This appears to be because Hermann's text lists several parts that all have the same formula, which Roger's text has condensed. The ten general parts, listed in Hermann's text with the heading 'De partibus neutrorum', is copied directly in Roger's text, but the latter has an additional entry, 'Veritatis', with a formula of Mercury to Venus, absent in Abu Ma'shar. Similarly, 'Regni' is missing from Roger's text for the tenth house, while the descriptions for 'Regni facultatum' and 'Regum et primatum' appear to have been swapped around in Roger's text.

There do also appear to be four typographical errors, copied in virtually all manuscripts. For the list of planetary parts, the part for Jupiter is given the title 'pars moralitatis' in Hermann's text.¹¹³ In virtually all manuscripts of *Judicial Astrology*, this is written as 'pars mortalitatis', the single exception being D. However, this is not an argument for D being an earlier copy (the arguments against this were presented in Chapter Three), since D has most of the formulae incorrectly listed after the entry for 'hore nati numerique natorum ac sexus discretionis'. In A, this is listed as a single line, abbreviated to 'Hore n[umer]i sex[us] p[ro]l[i]s' and is followed by the line 'masc[u]le p[ro]lis'. D has three lines, 'hore numeri', 'sexus prolis' and 'masculi prolis' instead of two, and the formulae on the line for 'sexus prolis' rightfully belongs with the following line for 'masculi prolis'. After this, everything has slipped by one line, suggesting the scribe had copied on a column-by-column basis from either A, or a manuscript very similar to A. Figure 4.18 illustrates this slippage.

For the tenth house, Hermann's 'pars matris', the part of the mother, is written as 'martis' in all manuscripts. The final typographical error is in the fourth house parts, where the formula for 'pars avorum', the part of grandparents is given by Hermann as 'Die a domino Solis ad Saturnum...', while Roger's text always gives 'a sole ad saturnam', projecting from the Sun to Saturn, rather than the correct formula of projecting from the planet ruling the Sun's sign to Saturn. Finally, the two consecutive entries for the eighth house, 'anni metuendi' and 'loci metuendi' are in Roger's text, but the formulae for these two are swapped.

¹¹³ Abu Ma'shar, *Great Introduction* (Hermann) VIII.3 line 183.

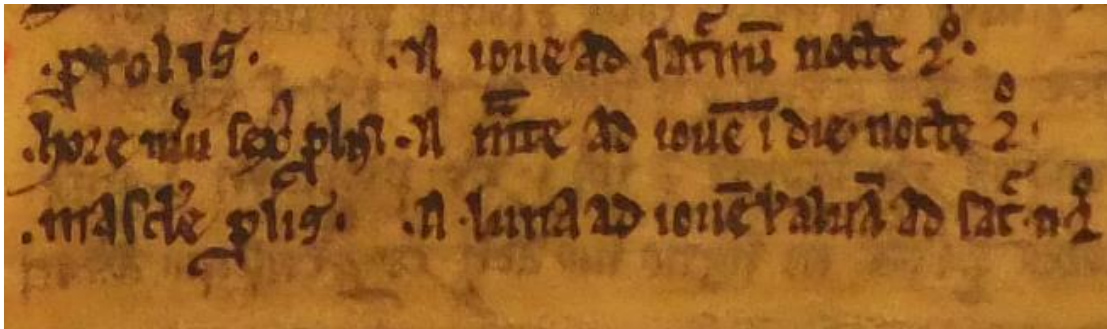


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

A, f.48v. 'Prolis, hore numeri sexus prolis, masculine prolis'

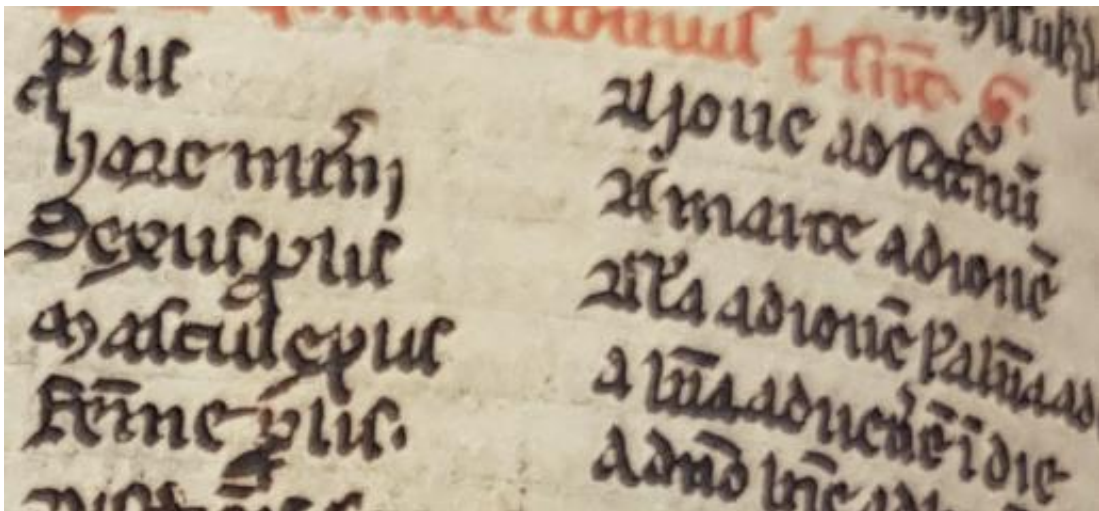


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

D, f.193vb. 'Prolis, hore numeri, sexus prolis, masculine prolis'

Figure 4.18 – Slippage in D.

	Name of part	From	To	Projected
Planets				
Moon	Fortune	Sun	Moon	Asc
Sun	Futurorum / celati	Moon	Sun	Asc
Saturn	More	Saturn	Pt Fortune	Asc
Jupiter	Moralitatis ¹¹⁴	Pt Future	Jupiter	Asc
Mars	Strenuitatis	Mars	Pt Fortune	Asc
Venus	Amoris	Pt Fortune	Pt Fortune	Asc
Mercury	Ingenii et memorie	Pt Future	Pt Fortune	Asc
Houses				
1st	Vite	Jupiter	Saturn	Asc
	Sustentationis	Pt Fortune	Pt Future	Asc
	Rationis	Mercury	Mars	Asc
2nd	Opum	Lord 2	Cusp 2	Asc
	Cambiendi	Saturn	Mercury	Asc
	Inveniendi	Mercury	Venus	Asc
3rd	Fratrum	Saturn	Jupiter	Asc
	Numeric fratrum	Mercury	Saturn	Asc
	Mortis fratrum	Sun	Cusp 10	Asc
4th	Patris	Sun	Saturn	Asc
	Mortis patrum	Saturn	Jupiter	Asc
	Avorum	Sun ¹¹⁵	Saturn	Asc
	Genealogie	Saturn	Mars	Mercury
	Agri ¹¹⁶	Saturn	Moon	Asc
	(eiusdem) ¹¹⁷	Mercury	Jupiter	Asc
	Agriculture	Venus	Saturn	Asc
	Finis rerum	Saturn	Lord Syzygy	Asc
5th	Prolis ¹¹⁸	Jupiter	Saturn	Asc
	Hore numeri sexus prolis	Mars	Jupiter	Asc
	Masculæ prolis	Moon	Jupiter	Saturn
	Femine prolis	Moon	Venus	Asc
	Discernus sexus	Lord Moon	Moon	Asc

¹¹⁴ Most manuscripts incorrectly give 'mortalitatis'

¹¹⁵ Hermann: lord of the Sun

¹¹⁶ Hermann: according to Hermes

¹¹⁷ Hermann: according to the Persians

¹¹⁸ Hermann: according to Hermes

	Name of part	From	To	Projected
6th	Passionum	Saturn	Mars	Asc
	Egritudinis	Mercury	Mars	Asc
	Servorum	Mercury	Pt Fortune ¹¹⁹	Asc
	Captivitatis	Lord Sun	Sun	Asc
7th	Desponsationis viri	Saturn	Venus	Asc
	(Welitis) ¹²⁰	Sun	Venus	Asc
	Viri feminas alliciunt ¹²¹	Sun	Venus	Asc
	Coitus vel adulterii ¹²²	Sun	Venus	Asc
	Adulterii viri ¹²³	Sun	Venus	Asc
	Desponsationis femine ¹²⁴	Sun	Venus	Asc
	(eiusdem) ¹²⁵	Moon	Mars	Asc
	Femine viros alliciunt ¹²⁶	Moon	Mars	Asc
	Coitus femine ¹²⁷	Moon	Mars	Asc
	Adulterii femine ¹²⁸	Moon	Mars	Asc
	Castitatis femine	Moon	Venus	Asc
	Coniugii utriusque sexus	Venus	Cusp 7	Asc
	Hore coniungendi	Sun	Moon	Asc
	Ingenii coniungendi	Sun	Moon	Asc
	Agnatorum	Saturn	Venus	Asc
	Controversie	Mars	Jupiter	Asc
8th	Mortis	Moon	Cusp 8	Saturn
	Stelle necantis	Lord 1	Moon	Asc
	Anni metuendi ¹²⁹	Saturn	Mars	Asc
	Loci metuendi ¹³⁰	Saturn	Lord Syzygy	Asc
	Angustie	Saturn	Mercury	Asc
9th	Itineris	Lord 9	Cusp 9	Asc
	Navigii	Saturn	15 Cancer	Asc
	Relgionis	Moon	Mercury	Asc
	Providentie	Saturn	Moon	Asc
	Scientiarum	Saturn	Jupiter	Asc
	Fame et historiarum	Sun	Jupiter	Asc
	Rumorum	Mercury	Moon	Asc

¹¹⁹ Hermann: gives both Hermes (Mercury – Moon) and ‘Zedamfroch’ (Mercury – Part of Fortune)

¹²⁰ Hermann only: according to Valens

¹²¹ Hermann only

¹²² Hermann: ‘coitus’, with ‘adulterii viri’ as the next entry; Roger’s text combines the two

¹²³ Hermann only

¹²⁴ Hermann only: according to Hermes

¹²⁵ Hermann: according to Valens

¹²⁶ Hermann only

¹²⁷ Hermann only

¹²⁸ Hermann only

¹²⁹ Abu Ma’shar, *Great Introduction* (Hermann) VIII.4 lines 462-464 has Saturn to lord of the Syzygy.

¹³⁰ Abu Ma’shar, *Great Introduction* (Hermann) VIII.4 lines 468-469 has Saturn to Mars.

	Name of part	From	To	Projected
10th	Principatus	Light	Ex Light ¹³¹	Asc
	Regni ¹³²	Mars	Moon	Asc
	Regni facultatum ¹³³	Mercury	Mars	Asc
	Regum et primatum ¹³⁴	Sun	Saturn	Asc
	Subite exaltationis	Saturn	Pt Fortune	Asc
	Auctoritatis	Mercury	Sun	Asc
	Curie regum	Mars	Saturn	Asc
	Regni nati	Saturn	Moon	Asc
	Mercature et operatonis	Mercury	Venus	Asc
	Inevitabilis operis	Sun	Jupiter	Asc
	Matris ¹³⁵	Venus	Moon	Asc
	Mercature ¹³⁶	Pt Sun	Pt Fortune	Asc
11th	Divitiarum	Pt Fortune	Pt Boni	Asc
	Gratie et amorum	Pt Fortune	Pt Boni	Asc
	Reverentie	Pt Fortune	Sun	Asc
	Deliberationis	Pt Fortune	Jupiter	Asc
	Delitiarium	Pt Fortune	Pt Boni	Asc
	Hope	Saturn	Venus	Asc
	Amicitie	Moon	Mercury	Asc
	Necessitatis	Pt Future ¹³⁷	Mercury	Asc
	Habundantie	Moon	Mercury	Asc
	Nobilis animi	Mercury	Sun	Asc
	Familiaritatis	Jupiter	Venus	Asc
12th	Inimicorum	Saturn	Mars	Asc
	(eiusdem) ¹³⁸	Lord 12	Cusp 12	Asc
	Laboris et pene	Pt Celati	Pt Fortune	Asc

¹³¹ By day, Sun to 19 Aries (exaltation degree of the Sun); by night, Moon to 3 Taurus (exaltation of the Moon).

¹³² Hermann only

¹³³ Hermann: 'Consulum regis atque primatum curie'

¹³⁴ Hermann: 'Regis et facultatum atque victorie eius'

¹³⁵ Roger's text incorrectly has 'martis'

¹³⁶ Hermann: 'Meracture iuxta alios Persas'

¹³⁷ Hermann: 'Pars celati'

¹³⁸ Hermann: according to Hermes

	Name of part	From	To	Projected
General				
	Alhileg	Syzygy	Moon	Asc
	Corruptionis	Pt Fortune	Mars	Asc
	Militie	Saturn	Moon	Asc
	Feritatis	Lord Asc	Moon	Asc
	Astutie	Mercury	Pt Future	Asc
	Loci negocii	Saturn	Mars	Asc
	Dampni obstaculi	Mars	Pt Brothers	Asc
	(eiusdem) ¹³⁹	Pt Love	Mercury	Asc
	Remunerationis	Mars	Sun	Asc
	Veracis operis	Mercury	Mars	Asc
	Veritatis ¹⁴⁰	Mercury	Venus	Asc

Table 4.6 – Table of parts. Items in grey are not in Roger’s text.

On the virtues of the planets in the signs

Each sign is given a very brief summary in a tabular format. For example, Aries reads: House of Mars; In the exaltation of the Sun 19 degrees; First triplicity Sun in the day, Jupiter in the night, Saturn participating; Terms: Jupiter 6, Venus 6, Mercury 8, Mars 5, Saturn 5; Faces: Mars, Sun, Venus; m.7 f.2 m.6 f.7 m.8 t.3 l.6 f.8 t.4 l.5 v.1; Full 12, Empty 18; Masculine, fiery, oriental.¹⁴¹

An example from A is shown in Figure 4.19 below, and the full table of virtues is summarised in Table 4.7. Figures shown in red in the Terms column are scribal errors where not all manuscripts agree and are clearly incorrect as they add up to more than thirty degrees.

¹³⁹ Herman: according to the Persians

¹⁴⁰ This is missing from Abu Ma’shar and only appears in *Judicial Astrology*

¹⁴¹ A, ff.49v-50r.

Sign	House Ruler	Exalt Plan. Deg	Trips D/N P	Terms	Faces	Sex	Brightness	F/E	Char Sex/El Dir
Ari	Mars	Su 19	Su Ju Sa	Ju 6 Ve 6 Me 8 Ma 5 Sa 5	Ma Su Ve	m7 f2 m6 f7 m8	d3 b6 s8 d4 b5 e1	12 18	M F E
Tau	Venus	Mo 3	Ve Mo Ma	Ve 8 Me 6 Ju 8 Sa 5 Ma 4	Me Mo Sa	m7 f8 m15	d4 b4 e5 b4 e5 b7 d2	20 10	F E S
Gem	Mercury	NN 3	Sa Me Ju	Me 6 Ju 6 Ve 5 Ma 7 Sa 6	Ju Ma Su	f5 m11 f6 m4 f4	b4 d3 b5 e4 b6 d5 e4	21 9	M A W
Can	Moon	Ju 15	Ve Ma Mo	Ma 7 Ve 6 Me 6 Ju 7 Sat 4	Ve Me Mo	m2 f6 m2 f2 m11 f4 m3	b12 d2 e4 s2 b8 e2	19 11	F W N
Leo	Sun	–	Su Ju Sa	Ju 6 Ve 5 Sa 7 Me 6 Ma 6	Sa Ju Ma	m5 f3 m7 f7 m8	d10 s10 e5 e5	21 9	M F E
Vi	Mercury	Me 15	Ve Mo Ma	Me 7 Ve 10 Ju 4 Ma 7 Sa 2	Su Ve Me	f7 m4 f8 m10	d5 b3 e3 b5 s6 e5 d3	14 16	F E S
Li	Venus	Sa 21	Sa Me Ju	Sa 7 Me 8 Ju 7 Ve 7 Ma 2	Mo Sa Ju	m5 f10 m5 f7 m3	s5 d5 b8 d3 b7 e3	19 11	M A W
Sco	Mars	–	Ve Ma Mo	Ma 7 Ve 4 Me 8 Ju 5 Sa 6	Ma Su Ve	m4 f10 m4 f8 m5	d3 b5 e6 b6 s2 e5 d3	16 14	F W N
Sag	Jupiter	SN 3	Su Ju Sa	Ju 12 Ve 5 Me 4 Sa 5 Ma 4	Me Mo Sa	m2 f3 m7 f12 m6	b11 d3 b5 s4 e7	–	M F E
Cap	Saturn	Ma 28	Ve Mo Ma	Me 7 Ju 7 Ve 8 Sa 4 Ma 4	Ju Ma Su	m11 f8 m11	d7 b3 s5 b4 d3 e3 d5	–	F E S
Aqu	Saturn	–	Sa Me Ju	Me 7 Ve 6 Ju 7 Ma 6 Sa 5	Ve Me Mo	m5 f10 m6 f4 m5	s4 b5 d4 b9 e4 b5	–	M A W
Pis	Jupiter	Ve 27	Ve Ma Mo	Ve 12 Ju 4 Me 3 Mar 9 Sa 2	Sa Ju Ma	m10 f10 m3 f5 m2	d7 b6 d6 b4 e3 b2 d3	–	F W N

Key: Sa=Saturn, Ju=Jupiter, Ma=Mars, Su=Sun, Ve=Venus, Me=Mercury, Mo=Moon, NN=North Node, SN=South Node. D/N/P=Day/Night/Participating, F/E=Full/Empty, Sex/El/Dir=Gender, Element, Direction.

Table 4.7 – Table of planetary characteristics, from A.

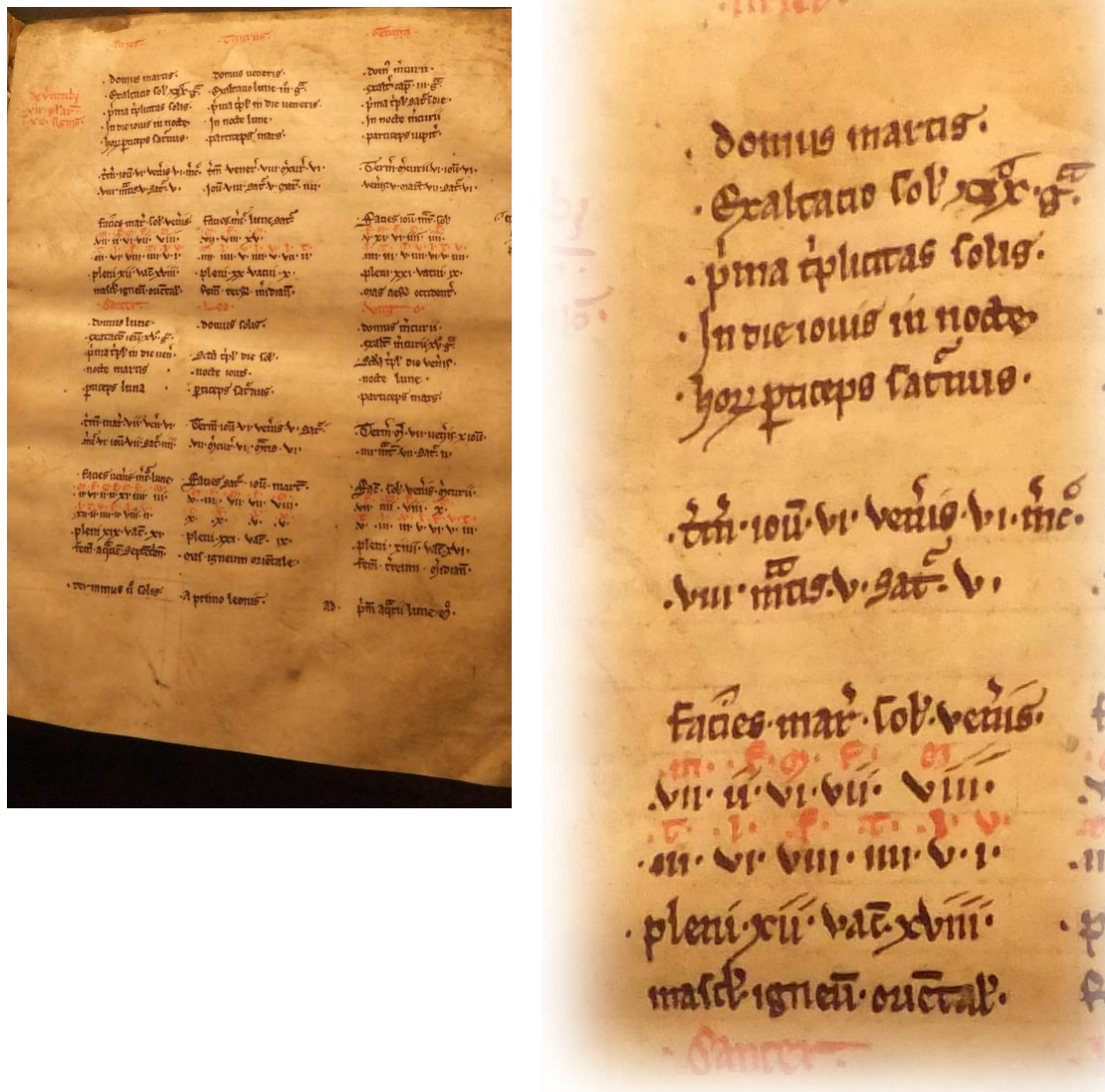


Image reproduced by permission of the Bodleian Libraries, University of Oxford.

Figure 4.19 – Table of planetary virtues from A, with close-up of Aries.

As will be seen in Chapter Five, a key feature of making an astrological judgement is to identify the planet that has the most strength in a chart. Essential dignities play a major role in this, but other considerations also come into play. This section provides a handy reference guide to where planets are strong, and some of their essential characteristics. As was shown in the section above on the impediments of the planets, one impediment is if a planet is ‘in dark degrees’. The origins of this are not known, but most medieval authors divided each sign into unequal segments comprising dark, bright, smoky and empty degrees. Similarly, each sign was divided into unequal male and female degrees. Medieval authors could not agree on any one particular scheme, and although Bonatti,

writing in the thirteenth century, mentioned both Abu Ma'shar and al-Qabisi, those two authorities disagree; Bonatti's own tables are almost identical (with one or two exceptions) to the Latin translation of al-Qabisi's *Introduction*.¹⁴² Roger did not explain how these features are used, but Bonatti gave an example of using a degree's gender in a question about pregnancy: if the significator (a concept Roger covered in great detail and which will be dealt with in Chapter Five) is in a male degree, the woman will bear a boy.¹⁴³ Similarly, when enquiring about a person's appearance, 'if they were in one of the bright degrees, that he will then be clear and very handsome. Indeed if it were in the dark ones, he will be less handsome. And if it were in the smoky ones, he will be between each, that is, he will be neither beautiful nor exceedingly ugly'.¹⁴⁴ If the significator falls in an empty degree, then the person in question will be 'of little sense and a small intellect'.¹⁴⁵

Roger's text also divides each sign into a number of degrees described in the manuscript as 'pleni' and 'vac', meaning full and empty. This technique is not in Abu Ma'shar, but can be found in Firmicus Maternus' *Mathesis*. However, Roger appeared to not have understood the technique. In *Mathesis*, the section on 'Empty and full houses' describes how each sign is divided into full and empty degrees, and gives examples on how to use these. For example: 'Those natives who have in their chart the Sun, Moon, and all five planets in full degrees will be elevated like gods with the protection of the greatest majesty.'¹⁴⁶ The book goes on to describe full and empty degrees in each sign, and emphasises the importance of knowing whether a point or planet is in a full or empty degree. For example, the entry for Aries reads:

Aries. In this sign there are twelve full and 18 empty degrees, as follows:

I locus, degrees III, empty

II locus, degrees V, *Senator*

III locus, degrees IX, empty

IV locus, degrees IV, *Senacher*

V locus, degrees V, empty

¹⁴² Bonatti, *Book of Astronomy*, p.85; Al-Qabisi, *Introduction* I.49-I.50, pp.248-251.

¹⁴³ Bonatti, *Book of Astronomy*, pp.85-86.

¹⁴⁴ Bonatti, *Book of Astronomy*, p.87.

¹⁴⁵ Bonatti, *Book of Astronomy*, p.87.

¹⁴⁶ *Mathesis* IV.22.4, p.147.

VI locus, degrees IV, *Sentacher*¹⁴⁷

This information makes it possible to work out whether a particular point in a chart is in a full or empty degree. However, Roger's text merely restates the first line of this description, saying 'pleni xii vac xviii', giving the total number of full and empty degrees but without stating which degrees are full and which are empty, thereby making it impossible to use the techniques in *Mathesis*.¹⁴⁸

Breaking down the entry for Aries:

House of Mars: Each sign is ruled by a planet, and Mars rules the sign of Aries.

Exaltation of the Sun 19 degrees: Each planet is exalted in a particular sign, and is especially exalted at one particular degree of that sign. The Sun is exalted in Aries, and particularly exalted at 19° Aries.

First triplicity Sun in the day, Jupiter in the night, Saturn participating: each triplicity (or element) has three planets ruling it. Fire signs, such as Aries, have the Sun, Jupiter and Saturn as triplicity rulers. In a daytime chart (the Sun above the horizon), the first planet (Sun in the case of Aries and the other two fire signs) is the main ruler, and in a night-time chart the second planet (Jupiter in the case of Aries and the other two fire signs) is the main ruler. The third planet is said to be 'common' or 'participating'. Roger's notation of referring to the first four signs (Aries, Taurus, Gemini and Cancer) as being the 'first' triplicity, the next four (Leo, Virgo, Libra and Scorpio) as the 'second' triplicity and the final four (Sagittarius, Capricorn, Aquarius and Pisces) as the 'third' triplicity does not seem to have any antecedents and is not generally used by medieval astrologers.

Terms: Jupiter 6, Venus 6, Mercury 8, Mars 5, Saturn 5: Each sign is divided into five unequal segments called terms or bounds, each segment ruled by a particular planet. In the case of Aries, the first six degrees are ruled by Jupiter, the next six by Venus, the next eight by Mercury, the next five by Mars and the final five by Saturn. There are two systems of terms – Egyptian terms and Ptolemaic terms. Roger is using Egyptian terms, although for three signs, these do not add up to thirty degrees.

¹⁴⁷ Firmicus Maternus, *Mathesis* IV.22.7, p.148.

¹⁴⁸ A, f.9r.

Faces: Mars, Sun, Venus: Each sign is divided into three ten-degree segments called faces or decans. The first face (the first ten degrees) of Aries is ruled by Mars, the next ten by the Sun and the final ten by Venus.

m.7 f.2 m.6 f.7 m.8: Each sign is divided into masculine and feminine degrees. For Aries, Roger gives the first seven as male, the next two as female, the next six as male, the next seven as female and the final eight as male. In this he agrees with Adelard of Bath's translation of Abu Ma'shar's *Abbreviation*, although other signs have values that do not agree with Abu Ma'shar, but frequently do agree with the Latin translation of al-Qabisi's *Introduction*.¹⁴⁹ Other signs have values that do not agree with either Abu Ma'shar or al-Qabisi, and in some cases do not add up to thirty degrees.

t.3 l.6 f.8 t.4 l.5 v.1: As covered in the Concept section above, each sign is divided into bright, dark, smoky and empty degrees, which Roger abbreviates with their Latin letters: l for lucidi, bright; t for tenebrosi, dark; f for fumosi, smoky; and v for vacui, empty. The values given here suggest that the first three degrees are dark, the next six bright, the next eight smoky, the next four dark, the next five bright, and the final degree empty. However, these values only add up to twenty-seven degrees so do not account for the entire sign. For other signs, the values add up to more than thirty degrees. Where they do add up, Roger's values are generally in agreement with al-Qabisi rather than Abu Ma'shar, but in the case of Sagittarius, Roger's text gives the first eleven degrees as bright, and none of the other medieval authors do.

Full 12, Empty 18: Roger's text is giving the total number of full and empty degrees, as described in Firmicus Maternus' *Mathesis* and explained above, but without giving further details enabling the reader to work out which particular degrees are full or empty. This suggests that Roger was merely copying this information without understanding its use.

Masculine, fiery, oriental: Signs are divided into masculine and feminine signs, as well as four elements (fire, earth, air and water). Fire signs and air signs are masculine, water and earth signs are feminine. Fire signs are eastern (oriental), earth signs are southern, air signs are western (occidental) and water signs are northern. Roger does not really need to

¹⁴⁹ Using Burnett's critical Latin translation of al-Qabisi's *Introduction*. The twelfth-century authorship is not clear-cut, as Burnett discusses on pp.198-202, but is usually attributed to John of Seville.

quote all three for each sign – the element of a sign is sufficient to identify the gender and direction.

For three signs (Taurus, Libra and Aquarius), the terms do not add up, and are highlighted in red in Table 4.7. As Roger is using Egyptian terms, for Taurus, Mars should be allocated three degrees, not four; for Libra, Saturn should be allocated six degrees, not seven; for Aquarius, Mars should be allocated five degrees, not six. This error is not restricted to A; B and K both make the same error. C does give correct values, except for Libra, which are left blank but with a gap in the manuscript as though a number should have been entered there.¹⁵⁰

The whole concept seems to be rather confused; many of Roger's figures impossibly add up to more than thirty degrees, they frequently do not correspond to any Arabic author's figures, and are prone to copyist errors as the various manuscripts of *Judicial Astrology* frequently do not agree with each other.¹⁵¹ Roger seemed to be using a mixture of al-Qabisi and Abu Ma'shar as sources, although the figures in the text do not always agree with them, and his lack of explanation suggests that he may simply have been copying this as reference material without understanding how it should be used.

¹⁵⁰ A appears to be the earliest of the extant manuscripts, as discussed in Chapter Three, dating from the thirteenth century. K dates from the late fifteenth century, so could have copied the earlier A. Both B and C date from the fourteenth century, and the error has been corrected in one of them.

¹⁵¹ For example, B has for the male and female degrees of Aries 7, 2, 7, 6, 8 while C has 7, 2, 6, 7, 8; for dark and smoky degrees of Taurus, b has 4, 4, 5, 3, 4, 7, 2 while C has 4, 4, 5, 4, 5, 7, 2.

Summary tables

The first section of *Judicial Astrology* ends with a set of lists and tables as shown in Tables 4.8 to 4.10.¹⁵²

Planet	House	Sign
Saturn	12	Aquarius
Jupiter	11	Sagittarius
Mars	6	Scorpio
Sun	9	Leo
Venus	5	Taurus
Mercury	1	Virgo
Moon	3	Cancer

Table 4.8 – Joys of the planets.

Rulership type	Score
Domicile	5
Exaltation	4
Triplicity	3
Term	2
Face	1

Table 4.9 – What testament a planet has in its dignities.

¹⁵² A, f.50v.

Planet	Friendship	Enmity
Saturn	Jupiter, Sun, Moon	Mars, Venus
Jupiter	All but Mars	Mars
Mars	Venus	Everyone except Jupiter and Sun ¹⁵³
Sun	Jupiter, Venus	Mercury, Moon
Venus	All but Saturn	Saturn
Mercury	Jupiter, Venus, Saturn	Sun, Moon, Mars
Moon	Jupiter, Venus, Saturn	Mercury, Mars
Head of the Dragon (North Node)	Jupiter, Venus	Saturn, Mars
Tail of the Dragon (South Node)	Saturn, Mars	Sun, Moon, Jupiter and Venus ¹⁵⁴

Table 4.10 – Friendship and enmity between planets.

Strengths

In a good place (house) from the Ascendant (that is, not cadent or non-aspecting)

In its own dignity

Direct or tending towards direct

If it does not have a malefic in its sign, or square or opposite

Not cadent or opposite or debilitated

It has reception

Masculine and diurnal and oriental in a compatible sign

In the heart of the Sun¹⁵⁵

Fast moving

In a good degree, bright or full

¹⁵³ This seems to conflict with the friendship that Mars supposedly has with Venus.

¹⁵⁴ A also lists Mars, but this must be an error – B does not have this.

¹⁵⁵ This would appear to relate to a planet being ‘cazimi’, when it is within 16 minutes of the Sun. Normally a planet being close to the Sun is ‘combust’, which is a negative – but being in this very small window of 16 minutes (the Sun occupies an arc of just over half a degree in the sky – so 16 minutes is half the Sun’s orb) is known as being ‘in the heart of the Sun’ and is considered very powerful. See for example al-Qabisi, *Introduction* III.7, p.93.

These summary tables are found in a variety of sources, including al-Kindi, al-Qabisi and Abu Ma'shar. Again, Roger did not give any explanation for their use, but simply lists them, so some discussion of each table and its source is in order.

Joys of the planets in houses and signs

Each planet is said to rejoice in a particular house, as shown in Table 4.8. Bonatti, writing in the thirteenth century, attributed this to Abu Ma'shar and al-Qabisi.¹⁵⁶ However, other than very briefly listing the joys, neither Abu Ma'shar nor al-Qabisi have much to say about them and do not give any reasons for their placement.¹⁵⁷ Bonatti, though, did give reasons for why each planet rejoices in a particular house; for example, he said that the fifth house is the house of pleasure, and Venus 'signifies this; therefore she rejoices in it', and that Saturn, the great malefic, rejoices in the twelfth house which is the 'house of grief and sorrow, labor, lamentation and tears, and Saturn rejoices in these'.¹⁵⁸ Al-Kindi also listed the planetary joys, and mentioned these for both signs and houses, and hinted at a reason behind them – in his brief paragraph on 'Joys by sign' he simply stated that 'the joy and happiness of the stars happens in their own proper houses, and also in signs agree with their nature'.¹⁵⁹ Dykes suggests that al-Kindi 'appears to have omitted the list of joys by sign', but points out that there is a logic in that diurnal planets rejoice in certain houses above the horizon, and nocturnal ones below the horizon.¹⁶⁰ Roger, too, simply listed the houses in which the planets rejoice without giving any reason. However, like al-Kindi, but unlike Abu Ma'shar or al-Qabisi, he also listed signs in which they rejoice, suggesting that Roger did use al-Kindi for this particular segment.

The logic behind both is straightforward, although Roger did not dwell on it. One can consider that the seven planets are three pairs, plus Mercury. The greater light (the Sun) is diurnal, the lesser light (the Moon) is nocturnal. The greater benefic (Jupiter) is diurnal, the lesser benefic (Venus) is nocturnal. The greater malefic (Saturn) is diurnal and the lesser malefic (Mars) is nocturnal. Mercury can be either diurnal or nocturnal, according to whether he appears as a morning star or an evening star. Using this model, Mercury rejoices in the first house, which (if one uses the original whole-sign houses) straddles

¹⁵⁶ Bonatti, *Book of Astronomy*, Chapter 11, pp.140-141.

¹⁵⁷ Al-Qabisi, *Introduction* I.70, p.55; Abu Ma'shar, *Abbreviation* I.121, p.31.

¹⁵⁸ Bonatti, *Book of Astronomy*, Chapter 11, pp.140-141.

¹⁵⁹ Al-Kindi, *Forty Chapters*, p.85.

¹⁶⁰ Al-Kindi, *Forty Chapters*, p.85, footnotes.

the Ascendant so can be either above or below the horizon. Each of the remaining pairs rejoice in opposite houses, one diurnal and one nocturnal – so the Sun (a diurnal planet) rejoices in the ninth house, above the horizon, and the Moon (a nocturnal planet) in the opposite third house below the horizon. Diurnal Jupiter rejoices in the eleventh house which is above the horizon, nocturnal Mars in the fifth, below the horizon; and diurnal Saturn rejoices in the twelfth, above the horizon, while nocturnal Mars rejoices in the opposite sixth, below the horizon.

Similarly, each planet rejoices in one of the signs that it rules, with diurnal planets preferring male signs (fire and air), and nocturnal planets preferring female signs (earth and water). The Sun and Moon only rule one sign each, so have to rejoice there; Saturn rules both Aquarius and Capricorn, but prefers masculine Aquarius as he is diurnal. Jupiter rules both Pisces and Sagittarius, but prefers masculine Sagittarius. Mars rules both Scorpio and Aries, but prefers feminine Scorpio because although he is male, he is nocturnal. Venus rules both Taurus and Libra, but prefers feminine Taurus because she is nocturnal. Mercury is the odd one out as he can be either diurnal or nocturnal, and al-Kindi said he rejoices in Gemini if he is a morning star and Virgo if an evening star, although Roger only allocated him to Virgo.¹⁶¹

What testament a planet has in its dignities

Table 4.9 is a very simple reminder of the scoring system for dignities, with rulership scoring five points, exaltation four, triplicity rulership three, term rulership two and face rulership one.

Friendship and enmity

Table 4.10 is a list of planets, and which planets they consider friends, and which they consider enemies. Roger's list is identical to al-Qabisi's, and is not necessarily two-way; for instance, the Moon hates Venus, but Venus does not hate the Moon.¹⁶²

Strengths

This is a summary of planetary dignities. Essential dignity relates to the essence of a planet – Mars is always dignified in Aries, as he rules it. Accidental dignity is when a

¹⁶¹ Al-Kindi, *Forty Chapters*, p.85.

¹⁶² Al-Qabisi, *Introduction* III.30, p.105.

planet, regardless of essential dignity, is fortunate because of something happening at the time – for example, it is making a beneficial aspect to another planet, or is fast-moving, and most of this list is a summary of accidental dignities that a planet can have.

Was Roger's work derivative?

In addition to works translated from the Arabic into Latin, Roger may have had access to astronomical texts written directly in Latin by earlier authors. As previously discussed, Roger claimed that his *Judicial Astrology* was the first time that the various astrological concepts he had obtained from a variety of sources had been compiled into a single volume. To verify Roger's claim, one must examine the possibility that there was an earlier Latin antecedent that Roger has paraphrased. Such a scenario has been suggested by Burnett, who states that Roger's *Judicial Astrology* may have used an earlier text by Raymond of Marseilles, *Liber iudiciorum*, as its source, since 'a section of [*Liber iudiciorum*] coincides verbatim with Raymond's description of the characteristics of men born under each of the signs of the zodiac and the planets, and the professions that they are likely to pursue'.¹⁶³

That Roger was aware of Raymond of Marseilles is not in doubt, as the discussion about Roger's tables for Hereford showed. Did Roger also use Raymond of Marseilles' *Liber iudiciorum* as the basis for his *Judicial Astrology*?

The *Dictionary of Scientific Biography* gives further details about this work:

Raymond mentioned his intention of writing a *Liber iudiciorum*. This text appeared to be lost; but it has recently been identified with "A philosophis astronomiam sic difinitam...", a treatise on astrology formerly listed, on the strength of information furnished by one of its manuscripts, under the name of John of Seville.¹⁶⁴

Burnett identifies the manuscript as Madrid, Biblioteca Nacional, 10009, fol. 133ra.¹⁶⁵ The waters have been muddied somewhat in identifying a full version of Raymond's *Liber iudiciorum*, because of a claim by Anne Lawrence-Mathers that it contains an

¹⁶³ Burnett, 'Mathematics and Astronomy in Hereford', p.55.

¹⁶⁴ E. Poulle, 'Raymond of Marseilles' in C.C. Gillispie, *Dictionary of Scientific Biography* (New York: Scribner, 1990), p.322.

¹⁶⁵ C. Burnett, 'Magister Iohannes Hispanus: Towards the Identity of a Toledan Translator' in D. Jacquart (ed.), *Comprendre et Maîtriser la Nature au Moyen Âge* (Geneva: Droz, 1994), p.430.

illustration of a horoscope for a child born in 1141, which is not present in the Madrid manuscript.¹⁶⁶ On clarifying this with Professor Lawrence-Mathers, she stated that an error may have been made.¹⁶⁷ Since Charles Burnett had initially given the Madrid reference as the authoritative one, he was also contacted regarding this issue, and he confirmed that the Madrid manuscript was complete.¹⁶⁸

Thus, having confirmed that the Madrid manuscript was indeed complete, this was analysed. There are indeed similarities with Roger's *Judicial Astrology*.

For example, Raymond of Marseilles gave this description for Saturn:

Saturnus: ...dat homine[m] e[ss]e fuscum. Raros in barba faciens pilos. Turpe[m].
Sepius op[er]ante[m] iniqua graue[m]. Pigru[m]. Nu[n]qua[m] aut uix ridente[m].
+ hii quos saturnus subiectos h[abe]t i[n] quo[rum] significato[r] e[ss]e i[n]
calcaneis fissuras quas uulgis ragadias uocat sepe patient[ur].¹⁶⁹

Roger's text has:

Ei[us] e[st] ho[mo] paucos pilos h[abe]ns i[n] barba, no[n] pulcher, iniquis, gravis,
piger, tristis, habens i[n] calcaneo ragadias...¹⁷⁰

However, as was discussed in the analysis of Roger's sources for this section earlier, Roger's text is almost identical to that in Pseudo-Ptolemy's *Iudicia*, making it likely that both Roger and Raymond derived these near-identical descriptions from *Iudicia*. Indeed, David Juste maintained that Raymond did draw upon a translation of an Arabic adaption of *Iudicia* for his *Liber iudiciorum*.¹⁷¹ In fact, even the difference between Roger's 'ragadias' and Raymond's 'fissuras quas uulgis ragadias uocat' may be explained:

¹⁶⁶ A. Lawrence-Mathers and C. Escobar-Vargas, *Magic and Medieval Society* (Abingdon: Routledge, 2014), p.34.

¹⁶⁷ 'I have been trying unsuccessfully to find out where the information about the horoscope of 1141 came from. I cannot find this in any of the drafts and notes I still have... It is possible that, in the process of cutting our drafts down to fit into the word limit allowed for the textbook, we became muddled – if so, I can only apologise.' Personal e-mail correspondence, 1 June 2018.

¹⁶⁸ 'You seem to have suffered from a mistake of Anne Lawrence-Mathers. The date '1141' is that of the composition of the *Liber iudiciorum* and the *Liber curium*... The long version survives in several manuscripts, of which an early manuscript from Paris (BNF, lat. 16208) is the one I have transcribed. I have also consulted the Madrid manuscript which appears to be complete.' Personal e-mail correspondence, 2 September 2018.

¹⁶⁹ Raymond of Marseilles, *Liber iudiciorum*, Madrid, Biblioteca Nacional, 10009, f.133r.

¹⁷⁰ B, f.44va line 1 - f.44vb line 2.

¹⁷¹ D. Juste, 'Pseudo-Ptolemy, *Iudicia*' (update: 01.09.2017), *Ptolemaeus Arabus et Latinus. Works*, <http://ptolemaeus.badw.de/work/63> [16 April 2019].

Burnett gives a comparison between the Pseudo-Ptolemy *Iudicia*, and a very similar *Iudicia* attributed to Aristotle, where this passage appears as ‘et ragadias quidem sepe habet in calcaneo’ in Pseudo-Ptolemy and ‘habet scissuras sepe in calcaneo’ in the Pseudo-Aristotle – reading ‘fissuras’ for Burnett’s ‘scissurus’ might suggest the root of the minor differences, too.¹⁷² The similarities between Roger’s work and Raymond’s only appear to apply to some parts of the reference section of Roger’s *Judicial Astrology*. Much of the remainder of Raymond’s text differs from Roger’s. Raymond’s *Liber iudiciorum* has a number of short sections, with summaries only, and has the layout shown in Table 4.11 below.

f.133r	Lists the planets and nodes and gives a brief description. For instance: Saturn is masculine, diurnal, dry. List of characteristics in a person for each planet.
f.133v	Occupations associated with planets. What the head and tail of the dragon (lunar nodes) signify. The signs: discussion of how the zodiac is divided into 360 degrees and 12 signs.
f.134r	Masculine and feminine signs. List of characteristics in a person for each sign.
f.134v	Strengths and dignities of planets in signs. Detriments of planets – a brief list. Exaltations of planets. Bounds of planets.
f.135r	Characteristics of triplicities. For example: Taurus, Virgo and Capricorn are dry and melancholy. Faces of the signs, with a table. Sects, and whether planets prefer to be occidental or oriental.
f.135v	Aspects of planets. Strength of planets by placement. Significations of houses.
f.136r	Strengths of houses. Strengths and weaknesses of planets. Interrogations: a very brief general concept without any rules given.

¹⁷² C. Burnett, ‘Aristotle as an Authority on Judicial Astrology’, *Florilegium Mediaevale* (Louvain-la-Neuve: Fédération Internationale des Instituts d’Études Médiévales, 2009), pp.39-62.

f.136v	Precepts. Questions.
f.137r	What will come about. Different ways of determining houses: whole signs and using an astrolabe.
f.137v	The Sun. The opinion of philosophy. Planetary hours.
f.138r	Discussion of the opinion of Stephanus of Alexandria (Argaphalau).
f.138v	Judgement of nativities. Whether children will live. Whether the native will be rich or poor.
f.139r	Years of the planets.
f.139v	Birth of a child.
f.140r	How many years are given (length of life). The figure of the year. Planets in the chart.
f.140v	What regions planets signify. For example: Saturn is the land of Ethiopia and its mountains. Solar return chart.
f.141r	How to set up a chart for a question.
f.141v	Sample questions. For example: whether a wife is being unfaithful.
f.142r	Further questions. For example: whether a woman is pregnant.
f.142v	Further questions. For example: whether one will get a wife. Questions about war.
f.143r	How long a war will last.

Table 4.11 – Summary of Raymond of Marseilles’ *Liber iudiciorum*.

As can be seen from this brief overview of Raymond’s *Liber iudiciorum*, the initial sections are comprised primarily of reference material, with just the last few folios devoted to interrogational astrology. The folios on interrogations are comprised of lists of questions and how to answer them, whereas Roger’s *Judicial Astrology* is entirely different in its discussion of techniques, as will be demonstrated in the next chapter.

The similarities, then, between Roger’s *Judicial Astrology* and Raymond’s *Liber iudiciorum* is that they both begin with a lengthy reference section before dealing with

the techniques. As stated in Chapter One, Deimann and Juste pointed out that this was not unusual in medieval astrology texts. Roger did not claim originality – he stated that his techniques were in ‘scattered sources’, and it is possible that Raymond of Marseille’s *Liber iudiciorum* is one of them; but it could simply be that, for the reference material, both books are drawing on other original sources such as *Iudicia*.

Summary

Judicial Astrology: Prologue and Reference concludes with the set of summary tables covered earlier. The fact that this is considered a section or book in its own right is made explicit in B, which has ‘[com]ple[tur] liber p[ri]mus’ after the tables, and is followed by the heading for the next section, ‘Incipit lib[er] de t[ri]b[us] g[e]n[er]alib[us]’.¹⁷³ This is also obvious by the fact that D only contains this first section, while P, Q, and R all commence with the next section, excluding the initial section entirely.

The fact that Roger’s text states that the book is in four parts and names the first part as ‘simple judgements’, which is the topic of the next section, suggests that he did not consider this introductory section to be an integral part of his book in four parts, but was merely an introduction to it. The analysis of the manuscripts covered earlier in this thesis suggests that the initial section stands in its own right as a reference book, providing the basics needed to understand the rest of the book. Some readers presumably already had this basic knowledge, either from Roger’s introduction or from one of the Latin translations of al-Qabisi or Abu Ma’shar, which is why several of the manuscripts exclude it.

This material discussed in this chapter, then, is simply a rehashing of reference material already available from Latin translations of Arabic authors. Roger may have gone some of the way to fulfilling his promise to ‘collate the practices of the astrologers into a single volume’, but there is little to be gleaned about Roger the teacher or Roger the astrologer from this initial section. Roger’s real role only becomes clear in the text to follow, his book in four parts – in effect, Roger’s astrology manual.

¹⁷³ B, f.51ra.

Chapter Five: *Judicial Astrology: Techniques*

Having examined *Judicial Astrology: Prologue and Reference* and identified that the reference material is essentially a summary of rules that can be found, as Roger stated, ‘from a variety of scattered sources’, this chapter will examine the next part of the text, *Judicial Astrology: Techniques*.

Immediately after the prologue, Roger claimed that his text was a book in four parts. However, it is not entirely clear where the dividing lines between these four parts are. It is clear that the section following the prologue and reference, and which is designated in this thesis as *Judicial Astrology: Techniques*, is considered by Roger to be the start of a new book, as it has an incipit, and then gives an opening section stating that this book describes three classes, from which all astrology derives. The three classes as stated by Roger are: bringing about a good outcome or avoiding a bad one, intentions and thoughts, and arranging something and electing a date.¹ Roger promised a fourth part on the method of judging in the prologue, and as discussed in Chapter Three of this thesis, the section headed ‘De ratione iudiciorum’ may or may not be the fourth part; unlike the other three parts, it has no incipit introducing it as a new part.

Campion pointed out that by the early twelfth century, four branches of judicial astrology were recognised: nativities (relating to an individual’s birth), interrogations, elections, and revolutions (for forecasting world events based on the entry of the Sun into Aries).² Although Roger’s text does make passing mention of nativities and revolutions, Roger’s *Judicial Astrology* focuses on interrogations and elections. The first part of the book, regarding good or bad outcomes, deals with interrogations; for example, asking an astrologer about the success of a proposed journey, or a question about marriage.³ This is often referred to now as horary astrology, although this term did not come into use until the seventeenth century.⁴ The second part of the book deals with intentions and thoughts; for example, discovering an ulterior motive that someone might have. The third part of the book, which is very short, deals with elections, where an auspicious date is chosen to

¹ A, f.10v.

² Campion, *History of Western Astrology*, Vol II, p.54.

³ Roger did not provide specific examples in this part of the book – the examples given here are purely for illustration.

⁴ See for example William Lilly, *Christian Astrology* (London: Tho. Budenell, 1642), p.B2 in his ‘Introduction to the Reader’: ‘The second part of this Treatise judging of horary Questions, is very large...’

undertake something. There is also a very short section on the method of judgements, which may or may not be the fourth part of the book.

Questions

The main feature of horary astrology is finding certain key planets called **significators**. This is vital to any astrological judgement. For example, if someone is about to undertake a journey, they may visit an astrologer to ask about the outcome. The astrologer will cast a chart for the time the question is asked, and make a judgement according to the chart, based on the significators.

Some terminology and basic concepts are useful at this point. The person asking the question is the **querent**. The thing being asked about – it might be another person, a lost object, a journey and so on – is referred to as the **quesited** in astrological texts.⁵ However, in his prologue to this section of the text, Roger referred to ‘the matter asked about’ (‘rem questitam’), which he subsequently tended simply to call ‘res’ – the thing or matter. For this reason, this thesis will subsequently use the term **matter** to refer to the matter or thing or person to which the question relates.

As a general rule in horary astrology, the querent and the matter are personified by planets in the chart. Planets are the active agents, signs determine how strong or weak they are, and houses refer to areas of life. To make a judgement about a question, it is first necessary to identify the planets that will signify the outcome. These are the significators.

Since the first house, which starts at the Ascendant, is about the person themselves, the planet ruling the sign of the Ascendant represents the querent. This planet is the **lord of the Ascendant**. The matter being asked about is suggested by a house – if the querent is asking about a journey, that would be a ninth-house matter, since the ninth house relates to long journeys. If the question were about a marriage, that would be a seventh-house matter, and so on. The ruler of that house – by which is meant the planet ruling the sign that the cusp of that house is in – is the **lord of the matter**. Finally, the **Moon**, which is fast-moving, is also used to represent the querent in addition to the lord of the Ascendant. These three planets constitute the three main significators.

⁵ See for example Sahl, *On Questions* 1.4, ‘And if you were asked about some matter..., give the Ascendant and its Lord and the Moon as significators of that man who asks you; the sign of the quaesited matter and its Lord to the quaesited matter’ in Sahl, *On Questions* in Dykes, *Sahl and Masha’Allah*, p.69.

The text starts simply, by asking whether there is a connection between the planet that is the lord of the Ascendant, or the Moon, and the lord of the matter. If the lord of the Ascendant, or the Moon – that is, the planets that represent the querent – is perfecting an aspect to the lord of the matter, then the querent will strive to gain the thing being sought. If the lord of the matter is perfecting an aspect to the lord of the Ascendant, or the Moon, then the thing being sought will come to the querent easily.⁶

Two terms need to be defined here. An **aspect** describes a condition when two planets are at the same position (this aspect is called a **conjunction**), separated by 60° (a **sextile**), 90° (a **square**), 120° (a **trine**), or 180° (an **opposition**). Since planets move at different speeds, two planets may not be making an aspect at the moment the chart is cast, but a faster moving planet may be moving towards making an aspect with a slower moving one – this is known as **perfecting** an aspect; the faster moving planet perfects an aspect to the slower moving one. The text specifies that if the faster moving planet is the one representing the querent, then the querent has to strive to gain what is being sought – the querent is the one doing the work of approaching the matter. If the planet representing the matter is the faster moving one, though, then the matter is the one moving towards the querent, who will therefore achieve the sought result easily.

Thus, having identified the two planets representing the querent and the matter, plus the Moon which also represents the querent, one looks at aspects between these planets. The chart, however, is not a static thing. Roger provided a description of the technique, but no practical example of it, so a hypothetical example will be shown here to illustrate the technique. Let us assume that the querent is a man asking whether he will marry a particular woman, and the chart cast for the moment of the question is as shown in Figure 5.1. In this example, the querent is represented by the lord of the Ascendant and the Moon. The Ascendant is Pisces, so the lord of the Ascendant is Jupiter. Thus Jupiter and the Moon represent the querent. The question is about marriage, which is a seventh house matter, and the cusp of the seventh house is Virgo, ruled by Mercury. Hence the lord of the matter is Mercury, who represents the querent's love interest. Will the man get his woman? There is no aspect between Jupiter and Mercury – Mercury is at 1° Virgo and

⁶ A, f.10v. There seems to be an implication of ease here – the querent might strive to gain something, or it might come easily to him or her. See Sahl, *On Questions* 1.6, 'A question if he will attain the matter through striving or he will have it without striving' in Sahl, *On Questions* in Dykes, *Sahl and Masha'Allah*, p.71.

Jupiter at 12° Cancer, so are 49° apart – too close for a sextile aspect of 60°. However, Mercury moves faster than Jupiter. Mercury is only at 1° Virgo at the time the question was asked, but in a few days it will have reached 12° Virgo, at which point Mercury will be exactly sextile Jupiter – there will be an aspect between them. In astrological terminology, Mercury is **applying** to Jupiter, and the aspect is being perfected, and, metaphorically, the woman of our querent's affection – the quesited – is rushing towards him, and so the matter will come to a satisfactory conclusion and the man will get what he is hoping for without striving.

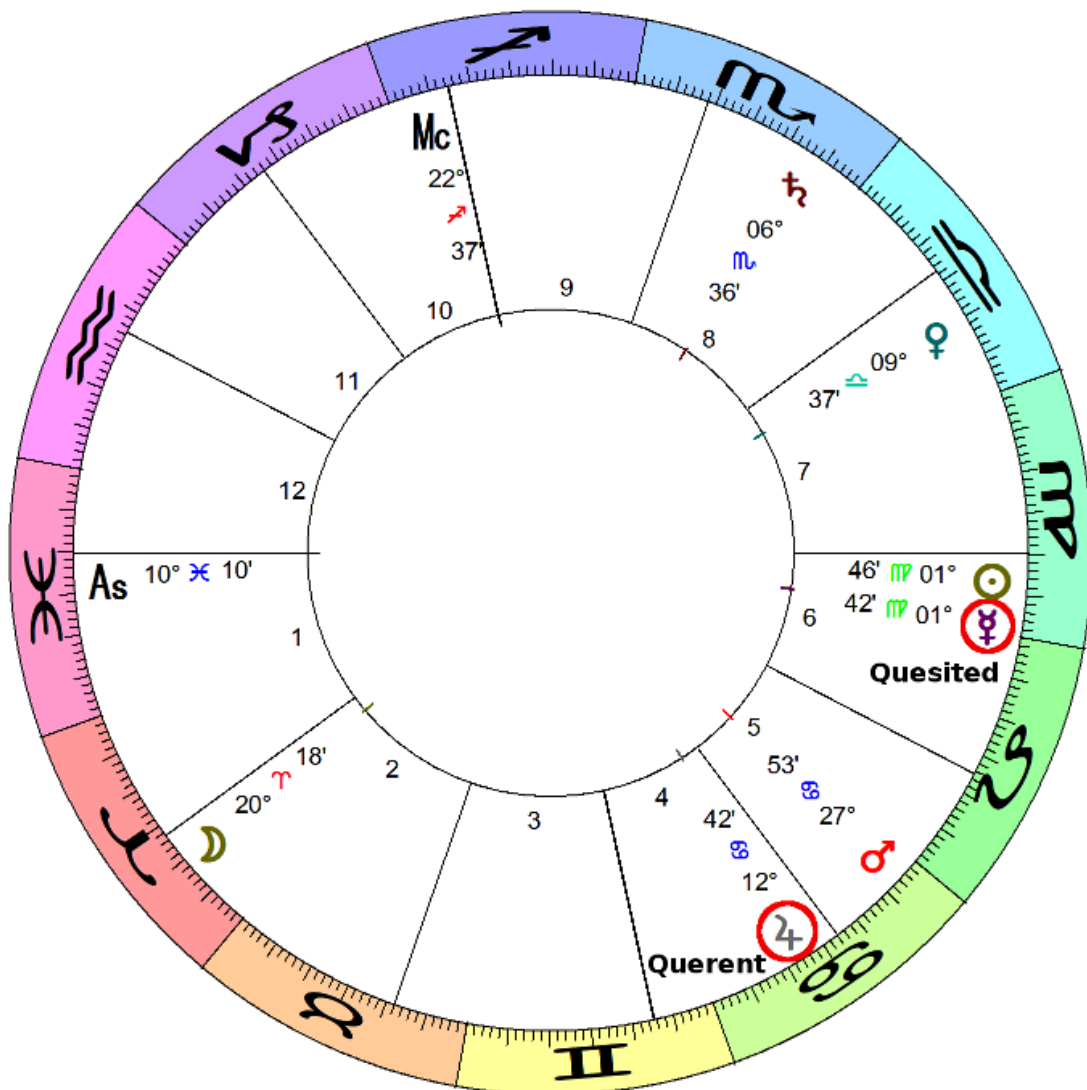


Figure 5.1 – Example question: ‘Will I marry this woman?’

On choosing a significator

Not all examples are as clear-cut as the example about marriage above. The text had started with a simple rule to identify relevant planets, but now goes on to say that if the planet representing the querent, or the Moon, is impeded (by one or more of the impediments listed in Chapter Four), then the aspect cannot be perfected using that planet. A few more rules are given: to answer a question, a planet must be found that can act as significator, so if the obvious candidates for the querent – the lord of the Ascendant and Moon – are impeded and additionally do not aspect the Ascendant and cannot be used, see if the ruler of the impeded planet or the ruler of the Moon aspects the Ascendant. If they do not, see which other planets aspect the Ascendant. There may be more than one, in which case the strongest planet is used.⁷ If more than one possible planet that can be a significator is identified, the text goes on to say that one must see how fast the candidates are moving, and which planet will perfect an aspect to the Ascendant first – and that planet will be the one involved in the judgement.⁸

In Chapter Four, an illustration was given in Figure 4.11 to demonstrate how the Table of Hours provided by Roger can be used to calculate the distance between the Ascendant and the midheaven, and this was followed by a description of how houses are defined on the celestial globe. However, Roger's text explains that there are two ways aspects may happen: 'per celum' or 'per figuram', where 'per celum' relates to aspects that are based on the distance between two planets measured along the ecliptic, and 'per figuram' relates to the arrangement of houses and varies according to latitude. The text provides a confusing statement that a sign might contain two house cusps, such that a sextile aspect by house could be less than thirty degrees, and gives an example of one house cusp being two degrees of Taurus and another house cusp at twenty-four degrees of Taurus.⁹ No explanation is given in the text, so an illustration demonstrating the difference between house aspects and sign aspects is given in Figures 5.2 and 5.3.

⁷ A scoring system was used to identify the strongest planet, based on whether a planet was in rulership, exaltation, in its own triplicity, in its own terms or in its own face, using the scoring system in Table 4.9.

⁸ A, f.10v.

⁹ A, ff.10v-11r.

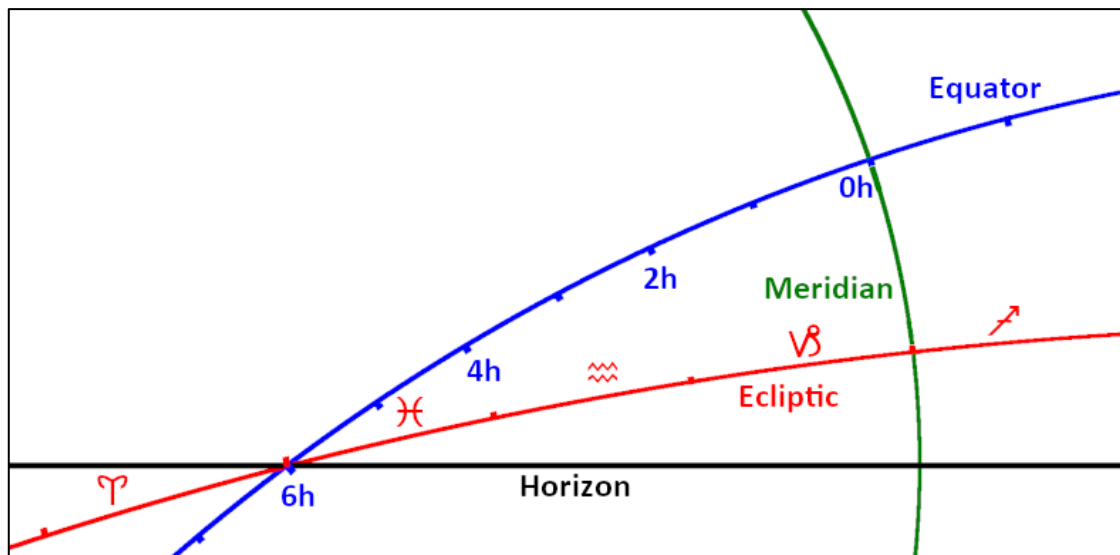


Figure 5.2 – Aries rising, Capricorn culminating.

Figure 5.2 shows a diagram of the sky when 0° Aries is rising. 0° Aries is defined as the point where the celestial equator crosses the ecliptic. When this point rises over the eastern horizon (the intersection of the ecliptic and the horizon is known as the Ascendant), the point culminating on the ecliptic (this is the point where the southern meridian and the ecliptic cross, and is known as the Midheaven or MC) will always be 0° Capricorn. The distance along the ecliptic between the Ascendant and the MC in this example is exactly three signs, or 90° (distance along the celestial equator is generally given in hours, where one hour is equivalent to 15°). The distance along the celestial equator between the point where the equator intersects the horizon and where the equator intersects the meridian is also 90°. This corresponds to the left-hand astrological chart shown in Figure 4.11, and the houses are all of equal size.

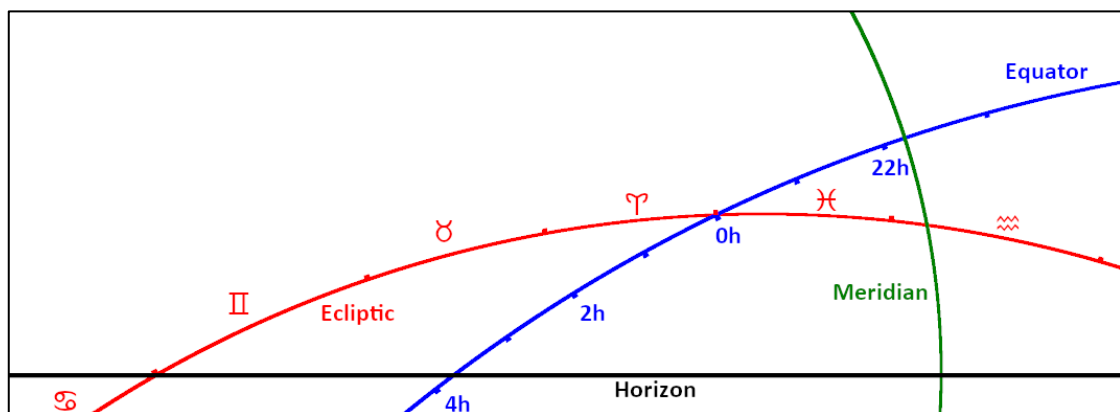


Figure 5.3 – Cancer rising, 23°40' Aquarius culminating.

Figure 5.3 shows a diagram of the sky when 0° Cancer is rising at the latitude of Hereford. The distance along the ecliptic between the Ascendant and the MC in this example is just over four signs – $126^{\circ}20'$, in fact. However, the distance along the celestial equator between the point where the equator intersects the horizon and where the equator intersects the meridian is exactly 90° , as it was in the previous example. This corresponds to the right-hand astrological chart shown in Figure 4.11, and the houses between the Ascendant and MC are all more than thirty degrees. In this example, a planet on the Ascendant and a planet on the MC will be aspecting each other by a wide trine (a trine is 120° , and these two points are $126^{\circ}20'$ apart), but will be exactly three houses apart, which corresponds to a 90° angle along the celestial equator.

Revisiting the examples given in Roger's text, two planets could be less than thirty degrees apart, but be two houses apart. An example is shown in Figure 5.4, where the cusp of the fifth house is at 2° Taurus, and the cusp of the sixth house is at 24° Taurus, as in Roger's example. The Moon is in the first degree of Taurus, and the Sun in the twenty-ninth degree; they are less than thirty degrees apart, and do not make an aspect using ecliptic degrees. However, the Moon is in the fourth house, and the Sun is in the sixth house, and so they are two houses apart. Roger's text suggests that these are "sextile" by house for this reason. In fact, this is not astronomically correct, as the distance between these two planets along the celestial equator is about 39° , not 60° since the Moon is close to the end of the fourth house, while the Sun is close to the start of the sixth.¹⁰ However, the idea that an aspect between two planets may be purely by the relationship of their respective houses, rather than by the number of degrees within those houses, does have an analogue in both Hellenistic and Arabic astrology with respect to aspects by sign. It was the norm in Hellenistic astrology, and espoused in Ptolemy's *Tetrabiblos*, that aspects were by sign rather than degrees – so a planet in Sagittarius would always trine a planet in Leo, regardless of the degree position.¹¹ Roger's text, as shown in Chapter Four, used either an astrolabe or a table of hours to draw up charts based on a quadrant house system, and as will be seen throughout this chapter the position of a planet by degree was important. Arabic astrologers had developed quadrant house systems rather than merely

¹⁰ Verified by Stellarium and Solar Fire software. Had the Sun been a degree from the end of the sixth house, giving it the same relative house position within the sixth that the Moon has in the fourth, the distance along the celestial equator would have been almost 60° , while the ecliptic distance would only be 44° .

¹¹ Ptolemy, *Tetrabiblos*, I.13, p.73.

considering relationships by sign. For example, al-Qabisi described how the chart ‘is shaped at every moment by a shape which is divided by four quadrants into which the circle of the horizon and the circle of the meridian divide it. Each of these quadrants is divided into three unequal divisions depending on the rising-times of the ascendant. So the circle is divided into twelve divisions, called “houses”... The working out of this is explained in astronomical tables.’¹² Aspects between planets were still considered by sign in Arabic texts; in the *Abbreviation*, Abu Ma’shar stated that ‘Aspects of the planets is only to certain places: these are the third, fourth, fifth, seventh, ninth, tenth and eleventh signs’.¹³ However, this is expanded on in his *Great Introduction*, which states that although aspects between planets are by sign, they are stronger if the degrees of the planets within the aspecting signs are closer, and weaker if they are further apart.¹⁴

¹² al-Qabisi, *Introduction* I.55, p.47.

¹³ Abu Ma’shar, *Abbreviation* III.10, p.41;

¹⁴ ‘Et fortior erit aspectus eius, ad unumquemque gradum horum signorum <ad> gradum qui fuerit propior affinitati gradus signi sui per numerum: ut LX et LX [this should be LXXXX] et CXX ac CLXXX per gradus equales. Cum vero fuerit longior aspectu ab his gradibus, erit aspectus eius debilior.’, Abu Ma’shar, *Great Introduction* (John) VII.5 726-730, p.292.

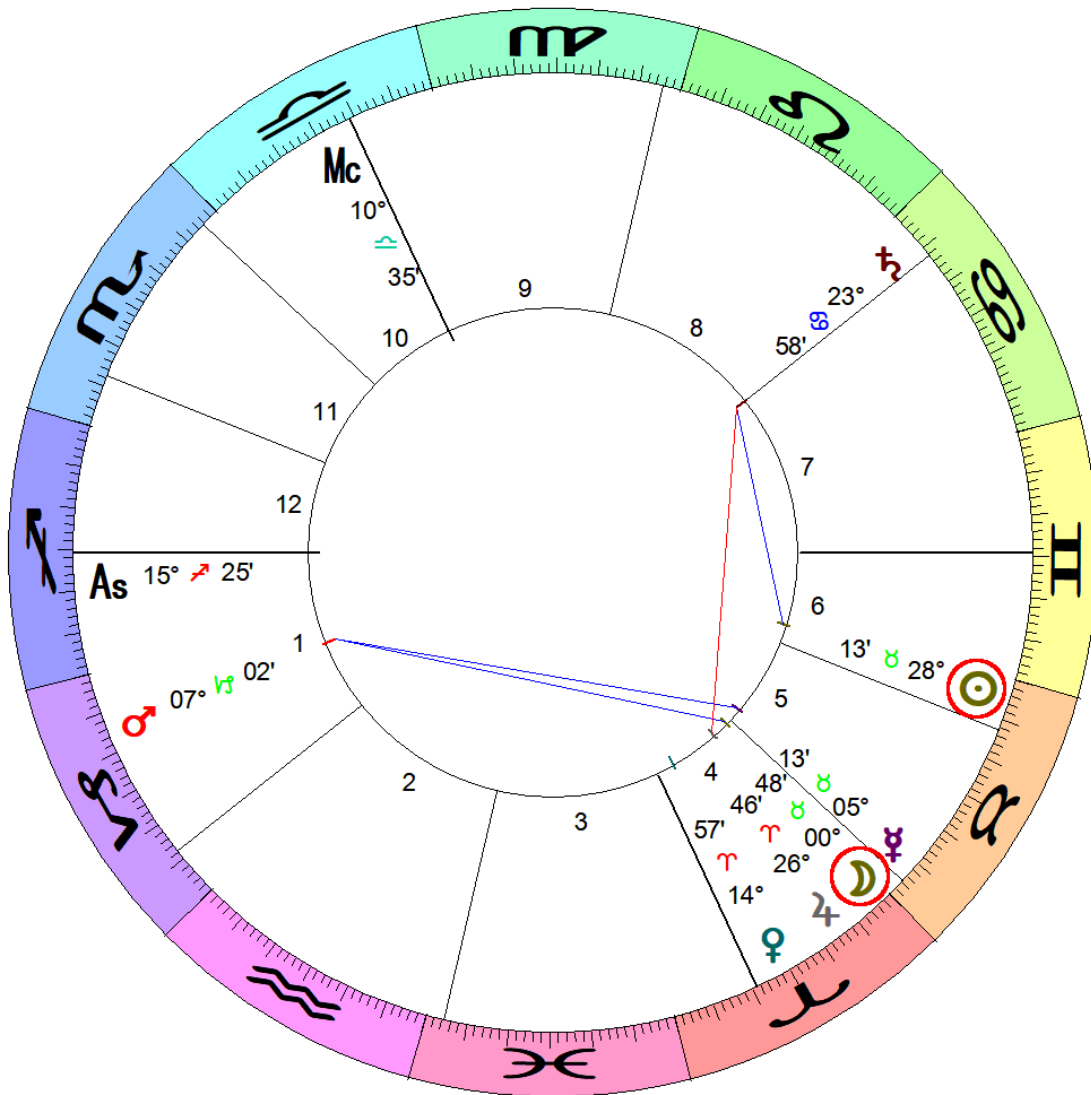


Figure 5.4 – Sextile aspect by house.

Although not subsequently referred to specifically in *Judicial Astrology*, which is a book on horary astrology rather than natal, aspects between points in a chart based on the celestial equator rather than the ecliptic was an important technique in natal astrology dating back to Ptolemy. In Ptolemy’s *Tetrabiblos*, the chapter on determining the length of life involves identifying a planet that acts as “prorogator”, the giver of life, and to calculate how long it takes for a malefic planet to reach the degree of the prorogator, this calculation being based on the rising times of each sign.¹⁵ Robbins’ footnote on the method cites Bouché-Leclercq’s assertion that the calculation involves converting ‘degrees of the zodiac into degrees of right ascension measured on the equator’.¹⁶ Al-

¹⁵ Ptolemy, *Tetrabiblos*, III.10, pp.270-307.

¹⁶ Ptolemy, *Tetrabiblos*, III.10, p.279 footnote 3, citing A. Bouché-Leclercq, *L’Astrologie Grecque* (Paris: E. Leroux, 1899), p.419: ‘D’une façon comme de l’autre, la durée de la vie était égale au nombre de degrés

Qabisi gave a detailed description of a method that corresponds closely to Ptolemy's method, showing that the use of measurements based on the celestial equator extended into Arabic texts too for the purpose of predictive astrology.¹⁷

The text of *Judicial Astrology: Techniques* does not, however, delve any deeper into this method, other than the very brief statement that an aspect can occur 'per celum vel per figuram', corresponding to aspects by sign or house. Indeed, although *Judicial Astrology: Prologue and Reference*, discussed in Chapter Four, went into some detail about calculating house cusps, either by using an astrolabe or with a set of tables that Roger had produced for the latitude of Hereford, neither text discusses the complicated issue of calculating planetary positions at all. As was seen in Chapter Two, the calculation of planetary positions was not at all trivial, and had acted as a block on the development of astrology until the techniques were rediscovered in Arabic texts translated into Latin in the twelfth century. Roger appeared to assume that his reader already knew how to do this, since the text subsequently provides various examples that would require knowing planetary positions fairly precisely. As will be shown later in this chapter, the text makes passing references to astrological techniques such as Jupiter/Saturn conjunctions and solar returns that are not covered in the text itself, which implies that the reader would already have been familiar with chart calculation, and a variety of astrological techniques.¹⁸

Tuning the techniques

The next section of the text fine-tunes the basic technique that Roger had introduced. It starts by stating that the Moon will participate with the lord of the Ascendant in all questions except those about the life of the querent (in which case, the lord of the Ascendant is stronger). Ideally, the significator should aspect the Ascendant – if it does not, the achievement of the aim will be weaker, or more difficult. If the question is about life and death – and questions about life and death were commonplace medieval concerns

d'ascension droite compris entre le lieu aphétique et le lieu anaerétique, à raison d'une année par degré.'

¹⁷ al-Qabisi, *Introduction* IV.11-12, pp.123-127. Martin Gansten points out that the directions described by al-Qabisi are 'of course the Ptolemaic semi-arc method', M. Gansten, *Primary Directions* (Bournemouth: Wessex Astrologer, 2009), p.56.

¹⁸ The technique of making predictions about world events (generally known as "mundane astrology") was described in numerous texts available in the twelfth century. See for example, R. Arribas, 'The Terminology of Historical Astrology according to Abraham Bar Hiyya and Abraham Ibn Ezra', *Aleph*, 11.1 (2011), pp.10-54; Abu Ma'shar, *The Book of Religions and Dynasties*.

– then the astrology is fairly literal. A question about death is an eighth house matter, so if the lord of the Ascendant were strong and not impeded by the lord of the eighth house, then the person’s life will not be impeded.¹⁹

The Ascendant signifies life, and the eighth house signifies death, and this example simply says that if the planet representing the querent is strong, and the planet representing death (the ruler of the eighth house) is not doing anything unpleasant to the planet representing the querent, then the querent will not die.

For all other questions, Roger’s text has already stated that the lord of the Ascendant and the Moon represent the querent, provided that at least one of those aspects the Ascendant. However, that ideal situation does not always apply. When this occurs, other planets aspecting the Ascendant should be examined. If there are none, the signifiers are **void of course**. Where there is no signifier, an event does not come to pass, and the querent gets a negative answer. In determining planetary strength where a signifier is found, the text explains that planets in angular houses (first, fourth, seventh, and tenth) are strongest, and those in cadent houses (third, sixth, ninth, and twelfth) are weakest.

In a simple question, the ideal outcome is for the lord of the Ascendant or the Moon (the querent) to gain what he or she is looking for, which is seen by that planet perfecting an aspect to the planet representing the matter being asked about. Sometimes that aspect will take place, but before it does the relevant planet will aspect another planet first. Again, this is fairly literal; the querent wants something, and both the querent and the thing he or she wants (the “matter”) are represented by planets. If the planet of the matter is moving to the querent’s planet, the querent will gain what he or she is looking for. However, if the planet of the matter meets another planet on the way, that represents a delay – in exactly the same way that someone coming to one’s house for dinner can be waylaid by meeting an old friend en route.

There may be an aspect between two planets, but it is also important to bear in mind whether those two planets are friendly or hostile to each other. This indicates something of the nature of the matter; if the question is about whether the querent will get to speak to the king, the answer might be that he will, but that the king will not be friendly towards him.

¹⁹ A, f.11r.

Finally, this section of the text suggests that the matter in question and its resolution can be divided into three stages – the first part, the middle and the end. The first is signified by the Moon, the second by the faster of the lord of the Ascendant and the lord of the matter, and the last part the slower of those two. If all of those planets are in good condition, the entire activity will be good and can be judged in the same way; if the Moon is impeded, the first part will be bad, and so on. If all planets are in a bad condition, then the whole of the matter will be bad.

On other methods of investigation – intermediaries

Having started off with a very simple rule, and then developing it to add further techniques if the simple rule cannot be applied, the text continues with several sections with different titles, but all effectively address the same thing – another method of investigation using intermediaries instead of the three usual significators. This will need to be done if no connection can be found between the significators or their substitutes – in this case, no aspect is being perfected, and so no outcome can be predicted. In this case, one looks for an intermediary that can be used to form a connection between the significators.²⁰

The language used in the text is quite complicated, but the principle is quite simple and best demonstrated by a non-astrological analogy. Imagine you wish to communicate with some local worthy, such as the bishop. Clearly, the easiest way of effecting this meeting is either you go to the bishop's residence, or he comes to yours. That is akin to the sort of perfecting aspects discussed so far. However, you are unable to travel far as your horse is lame, and the bishop is unwilling to come to you. You can still communicate with the bishop by sending a friend who will represent you – he or she can go to the bishop's residence instead, and you may still get the outcome you are looking for. The simplest way is for the friend to come to your house first, get debriefed, and then head off to the bishop's residence and pass on the message. The second method is that your friend lives half way between you and the bishop, and so although neither you nor the bishop are willing to travel to each other's residences as that is too far, you are both willing to travel to your friend's residence and meet there. The first method is akin to the astrological technique of **translation**, and the second to the technique of **collection**.

²⁰ A, f.11v.

For an example of what is meant by “translation”, consider the chart shown in Figure 5.5 (this is a hypothetical example, and not an example given in *Judicial Astrology*). The querent has asked whether she will be able to get in touch with her estranged son. The querent is represented by the lord of the Ascendant, Mars; the question is about her son, and children are the fifth house, so the son is represented by the ruler of the fifth house, the Sun. The Sun moves faster than Mars, and the Sun is at 17° Aries, and Mars is at 12° Aries. The Sun is separating from Mars, so just using the two planets as before, the querent (Mars) will not catch up with her son (Sun). However, Mercury moves faster than both of them. He is applying to Mars, and once he has overtaken Mars he will also apply to the Sun and catch up with the Sun too. This is akin to the friend taking your message to the bishop. Mars (the querent) will never catch the Sun, but Mercury can pick up the message from Mars and pass it on to the Sun.

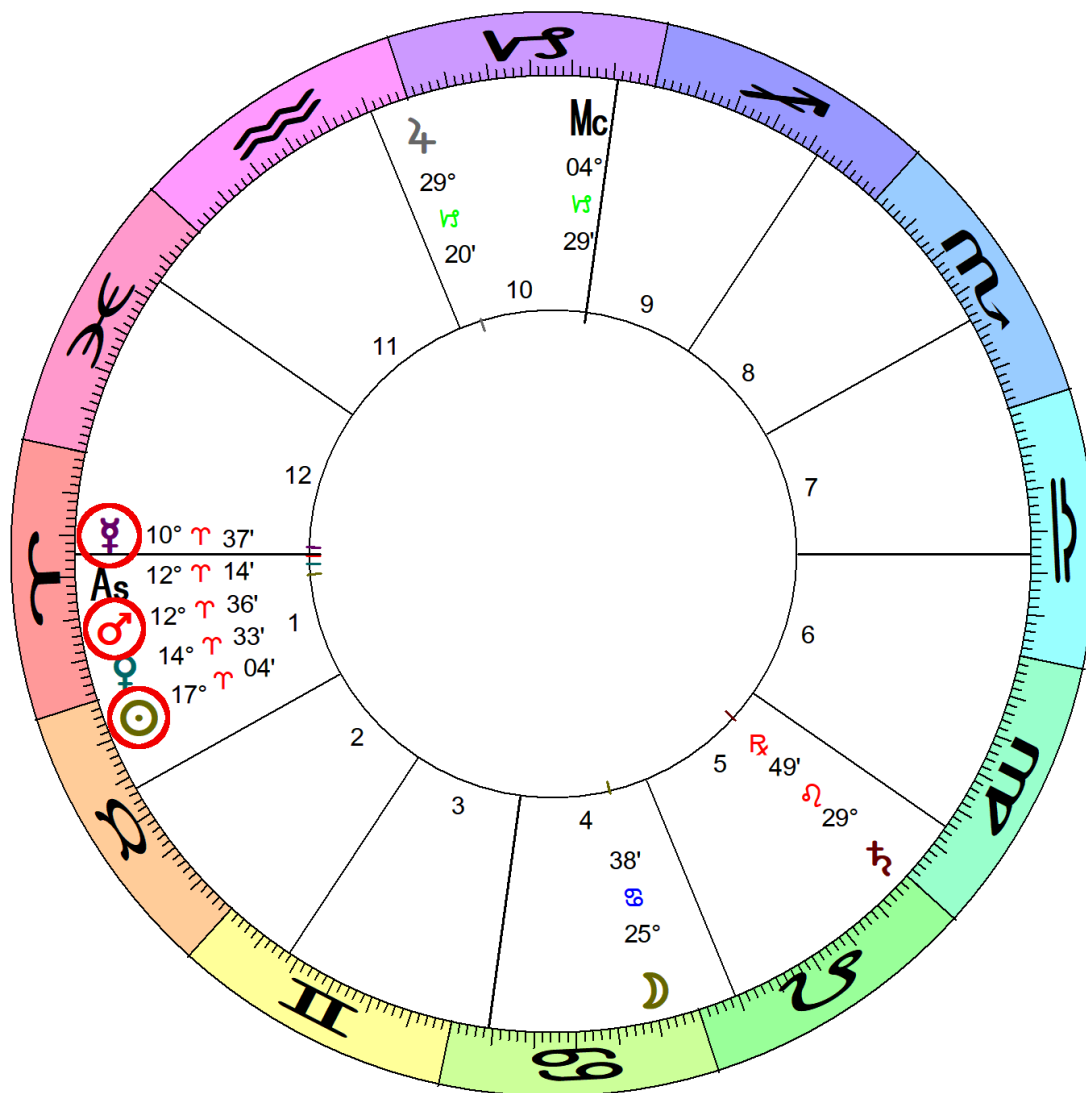


Figure 5.5 – Mercury translating from Mars to the Sun.

Note that although in this example Mercury makes a physical conjunction to both planets, the same principle would apply by aspect, too. If Mars were at 12° Aries as it is in this diagram, the Sun were at 17° Gemini and Mercury were at 10° Gemini, exactly the same rule would apply. The Sun would still be separating from Mars, but Mercury would perfect a sextile aspect first to Mars, and then perfect a conjunction to the Sun. It would still translate, and the outcome will be successful.

To illustrate the concept of “collection”, consider the chart in Figure 5.6 in a hypothetical question about marriage. The querent has asked if she will marry a particular man. The querent is represented by the lord of the Ascendant, Mars. The quesited is represented by Venus, ruler of the seventh house. There is no aspect between Mars and Venus, so with just those signifiers, the result she wants will not turn out. However, Venus at 13°

Capricorn is applying to Jupiter at 15° Libra by square, and Mars at 10° Aquarius is also applying to Jupiter by trine aspect. Hence Jupiter will “collect” from both parties, and is akin to the example of you and the bishop meeting at a friend’s house. Thus although the two main planets do not aspect, Jupiter collecting from both of them means a successful outcome.

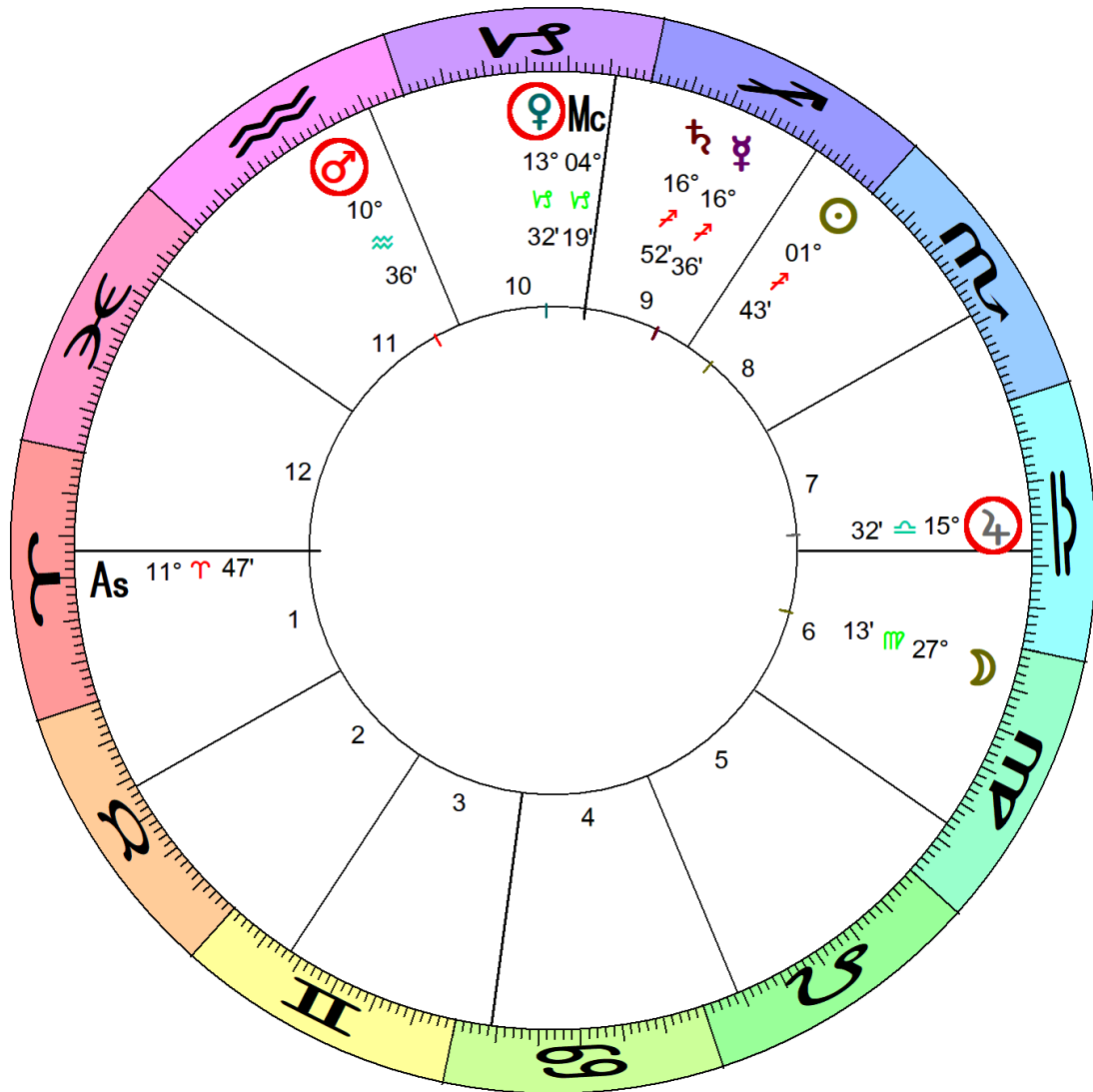


Figure 5.6 – Jupiter collecting from Mars and Venus.

Intermediaries can also be used to choose the best candidate when more than one planet may be a significator. The text uses legal terminology, likening the decision to a court case where a judge selects the best candidate:

Tertius modus est ut sint d[omi]n[u]s ascend[e]ntis vel luna + dominus rei iuncti alicui pond[er]osiori utroq[ue] tunc fiet res p[er] manus alicuius iudicis inter eos qui plus favebit in causa ei cui dulciore aspectu iungetur.²¹

The use of apparently legal terminology can be found in John of Seville's Latin translation of Sahl's *On Questions*, where the outcome refers to a matter being perfected by the 'petitione' of the one asking: 'Q[uo]d si aliquis eo[rum] iunc[e]t[ur] fu[er]it d[omi]no rei p[er]ficietur via res petit[i]one interrogantis'.²² However, Dykes, in his translation of *On Questions*, disputes that the section has legal connotations and prefers to translate 'petitione' as 'striving'.²³

The principle for using intermediaries is the same as for using a third planet for collection and translation – if an aspect between the querent and the matter cannot be perfected, then look for other planets that will be able to overcome obstacles. In some cases there will be more than one planet, and then it is necessary to choose the most powerful one. This will depend on all sorts of considerations – each planet's dignity, whether it is impeded, the nature of the aspect, whether the proposed planet is friendly to the planet it is acting for, and so on. In all cases, though, the key feature is to find a planet that will connect the querent and the quesited, and for that planet not to have any impediments.

Even if a significator is not immediately obvious, the text points out that one must also consider the lord of the Part of Fortune (a calculated point in the chart), the Sun, the lord of the Moon, and the lord of the hour. Manuscript K also adds the Sun and the lord of the house he is in when a day chart, and the Moon and the lord of the house she is in when a night chart. In addition, consider the planet that is strongest in the degree of the Ascendant – again, the scoring system is used to work out which planet is strongest at any given degree.²⁴

The lord of the hour is a planet that rules the hour of the day, and is widely referred to in *Judicial Astrology* for determining intentions. It is covered in a later section of this thesis.

²¹ A, f.12r.

²² Paris, Bibliothèque nationale de France, Lat. 16204, p.446a.

²³ Sahl, *On questions* 1.4, 'A question about some matter pertaining to the twelve signs: if it will come to be or not' in Dykes, *Sahl and Masha'Allah*, p.69, fn13. However, the concept of "witnesses" and "testimonies" does appear in later medieval texts, too – see for example, R. Arribas, 'Testimonies in Medieval Astrology: Finding Degrees of Certitude in Astrological Judgements' in P. Hummel (ed.), *Doxa: Études sur les Forms et la Construction de la Croyance* (Paris: Philologicum, 2010), pp.115-133.

²⁴ A, f.12v; the text about Sun and Moon in day and night charts only appears in K, f.22v.

The text summarises the techniques covered, and then adds a very brief comment that one should also consider the New Moon or Full Moon prior to the question being asked, or prior to the spring equinox, and the next conjunction of Saturn and Jupiter.²⁵ Both of these techniques are widely used in Arabic and medieval astrology, but are not covered elsewhere in *Judicial Astrology*.²⁶ A chart cast for the syzygy (Full Moon or New Moon) prior to the spring equinox, was widely used in mundane astrology, and a similar chart for the syzygy before a birth was used in natal astrology. Similarly, the concept of using conjunctions of Saturn and Jupiter, which occur roughly every twenty years, was widely used in mundane astrology, and is described in various texts, including John of Seville's translation of Abu Ma'shar's *De revolutionibus annorum* and *De magnis coniunctionibus*, both of which would have been available at the time Roger was compiling *Judicial Astrology*. This brief line is significant, because it clearly indicates that Roger expected his students to be familiar with these concepts, suggesting that *Judicial Astrology* was not intended as a complete textbook on astrological techniques, but was specifically a book on horary for readers already familiar with the basics. On the other hand, *Judicial Astrology: Prologue and Reference*, analysed in Chapter Four, is a text containing basic information, including details of calculating house cusps, but misses the all-important technique of calculating planetary positions, a prerequisite for practising any branch of astrology.

This section of the text ends with a summary, stating that in all judgements there are four things to enquire about: the nature of the planet that is the significator and the sign it is in; the sign of the Ascendant and of the sign on the cusp of the house of the matter; how every planet, lord of the Part of Fortune, and the lord of the hour participate and in what way; and the essential and accidental dignities (that is, the strengths) of everything investigated.²⁷

It is clear from what has been shown so far in this section that the format of *Judicial Astrology: Techniques* is entirely different to *Judicial Astrology: Prologue and Reference*. The latter was shown to be largely a reference work taken primarily from Abu Ma'shar's *Great Introduction* and al-Qabisi's *Introduction*, but abbreviated. The wording

²⁵ A, f.12v; this comment is missing from Q, but is present in all other extant manuscripts.

²⁶ See for example, Abu Ma'shar, *The Book of Religions and Dynasties* for details of Arabic mundane techniques.

²⁷ A, f.12v.

Roger used is in many places so similar to Latin translations of these texts that it is possible to identify the particular translations that Roger used with a fair degree of certainty: the wording is based largely on Hermann of Carinthia's translation of Abu Ma'shar, and John of Seville's translation of al-Qabisi. The techniques section, however, while drawing heavily on Arabic techniques that had been in texts translated into Latin by the time Roger was teaching, are in a different style altogether. While it is possible to identify the provenance of the techniques Roger described in his text, it is not possible to do a paragraph by paragraph comparison with Latin translations of Arabic texts as it was for *Judicial Astrology: Prologue and Reference*.

Thus, the concepts that Roger introduced here are not new, as they can all be found in al-Kindi and Sahl.²⁸ However, the works of Sahl and al-Kindi have separate chapters for each type of question. Sahl's *On Questions*, for example, consistently presents questions house by house, so that the section on the sixth house has specific questions such as 'Whether someone is infirm or not', or 'On buying a slave', and al-Kindi's *Forty Chapters* has a variety of chapter headings on digging canals, building ships, and theft. As a result, these chapters are quite repetitive, with the same techniques reprised for each application. Roger, instead, synthesised the information in these books to give a general technique applicable to all questions, so that the reader could work out how to answer a question from first principles, rather than having to look up the relevant question in a book.

On reception

Having described the fundamental technique of identifying significators and looking at aspects between them, the text continues with the important topic of **reception**. This is effectively a combination of aspecting and planetary dignities. The concept was described in *Judicial Astrology: Prologue and Reference*, in the section of the conditions of the planets, and, as discussed, it was a topic where Roger's description deviated from Hermann of Carinthia's translation of Abu Ma'shar's *Great Introduction*, suggesting that reception played a particularly important role for Roger.

Throughout the previous section on intermediaries, the text was concerned with not only identifying the strongest planet, but considering the relationship it has with the planet for

²⁸ Sahl, *On Questions* in Dykes, *Sahl and Masha'Allah*, pp.67-186; Al-Kindi, *Forty Chapters*.

whom it is acting as an intermediary – whether it is in a beneficial aspect, whether the two planets are friendly and so on.

The general principle of reception is a relationship between two planets who can provide each other assistance, and is akin to being received as an honoured guest in somebody's house. For reception to occur between two planets, there must be an aspect between them, and one planet must be in a sign where the other has dignity. Some examples will explain this more clearly. If Jupiter is in Taurus and aspects the Sun in Pisces, neither has any particular essential dignity (at least, not by rulership or exaltation). However, Jupiter rules Pisces, and therefore when he “sees” (aspects) the Sun in Pisces that is akin to having a visitor in his home, and he therefore “receives” the Sun.

The text includes two other elements of reception. Firstly, in addition to rulership and exaltation, reception can occur if the other planet is in two other dignities of the host planet. For example, if Venus aspected Jupiter but was not in Pisces, Sagittarius or Cancer (the signs that Jupiter rules or is exalted in), but was in the triplicity of Jupiter and the terms of Jupiter, or the terms of Jupiter and the face of Jupiter, there would still be reception – but Venus would need to be in at least two of Jupiter's dignities for this to work. Secondly, the text defines the roles in reception rigidly – the receiver is always the slower-moving planet and applicant is the faster-moving one. The slower-moving planet is considered superior, like a king being approached by a commoner. The king will receive a commoner, but it would be presumptuous for a commoner to receive the king. However, the gifts can still be two-way; the king might bestow gifts on his guest, but equally the guest might give a token of gratitude to the king.

The text makes the point that reception is always beneficial. A malefic planet like Saturn will be “better behaved” if it is in reception, and its negative effects reduced. The analogy is that a fighter is more honourable as a soldier in an army, subject to rules and agreements, than as a lone mercenary, that reception is equivalent to working in a team. Reception will also work with difficult aspects such as a square or opposition, but the benefits will be harder to come by.²⁹

Roger's definition of reception is quite restrictive, however, in that only the slower-moving planet can be the receiver. Roger's definition was not the only one, though, and

²⁹ A, ff.12v-13r.

as a result of these differing definitions, the concepts associated with reception seem to have been a source of confusion for later medieval astrologers, and so it is instructive to examine some concepts and compare some terminology used by Arabic authors, to demonstrate that not all Arabic authors defined reception in the restrictive way that Roger did. Hermann's translation of Abu Ma'shar's *Great Introduction* was heavily abbreviated compared to John of Seville's translation, and while John listed twenty-one conditions of the planets, Hermann listed only eighteen. John's version has four categories relating to 'pushing', or 'pulsatio', which Hermann has condensed into a separate section.³⁰ While two of these categories appear to relate to a faster-moving planet applying to a slower-moving one, two do not. Adelard of Bath's translation of Abu Ma'shar's *Abbreviation* makes this clear; he uses the term 'donum' (gift) rather than 'pulsatio':

The gift of nature ('donum naturae') is if any planet occupying the house of another, applies to it. Hence it is presented with its own nature by that planet, its guest... The gift of power ('donum potentiae') is whenever any of the stars gives its own power to another star occupying either its house or other dignities. The gift of two natures ('donum duarum naturarum') happens in two ways: one, if any planet situated in a place of its dignity applies to another having a dignity in the same place, the other, whenever a star applies to a star, each of which is in its good fortune. The gift of counsel ('donum consilii') is when in the case in which planets are in application in any place, one of them gives counsel to the other. If they are in trine or sextile or together, it is good, but quartile or opposition it is the reverse.³¹

The first category, the gift of nature, is the unambiguous case where a faster-moving planet applies to a slower-moving one, which receives the nature of the applying planet – which is the case described in Roger's text. The final category, the gift of counsel, allows for either the applying (faster-moving) planet or the slower-moving planet to give its counsel to the other.

Al-Qabisi uses very similar definitions, and also refers to the concept of pushing. For example, Charles Burnett's translation of the Arabic says: 'When a planet (A) applies to the lord (B) of the sign in which it (A) is,... then it (A) pushes the nature of the planet (B)

³⁰ Abu Ma'shar, *Great Introduction* (Hermann) VII.3, lines 383-389.

³¹ Adelard, *Abbreviation* III.30-34, p.115.

onto it (B).³² This makes it clear that al-Qabisi considers the faster-moving planet to be the one doing the pushing, while the slower-moving planet is the receiver. However, John of Seville's Latin translation does not mention application at all: 'And if a planet is being connected to the lord of the sign in which it is it is said to push the nature of that planet to it'.³³

While Roger's text follows Abu Ma'shar and al-Qabisi in insisting that only the slower-moving planet can be the receiver, not all Arabic authors used this definition. Masha'Allah, for example, in his text *On Reception*, gives an example where Mars in Aries is applying to Saturn in Aries, and states that Mars receives Saturn, but Saturn does not receive Mars.³⁴ This contradicts Abu Ma'shar's idea that only the slower-moving planet (Saturn, in this case) can be a receiver. Masha 'Allah's second example is of Mars in Capricorn applying to Saturn in Aries, where he states that they 'receive each other mutually in their domiciles'.³⁵ Clearly, this concept of mutual reception would not be possible if only the slower-moving planet is allowed the role of receiver.

Finally, Roger's text gives various situations where reception cannot work, and there is a section in the text that identifies each of these briefly, and can be summarised as follows: reception cannot work if one of the planets is impeded, if the two planets have enmity, or if a planet is in a cadent house (third, sixth, ninth or twelfth). In this case, known as the **return of virtue**, the reception will not take place and neither planet will benefit from the other.

³² Al-Qabisi, *Introduction* III.17, p.99.

³³ 'Et si coniungitur planeta domino illius signi in quo fuerit... dicitur pulsare naturam illius planete, ad eum', Al-Qabisi, *Introduction* III.7, p.305.

³⁴ Masha'Allah, *On Reception* in Dykes, *Sahl and Masha'Allah*, pp.439.

³⁵ Masha'Allah, *On Reception* in Dykes, *Sahl and Masha'Allah*, pp.440.

On the principle of the houses

Having shown how to choose significators, the reader now has the basic techniques for making a judgement for a horary question. The text comes to a close with two final techniques that relate to specific kinds of questions. The first is whether the question really does relate to the querent or not; the text says that it is necessary to ask whether the querent is asking a question on behalf of his friend, or master, or servant, as this will change which house is considered to be the ‘true’ Ascendant. The text gives an example: if the query relates to the querent’s master, then the first house of the master is the tenth, the second is the eleventh, and so on, and the associates of the master (which would normally be represented by the third house) would be the third from the main, starting from the tenth. The second type of question is very specific – if the question concerns returning to one’s home country, the signs are arranged backwards; so if the first house had been Aries, the second would be Pisces, the third Aquarius and so on.³⁶

An example will illustrate the first of these points. Roger’s text had already discussed choosing a significator for a question; for example, if a querent asks the astrologer a question on their own behalf, such as “is my brother still alive?”, the querent will be represented by the first house, and the brother by the third.³⁷ However, in some cases, the person visiting the astrologer will not be asking a question on their own behalf, but on somebody else’s: their lord, or friend, or servant. In this case, the person is more of a bystander, and the real querent is not the person asking the question, but the other party. So in this case, if the person visiting the astrologer is asking a question on behalf of his master, asking “my master wishes to know if his brother is still alive”, then instead of using the first house for the querent and the third for the brother, the astrologer selects the tenth house to represent the master (which Roger called ‘the true Ascendant’), and the third house from the tenth (the twelfth house) to represent the master’s brother.³⁸ This technique, known as derivative houses, is widely used in traditional astrology, and although it does not appear explicitly in most of the Arabic texts, there are hints of it in Sahl. For example, after describing the fourth domicile (house) as relating to real estate, his *Introduction* relates the fifth house to children (the root meaning as given by al-Qabisi and Abu Ma’shar and covered in the section headed ‘On matters of the houses’ in Chapter

³⁶ A, f.13v.

³⁷ In this example, the ‘rem quesitam’ would be the brother, and siblings are a third house topic as described in ‘On matters of the houses’ in Chapter Four of this thesis.

³⁸ ‘Tunc vere asc[enden]tis p[ri]mum dicitur’, A, f.13v, line 27.

Four of this thesis), and also to ‘the fruits of real estate’.³⁹ This attribution is because the fifth house is the second from the fourth, and the second house represents substance and money, although Sahl did not make this explicit. The earlier Hellenistic author Vettius Valens did make this explicit in *Anthologies*, where for each house he provided examples of meanings in relation to other house. For example, for the third house (whose base meaning is brothers), he said ‘Concerning the life of brothers. Relative to the IV Place of Parents, it concerns enemies and slaves. Relative to the VII Place of Women it is the IX Place [concerning rank, occupation, and childbearing].’⁴⁰ Later authors such as Bonatti also make use of derived houses, giving twelve meanings for each house, such as the eighth house relating not only to death (the base meaning), but ‘brothers of slaves since it is the 3rd from the 6th; and the infirmities of brothers, because it is the 6th from the 3rd, and the enemies and wives and partners of household intimates, because it is the 7th from the 2nd...’⁴¹

The very brief sentence referring to a reversal of the usual order of houses when the question relates to a return journey does not seem to feature in Arabic texts, and Roger’s text does not give any further details. Al-Kindi’s *Forty Chapters*, for example, has a section devoted to returning from travel but makes no mention of this reversal.⁴²

On intentions and thinking

This is the second part of Roger’s ‘four parts’. Manuscript A makes this explicit with a heading stating that this is the second book, and that it concerns intentions and thinking, and considers what the querent’s intentions and thoughts on the question are.⁴³

This part of the book is concerned with not simply making a judgement, but finding out what the querent really means. As already seen, the previous section in the book goes into detail about how to choose a planet that will act as the significator for a particular chart, and this section assumes that the significator has already been determined. The text begins with a lengthy recap of planetary dignities, and the ways in which planets are stronger in

³⁹ Sahl, *Introduction* Section 3 in Dykes, *Sahl and Masha’Allah*, p.5.

⁴⁰ ‘The XII Places and Their Relationship to Propitious and Improper Times’ in Vettius Valens, *Anthologies*, Book IX M. Riley (trans.) (2010) online at <http://www.csus.edu/indiv/r/rileymt/Vettius%20Valens%20entire.pdf> [22 December 2012].

⁴¹ Bonatti, *Book of Astronomy*, Treatise 2, p.109.

⁴² Al-Kindi, *Forty Chapters*, Ch. 8.5 ‘On returning from travel’, p.150.

⁴³ ‘Incipit liber s[e]c[un]d[u]s de cogitate[i]o[n]e’ is the incipit in red; the first line starts ‘Set q’m iam de intentione + cogitatione...’, A, f.14v, lines 16-17.

certain parts of a sign, which was covered in *Judicial Astrology: Prologue and Reference*.⁴⁴

The concept of making any kind of judgement implies that there is a meeting between the astrologer and the client, the person visiting the astrologer. The client may be asking for general advice about their life, or about a new-born child, in which case a birth chart (called a nativity) would be drawn up, showing the position of the planets at the time of birth; however, the techniques in *Judicial Astrology: Techniques* imply that the client was asking a specific question about an issue, and instead of drawing up a birth chart, a horary chart would be produced, which was the topic of the previous section.

This section of *Judicial Astrology: Techniques* is about identifying ‘the intention’ of the questioner. One would presume that the questioner already knows the question, and his or her intention behind asking the question. However, the question the client asks the astrologer might not reflect the client’s true intentions; for example, if the client asks whether his father will recover from his illness, that might seem like a straightforward question about health, but the client might secretly be wanting to know when he will get his inheritance. In addition, such a technique could be used to test the astrologer’s skill. A letter attributed to one ‘Argafalau’, supposedly written to Alexander the Great and found in a tenth-century Latin compilation, gives an example of using a technique to determine a secret object held in the client’s hand, and this technique is covered in detail in a text by Hermann of Carinthia, and is described later in this chapter.⁴⁵ Although not related to the issue the client wanted to discuss, presumably if the astrologer is able to tell a client about a secret object on his person prior to the consultation, this would impress the client and give him confidence in the astrologer’s ability to deal with the question itself.

Roger’s text on intentions starts by making mention of **novenes** and **duodenaria**, stating that these relate specifically to the intention. These are divisions of a sign into nine and twelve parts respectively, and as there are no standard English terms for these, this thesis will use the Latin terms in Roger’s text. The text starts by describing novenes, and then

⁴⁴ See ‘On the virtues of the planets in the signs’ in Chapter Four of this thesis.

⁴⁵ Dykes, *Search of the Heart*. The letter from Argafalau is in Appendix I, p.207. Roger covers this technique in the ‘Intention from the lord of the hour’ section of this thesis.

goes on to describe duodenaria, but conceptually it is easier to explain duodenaria so in this thesis these two brief sections have been swapped.

On the duodenaria

The text defines duodenaria as dividing a sign into twelve equal parts of 150 minutes each, or two and a half degrees. The first duodenaria of Aries has the nature of Aries, the second of Taurus, the third of Gemini; and the first duodenaria of Taurus has the nature of Taurus, the second of Gemini, and so on in succession. It then gives an example: for the fourth degree of Aries, multiply by twelve to get forty-eight. The first thirty are given to Aries, and the remaining are Taurus, so this point in the chart will have the nature of Taurus.⁴⁶

This example may sound rather clumsy to a modern ear, but attempting to do arithmetic based on the idea of ‘two and a half degrees’ was non-trivial, especially when using Roman numbers, as A does. This method, in effect, maps the two and a half degree segments within a thirty-degree sign onto a full circle by multiplying by twelve. Roger considered a planet at 4° Aries, and multiplied the number of degrees by 12 to get 48. He then repeatedly subtracted 30 from this until the result was less than 30; the subtraction only had to be done once in this case, so he counted forwards just one sign – Taurus. Hence this particular duodenaria has the nature of Taurus, and the planet ruling it will be the ruler of Taurus, Venus.⁴⁷

The concept behind duodenaria is a simple one: there are twelve signs of the zodiac of thirty degrees each, traditionally starting from Aries and following a fixed sequence. For the duodenaria, each sign is divided into twelve equal divisions of two and a half degrees each, with the first division having the nature of the sign itself, the second division having the following sign, and so on. Thus within the sign of Gemini, the first division will have the nature of Gemini, the second division the nature of Cancer, and so on for all twelve divisions. These duodenaria can be thought of as a zodiac within a zodiac. Figure 5.7 illustrates this, showing the duodenaria of Aries and Taurus. Manuscript C includes a table of duodenaria.⁴⁸

⁴⁶ A, f.15r.

⁴⁷ The text for this example reads: ‘Ut si fu[er]it arietis quartus multiplicaetur in .xii. + erunt .xlvi. + ex his si .xxx. dedis arieti cetere tauro remanebunt...’, A, f.15r, lines 27-29.

⁴⁸ C, f.150va.

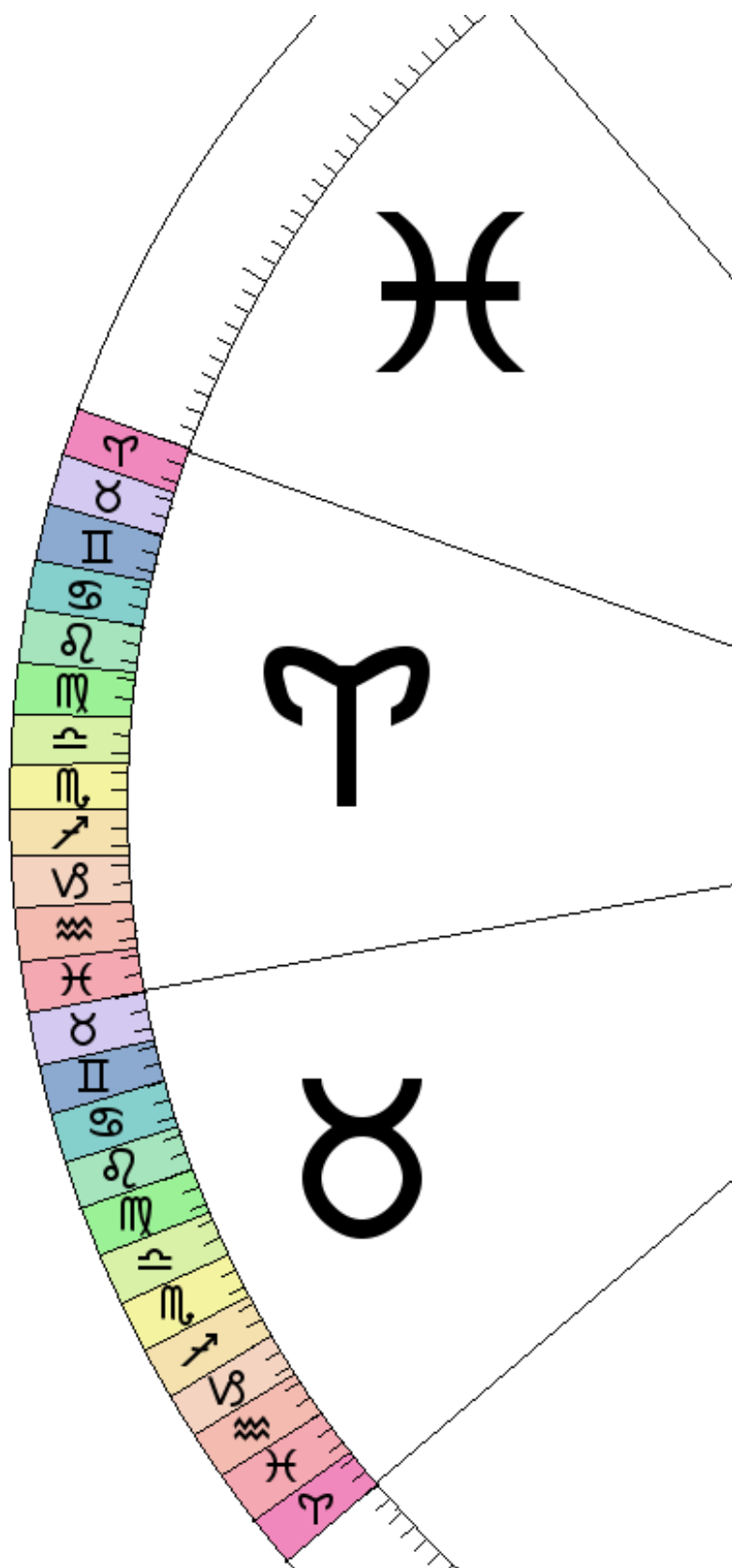


Figure 5.7 – Illustration of the duodenaria of Aries and Taurus.

On the novenes

The text for **novenes** (which is before the text on duodenaria in all manuscripts) starts off with a definition that a novene divides each sign into nine parts, and is therefore 200 minutes or three and one-third degrees. The first novene of Aries is of its own nature and so ruled by Mars, the second novene is Taurus so ruled by Venus, and so on around the zodiac. Thus the first novene of the second sign (Taurus) would be Capricorn and so ruled by Saturn.⁴⁹

This rather confusing description requires an explanation. Each sign is divided into nine equal divisions of three and one-third degrees. This time, it is not possible to fit an entire mini zodiac into a sign, since there are twelve zodiac signs but only nine divisions. The technique here is that starting with the sign of Aries, the first division of Aries will have the nature of Aries, the second division the nature of Taurus and so on, until the final (ninth) division of Aries will have the nature of the ninth sign, Sagittarius. The next division is within the sign of Taurus, but continues from where it left off, so the first division of Taurus has the nature of the sign following Sagittarius, which is Capricorn. The second division of Taurus has the nature of Aquarius, and so on.

C has a table of novenes.⁵⁰ However, without a table it is still relatively easy to calculate in which novene a planet lies, and the text gives a useful explanation: it says that whatever triplicity is examined, all triplicities will have a particular cardinal sign, whose lord starts a new sequence and is said to be the lord of the first novene, and so on.⁵¹ Again, the text is a little clumsy, and an explanation is in order. As explained above, the first novene of Taurus has the nature of Capricorn. The twelve zodiac signs can be divided into four triplicities (or elements) of fire, earth, air, or water, and into three quadruplicities of cardinal, fixed, and mutable. These have been defined since at least the time of Ptolemy and would be instantly known to any medieval astrologer – Taurus being a fixed earth sign, for example.⁵² Roger's method, therefore, is to look at the element of the sign – earth, in the case of Taurus – and ask which sign of the zodiac is the cardinal sign for that element. In the case of earth signs, Capricorn is the cardinal sign. Thus the first novene of Taurus (and indeed of all three earth signs) is Capricorn. This demonstrates Roger's

⁴⁹ A, f.15r.

⁵⁰ C, f.150r.

⁵¹ A, f.15r.

⁵² See for example Abu Ma'shar, *Abbreviation* I.15, p.15: 'Taurus is... feminine, nocturnal, fixed' and I.87, p.25: 'Taurus, Virgo and Capricorn... are trined, earthy, southern'.

role as a teacher in an environment where mathematics may not have been as natural as to the Arabic authors. Most English documents from the twelfth century use Roman numerals for numbers, while Arabic authors were using Arabic numbers, derived from those used in India, and which were the forerunners of the numbers in use today. An instruction to ‘consider the degrees and minutes which the planet has moved through its sign... and multiply this by 12’, as could be seen for duodenaria, is a lot easier when using Arabic numbers than Roman numerals.⁵³ Roger therefore described the techniques, but gave useful shortcuts for performing the calculations, of which two examples have been shown. Figure 5.8 illustrates novenes, showing the novenes of Aries. The last novene is Sagittarius, which means the following novene, which is the first novene of Taurus, is Capricorn as described above.

The techniques of dividing a sign into nine and twelve parts predate Arabic astrology. The novenes and duodenaria are of Indian and Greek provenance respectively, described by al-Qabisi and Abu Ma’shar. Al-Qabisi calls novenes ‘nawbahrat’ (an Indian term) and duodenaria ‘al-shena ashera’, meaning twelfths, while Burnett translates duodenaria using the term ‘dodecatemoria’, which is Greek. Adelard of Bath’s Latin translation uses the terms ‘novenarius’ and ‘duodenaria’, although the Latin text mentions the Indian term, too: ‘Et ex hoc annubaharat, que sunt novenarie’.⁵⁴ Hermann’s Latin translation of Abu Ma’shar refers to the Indian term for novenes, too: ‘E quibus prime sunt novene, quas Indi reperientes noubaharat vocarunt.’⁵⁵

⁵³ Al-Qabisi, *Introduction* IV.15-16, p.129.

⁵⁴ Al-Qabisi, *Introduction* IV.16, p.338.

⁵⁵ Abu Ma’shar, *Great Introduction* (Hermann) V.17, p.88, lines 534-535.

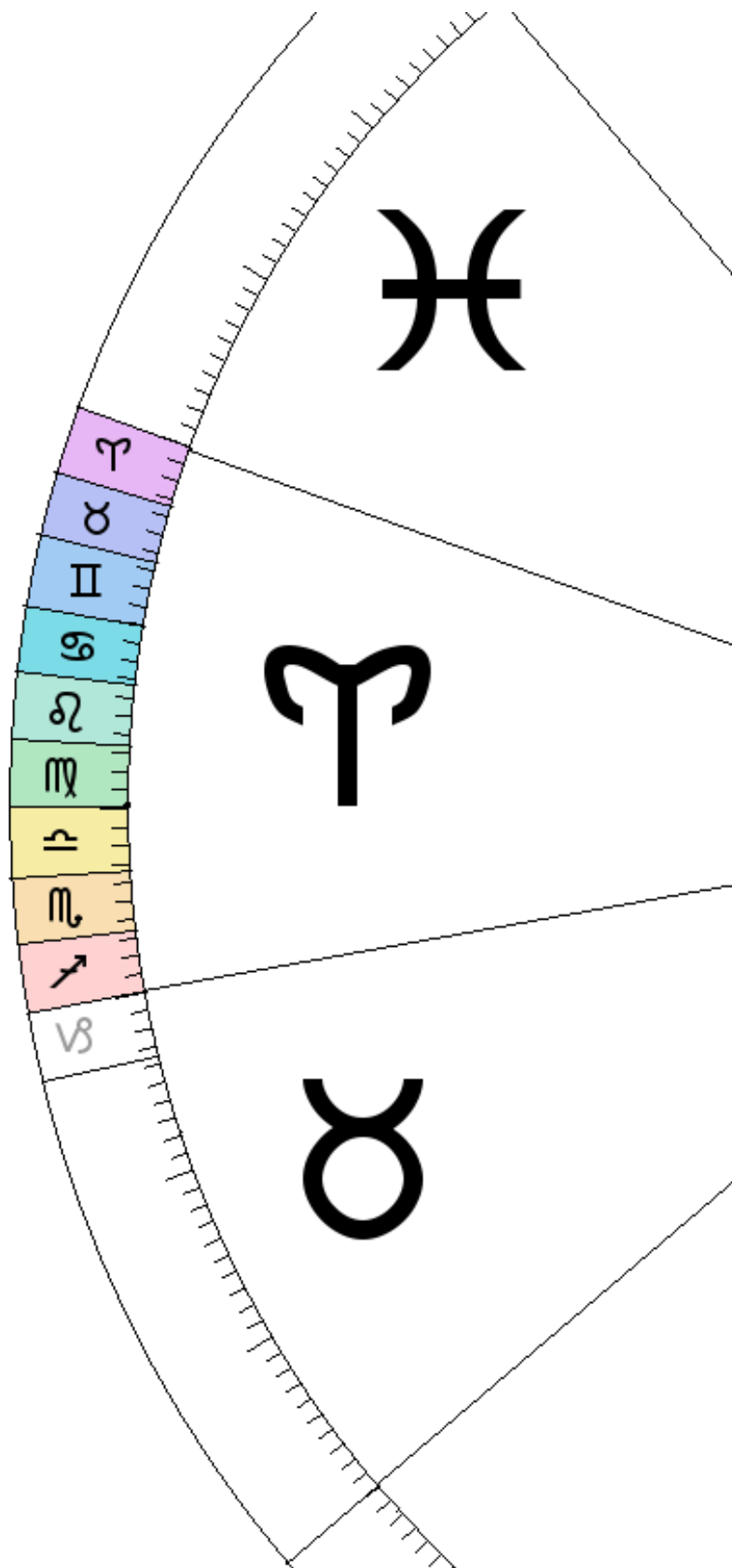


Figure 5.8 – Illustration of the novenes of Aries, and the first novene of Taurus.

On the trigenaria

The final division, which Roger's text includes for completeness but does not appear to make use of subsequently, is to divide the sign into thirty degrees and allocate consecutive signs to each degree, so the first degree of a sign has the nature of that sign, the second degree the nature of the following sign and so on. This method is also described by Abu Ma'shar, who includes it in the section on duodenaria, attributing it to Hermes.⁵⁶

On all the varieties of judgements

Having given the method for calculating novenes and duodenaria, and glossing over a third method of trigenaria, the reader is still none the wiser in how to determine the querent's intention, of course. Before telling his reader how to do this, Roger rather laboured the point, presumably for the benefit of his students, that intentions and answers in general are rarely clear-cut and that the art of the astrologer is to weigh up the various (and sometimes contradictory) testimonies from the various planets to come to a reasonable conclusion, and starts this section by pointing out that 'nobody should be surprised that we discuss these different divisions' since when it comes to intentions many things can arise, some good and some bad, and from different causes.⁵⁷ After giving this caveat, the text gives three practical examples. First, the text says, look at the nature of the rising sign, and note the rising degree and the duodenaria that contains the ascending degree. Look for the house that is occupied by that sign, and the following house and its lord to find the intention. Thus if the sign of the duodenaria were to occupy the fifth house, which is the house of sons, and its lord were to fall in the fourth, which is the house of heirs, one would consider the inheritance of sons. Secondly, the intention can be discovered by the lord of the Ascendant and by planets that it aspects. Thus, if the lord of the Ascendant were in the eleventh and aspected something in the seventh it concerns the love of women. Thirdly, examine the strength of the planet in its place. If the planet were in the fifth house and the fifth house's lord is Saturn, and Saturn is in the sixth house in Taurus, in which sign Saturn signifies the stomach, one would consider sickness of the stomach of the sons.⁵⁸

⁵⁶ A, f.15r; Abu Ma'shar, *Great Introduction* (Hermann) V.18, p.89, lines 564-569.

⁵⁷ 'Non miretur aliquis l[icet] ssecundum diuisos diu[er]se t[ra]ctemus', A, f.15v, lines 3-4.

⁵⁸ A, f.15v.

The first example determines the intention from the duodenaria. Figure 5.9 is an illustration based on Roger’s example, although Roger did not specify the Ascendant or the degrees of any of the planets. In this hypothetical example, the Ascendant is at 11° Scorpio. The first 2.5° of Scorpio will have a duodenaria of Scorpio, the next 2.5° of Scorpio will have a duodenaria of Sagittarius, and so on through the signs. We can see that 11° Scorpio (shown as a red line) will fall in the fifth segment, which has a duodenaria of Pisces.

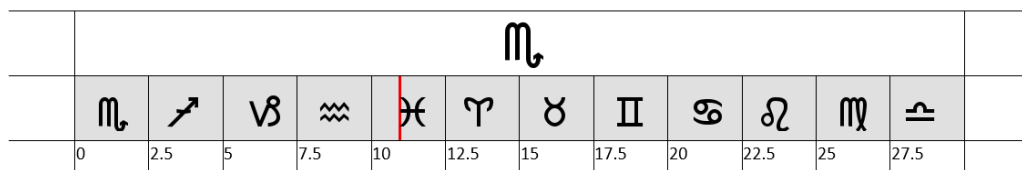


Figure 5.9 – Duodenaria of 11° Scorpio.

The chart in figure 5.10 illustrates one possibility for the example in the text.⁵⁹ We can see that Pisces is the sign on the fifth house cusp. The ruler of Pisces is Jupiter, and Jupiter is in the fourth house, the house of heirs. Thus when the client comes to see the astrologer and this is the chart of the meeting, the astrologer can conclude that the question will relate to the inheritance of sons.

⁵⁹ Roger’s example only mentions a duodenaria falling in the fifth house whose Lord is in the fourth, so the chart in Figure 5.10 is only one possible example of this.

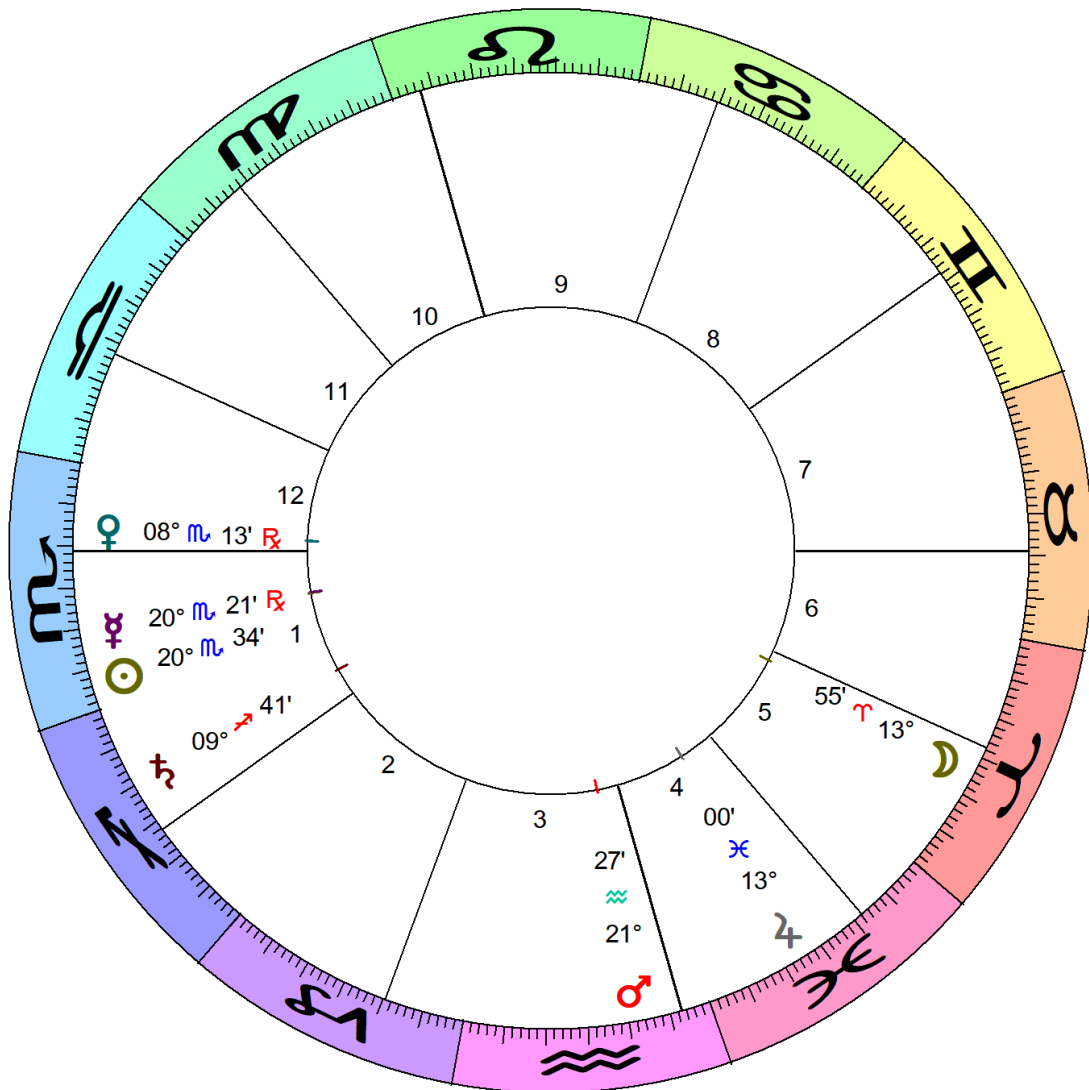


Figure 5.10 – Chart illustrating Roger’s example of the duodenaria of the Ascendant being in the fifth house, and the ruler of that house being in the fourth house.

As Roger was at pains to point out, there is more than one way to determine the intention, and he gives a second example, this time just using the Ascendant and its ruler.⁶⁰ This is illustrated in the chart shown in Figure 5.11. The ruler of the Cancer Ascendant is the Moon, which is in the eleventh house in Taurus, and makes a trine (a 120° aspect) to Mars in Capricorn in the seventh house. The chart ruler – the ruler of the Ascending sign – is connected to a planet in the seventh house of marriage and women.

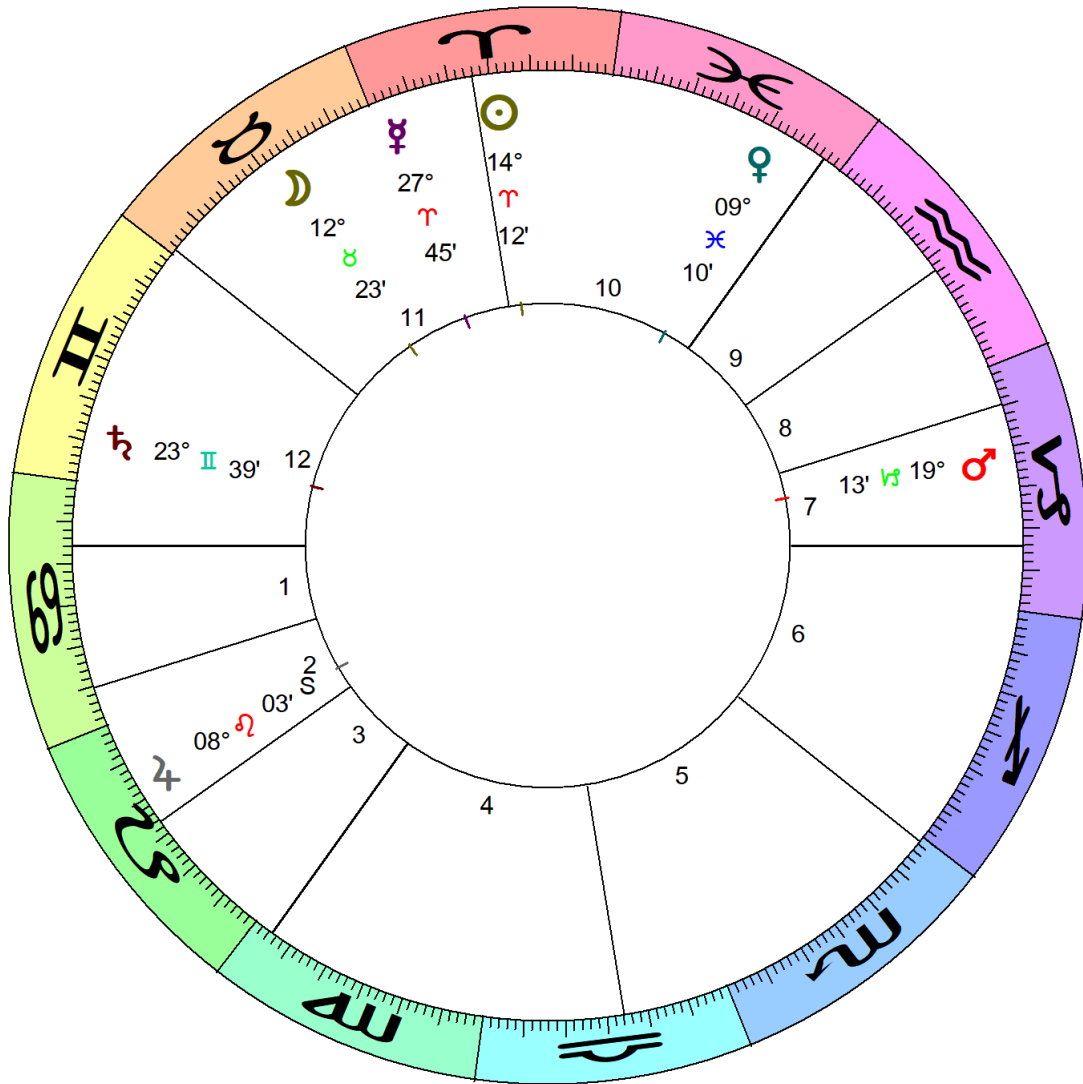


Figure 5.11 – Chart illustrating example of lord of the Ascendant aspecting a planet in the seventh house.

⁶⁰ Again, Roger did not give full chart details, so the chart in Figure 5.11 is just one possible example.

Sometimes, the clues to the intention can be very detailed. Roger's text gives a third example, where the significator is a planet in the fifth house, the house of sons, so the question might involve sons. If the house cusp were in Capricorn or Aquarius, then the fifth house ruler is Saturn, so one observes where Saturn is. Let us say that in this example, Saturn is in the sixth house of illnesses in the sign of Taurus, so the question is to do with the illness of a son. However, Saturn in Taurus relates to the stomach – hence the question will be about a stomach illness in a son.⁶¹

Although the alleged letter of Argafalau to Alexander the Great may well be apocryphal, determining an intention as a practice dates back to at least the third-century Indian source, the *Yavanajataka*.⁶² Various Arabic sources use the concept of intention, especially Masha'Allah's *On Hidden Things*, who justifies the idea of determining the question rather than merely asking the querent on the grounds that 'if he who asked you did so well, you will not go astray – but not every man knows how to ask.'⁶³

Roger's numerous methods of determining the intention seems overwhelming, but Hermann of Carinthia's *Search of the Heart*, which appears to be a translation of 'Umar al-Tabari's *Treatise on the discovery of Innermost Thoughts*, puts this into context.⁶⁴ This text has a section entitled 'Other opinions on identifying the thought', describing three methods: using the Lot of Fortune, and attributed to Dorotheus; the ruler of the Ascendant, attributed to Hermes; and the duodenaria and novenes, attributed to 'the Indians'.⁶⁵ The final opinion is attributed to Masha'Allah:

The fourth [opinion] is the signification of Masha'Allah, generally mixing together all of these from the east: the lord of the rising sign, the lord of the sovereignty, lord of the trigon, the bound, the decan, the ninth-part, the twelfth-part, the star to which the rising degree is bound, the star which occupied the east. Apart from the east, the Lot of Fortune with its lord, the lord of the hour, and the lord of the Sun (by day, [but] of the Moon by night). The one which was strongest

⁶¹ See the section in Chapter Four on the nature of the twelve signs for the attribution of the stomach to Saturn in Taurus.

⁶² Dykes, *Search of the Heart*, p.6.

⁶³ Masha'Allah *On Hidden Things*, from Dykes, *Sahl and Masha'Allah*, p.426.

⁶⁴ Dykes, *Search of the Heart*, p.4.

⁶⁵ Dykes, *Search of the Heart*, Chapter I.9.

among all of these, and which many testimonies favored, that one plainly obtains [the signification].⁶⁶

Intention from the Part of Fortune

Roger used the Part of Fortune as another method of determining the intention of the querent. The text tells the reader to consider the sign and house that the Part of Fortune occupies, but warns that there are many things that can be determined for a single house.⁶⁷ Thus, once again, Roger emphasised that there are many ways of determining the intention, and many interpretations for even a single technique. For example, if the Part of Fortune were in the ninth house, the intention would likely be a ninth house matter. However, this is too vague, since the ninth house can represent long journeys, learning and religion, so other techniques need to be used to decide which of these themes applies in the particular case. This would involve looking at the nature of the sign that the Part of Fortune is in as well as the house, considering the planet ruling that house and what condition and themes that planet represents, and so on.

Intention from the lord of the Ascendant

The text now gives yet another method – considering the intention from the lord of the Ascendant. It starts off with a rule – the lord of the Ascendant must not be impeded; if it is, this technique cannot be used. If the lord of the Ascendant is not impeded, consider the house it is in, and which part of the house. The text then states that each house may be divided as follows: the first and second houses are not divided; the third is divided into two; the fourth house into three; fifth into four; sixth into two; seventh and eighth into three, ninth into four, tenth, eleventh, and twelfth into three. If the lord of the Ascendant is in the first house, the intention relates to the querent himself. If in the second, it relates to possessions. If in the first half of the third, it concerns movement within the locality. If in the final half it concerns brothers and sisters. If it were in the first third of the fourth, it concerns the father. If in the second third of the house it concerns the birth, and house and things underground and the building and other inhabitants in the same house. If in the final third, it concerns other great reflections on things that can make one ignorant or unaware. If then it is in the first quarter of the fifth it concerns sons. If in the second quarter it concerns clothes. If in the third quarter,

⁶⁶ Dykes, *Search of the Heart*, p.69.

⁶⁷ A, f.16r.

letters or tidings. If in the last quarter, parchment and books. The text continues in this vein for all twelve houses.⁶⁸

In medieval astrology, the planet ruling the Ascendant took on a special significance as one of the key rulers of the chart, provided it was in good enough condition. Roger's text describes a technique for using this planet to determine the intention, by considering which house this planet is in, and dividing the house into a number of equal segments, with each segment representing a particular theme.

The planet ruling the Ascendant ('the lord of the first') must be in good enough condition to perform its task. If it is in 'exile' (in other words, in detriment) it cannot act. Similarly, if it is 'impeded' by other considerations, such as being retrograde, or too close to the Sun, it cannot act. Assuming none of these apply, one can proceed to use the technique that the text goes on to describe. This rather long-winded paragraph continues for all twelve houses, and the concept is easier to see visually. Some houses have several meanings – the ninth house, for example, can represent faith, journeys, wisdom, and dreams. In the technique that Roger described here, most houses are divided into two, three or four equal segments, and each segment has its own meaning. Using the ninth house as an example with the four meanings just referred to, this is divided into four, and the first quarter of the house relates to faith, the second quarter to journeys, the third to wisdom and the last quarter to dreams.

Figure 5.12 illustrates this concept. In this hypothetical example, the Ascendant is Pisces, ruled by Jupiter. Jupiter is at 22°35' Sagittarius, and is in the ninth house. The ninth house is divided into four equal segments, and as the house cusp (the start of the house) is at 1° Sagittarius and ends at 29° Sagittarius, this means the ninth house occupies 28°, so dividing this house into four gives four 7° segments. Jupiter is therefore just into the last of these segments of the ninth house, so the intention would relate to dreams. Table 5.1 gives details of each segment.

⁶⁸ A, f.16r.

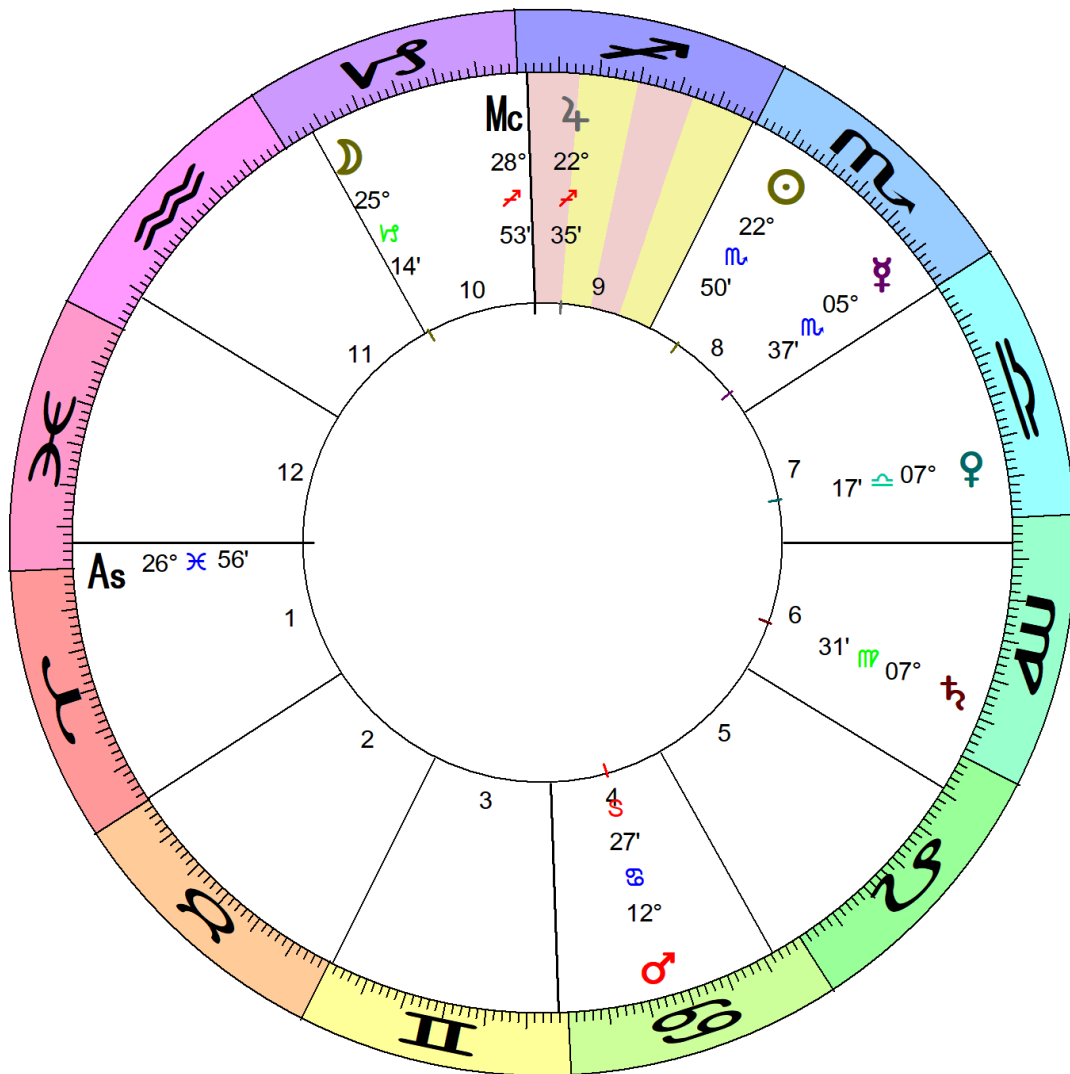


Figure 5.12 – House division example for lord of the Ascendant.

House	Divided into	Segment	Meaning
1 st	Not divided		The querent himself
2 nd	Not divided		Possessions
3 rd	2	First half	Movement within the locality
		Second half	Brothers and sisters
4 th	3	First third	Father
		Second third	One's birth, one's home, things underground, the building and other inhabitants in the same building
		Final third	Other great meditations on things that can make one ignorant
5 th	4	First quarter	Sons
		Second quarter	Clothes
		Third quarter	Letters and tidings
		Final quarter	Writings and books
6 th	2	First half	The patient and their illness
		Second half	Slaves, servants and beasts
7 th	3	First third	Marriage and wives
		Second third	Associates
		Final third	A thief or theft
8 th	3	First third	Death
		Second third	Sharing in possessions
		Final third	Debt and duty
9 th	4	First quarter	Faith
		Second quarter	A journey
		Third quarter	Wisdom or civil office or honour bestowed by an office
		Final quarter	Dreams
10 th	3	First third	New lords
		Second third	Business
		Final third	Mother
11 th	3	First third	Trade
		Second third	A rich man
		Final third	A friend or sweetheart
12 th	3	First third	An enemy
		Second third	Deception or a poor man
		Final third	Beasts

Table 5.1 – Intention from the lord of the Ascendant.

This system does not appear in Abu Ma'shar or al-Qabisi, and Whyte claimed that 'This may have been a system developed by Roger; I have certainly seen no reference to it elsewhere'.⁶⁹ However, this method does appear in Pseudo-Ptolemy's *Iudicia*, with generally identical references. For example, for the third house, Roger gives: 'Si i[n] p[rima] mediante t[er]t[i] de mot[i]o[n]e locali. Si i[n] ultima de v[e]l fr[at]r[e] sorore', while *Iudicia* gives 'Q[uod] si i[n] medio te[rt]i fuit ei uolu[n]tas e[st] mou[er]i d[e] loco i[n] locu[m]. In ultima medietate si inu[e]nt fuit d[e] sororib[us] [ve]l fr[at]ri[bu]s audire cup[it]'.⁷⁰ There are some discrepancies, though – for the fifth house, Roger gives 'de filiis de vestimentis de nunciis de cartis v[e]l libris' while *Iudicia* gives 'd[e] filiis d[e] gaudio d[e] vestimentis d[e] carta siue lib[ri]s' for the four parts.⁷¹

Intention from the lord of the hour

The text had mentioned using the "lord of the hour" earlier, and the next part of the text describes one way of using this. The text itself is brief, and simply says that one should work out the lord of the hour, see what sign it is in and how far through that sign it is, multiply that by twelve and project from the Ascendant. This can be used in the event that the other methods (such as lord of the Ascendant) could not be used because of an impediment.⁷²

Planetary days and hours were widely used in medieval astrology. The association of planets with days is obvious from the Latin names of days, as shown in Table 5.2:

English	Latin	Planet
Sunday	Dies Solis	Sun
Monday	Dies Lunae	Moon
Tuesday	Dies Martis	Mars
Wednesday	Dies Mercurii	Mercury
Thursday	Dies Iovis	Jupiter
Friday	Dies Veneris	Venus
Saturday	Dies Saturni	Saturn

Table 5.2 – Planetary days.

⁶⁹ Whyte, *Roger of Hereford*, p.38.

⁷⁰ A, f.16r, lines 24-25; Pseudo-Ptolemy, *Iudicia*, BNF Lat. 16208, f.62va.

⁷¹ A, f.16r, lines 28-29; Pseudo-Ptolemy, *Iudicia*, BNF Lat. 16208, f.62va.

⁷² A, f.16v.

The principle of a planetary hour is that at sunrise on a particular day, the planet ruling the day was also the planet ruling the first diurnal hour. For example, the first diurnal hour of Thursday is ruled by Jupiter. The second hour is ruled by the next planet in Chaldean order, so for Thursday, the second hour would be ruled by Mars.⁷³ Table 5.3 shows all the planetary hours for Thursday, and the first two for Friday – as can be seen, the natural Chaldean order means that the final night-time hour of Thursday is ruled by the Sun, so the next planet in the sequence – Venus – is the ruler of the first daytime hour of Friday, as one would expect for *Dies Veneris*.

Day	Hour	Day/Night	Lord of the hour
Thursday	1	Day	Jupiter
	2		Mars
	3		Sun
	4		Venus
	5		Mercury
	6		Moon
	7		Saturn
	8		Jupiter
	9		Mars
	10		Sun
	11		Venus
	12		Mercury
	1	Night	Moon
	2		Saturn
	3		Jupiter
	4		Mars
	5		Sun
	6		Venus
	7		Mercury
	8		Moon
	9		Saturn
	10		Jupiter
	11		Mars
	12		Sun
Friday	1	Day	Venus
	2		Mercury

Table 5.3 – Planetary Hours for Thursday.

⁷³ The Chaldean order is Saturn, Jupiter, Mars, Sun, Venus, Mercury, and Moon in that sequence.

Roger's text uses the planetary hour ('the lord of the hour') in two ways. The first of these is as a method of finding the intention if any of the usual candidates (for example, the lord of the Ascendant) are in a poor condition and cannot be used. Roger's wording is rather unclear on this point, but fortunately manuscript A has a helpful note in the margin: 'Ut si finierit num[er]us m[u]ltiplicat[ur] + ab as[ce]nd[en]te ductus i[n] domo tertia s[up]erit dere p[er]tinente ad domum tertiam + ita de aliis', so if the value projected from the Ascendant ends up in the third house, the intention will be a third house matter.⁷⁴

There is no example in the text, but an example here should make the technique clearer. In Figure 5.13 the Ascendant is at 10° Libra, and let us assume this chart is for a date and time where the lord of the hour is Mars. Mars is at 6° Aries. Multiply 6 by 12 to get 72, and then project 72° from the Ascendant (another way of thinking of this in modern terms is to say that Mars is 20% of the way through the sign of Aries, so the distance to project from the Ascendant is 20% of the zodiac, or 72°). Since the Ascendant is at 10° Libra, 72° from this point reaches 22° Sagittarius. In the diagram, the dark pink shading shows how far Mars is through the sign of Aries, and the red arc from the Ascendant shows this same ratio projected from the Ascendant. This point is in the third house, so the lord of the hour will relate to third house matters, such as short journeys or siblings (even though the lord of the hour itself is in the sixth house of illness and servants).

This technique does not seem to feature in most Arabic texts, and so may have derived from a source no longer extant. Masha'Allah's *On Hidden Things* as a technique for finding a lost object, rather than an intention, that uses a similar calculation:

Then look to see how much the lord of the hour has traveled through in the sign, and in which one of the degrees it is, and multiply those by 12; and what was collected together, divide by sign, giving to each sign 30°, beginning from the Ascendant until the number is finished.⁷⁵

⁷⁴ A, f.16v.

⁷⁵ Masha'Allah, *On Hidden Things*, in Dykes, *Sahl and Masha'Allah*, p.432.

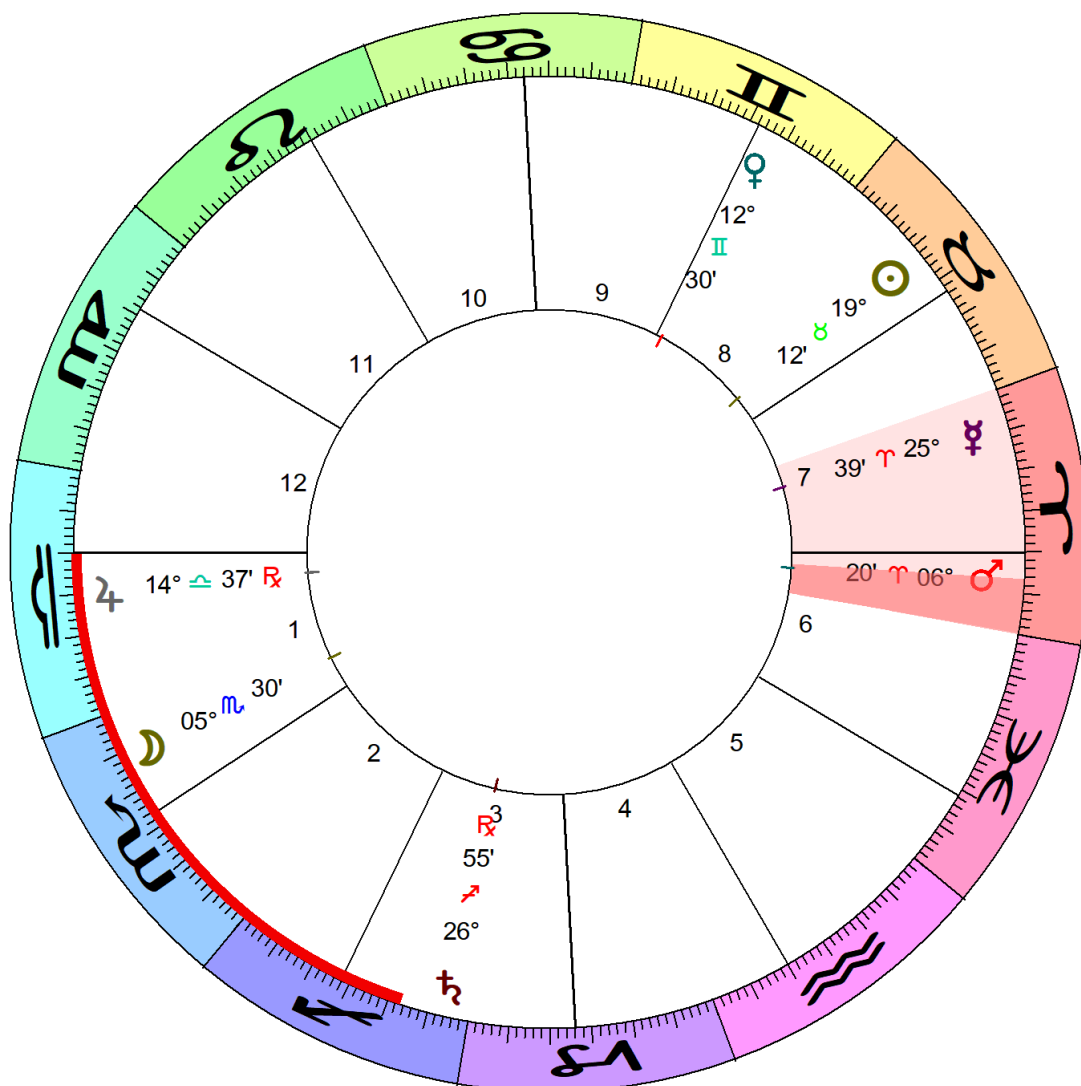


Figure 5.13 – Intention from lord of the hour.

Hidden objects from the lord of the hour

The second method described is to find a hidden object. The text states that the planetary hour is divided into three, and each third of the hour relates to an intention, and a hidden object. It lists all of these: if the time is in the first part of the hour of the Sun, one looks for oneself or one's associates; the hidden thing will be concerned with food or herbs. If in the second part of the hour of the Sun, look for advice concerning war or siege or panic; the hidden thing will be bones or land or money. If in the last third of the hour of the Sun, look for advice or evil omens, or avoiding the anger of the powerful. The hidden thing will be white wool or thread or something twisting...⁷⁶

This need not relate to the question that the querent will ask the astrologer – the querent may not be asking about something that he has lost, for example – but if the astrologer starts the consultation by telling the querent something about himself that only the querent should know, such as an object that the querent has on his person, it is a demonstration of the astrologer's skill. In this case, the astrologer simply needs to know the time that the querent arrives, to determine what the current planetary hour is, and how far through the hour it is – no mean feat without an accurate clock, of course, although an astrolabe could be used to calculate a reasonably accurate planetary hour, and a footnote in manuscript A implies this, stating that since the Sun moves 15 degrees in an hour (this would be with respect to the celestial equator, not the ecliptic), 'five degrees is a third part of the elevation of the Sun', to determine whether the Sun was in the first, second or third part of the hour.⁷⁷

This is a single example based on the arrival time of the querent being in the planetary hour of the Sun. However, Roger gave examples for each planetary hour, summarised in Table 5.5.

A simple example, illustrated in Table 5.4, will demonstrate the method. Let us assume that the querent visits the astrologer on Tuesday 6 August 1185 in Hereford at noon. Sunrise was at 04:44, and sunset was at 19:22 (local time, and using the Julian calendar). Hence the day was 14 hours 38 minutes long. Dividing this by 12, each planetary hour was 73 minutes 10 seconds long. Noon was 7 hours 16 minutes after sunrise, or 436

⁷⁶ A, f.16v.

⁷⁷ See for example 'Drafting the Astrolabe 11: The Unequal Hour Arc', <http://www.astrolabeproject.com/26/02/2012/drafting-the-astrolabe-11-the-unequal-hour-arcs/> [06 May 2017]; 'G[ra]duu[m] .v. est tertia pars videat g. p[er] eleuatione[m] sol[is]' A, 16v. footnote.

minutes. Since the day was Tuesday, the first planetary hour was Mars, so the sixth planetary hour is Saturn, which started at 10:49, and the seventh planetary hour would be Jupiter, which started at 12:03. Hence, noon is in the final third of the hour of Saturn.

Hour	Start	Lord of the hour
1	04:44:00	Mars
2	05:57:10	Sun
3	07:10:20	Venus
4	08:23:30	Mercury
5	09:36:40	Moon
6	10:49:50	Saturn
7	12:03:00	Jupiter

1 st third	2 nd third	3 rd third
10:49:50 – 11:14:12	11:14:13 – 11:38:35	11:38:36 – 12:03:00

Table 5.4 – List of the first seven planetary hours for Tuesday, showing noon as falling in the sixth hour, and the third part of that hour.

The text for Saturn says that if the time is in the first part of the hour of Saturn one looks for education, or bearing books. The hidden thing is glassy or somewhat green. If in the second, a fighting man, or a woman who would give birth – if placed in the day it will be masculine if in the night it will be feminine. The hidden thing is iron or another metal or anything accustomed to being put in the fire. If in the last it concerns his illness or his friends' illnesses or war or discord and other grief. The hidden thing is the head of a bat or a bird of two colours.

Hence the astrologer would deduce that this client will be asking a question about illness or war, or some other kind of grief, and may have secreted about his person a head of a bat, or something relating to a bird of two colours – presumably some sort of lucky charm.

Hour	Third of hour	Intention	Hidden thing
Sun	1 st	Oneself or one's associates	Food or herbs
	2 nd	War, siege, fortification, fear	Bones, land or money
	3 rd	Advice, debate, evil omens or avoiding the anger of the powerful	White wool, a thread from white or dyed wool, something twisted
Venus	1 st	One's own deeds or desiring a woman	Skin or leather or something flammable
	2 nd	Temptation, enchantments	Twisting, spacious, harmless trifle
	3 rd	A woman or sharing with a companion	Herbs, trees or seashore things
Mercury	1 st	Education or the future	Fresh, blooming, delicate of ample form, short edible roots, externally dry and internally hollow
	2 nd	Sickness	Dark edible shoots that grow in the earth
	3 rd	Lost things or a fugitive	Precious gem of onyx or other pierced jewel
Moon	1 st	Weaknesses of the eyes	Fragrant herbs
	2 nd	Imminent foreign travel or concerning lost things	Somewhat dark or obtained from the seashore or water, or yellow orpiment [a yellow pigment] or dark-coloured jewels
	3 rd	Lost things	Yellow orpiment or similar colours
Saturn	1 st	Education, bearing books	Something glassy or somewhat green
	2 nd	A fighting man or a woman who would give birth (masculine by day, feminine by night)	Something iron or another metal or anything accustomed to being put in the fire
	3 rd	His illness or his friends' illnesses, war or discord and other grief	Head of a bat or a bird of two colours
Jupiter	1 st	Healing of demonic possession	Something put into fire, iron or statue or small trifle sculpted by a carpenter
	2 nd	Acquisition of money	Something of diverse colours or of a white colour or a statue with green gems mixed with red
	3 rd	Agreeing with a like-minded one and concerning hidden underground treasure that he will discover	A tin ⁷⁸ statue, thong, leather or hide.
Mars	1 st	Avoidance of threats, omens, treachery or attacks	A staff of gold or other metals
	2 nd	Stolen money	A book (?) or anything red
	3 rd	Laws of enemies or illness	Something wooden or dry

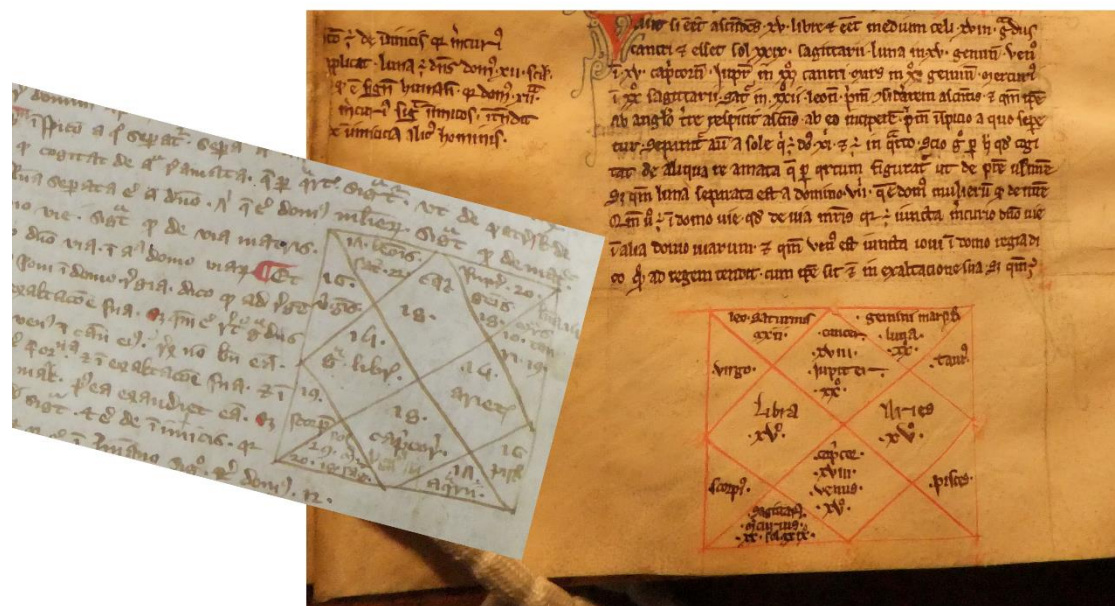
Table 5.5 - Intentions and hidden objects from lord of the hour.

⁷⁸ Reading 'stannum' for 'stagnum'

The *Letter of Argafalau* also appears to be the source for this method of determining a hidden object that the questioner might have, based on a three-fold division of the planetary hour. The nature of the hidden object in the *Letter* differs slightly from Roger’s descriptions, implying Roger did not simply copy the text verbatim, but is very similar. For example, for the planetary hour of the Sun, Roger and Argafalau agreed on the intention for each third of the hour, but while Roger gave ‘food or herbs’ for the first part, ‘bones, land or money’ for the second and ‘white wool, a thread from white or dyed wool, something twisted’, Argafalau gave ‘something of earth’ for the first, ‘silver or copper or earth’ for the second but agreed with Roger for the third part with ‘white wool in his hand, or a little white piece... or a white woollen string’.⁷⁹

A worked example

In several manuscripts, Roger provided a worked example of a horoscope, which was the subject of Whyte’s dissertation in 1991, in which he hypothesised that the horoscope was the natal chart of Eleanor of Aquitaine, although he acknowledged that the chart seems to be a jumble of several different dates.⁸⁰



Images reproduced by kind permission of the Syndics of Cambridge University Library, and Bodleian Libraries, University of Oxford.

Figure 5.14 – Roger of Hereford’s example horoscope in two manuscripts.

⁷⁹ Dykes, *Search of the Heart*, Appendix I: ‘The letter of Argafalau to Alexander’, pp.207.

⁸⁰ Whyte, *Roger of Hereford*, pp.40-44.

Figure 5.14 shows two of these manuscripts, one a fourteenth-century copy (left) from manuscript C, one a thirteenth-century copy (right) from manuscript A.⁸¹ The example is curious, since the chart does not correspond to any real date, at least not within many centuries of Roger's time period. My own view is that this chart is a teaching example that Roger invented to demonstrate some salient points that he wished to illustrate, and that it does not represent a chart of any particular time. This is certainly a common practice among teachers of astrology today, where one can illustrate a point by drawing various planetary positions on an example chart without it representing actual physical positions of the planets at a particular date and time, as indeed has been demonstrated by illustrative examples provided throughout this thesis.

The diagrams in these manuscripts differ. While the text says 'Moon 15 Gemini' in both texts, the diagram in A has it as 20°. A has Jupiter in the tenth house (which is correct since Jupiter is at 20° Cancer, and the MC is 18° Cancer), but C has Jupiter drawn in the ninth house in the diagram. Mars and the Moon are both technically in the eighth house, but A has them pushed over to the ninth house in the diagram (reasonably so for the Moon, since a planet close to a house cusp is frequently treated as though it is in the next house, though this is a little more questionable for Mars), and Roger did treat them as ninth, which gives the possibility that he might have been using whole-sign houses for this example. The ambiguity of whether a planet close to a house cusp is considered to be in that house or not derives from Ptolemy, who defined the first house as 'the twelfth part of the zodiac surrounding the horoscope, from 5° above the actual horizon up to the 25° that remains, which is rising in succession to the horizon'.⁸² The idea that a planet within five degrees of a cusp of a house can be considered as being in the next house was a source of debate among medieval astrologers – Dykes points out that 'in the eighth century... there was some dispute over whether houses should be measured from cusps (and even a few degrees before the cusp), or in terms of whole signs.'⁸³

Figure 5.15 shows a diagram in modern format, based on Roger's text itself rather than the (possibly incorrect) diagrams. The small grey arrows illustrate where planets have been treated in the text as though they are in the following house.

⁸¹ C, f.152r; A, f.17v.

⁸² Ptolemy, *Tetrabiblos*, III.10, p.273.

⁸³ Dykes, *Introductions to Traditional Astrology* I.12, 'Angularity of the houses', p.70 fn.155.

The text in *Judicial Astrology: Techniques* does not state whether this chart is a natal chart, an electional chart or a horary chart. However, since the example is in the ‘On intentions’ section, and his conclusion is about intentions, it appears to be an example of either a horary chart, or a chart of the arrival time of the client so that the intention can be determined. The other reason for assuming this is a chart to show intention is that this part of the text comes after the lengthy section that talks about the various points that can all be used to determine intention. The example that the text gives then demonstrates this.

Since Roger used this worked example to conclude the book on intentions, it provides a good example of synthesising the information Roger had already presented and is a useful teaching exercise. Since Roger’s text is quite dense, it is presented here piece by piece, with a commentary on each element within the text.

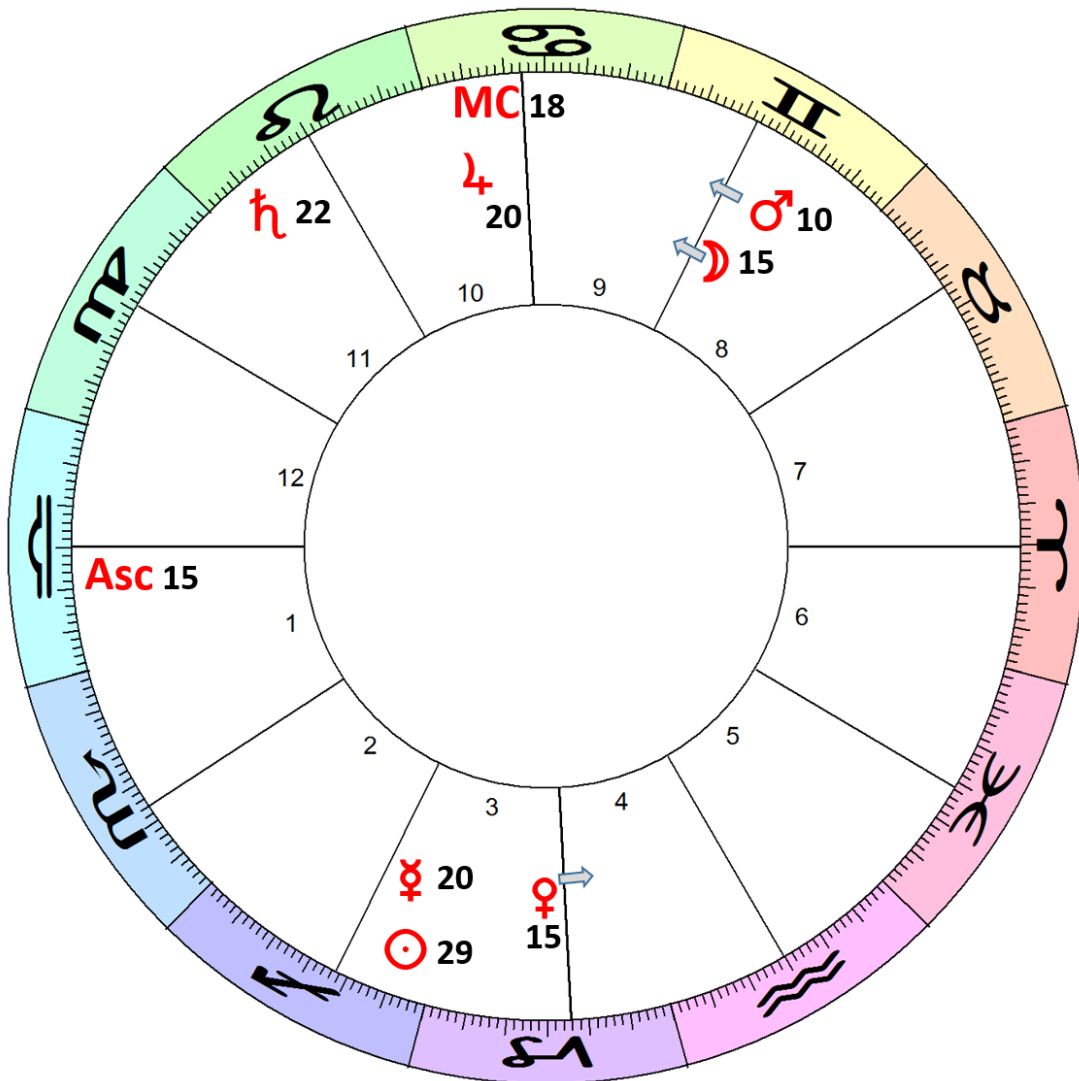


Figure 5.15 – Modern representation of Roger of Hereford’s example chart.

Roger’s text starts by saying he would look at the lord of the Ascendant – and that this makes a right angle to the Ascendant.⁸⁴ The Ascendant is Libra, and the planet ruling Libra is Venus, which is exactly 90 degrees from the Ascendant. Planets making aspects to the angles are strengthened, and since this is an exact aspect, and Venus is angular too (very close to the IC, so considered to be a fourth house planet) and has essential dignity in earth signs, this makes Venus very strong in this example and so will be used as one of the main signifiers.

⁸⁴ All quotes for this example are from A, ff.17v-18r.

Now a main significator (Venus) has been found, the text says he would see from what it is separating. Looking at the chart, the Sun is in late Sagittarius, and the significator, Venus, is in Capricorn, moving away from the Sun. This is said to be **separating**, and the planet that the significator is separating from is also considered important.⁸⁵ Roger noted that the Sun is the ruler of the eleventh house, and that the significator, Venus, is in the fourth.

This allowed Roger to make an initial judgement: the matter concerns some beloved thing that relates to the fourth house; this signifies the father or mother. Since the lord of the Ascendant (Venus) is in good condition, it is able to act and does not suffer from the impediments mentioned earlier in the text. Hence it can be used to determine the intention – what the question is likely to involve. The question will concern something beloved (since Venus is linked with all things loved) and will relate to the fourth house of parents. The text then determines which parent – mother or father – stating that since the Moon is separating from the lord of the seventh and the seventh is the house of women, it relates to the mother.

Since Roger had determined that the intention is about a parent, he narrowed it down to either mother or father. The Moon, provided it is not impeded as described earlier in the text, can act as another indicator of intention by seeing what it is separating from (just as was done for the chart ruler, Venus). In this case, the Moon is separating from Mars, and Mars is the ruler of the seventh house. The seventh house relates to women, so the parent in question must be the mother.

The text then makes another judgement, noting that the Moon is in the ‘house of travel’ and that the significator is in aspect to Mercury, the ‘Lord of travel’, in the other ‘house of travel’.⁸⁶

Having determined that the mother is the relevant parent in this question, Roger investigated what else might be involved. The Moon is in the ninth house, which is associated with long-distance travel. The Moon is joined to Mercury (by an opposition), who is the ‘Lord of travel’. This designation could be because Mercury is associated with the image of the messenger and therefore travel, or because it rules the ninth house in this

⁸⁵ ‘P[ri]m[um] i[n]spicio a quo sep[er]atur’, A, f.17v, lines 25-26.

⁸⁶ ‘Q[uonia]m v[er]o [est] i[n] domo uie q[uo]d de uia m[at]ris q[ui] [est] iuncta m[er]curio d[omi]no uie, i[n] alia domo viarum’, A, f.17v, lines 29-30.

chart, but in either case the designation makes sense. Roger then considered the placement of the Lord of travel and noted it was in the third house, which is associated with short-distance travel. Hence there are several testimonies relating to travel in this question, in addition to the querent's mother.

Another judgement is then presented in the text, stating that since Venus aspects Jupiter in the house of kings, this relates to a king – and the king is in his exaltation. However, because Jupiter is retrograde and opposite Venus, and Venus is in Jupiter's fall, the king will not be pleased to welcome her.

Venus – the chart ruler – aspects (by opposition) Jupiter, and Jupiter is in the tenth house. Both Jupiter and the tenth house relate to kingship, and Jupiter is also in Cancer, where he is exalted. This, therefore, is a very clear signature of a king being involved.

In the earlier section on reception, it was stated that reception occurs when the faster-moving planet is applying to a slower-moving one and is in the dignities of the slower-moving planet. In this example, Venus (the mother) is applying to Jupiter (the king), but far from being in a sign where Jupiter has dignity, Venus is in a sign where Jupiter is in fall (Capricorn). Although this was not specifically mentioned as a case earlier in the text, here the text implies what might be considered a “negative reception”, where rather than Jupiter receiving Venus warmly, he actively rejects her. There is a precedent for this technique in Sahl's *Introduction*:

Likewise, if the Moon... were joined to a planet, in its descension, she will be like one who goes to him from the house of his own enemies: and he does not receive nor esteem her.⁸⁷

In addition to this negative form of reception, the aspect that Venus is making to Jupiter is a difficult opposition, and Jupiter is retrograde.⁸⁸ These testimonies, then, mean that the king will not be pleased to see her.

The text goes on to give an ameliorating factor, though, saying that since it is fortunate and in the sign of its exaltation and in an angle, and free from aspects from evil planets, then the king will listen to her. The wording of this passage is not immediately clear,

⁸⁷ Sahl, *Introduction* V.9 in Dykes, *Sahl and Masha'Allah*, p.32.

⁸⁸ This is not explicitly shown in the chart, but any outer planets in the opposite half of the chart to the Sun will always be retrograde, so it is taken for granted that the student would realise this.

though: ‘S[ed] t[u]n[c] q[uonia]m est fortuna + i[n] exaltac[i]one sua + in ang[u]lo celi lib[er] a male postea exaudiet eam’.⁸⁹

This rather confusing passage uses the word ‘fortuna’, which can simply mean fortunate or can relate to the Part of Fortune. The Part of Fortune is not shown on the diagram in either of the manuscripts, nor in the text, but the sentence about being ‘in the sign of its exaltation’ implies that Roger was not talking about the Part of Fortune here, since exaltations only apply to planets.⁹⁰ Rather, the term ‘fortuna’ simply refers to the fact that Jupiter is a benefic planet. Thus, Roger was referring to the fact that although Jupiter might seem to reject Venus for the reasons just given, Jupiter is nevertheless in a generous mood as it is a benefic planet, exalted, in an angular house and free of all evil planets, so he will indulge Venus and hear her out.

The final passage gives one last judgement, stating that the ruler of the Moon receives the Moon, but Mercury is in detriment and ruler of the twelfth house. The twelfth house is in a human sign as is the Moon, and so this means enmity towards other people.

Here, Roger was discussing another example of reception, where planets in signs ruled by other planets either benefit or suffer from those rulers (depending upon the condition of the rulers), provided there is an aspect between them. In this example, the Moon is in Gemini, which is ruled by Mercury, and there is an opposition aspect between the Moon and Mercury. However, Mercury is not benefitting the Moon. Mercury is in detriment, and is also the ruler of the twelfth house of hidden enemies, considered to be a malefic house. The twelfth house does have other meanings as well, such as large animals. However, Roger narrowed the meaning down by pointing out that the twelfth house is in Virgo, and the Moon is in Gemini, which are both human signs, and therefore the meaning of this definitely relates to human enemies. The scribe writing in manuscript A emphasises this, too, with a note (partially obscured) in the margin that the enmity of Mercury is because Mercury is the lord of the twelfth house, and in a human sign that is also the sign of Mercury’s detriment, which means enmity to other men.⁹¹

⁸⁹ A, f.18r, lines 2-3.

⁹⁰ Whyte clearly assumed Roger was talking about the Part of Fortune, since he wrote ‘if the Part of Fortune has an exaltation, we haven’t been told of it!’, Whyte, *Roger of Hereford*, p.43.

⁹¹ A, f.17v.

This worked example of Roger's is summed up in sixteen lines of text and a diagram (see Figure 5.16), but includes the salient points that he wrote in the section 'On intentions and thinking'.

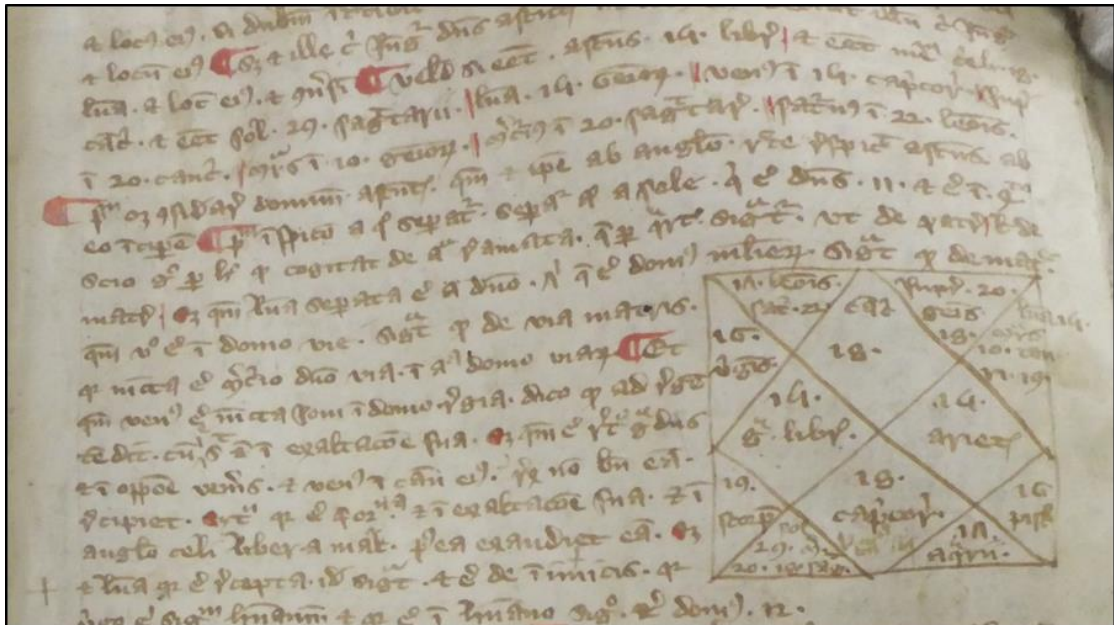


Image reproduced by kind permission of the Syndics of Cambridge University Library.

Figure 5.16 – C, f.152r. Roger's worked example.

On elections

The text now continues with a heading stating that this is the third book, concerning elections.⁹² It is a brief section, and starts by stating that there are three ways of preparing an election: using the lord of the Ascendant, the Moon, or other significators derived from the Ascendant or the lord of the seventh house.

So far, apart from the mention of the seventh house, this is the same rule that applies to horary charts, but in the case of elections, the text states, extraordinary care must be taken. The philosophy behind this is then given: anything in the past has a bearing on the present or future, and the present has a bearing on the future. The lord of the Ascendant relates particularly to events in the past and present that have led up to this point. If the lord of the Ascendant is in a sign in which it is strong, then choose a date when that planet is in that sign. If it is stronger in the next sign, then choose a date after the planet moves to that sign. Then consider from what it next separates and what it next

⁹² A, f.18r.

joins, and see whether the planet is stronger or in better reception with the planet it will join. If so, choose a date when that aspect is being perfected.

None of these rules come as any surprise – the techniques have already been described in the earlier parts of the text. Electional astrology is indeed similar to horary astrology in that it involves selecting the best time to undertake something. In horary astrology, the moment is happening “right now” – the querent arrives at the astrologer’s house and asks a question. That question might be about something in the past (“where is my lost object?”), something potential in the future (“will my meeting with the king turn out well?”), or asking about future timing of something that is determined (“when will I recover from or die from my illness?”). In none of these cases is the astrologer drawing up a chart for the time that the question being asked about happened or will happen – the chart is drawn up for the moment the querent asks the question. The question is past or future, but the chart is for the present.

Electional astrology uses very similar techniques to horary astrology, but instead of a single chart being cast for a moment of a question, numerous hypothetical charts are cast in the future, to see which one looks most promising for a particular outcome where one has choice over the selection of a date and time. An electional question might be “when should I go and visit the king?” as opposed to “will my meeting with the king turn out well?”. This ability to choose a chart distinguishes electional astrology from horary astrology. In horary astrology, if the lord of the Ascendant is impeded, the astrologer has to accept that fact and choose a different significator. In electional astrology, the astrologer can simply discount that chart and choose a time when the Ascendant changes, so that there is a different lord, which may not be impeded. It is this careful selection of a time – which may involve considering numerous charts – that requires such care and attention to detail, and makes electional astrology differ from horary astrology.

This section of the text is very short, taking up just one folio out of the forty in manuscript B, for example. The reason for this is that all the techniques on making judgements that are needed for horary astrology apply equally to electional astrology, and the bulk of the book has already covered this. All that is left are a few basic pointers relevant to electional astrology, but no real new techniques. Once the student knows how to cast a chart and interpret it, it works just as well for natal astrology, horary astrology or electional astrology.

Arabic authors wrote entire treatises on electional astrology, such as Sahl's *On elections*, or al-Kindi who wrote entire sections for electing auspicious times for particular tasks such as constructing ships or buying slaves in his *Forty Chapters*.⁹³ Roger's approach, however, is different. Since the techniques themselves are the same as for horary, Roger's text simply gives a few brief pointers showing the differences in practice. For a horary question, as has been shown, the three key significators are the lord of the Ascendant, the Moon, and the lord of the Matter. There is only one chart to deal with – the chart cast for the moment the querent asked the astrologer the question. For an election, where one is choosing an auspicious date and time, more care must be taken. Roger's text introduces the idea of using the lord of the seventh house as worthy of consideration – this differs from horary astrology, which would only use the ruler of the seventh house in a question about seventh house matters such as marriage or partnerships. The use of the seventh house for elections does not seem to be common practice in Arabic texts, although for any election involving another party, it would make sense. Sahl, for example, suggests the use of the ruler of the fourth house (since the fourth house can represent the end of the matter), but not the seventh.⁹⁴

The point about election charts is that they are not static. We saw that in horary, the concept of a fast-moving planet applying to a slow-moving one was key to any judgement, but the horary chart itself represented a snapshot. With an election, one has the freedom to choose a date, and since the planets are in constant motion, first look at where the key planets have been, and where they are heading. Another feature of the moving chart is that a significator will move away from an aspect with one planet, and onto an aspect with another. Choose the most beneficial aspect, by looking at the type of aspect and whether there is reception between the two planets. The same techniques can be applied to the Moon, where one looks for strong house placements and good relationships between the significator and planets it interacts with. If one can find a chart where more than one significator is in a positive place, this is even better. Roger also suggests that reception can be 'improved'. Since a chart is constantly changing, it may be that the relationship between the lord of the Ascendant and the lord of the seventh is poor – for example, if Scorpio is rising, and Mars lord of the Ascendant) is not received by Venus (ruler of the

⁹³ Sahl, *On elections*, in Dykes, *Sahl and Masha'Allah*, pp.187-222; Dykes, *The Forty Chapters of al-Kindi*, Chapter 17, pp.205-206 and Chapter 19, pp.216-217.

⁹⁴ Sahl, *On Elections* in Dykes, *Sahl and Masha'Allah*, p.196.

seventh house). An hour or two later, Sagittarius will be rising instead, and so the lord of the Ascendant will be Jupiter and the lord of the seventh will be Mercury – and that may be a more favourable relationship, in which case elect the later time.

Roger did not, then, give his reader much additional information in this short section. He simply stressed that in the case of elections, the rules he had already provided should be used but that the numerous possible dates should be investigated to see which is the most auspicious.

On the method of judging

The final short section of the text may or may not be the fourth book promised, although it has the appropriate title in many manuscripts. It is a summary, and contains a few extra pointers for making a judgement. It suggests using the Sun as an extra significator in a daytime chart, with the Moon being less important; in a night chart, it is the other way round.⁹⁵ The reasoning behind the importance of the Part of Fortune is given; as demonstrated in Chapter Four, the Part of Fortune is a calculated point derived by projecting the distance between the Sun and Moon onto the Ascendant, and so the text says that just as the heat of the Sun awakens those when it rises, and the Moon waxes and wanes and limits, then in the chart the Part of Fortune represents the same process – what the Sun starts the Moon completes. In other words, symbolically the Sun starts a process (as it has a waking role in life), and the Moon limits and sets boundaries with its waxing and waning. These should be used as significators, together with the planets ruling them. Similarly, something is initiated, and it has an end result – the desired outcome, for example. The Part of Fortune emulates this astrologically – since it represents the arc between the Sun and Moon projected onto the Ascendant, and so symbolically represents the timeframe of the project being enquired about, it is valid to use the Part of Fortune and its ruler as an extra significator, especially if the Sun and Moon are in their own signs (Leo and Cancer respectively), since in that case the ruler of the Sun or Moon will be the Sun or Moon itself and not a different planet. One can also use the planet ruling the hour that the question is asked as a significator.

Roger's text points out that it is not always easy to find a significator for the querent using the rules outlined so far, and in this case the 'lord of the conjunction or opposition' may

⁹⁵ A, f.18v.

be used.⁹⁶ Roger had not made much mention of this other than references in his table of parts, but the most recent New Moon or Full Moon prior to an event (known as the conjunction and opposition respectively) was widely used in Arabic astrology, especially in natal and mundane astrology.⁹⁷ Al-Kindi made use of this technique in horary and election charts too.⁹⁸

Judicial Astrology ends by summarising that although the principles are simple, a lot of work is involved. There are numerous signifiers, and every aspect and relationship must be examined to determine the most auspicious planetary configuration for the undertaking.

One might have expected Roger to finish with something of a flourish, with a sentence indicating the end of the text, but most manuscripts simply stop here. U does have an explicit at this point, as does T, which confirms that this is the end of ‘the book of four parts of Roger of Hereford’s judicial astrology’, possibly confirming that ‘On the Method of Judging’ is indeed a separate book.⁹⁹ A and B follow with a brief list of hours at Hereford at the end of the manuscript.

⁹⁶ ‘+ qui p[ro]xime opp[ositi]oni + coniunctioni’, A, f.19r, line 9.

⁹⁷ See for example, Al-Qabisi, *Introduction* IV.3, p.109.

⁹⁸ Al-Kindi, *Forty Chapters*, p.10.

⁹⁹ T, f.137ra: ‘Explicit lib[er] de 4 p[ar]tibus iudico[rum] astronomie editus a magistro Rog[er]o de Heford [sic]’.

Summary

Judicial Astrology at first sight looks like a single work, starting with a prologue and reference material and running into a section on the techniques of judicial astrology in four parts. However, there is in fact a very clear distinction between the reference section and the techniques section, and the text in the first section even refers to the second part as a ‘work in four parts’. For this reason, this thesis has referred to the entire work as *Judicial Astrology*, but has divided it into two sub-works, designated as *Judicial Astrology: Prologue and Reference* and *Judicial Astrology: Techniques*. The discussion of whether Roger had drawn on Raymond of Marseilles’ *Liber iudiciorum* in Chapter Four demonstrated that Raymond, too, had started his work on judicial astrology with a reference section, and that this is a feature of medieval astrological texts.¹⁰⁰ Roger’s prologue claims that everything in *Judicial Astrology* can be found from a diverse range of sources, and that Roger’s intention was to compile the information into a single volume; no claim of originality was made. The reference material in *Judicial Astrology: Prologue and Reference*, covered in Chapter Four, is indeed a compilation from a variety of Arabic sources. In many cases, the information in *Judicial Astrology: Prologue and Reference* was a verbatim copy of a Latin translation of an earlier source, which included al-Qabisi’s *Introduction*, al-Kindi’s *Forty Chapters*, pseudo-Ptolemy’s *Iudicia*, Firmicus Maternus’ *Mathesis*, and Abu Ma’shar’s *Great Introduction*. In the case of the latter, it was a straightforward matter to demonstrate that Roger had used Hermann of Carinthia’s translation of Abu Ma’shar’s *Great Introduction*, rather than John of Seville’s translation. Apart from Roger’s Prologue, extolling the virtues of astrology and his reason for considering it a worthy topic of study, the remaining material in *Judicial Astrology: Prologue and Reference* appears to be a convenient reference work. This work does refer to Roger’s second text, *Judicial Astrology: Techniques*, in terms that suggests the latter is simply a continuation of this same work, but the fact that some codices contain only one part or the other, implies that *Judicial Astrology: Prologue and Reference* and *Judicial Astrology: Techniques* were seen as two different books by the collators of codices.

Judicial Astrology: Techniques, on the other hand, while based solidly on Arabic techniques described in Latin translations, contains only a few areas where the text has

¹⁰⁰ See the citation to Deimann and Juste in Chapter Three.

been copied verbatim from other sources. It appears to be a genuine attempt to integrate the Arabic material into a form that introduces techniques gradually, starting with basic principles and building upon these. In this respect, it differs from both the Latin translations of Arabic sources from Abu Ma'shar, al-Qabisi, Sahl and al-Kindi, and earlier twelfth-century works that were written in Latin initially such as *Epitome totius astrologiae*, attributed to John of Seville, or Raymond of Marseilles' *Liber iudiciorum*. While these other sources do introduce various techniques, they are followed by long lists of examples for specific cases. For example, Sahl's *On Questions* gives a long list of possible questions, broken down by house meaning. Al-Kindi's *Forty Chapters* has chapters broken down by topic, and mixes horary and electional astrology within them. It is difficult to know how these were used in practice, but to a modern eye they look like reference works for astrologers already familiar with the basics; if an astrologer were asked to select the best time for digging a well, he would look at Chapter Sixteen of Al-Kindi's *Forty Chapters*, 'On digging canals, cultivating the land, and constructing wells and dams', and would read that one should 'let the Ascendant and pivots be established as firm and immovable, not drawn down, even straight [in ascensions]; also, the Ascendant should be an earthy sign.'¹⁰¹ Similarly, if an astrologer were asked whether a planned journey will turn out well, he might consult Sahl's *On Questions* in the section on ninth house questions. Here he would be told to look at the lord of the Ascendant and the Moon, and the lord of the ninth sign, and then be given a long list of possible conditions of these planets, with outcomes. For example, 'If the lord of the Ascendant (or the Moon) were in the ninth, or one of them were joined to the lord of the ninth, the foreign travel will not be horrible for the querent and he will go of his own volition.'¹⁰² The symbolism in both cases is straightforward, and the instructions are simple, but seem to assume that the reader already understands the principles underlying horary and electional astrology.

Roger's *Judicial Astrology: Techniques*, though, starts off with some terminology: somebody who asks the astrologer a question is a "querent", and the matter being asked about is the "quesited". Rather than a long list of possible questions and conditions, Roger's text states the principles: the querent is represented by the planet ruling the Ascendant, and also by the Moon. The quesited is represented by the planet ruling the

¹⁰¹ Al-Kindi, *Forty Chapters*, Chapter 16.2 'Digging Wells', p.203.

¹⁰² Sahl, *On Questions*, 9.1, in Dykes, *Sahl and Masha'Allah*, p.133.

house relating to the question. If the question were about foreign travel, that would be the ninth house. The planets are called significators. If the significators are in a good relationship to each other, the outcome is good. The text then goes on to add layers of complexity – what to do if the significators are not in an easy relationship, or are impeded in some way. This approach, of starting with basic principles and adding layers to it, is a method still used today in teaching. The two different approaches suggest two different audiences; that the texts of Sahl and al-Kindi were perhaps aimed at working astrologers who needed guidance and examples but were well versed in astrology, much as a modern-day solicitor might look up books of case law to assist with a forthcoming court case, whereas Roger's *Judicial Astrology: Techniques* was aimed not at working astrologers, but at students learning the subject.

Chapter Six: Conclusion

The focus of this thesis has been on a single work on astrology, written in a small English city, by a rather shadowy individual, Roger of Hereford. Yet it belongs to, and throws light on, wider intellectual movements that were transforming the spread and acquisition of knowledge across the whole of Europe. Chapter One provided a historiographical review of the academic landscape and introduced Roger of Hereford, and Chapter Two provided the context within which Roger was operating.

The thesis also set out to address three key research questions: to discover the sources that Roger drew on, whether he innovated by inventing new techniques, and whether *Judicial Astrology* was a textbook used for teaching students. To answer these questions, an extensive analysis of the entire text of *Judicial Astrology* was undertaken, which involved examining every extant manuscript. This is the first examination of the text that has looked at all extant manuscripts, and is covered in Chapter Three. The analysis of the corpus has allowed a basic chronology to be established, determined which manuscripts were derivative, and identified a canonical text that has been used in this thesis, based on two manuscripts – A (Oxford, Bodleian Library, Selden Supra 76), the earliest extant manuscript, and B (Cambridge, University Library, Ii 1.1), a complete manuscript, which was used for the brief section missing in A. This was supplemented by other manuscripts where wording in the main two was unclear or where there were lacunae.

The analysis of the manuscripts also identified an issue that has confused previous authors working on manuscripts of *Judicial Astrology* – namely that some scholars have considered it to be two separate works, while others considered it a single work. The confusion arises because the first part of the work, designated *Judicial Astrology: Prologue and Reference* in this thesis, begins with a prologue that states that the work is in four parts, which it lists: simple judgements, intentions, elections, and the method of judging. However, the prologue is followed by a lengthy reference section, rather than the work in four parts that was promised. Those four parts appear later, and are not present in all codices; other codices only contain those four parts, and not the prologue and reference work. For this reason, this thesis has split the work into two: *Judicial Astrology: Prologue and Reference*, covered in Chapter Four and *Judicial Astrology: Techniques*, covered in Chapter Five. The reason for this is that the two sections are structured very differently. The reference material is laid out in a fixed order, and sometimes in tables. In

many cases, the Latin text is a verbatim copy of a Latin translation of an Arabic source, and a comparison of Roger's Latin text with the Latin text from other twelfth-century authors has enabled Roger's sources to be determined. In the case of *Judicial Astrology: Techniques*, the same methodology could not be used; Roger's text in this material is not a verbatim copy of existing translations, but is a compilation of techniques that exist in other sources, but which Roger had completely paraphrased and restructured. In this case, rather than a comparison of Roger's Latin text with other Latin translations of Arabic texts, a technical analysis was undertaken, looking at each technique in detail, elucidating the technique with a practical example where appropriate and then investigating Arabic sources to find the provenance of the technique.

Although the sources that Roger appeared to have used was covered in the analysis of *Judicial Astrology*, identifying Roger's potential astrological contacts is not definitive or simple. He left a dedication to 'Gilbertus' in his computus, who was almost certainly Gilbert Foliot, the former bishop of Hereford, as discussed earlier. Since Roger worked at the cathedral school in Hereford and was probably part of the bishop's household, there is no surprise that he should have dedicated a work to a former bishop.

Slightly more useful is the fact that Alfred of Shareshill, a younger contemporary of Roger who flourished in the early thirteenth century, and who was a translator of Arabic Aristotelian texts, 'dedicates his version of the Pseudo-Aristotelian treatise *De vegetabilibus* [to Roger]'.¹ This is significant; according to Haskins, 'After Gerard of Cremona, Roger Bacon lists Alfred the Englishman, Michael Scot, and Hermann the German as the principal translators from the Arabic, all of whom worked in Spain in the earlier thirteenth century.'² Alfred the Englishman is Alfred of Shareshill; since he flourished around 1215, long after Roger's works, Roger must have been held in high esteem. Alfred refers to Roger as 'my most beloved Roger' and 'presents his work to him as one would offer mature shoots of the vine to Bacchus or a golden stem of wheat to Ceres'.³ French went on to say that this is an expression of friendship rather than angling for patronage, and that the two men must have known each other well, but Southern saw it differently, saying that 'We see here the provincial innovator pleading for attention'.⁴

¹ Haskins, *Mediaeval Science*, p.128.

² Haskins, *Mediaeval Science*, p.15.

³ French, 'Foretelling the Future', p.459.

⁴ R.W. Southern, *Robert Grosseteste* (Oxford: Clarendon Press, 1992), p.92.

Thorndike implicitly linked Roger of Hereford and Daniel of Morley, who expressed disgust with the state of learning in Latin Europe, after which he headed to Toledo and learned Arabic, studying with Gerard of Cremona.⁵ Only one text of his, *De philosophia*, is known, which is bound in the same manuscript as Roger's astronomical tables, and Daniel and Roger were contemporaries.⁶ It is not known if they ever met, however. Nevertheless, although Daniel left only one text to posterity, he claimed to have brought back numerous books from Toledo, and both Roger and Daniel were working in the same field at the same time.⁷ Burnett provided another link, claiming that a treatise on geomancy by Gerard of Cremona contains passages that are similar to another work of Roger's, on astronomy, which Burnett designates 'Roger of Hereford's *Liber de quatuor partibus*'.⁸ An examination of both does show similarities between Gerard's geomancy work and Roger's *On the Four Divisions of Astronomy*.⁹

It seems clear that Roger was not simply an isolated schoolteacher in a provincial cathedral school. The dedication to him by Alfred shows that he was well-known outside his immediate school, and French described him as belonging to 'a circle of Anglo-Normans, most of them with connections with the West Midlands and some associated with Oxford; all were interested to some extent in the new physical learning.'¹⁰ This circle included Alexander Neckam, who taught in Oxford, Alfred of Shareshill, and Robert Grosseteste, the latter 'in the bishop's service in the 1190s and probably, then, in Hereford in Roger's lifetime'.¹¹ If this circle was real, with the four men knowing each other, rather than metaphorical, Roger would have been the senior member in terms of age.

The other contacts that Roger may have had could have been his local Jewish community. French wondered if 'Roger's knowledge of Arabic astrology came to him from Jewish sources... Perhaps he did not have to go farther than town on market day'.¹² This is quite

⁵ Daniel of Morley, quoted in Burnett, *Introduction of Arabic Learning*, pp.61-62.

⁶ Daniel of Morley, *De philosophia*, Arundel 377, ff.88r-103v; Roger of Hereford, *Astronomical Tables*, Arundel 377, ff.77r-87v.

⁷ 'cum pretiosa multitudine librorum in Angliam veni' quoted in Wright, *Biographia Britannica*, p.228.

⁸ Burnett, 'Mathematics and Astronomy in Hereford', p.57.

⁹ Gerardi Cremonensis, *Geomantiae astronomicae libellus* in Henrici Cornelii Agrippae *Opera* (Basel: T. Guarin, 1578), pp.687-705; Roger of Hereford, *Liber de divisione astronomie atque de eius quatuor partibus* BNF Lat. 10271, ff.179r-201v. See for example p.692 of Gerard's *Geomantiae*, whose questions of the third house gives details of determining whether the querent will have brothers or sisters depending on the planets in the house, and which is very similar to f.184v of Roger's *Four Divisions*.

¹⁰ French, 'Foretelling the Future', p.462.

¹¹ French, 'Foretelling the Future', p.462.

¹² French, 'Foretelling the Future', p.465.

a leap to make – the first Jewish settlement in Hereford was ‘founded by 1179’ and ‘remained small and isolated for thirty years’ and did not flourish until 1218.¹³ However, as seen earlier with the possibility of ibn Ezra meeting Robert of Ketton, there were contacts between Jewish and Latin scholars, and ibn Ezra came to London in the 1150s. Additionally, it is known that there were contacts between Jews and Christian religious establishments. The laws of usury that prevented Christians loaning money to each other meant that Jews were the only people able to loan money, and this extended to abbeys and monasteries, too – Jacobs related a tale of ‘How the Abbey of St. Edmund’s became in debt to the Jews’ from 1173-1180.¹⁴ Jacobs also recounted a witty pun which offers ‘conclusive evidence that the everyday speech of the English Jews of the time was French, as was the case with the upper classes in general’.¹⁵ It is, of course, possible that Roger had learned some Hebrew. The Chancellor of Hereford Cathedral, Chris Pullin, stated that the bishop Gerard (1096-1100) ‘owned a Hebrew Psalter and encouraged clergy to study Hebrew at a time when the understanding of that language was virtually non-existent’.¹⁶ Similarly, Moreton cited the example of the *Compotus* of Constabularius, and referred to ‘his acquaintance with Jewish practices. He tells us that he obtained his information, which includes knowledge of the writings of ibn Ezra and Mar-Samuel, “by asking the Jews themselves”’.¹⁷

There are also hints of Jews in England having astronomical interests – in a section headed ‘Before 1184 – Deodatus writes an astronomical work’, Jacobs commented that ‘The passage is corrupt and of little interest beyond the fact that Rabbi Elchanan was the author of an astronomical work. I have identified R. Elchanan with the Deodatus Episcopus Judaeorum of the Latin records... because he married a sister of Rabbi Samuel ben Solomon who is known as “Sir Morel of England”’.¹⁸ English Jews also engaged in translation activities from Latin to Hebrew, so the translation of texts was clearly two-

¹³ J. Hillaby, ‘Hereford Gold: Irish Welsh and English Land, Part 2 – The Jewish Community at Hereford and Its Clients 1179-1253: Four Case studies’, *Transactions of the Woolhope Naturalists’ Field Club*, 45.1 (1985), p.193.

¹⁴ J. Jacobs, *The Jews of Angevin England: Documents and Records from Latin and Hebrew Sources Printed and Manuscript* (London: Nutt, 1893), p.59.

¹⁵ Jacobs, *Jews of Angevin England*, p.87.

¹⁶ Pullin, ‘Cathedrals as Centres of Learning’, p.82.

¹⁷ Moreton, ‘Before Grosseteste’, p.585.

¹⁸ Jacobs, *Jews of Angevin England*, p.81.

way. The quote from Benedict of Oxford translating Adelard of Bath's *Questiones naturales* is revealing:

I, Berachyah son of Natronai, will gird my loins to translate these things in Hebrew, for I found them in the writings of the Gentiles who have taken them from the Arabs. Here are to be found things unknown to the men of our time. And when I saw wisdom in an unclean vessel and pearls before swine I have purified this treatise of strange elements and translated it into the sacred language, the most beautiful of tongues...¹⁹

While the tone of this passage suggests a mistrust of the time between Jews and Christians in England, this was not universal across Christian Europe. In early twelfth-century France relations between Christians and Jews were good; David Malkiel described how Christians and Jews swapped gifts on their respective religious festivals.²⁰ In Islamic Spain, Jews were integrated into their communities, and spoke Arabic. Interfaith relationships involving Jews, Muslims and Christians were widespread, which is why the Fourth Lateran Council in 1215 'expressed concern about sociability between Christians and Jews' and that 'sexual relations... are cited as the reason for instituting the requirements that Jews and Muslims wear distinguishing clothing'.²¹ In Spain, Muslims, Jews and Christians all socialised together.²²

One final possibility for Roger's sources is that, perhaps, he was not confined to Hereford and the West Midlands, but, like his contemporary Daniel of Morley, travelled to a Muslim country and learned Arabic so he could translate Arabic texts directly. This is certainly the view of Hereford Cathedral. An exhibition at the cathedral in July 2016 had a section on Hereford's links with astronomy, with a picture board claiming that Roger had a knowledge of Arabic. This is reflected in the definitive guide to the cathedral, which states that 'Roger of Hereford (fl. 1178), though not likely to have been a canon, was a scholar connected with the cathedral or city. He had studied astronomy and astrology at Toledo and wrote Latin works on these subjects.'²³ As discussed in the review of Roger's works in Chapter One, Hereford Cathedral maintains that the 'very Islamic' opening to

¹⁹ Jacobs, *Jews of Angevin England*, pp.196-197.

²⁰ D. Malkiel, 'Jews and Apostates in Medieval Europe – Boundaries Real and Imagined', *Past and Present*, 194.1 (2007), p.32.

²¹ M. Cohen, *Under Crescent and Cross* (Princeton: Princeton University Press, 1996), p.129.

²² Cohen, *Under Crescent and Cross*, p.85.

²³ G.E. Aylmer and J. Tiller (eds), *Hereford Cathedral: A History* (London: Hambledon Press, 2000), p.566.

On the Four Divisions of Astronomy implies that Roger had learned some Arabic. French, too, pointed out that ‘In introducing the Hereford tables, Roger mentions the difficulty of following the Arabic years and months, which suggests that he was very close to his Arabic sources’.²⁴ French also gave some reasons why Roger may have travelled. Although he says that it ‘is not known whether... Roger himself travelled abroad to learn astrology or if he translated Arabic texts himself’, he pointed out that being known as Roger “‘of Hereford” suggests that this attribution might have become attached to him when he was somewhere else, as Alfred was known as “of Sharesill” when away from home and as “the Englishman” probably when in Spain.’²⁵

This thesis has examined all three research questions. The comparison of both the text and the techniques between Roger’s text and a variety of Latin translation of Arabic source addressed the issue of identifying Roger’s sources. An analysis of techniques also addressed the question of whether any of the techniques were of Roger’s own devising, as suggested by Whyte. Finally, the fact that Roger paraphrased and restructured the techniques described in *Judicial Astrology: Techniques* addresses the question of whether this was a textbook for students.

It is often difficult to establish sources, but there are clear indications that he drew on Abu Ma’shar’s *Great Introduction* extensively, particularly for the reference material in the first section, along with al-Qabisi’s *Introduction*, and with minor input from Firmicus Maternus’ *Mathesis* and pseudo-Ptolemy’s *Iudicia*. In particular, Chapter Four demonstrated that, for the reference material, Roger was drawing on Hermann of Carinthia’s translation of Abu Ma’shar rather than the translation by John of Seville. Other material appears to come from al-Kindi’s *Forty Chapters*, but he may well have had access to other sources. There are tantalising hints that he may have had a knowledge of Arabic himself, in which case it is feasible that he had access to Arabic texts that were never translated directly into Latin, but which Roger may have paraphrased. However, since virtually all of Roger’s Latin text in the reference section closely matches known Latin translations, this seems unlikely.

In terms of innovation, *Judicial Astrology* claimed to be a textbook of astrological practice that was compiled from a range of sources, and that its purpose was to collate

²⁴ French, ‘Foretelling the Future’, p.459, footnote 18.

²⁵ French, ‘Foretelling the Future’, p.459.

these into a single volume. It made no claim to innovate new techniques. These techniques were not merely new to the readers of *Judicial Astrology*, but were relatively new to anybody in Christian Europe, including Roger himself, as they derived from Arabic sources that had been translated only a few decades earlier into Latin. Although much of the symbolism of astrology would have been familiar to a Christian audience, these new techniques would not have been. Roger therefore needed to provide reference material from his Arabic sources as an introduction, to enable his readers to understand the main part of his book.

While not an innovator in techniques, it does appear that Roger did something unique. The Arabic texts available in Latin were effectively reference works. Even Sahl, with his ‘reader-friendly repackaging’ of Arabic techniques where he provided several examples, still reads more like an encyclopaedia than a classroom textbook.²⁶ What Roger did was create a textbook that, rather than listing endless sets of examples, gave general rules that could be applied to any situation. *Judicial Astrology* has an internal logic to it, of Roger’s own devising. Although the text does indeed start with a reference work that is almost entirely copied from a few Arabic sources and in a similar format, Roger’s own work becomes very apparent in his ‘book of four parts’. While Sahl opened his *On Questions* by stating that he would first deal with ‘questions of the Ascendant, that is, the first domicile’ and then continue with questions of subsequent houses, with numerous headings covering a wide range of questions that might be asked, Roger offers a succinct method that works for any question. If someone asks a question about a foreign journey, Sahl had a vast number of questions as headings, one of which is about a foreign journey, which tells the astrologer to first ‘Look at the lord of the Ascendant or the Moon’ and look at its relationship to the ninth house of travel.²⁷ The book is rather unwieldy, because virtually every question starts with the same advice to look at the lord of the Ascendant or the Moon and its relationship to the house in question. Roger’s text, on the other hand, starts with an introduction stating that the whole of astrology can be condensed into a small set of rules, and introduces the concept of the querent asking the question, and the matter being asked about, and then begins with a simple rule that lets the reader identify the planets representing the querent (one of which is always the Moon), and the planet

²⁶ See for example a question on whether a person will acquire a kingdom, where planetary positions and an explanation are given: Sahl, *On Questions* 1.8, in Dykes, *Sahl and Masha’Allah*, p.75. This practical example is still part of a repetitive set of rules broken down house by house.

²⁷ Sahl, *On Questions* 9.1, in Dykes, *Sahl and Masha’Allah*, p.133.

representing the topic of the enquiry. As a teaching aid, learning these simple rules would enable a student to understand the concepts behind the astrology, rather than having to look up a question in a book and follow some instructions blindly.

Does this approach imply, then, that *Judicial Astrology* was a teaching text? This can be answered in two ways. First, to examine whether the text was used practically as a textbook for students at the time, and secondly, whether the style is still accessible enough today to be able to use it in a teaching setting. The first part of this question has been addressed in Chapter Three, which examined the manuscripts and considered their purpose. The inclusion of tables for multiplying and adding in C certainly suggests its use as a practical text, and the copious margin notes in A in a different hand to the original, and giving explanations and examples, has the feel of a textbook that was actually being used. The clearest example of all is surely J, where margin notes against Roger's text give book and chapter references to the more detailed description in the source text, such as Abu Ma'shar's *Great Introduction* – strongly suggesting that Roger's text was the concise textbook, with the margin reference being an aide-memoire for the teacher should a more detailed explanation be required. Other manuscripts have been heavily abbreviated, suggesting their use as reference works. For example, D contains only the reference material in *Judicial Astrology: Prologue and Reference* and none of the techniques; V appears to be interested only in how to use an astrolabe, and P focuses only on the techniques with very little reference material. Virtually all of the copies of *Judicial Astrology* are bound in codices with other astrological works, rather than as an adjunct to associated subjects such as medicine. All of this points to evidence that most of the manuscripts were intended to be used practically in a teaching environment. In addition, it appears that this text was not restricted to the school at Hereford. Its inclusion in medieval libraries across Europe, and the fact that this twelfth-century text was being copied in subsequent centuries suggest that it was a useful text.

Further evidence that it was a teaching text lies in the fact that Roger claimed to have 'sweated for many years' in the cathedral school at Hereford, and in his text on computus he referred to students arguing over different methods. There is, then, evidence that Roger was a teacher at the cathedral school. His prologue states that he was compiling the book to satisfy a request for those needing an explanation of these techniques – and so it seems reasonable to assume that the purpose of this text was to teach scholars the techniques of astrology. Like any good teacher, Roger did not overwhelm the student. Starting with

these very simple rules for finding the three relevant planets, his text tells the student that sometimes one or more of these planets are not in a good enough condition to be used, in which case another planet must be chosen, with rules on how to identify it. The complexity of the art is then built up gradually, introducing new topics and letting the student see how planets relate to each other in a chart. In the book on intentions, new techniques are introduced to identify the intention of the questioner, and here the student risks getting overwhelmed by having three different methods for achieving the same end. Roger was clearly aware of this, reassuring his readers not to be concerned that there are so many different methods, before explaining how to decide which of them is the most relevant, and giving two practical examples.²⁸

The second part of the question, whether *Judicial Astrology* is an effective textbook that could still be used to teach such techniques today is far more subjective, and a short piece of qualitative research on this question is given in the Postscript to this thesis.

Despite the fact that *Judicial Astrology* was widely copied, Roger does not seem to be credited in later astrological texts. However, as was demonstrated in the section on the reception of *Judicial Astrology* in this thesis, twelfth-century authors themselves (such as William of Tyre, Bernard of Chartres, and John of Salisbury) pointed out that their function was to propagate ancient writings, rather than publicise their own ideas, and so subsequent obscurity does not imply a lack of importance. Nevertheless, later writers, from Guido Bonatti in the thirteenth century through to William Lilly in the seventeenth century, were keen to credit their Arabic sources (to which they had access in Latin translation), but none of these later writers mention Roger of Hereford. This, too, gives tentative support to the idea that Roger's text was a classroom textbook rather than an authoritative source. He made no claims to be an innovator, merely a compiler of existing – although at the time quite new – material, and if his text was used in a classroom setting then it is quite understandable that future authors would not consider a school textbook authoritative enough for the author to be cited. The review of *Judicial Astrology* that Whyte undertook in 1991 did make claims of innovative techniques used by Roger, but this thesis has demonstrated that, in fact, those techniques did have an antecedent and were not original to Roger. Indeed, it would be very strange if Roger had made up his

²⁸ A, f.15v – see discussion in Chapter Five.

own techniques, since the techniques he was describing were already innovative to a Latin-reading audience.

As a textbook for teaching astrology, Roger's text did make one very big assumption – and that is that the student already knew how to draw up a chart. The text explains how to calculate house cusps, but it says nothing about calculating the position of the Sun, Moon and five planets. The difficulties in calculating the position of the five planets, in particular, was discussed in Chapter Two. Without this knowledge, constructing a chart – and therefore being able to use astrological techniques practically – was impossible. Tables of planets were available by then, and Roger himself had developed astronomical tables for Hereford based on the earlier tables from Raymond of Marseilles. *Judicial Astrology* does not explain how to use these tables, though, so to use the techniques outlined in the text, the student would already need to know this information. For horary astrology, since the horoscope is constructed for the time the question is asked, it may have been feasible to use an astrolabe to observe planets – Adelard of Bath demonstrated this – but given the availability of astronomical tables, this seems unlikely.²⁹ Many of the codices in which *Judicial Astrology* is bound do also contain planetary tables.

From a modern perspective, Roger's claim to have compiled a book of astrological techniques collated from different sources – in other words, to have created England's first astrology textbook for students – may seem minor. At first glance, he was simply a teacher at a cathedral school in a small city in England who wrote a handful of texts. His astrology book made no claims to originality, but was compiled, by his own admission, from 'a variety of scattered sources'. This is in contrast to some of his better-known contemporaries, who travelled to Toledo, learned Arabic, and translated vast numbers of astrological texts. This view, however, underestimates the importance of the scientific revolution of the twelfth century. The translation movement made Arabic scientific ideas available to a Latin-reading audience for the first time, but for these ideas to have an impact it was necessary that they were disseminated. In this, Roger played a role. Hereford was known as an important centre for the study of science, and cathedral schools were the major centres of learning in the days before universities. Roger demonstrated his analytical mind and original thinking in his *Computus*, introducing a new method of understanding the calendar; and in his *Judicial Astrology*, he demonstrated his

²⁹ S. McCluskey, *Astronomies and Cultures in Early Medieval Europe* (Cambridge: Cambridge University Press, 1998), p.186.

consummate skill as a teacher, able to bring complex and novel concepts to his students in a logical and approachable style, with practical examples. Roger appears to have been part of an influential circle of scholars, and had a book dedicated to him decades after he flourished.

Roger flourished towards the end of the twelfth century. By the thirteenth century, the university was increasing in prominence, partly as a result of ‘the critical attitude of twelfth-century astronomers... in the cathedral schools’, according to McCluskey.³⁰ However, the single most common teaching text in the new universities was not Roger’s textbook, but al-Qabisi’s *Introduction*.³¹ Yet despite this, Roger’s manuscripts were copied across England, over many centuries, and by his own admission he ‘sweated’ in a cathedral school at Hereford. Who were his students? Did they go on to become teachers at the new universities? Were they using Roger’s text to teach?

Unfortunately, the answers to these important questions remain unknown. Little is known about the diffusion of twelfth-century translations of Arabic texts, let alone textbooks – Marie-Thérèse d’Alverny supposed that ‘the agents of transmission were frequently the wandering scholars’, with many of them being physicians who ‘studied in Salerno or Montpellier but traveled further because they were amateurs of mathematics, astrology, and physics’ but the details of this transmission remain unknown.³² Most information relating to university curricula is much later and often associated with medicine.³³ The curriculum at Oxford, for example, cannot be reconstructed in detail prior to the fourteenth century.³⁴ Burnett cited an example from Bologna in 1405, stating ‘the only texts directly on astrology to be studied during the four-year course are al-Qabisi’s *Introduction*, Ptolemy’s *Centiloquium* with the commentary of “Haly”, Ptolemy’s *Quadripartitum*, and William the Englishman’s *De urina non visa*.’³⁵ Documentary evidence for how astrology was taught in that crucial transition from cathedral school to university is, therefore, sadly lacking.

³⁰ McCluskey, *Astronomies and Cultures*, p.187.

³¹ C. Burnett, ‘Al-Qabisi’s *Introduction to Astrology*: From Courtly Entertainment to University Textbook’, *Studies in the History of Culture and Science: A Tribute to Gad Freudenthal* (Leiden: Brill, 2010), p.49.

³² D’Alverny, *Translations and Translators*, p.457.

³³ See for example, R. Lemay, ‘The Teaching of Astronomy in Medieval Universities, Principally at Paris in the Fourteenth Century’, *Manuscripta* 20 (1976), p.200.

³⁴ Brockliss, *University of Oxford*, p.86.

³⁵ Burnett, ‘Al-Qabisi’s *Introduction*’, p.49.

The intention of this research has not been to produce a critical edition of Roger of Hereford's *Judicial Astrology*, but to provide an entirely novel approach to the text, from an astrological perspective. There have been two strands to this approach, which required a background in astrology to undertake. First, a detailed analysis of each technique and a comparison with classical techniques from Arabic and Hellenistic astrology to identify their provenance. Secondly, to examine the text from the perspective of an astrology teacher to determine if the structure of the text was consistent with Roger's claim to have been a teacher in a cathedral school who compiled the first astrology textbook in England, and confirming that *Judicial Astrology* does indeed provide a mechanism for teaching medieval horary astrology that is still practical today.

Roger, then, remains partially in the shadows. However, far from being an obscure and maverick teacher in a small school, he appears to have been a distinguished scholar who succeeded in his ambition to create a workable astrology textbook, which was widely distributed and used.

Postscript: *Judicial Astrology* as a teaching text

If *Judicial Astrology* was intended to be a textbook for students, does it still work for teaching students the principles of horary astrology today? The answer to this question is subjective, but I have a long background of teaching both modern and medieval astrology to students so am including some tentative findings.¹ Although I have not used the entire text of *Judicial Astrology* on a teaching course, I have taught a six-hour course on medieval astrology over three weeks to graduates and students of the University of Wales Trinity Saint David Cultural Astronomy and Astrology MA, using portions of *Judicial Astrology*. Some of these students already had some familiarity with the techniques of modern astrology, but these differ significantly from medieval techniques, and none of the students had a background in medieval astrology. The initial reference section is structured in a very accessible and logical order, introducing signs, planets and houses, and is certainly useable as a teaching aid, but the same could be said for any astrological reference work. However, as regards the second part of *Judicial Astrology*, I spent some time working through Roger's example horoscope step by step with students on the course, using his terminology. The feedback from this was very positive, and all the students understood and appreciated the technique that Roger used, and many were astonished by the level of detail that Roger went into in his examples, while appreciating his clear methodology.

I then canvassed a number of contemporary astrologers who are already engaged in teaching medieval horary techniques, providing them with a brief synopsis of Roger's text, together with the worked example given earlier in this thesis, for their views on whether *Judicial Astrology* could be used as a teaching text in the twenty-first century to teach students about horary astrology.

¹ This section has been included on the encouragement of my examiners.

Methodology

The research conducted is qualitative, and the sample size necessarily small since the focus group for this research comprised astrologers actively engaged in teaching techniques of medieval astrology, and these are few in number since only a small minority of contemporary astrologers are engaged in teaching medieval astrology, and contemporary astrologers as a group represent a tiny minority of the population today.

All responses were anonymous. An initial approach was made either face to face or by e-mail, explaining that I was investigating a twelfth-century text on horary astrology, and would welcome any feedback on it. The responses were to be free-form rather than following a strict format, but I did provide a few guidance questions to focus the responses, together with a synopsis of *Judicial Astrology*.

Guidance questions

1. What are the strengths and weakness of Roger's synopsis?
2. Is the order sensible for a teaching book? Is there a layout that would work better?
3. What is missing?
4. Would you arrange the material differently?
5. Does Roger assume a pre-knowledge (other than the basics in the reference section)?

Results

Out of eight astrologers canvassed, only one felt that the text was too vague, and was not suitable as a course book, but was more of a summary. The other seven all felt it worked as a course book, that the structure of the synopsis made sense, and that the worked example in Roger's text formed the basis of a good example for students. Two felt that what was lacking were more examples – *Judicial Astrology: Techniques* gives only one worked example – but both responders pointed out that the lack of examples suggested a classroom setting, since the classroom is where the examples would have been worked through, rather than being “published” in a textbook.

Summary

This short piece of qualitative research cannot be considered conclusive, but was an attempt to see whether a twelfth-century text could still work today. The setting is necessarily rather artificial; astrology is not an integral part of the contemporary world view in the West, it is not taught in schools or universities, and where astrology is taught today it tends to be a modern psychological variety of astrology, and not the techniques that were taught over eight hundred years ago. However, there is a small but enthusiastic group of astrologers in the Western world who do teach horary and medieval astrology, working from the same texts that Roger drew on – Abu Ma’shar, al-Kindi, and al-Qabisi, as well as earlier Hellenistic texts, and there has been something of a revival in this field, working directly from Greek and Arabic sources. A translation of Abu Ma’shar’s *Great Introduction* from the Arabic by Charles Burnett and the late Keiji Yamamoto was released in 2019. Liana Saif from the Warburg Institute is currently preparing a critical translation from the Arabic of *Picatrix*, an astrological magical text from the eleventh century.² Just as in the twelfth century, translations of Arabic astrological texts are still being produced, and medieval techniques are being taught in specialist groups, but textbooks in these techniques are not readily available.

It is instructive, therefore, to see how these modern teachers of ancient techniques view what purports to be a twelfth-century textbook on astrology. In many respects, Roger’s teaching methods in his “four books” of *Judicial Astrology: Techniques* seem to be similar to those of modern teachers – that is, to start with a simple principle and build up more and more layers of complexity so as not to confuse the student. This approach differs from the standard Latin translations of Arabic texts, which read more like reference works than textbooks, and it is remarkable that a book written over eight hundred years ago – Roger of Hereford’s *Judicial Astrology* – can still speak to a modern audience.

² ‘An Interview with Dr Liana Saif on the Present and Future Study of Islamic Esotericism’, <https://shwep.net/2018/08/23/an-interview-with-dr-liana-saif-on-the-present-and-future-study-of-islamic-esotericism/>, 23 August 2018 [16 April 2019].

Appendix One: Codices containing *Judicial Astrology*

The earlier discussion on twelfth-century astrologers and the translation movement demonstrated that a number of Arabic works on natural philosophy were translated, and that works on astrology comprised a great number of these. The extant manuscripts of *Judicial Astrology* are bound in codices that date from later than the twelfth century, but it is nevertheless instructive to see the context in which the manuscripts were considered when later bound.

In a few cases, an entry for *Judicial Astrology* is found in a medieval catalogue, and in this case the other manuscripts held in the same section of the catalogue is found in the section headed “Medieval catalogues”.

The tables in this appendix show the manuscripts bound within each codex. A hyphen in the “author” column indicates that the author is unknown or uncertain.

Current-day codices

A: Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v.

Folios	Author	Title or incipit
3r-19v	Roger of Hereford	Judicial Astrology
20r-28r	-	Liber de motibus planetarum
28r-29v	al-Khwarizmi	Astronomical tables
31r-39r	-	Doctrina equacionis omnium planetarum
39v-40v	Pseudo-Ptolemy	Liber de compositione universalis astrolabii
41r-45v	-	Liber de institutione universitatis
47r-60v	al-Kindi	De radiis
61r-69r	-	Liber graduum
69r-72v	-	Liber de vulgari iudicio sermonis
74r-109r	-	Alchemical recipes
109v-112v	Thetel	Liber sigillorum
112v-113r	-	Nine verses on stones
113v-115r	-	Notes on magic
116r-125r	-	Alchemy

B: Cambridge, University Library, li 1.1, ff.40r-59r.

Folios	Author	Title or incipit
1r-12r	Bernardum de Gordon	Libellus de graduatione
13r-24r	Robertus Anglicus	Impressionibus aeris
25r-39r	Richard of Wallingford	Exafrenon
40r-59r	Roger of Hereford	Judicial Astrology
61r-104r	Sahl	De judiciis astrorum
104r-109r	Jerjis	De significatione planetarum in domibus
108r-110v	Masha'Allah	De ratione circuli et stellarum
111r-126r	-	A tract on astronomy

C: Cambridge, University Library, Gg 6.3, ff.139r-153r.

Folios	Author	Title or incipit
1r	-	Astronomy and astrology: on plants
1v-44v	John Maudith	Astronomical tables for Oxford
45r-48v	Richard of Wallingford	Tractatus de quatuor tabulis
48v	-	Star table
48v-54v	-	Canons for solar eclipses
54v-80v	Richard of Wallingford	Tractatus de sectore
81r-90v	-	(blank)
91r-103v	-	Toledan tables
103v-105r	-	Planeta levis est qui applicat et vim donat
105r-107r	-	Syzygy tables from 1311, including Paris
107v-108r	-	Canon de eclipsi Lune
108r-123v	-	Compilation based on Alchandreana
124r-132r	-	Toledan-type tables
132v-133v	-	Syzygy tables for Novara
134r-138v	Robert Grosseteste	De impressionibus aeris
139r-153r	Roger of Hereford	Judicial Astrology
154v-192v	Sahl	Liber iudiciorum
193r-200r	-	Planetary almanac 1324-1343
200v-205v	Robert Grosseteste	De sphaera
206r-212r	-	Theorica planetarum Gerardi
212r-212v	Richard of Wallingford	Tractatus albionis
213r	Pseudo-Ptolemy	De imaginibus super facies signorum
213r-213v	-	Astrological and astronomical notes
214r-217r	-	Planetary tables 1348
217v-220v	-	Quia nobilissima scientia astronomie
221r-222v	William Rede	Theorica planetarum
223r-226v	-	Notabilia experimenta theoricarum predictarum
226v-230v	-	Astronomical tables
231r-232v	Campanus	De quadratura circuli
233r-233v	-	Hec ars debet artem multiplicandi
233v-260r	-	Ad theorice planetarum intelligencia
260r-270r	-	Planetary theory
271r-272v	-	Si quantitatem diametri umbre
273r-284r	John Maudith	Ars et operatio novi quadranti
284v	-	Celestial distances
285r-287r	Richard of Wallingford	Tractatus de sectore
287v-288r	Euclid	Elements
288v-303v	Richard of Wallingford	Tractatus albionis
309r-310v	-	Algorismus in novis numeris
310v-315v	-	Liber quantitatum mensurandum per numerum
315v-319v	-	De regulis generalibus algorismi
319v-321v	-	Tract on arithmetic
322r-330r	Petrus de St. Audomaro	Semissa
332v-376v	-	Various tables
377r-381v	Jordanus of Nemore	De numeris datis

D: Oxford, Bodleian Library, Digby 149, ff.189r-194v.

Folios	Author	Title or incipit
1r-9r	-	Genesis commentaries
9r-36r	-	Hebrew names
37r-44r	-	Sermons of Maurice, bishop of Paris
45r-60r	Robert Grosseteste	Templum Domini, confessions
61r-65r	-	De confessionis articulis
65v-66v	-	Miscellaneous notes
67v-68r	Bernard of Clairvaux	Jubilum rhythmicum
68v	-	Miraculum S. Augustini Cantuar
69r	-	Commentary on Augustine
69v-72r	Bede	Excerpt from Ecclesiastical History
72v	-	History of St. Peter Telonearii
73r-73v	-	Sententiae variae piae
74r-87r	-	Tractatus domini papae
88r-99r	-	Excerpts from the sermons of St. Augustine
100r-122r	-	Summula de viciis et virtutibus
122v	John Chrysostomus	Contra gulosos
123r	-	Note about the response of King Arthur
123v	-	Hoc dixit Dionysius tempore passionis Christi
124r-128r	-	Lunar calendar
134r-172r	-	Astronomical tables
176r	-	Tables of planets and signs
176v	-	Strengths and debilities and impediments of planets
177r-188r	Al-Qabisi	Liber ysagogarum (John of Seville)
189r-194v	Roger of Hereford	Judicial Astrology
195r-200r	John of Seville	Epitome totius astrologiae
200r	Masha'Allah	Liber Messehalle de interpretatione cogitantis
201r-202r	-	Liber ejusdem de occultis
202v	-	Capitulum utrum occulta fuerunt in loco
203r-204v	-	Quedam capitula extracta de libro 3 Judicum
205r-216r	-	Various astrological texts

E: Oxford, Bodleian Library, Laud Misc. 644, ff.221r-224r.

Folios	Author	Title or incipit
1r-7r	Robert Grossetests	Kalendarium
7v	-	Canon super chilindrum
8r-10v	Pseudo-Bede	De signis coeli
11r-13v	-	Solar tables
14r-15r	-	Tables (Gerland and Bede)
16r-115v	-	Toledan tables
115v-119v	Gerald of Cremona	Planetary theory
119v-120v	-	Latitudes of five planets
120v-123v	-	Tract on proportions and fractions
124r-125r	-	Tractatus Algorismi de fractionibus
125r-127r	-	Toledan tables
127v-131r	-	De algorismo
131r-139r	Boethius	De arithmetica
139r-142r	Boethius	De musica
143r-147v	Robert Grosseteste	De sphaera
147v-164r	Robert Grosseteste	De computo
165r-175r	Abu Ma'shar	Flores
175r-190r	-	Canones Humenuz Aegyptio and tables
191r-207r	al-Farghani	De scientia astrorum
207v-210r	Robert Grosseteste	Liber de figuris et lineis
210r-210v	Ptolemy	Almagest
211r-213r	Campanus of Novara	De quadrante
213r-218v	-	Astronomical tables
219r-220v	Robert Grosseteste	Libellus de compositione chilindri
221r-224r	Roger of Hereford	Judicial astrology
224r-226r	al-Qabisi	Libellus de fructibus planetarum
227v	-	Aspectus luna

F: Oxford, Bodleian Library, Auct F III 13, ff.148r-151v.

Folios	Author	Title or incipit
1r-48v	Euclid	Elements
49r-66v	Ibn al-Daya (Haly)	Commentary to Ptolemy's Centiloquium
67r-90v	Boethius	De musica
91r-103v	al-Zarqallu (Arzachel)	Toledan tables
105r-109v	-	Theorica planetarum
110r-112v	-	De quadrante
113r-114v	-	Tabulae solis
115r-142r	Campanus	Theorica planetarum
142r-148rb	-	Some short astronomical texts
148rb-151v	Roger of Hereford	Judicial astrology
152r-166r	al-Qabisi	Liber introductorius ad artem astronomie
166r-175v	Abu Ma'shar	Liber florum
176r-192v	al-Farghani	Liber differentiarum
194r-200v	Martianus Capella	De nuptiis Philologiae et Mercurii book VIII
201r-219r	al-Zarqallu (Arzachel)	Toledan tables
219v-220v	-	Rules for forming a calendar
223r-224r	Euclid	Elementa, version I, book IV def, IV.1-7

G: Vatican City, Biblioteca Apostolica Vaticana, Pal. Lat. 1414, ff.220r-224r.

Folios	Author	Title or incipit
1r-20v	al-Qabisi	Liber introductorius
21r-23r	Thabit ibn Qurra	De motu octauae sphaerae
23r-26v	-	Tractatus de astrolabio
27r-29v	Pseudo-Ptolemy	Liber figurae
29v-34v	Johannes de Sacrobosco	Algorismus
34v-41r	Robert Grosseteste	Sphaera
41v-43v	Hermes	Centiloquium
43v-62r	Robert Grosseteste	Computus
62v-66v	-	Astronomia seu theorica planetarum
67r-84r	Arzachel	Canones in tabulas Toledanas
84r-85r	Thabit ibn Qurra	De recta imaginatione sphaerae
86r-157v	-	Toledan tables
157v-159v	-	Cum sint due signorum distinctiones
160r-166r	Gerard of Cremona	Theorica planetarum
166r-167v	-	De planetarum virtutibus
168r-173r	Robertus Anglicus	Quadrans vetus
173r-174r	-	De saturno excerpta
174r-177r	Masha'Allah	De septem planetis
177v-189v	Masha'Allah	Tractatus astrolabii
190r-204v	-	Humeniz tabulae planetarum
205r-208r	Johannes Papiensis	Canones super tabulas Humeniz
208r-211r	Campanus of Novarra	De quadrante
211r-213r	-	De naturis planetarum
213r-215v	-	De fructibus planetarum in mundo maiore et minore
216v-220v	Robert Grosseteste	De impressionibus aeris
220r-224r	Roger of Hereford	Judicial Astrology
225r	-	Genera piscium in Mosa
225v	-	Notae

H: Erfurt, Wissenschaftliche Allgemeinbibliothek, Ampl. Oct. 84, ff.39r-52r.

Folios	Author	Title or incipit
1r-37r	John of Spain	Quadripartitum
39r-52r	Roger of Hereford	Judicial Astrology
53r-63v	al-Kindi	Impressionibus meteorologicis
65r-67v	John of Spain	Liber eleccionum
67v-68r	-	Epistola de discrecione mortis
68v	-	Regulae in iudiciis astrorum observandae
69r-84v	Bernardus Silvestris	De sortilegiis algorismi
85r-94v	-	Alio collectio vaticiniorum
95r-106r	Apollonius	Tractatus de arte notoria Salomonis

I: Soest, Stadtbibliothek, Codex 24, ff.33r-45v.

Folios	Author	Title or incipit
1r	-	Excerpta astrologica
1v-32r	Firmicus Maternus	Matheseos Libri II
32v	-	Notae astronomicae
33r-45v	Roger of Hereford	Judicial Astrology
45v-52v	Sahl	De electionibus
52v-56r	Sahl	Liber temporum
56r-60r	al-Qabisi	Liber introductorius
60v-65v	Sahl	Liber de natalibus
66ra-76vb	al-Qabisi	Liber introductorius
76vb-78vb	-	Excerpta astrologica
79va-82rb	Sahl	Introductorium de principiis iudiciorum
82rb-83vb	Sahl	50 praecepta
83vb-85vb	Sahl	De interrogationibus
85vb-86ra	-	Si quis querit pro castro vel urbe an sit capienda
86v	-	7 astrological characters
87r-89r	-	Various
89r-120v	Petrus Helias	Summa de rhetorica ciceronis

J: Paris, Bibliothèque nationale de France, Lat. 7434, ff.72r-79r.

Folios	Author	Title or incipit
1r-12v	Abu Ma'shar	Tractatus de iudiciis astrorum
13r-49r	-	Tractatus de perspective
49r-51v	Alfragani	Rudimenta astronomica
52r-71v	-	De iudiciis astrorum
72r-79r	Roger of Hereford	Judicial Astrology
	Thabit ben Qurra	Liber Carastonis, sive tractatus de statera
	-	Solutiones variorum problematum geometricorum
	-	Nonnullae propositiones de optica
	-	Fragmentum de computo
	-	Fragmentum de compositione et usu astrolabii

K: Oxford, Bodleian Library, e Musaeo 181, ff.1r-31v.

Folios	Author	Title or incipit
1r-31v	Roger of Hereford	Judicial Astrology

L: Berlin, Staatsbibliothek Preußischer Kulturbesitz, Lat. fol. 54 (964), ff.87va-95vb.

Folios	Author	Title or incipit
1r	-	Astrology: table of 33 cities
1v-69ra	Haly Abenragel	De iudiciis astrorum, Books I-III and VII-VIII
69ra-73vb	-	Notes on the great conjunctions
74ra-87rb	Haly Embrani	De electionibus horarum
87va-95vb	Roger of Hereford	Judicial Astrology
96ra-137rb	Abu Ma'shar	Introductorium (John of Seville) Books IV-VIII
137rb-140ra	-	Prognostication for 1433
140ra-140vb	Omar of Tiberius	Omar's Nativities
140vb-142vb	John of Ashenden	Sententia Aschenden.
146ra-157rb	Abu Ma'shar	Flores
157va-168ra	Masha'Allah	Liber receptiones
168ra-168vb	Masha'Allah	De cogitatione
169ra	-	Item modeum ad faciendum lac virginis
170ra-176vb	Abraham ibn Ezra	De mundo vel seculo
177ra-179vb	Masha'Allah	De revolutionibus annorum mundi
179va-181vb	-	Ad inveniendum gradum ascendentem in nativitatibus
182ra-193rb	Abraham ibn Ezra	Liber de nativitatibus
193rb-194rb	Abraham ibn Ezra	Liber nativitatum et revolutionum earum
194va-207vb	Pseudo-Ptolemy	Centiloquium and De cometis
208ra-213ra	-	Debilis planetarum
213ra-215rb	Thabit ibn Qurra	De imaginibus
215rb	-	Item de Guido de Cauliacho magister medicine
215va-215vb	Pseudo-Ptolemy	De occultis
215vb	-	Aries habet caput, faciem et pupillam

M: Limoges, Bibliothèque Municipale, 9 (28), ff.124v-128v.

Folios	Author	Title or incipit
1r-44r	ibn Ezra	Liber rationum
44v-51r	Côme d'Alexandrie	Liber introductorius ad astrologiam
51v-65v	Henri Bate of Mechelen	De diebus creticis periodorumque causis
66r-71v	ibn Ezra	De luminaribus
71v-75v	Guillelmus Anglicus	De urina non visa
75v-79v	ibn Ezra	De terminatione morborum
79v-84r	-	Ut dictum in commento super librum Ypocratis
84v-115v	ibn Ezra	Principium sapientie
115v-124r	Sadan	Excerpta de secretis Albumasar
124v-129r	Roger of Hereford	Judicial Astrology
129v-135r	al-Kindi	De milicia seculi
135v-143v	ibn Ezra	De mundo vel seculo
144v-269r	Ptolemy	Quatripartitum
272r-289r	Pseudo-Ptolemy	Centiloquium
289v-291r	Hermes	Centiloquium
291v-294v	-	Astrological notes

N: Dijon, Bibliothèque Municipale, 1045 (116), ff.172v-180r.

Folios	Author	Title or incipit
1r-49v	Abu Ma'shar	De revolutionibus nativitatum
50r-71v	Omar of Tiberius	De nativitatibus
71v-81v	Masha'Allah	De revolutionibus annorum mundi
81r-107r	Abu Ma'shar	De revolutionibus annorum mundi
107r-119r	-	Nativity of 30 December 1160
119v-148r	Pseudo-Ptolemy	Centiloquium
148r-172r	Hermann of Carinthia	De occultis
172v-180r	Roger of Hereford	Judicial Astrology
180v-186v	-	Astronomia Ypocratis
187r-190v	Hermann of Carinthia	Liber imbrum
191r-195v	Masha'Allah	De mercibus

O: Paris, Bibliothèque nationale de France, Nouv. acq. Lat. 693, ff.135va-138vb.

Folios	Author	Title or incipit
2r-8r	-	Calendar and computus
9r-14v	Masha'Allah	Treatise on the Astrolabe
15r	Sahl	Introductorium
15r-15v	Pseudo-Ptolemy	Centiloquium
16ra-21ra	-	Magisterium astrorum (astrological miscellany)
21v	-	Astrology in French
22r	-	List of days and planets in Chaldean order
23r-60v	-	Almanac from 1312
61r-92r	Ptolemy	Quadripartitum
92v-93r	-	Five horoscopes 1235-1236
93v	-	Astrological notes in French
93v-95r	-	Dignior et fortior omnibus locis circuli est ascendens
95v-97r	Pseudo-Aristotle	Chiromancy
97v-107v	Sahl	Liber iudiciorum
107vb-109va	-	Astronomia Ypocratis
111r-135va	Abu Ma'shar	Conjunctions
135ra-135va	-	Primum clima est Iudeorum et in ipsum est Saturni
135va-138vb	Roger of Hereford	Judicial Astrology
139ra-150v	Lanfrancus	Surgery
152ra-153rb	-	Medical recipes
153va-154vb	-	Nota quod Saturnus est frigidus et siccus
154vb-195r	-	Medical recipes
195v-201r	-	Epistolary formulae
202r-203v	-	Entry of Sun in the signs for 1321-1325

P: Oxford, Bodleian Library, Digby 57, ff.146-151v.

Folios	Author	Title or incipit
1r-8r	-	Raciones equacionum planetarum
9r-23r	-	Kalendarium de mediis motibus planetarum
24r-31r	-	Chronological table
32r-43r	-	Astronomical tables
44r-108r	-	Astronomical tables for Oxford
109r	-	Tabula latitudinum diuersarum parcium terre
109v-110r	-	Of the signs of the planets
111r-118r	-	Astronomical tables for Oxford, 1375-1390
119b-126r	-	Various astronomical tables for Oxford, 1376-1389
127r-129r	-	Excerpta de diametro lunae
130r-132r	-	Use of astronomical instruments
133r-137r	-	Tables of the ascension of signs
137v-141r	-	Astrological tract on the qualities of planets and signs
142r-143r	-	On Ptolemy and contents of Almagest
144r-145r	Robert Grosseteste	De dispositione aeris
145v-151r	Roger of Hereford	Judicial astrology
151v-160r	Abu 'Ali al-Khayyat	De iudiciis nativitatum
161r-164r	-	De potestate lunae in morbos
165r-170r	-	Astrological extract
171r-175r	-	Introductio quaedam ad cognitionem artis astrologicae
176v-177r	Ptolemy	Ymagines Tholomei
178r	-	Notes on the location of the Moon
179r	-	De medicinis dandis secundum planetas

Q: Oxford, Bodleian Library, Digby 58, ff.33r-34v.

Folios	Author	Title or incipit
1v	-	Spera philosophorum
2r-8r	-	Astrological calendar
9r	-	Fragment of a tract on astrology
10r-32v	-	Various astrological tracts
33r-34v	Roger of Hereford	Judicial Astrology
35v-37r	-	Exerpt from the Nine Judges
38r-85r	-	Stimulus amoris; tribus partibus
85v	-	Constitutionibus Ottoboni contra pensiones simoniacas
86r-88r	-	Sermon in Matthew 26
88v-91r	-	Pro die Innocentium
91v-92r	-	On angels
93r-95r	-	Augustine: Utrum caritas semel habita amittatur
95v-96r	-	Oration on the holy trinity
97r-111r	-	Constitutiones Johannis Peccham, 1281
111v-112r	-	Pars statutorum Concilii de Reading
113r-118r	-	Confessions and punishments

R: Oxford, Bodleian Library, Digby 38, ff.96v-99v.

Folios	Author	Title or incipit
1r	-	Regulae quaedam astronomicae
1v-4r	-	Tables of proportions
5r-17r	-	Almanack for Saturn, Jupiter, Mars, Mercury
17v-21r	-	Four solar tables
21v-64v	-	Lunar tables for 1300-1323
65r-66r	-	Tables of equations for the latitude of Oxford
67r	-	Tables of hours
69v-75r	-	Tables of houses
76r	-	Use of the astrolabe
77r	-	Table for the year 1324
78r-82r	-	Tract on the signs of the zodiac
82v-83r	-	On planets and signs
84r-86r	-	Tractatus alius de signis zodiaci
87r-91r	-	Kalendarium
91v	-	Antiphonae et preces
92r	-	Tabulae elevationum signorum
93v-96r	-	Canones super tabulas altitudinum horarum
96v-99v	Roger of Hereford	Judicial Astrology
100r-123v	-	Tabulae altitudinis horarum

S: Oxford, Bodleian Library, Ashmole 1796, ff.36r-38r.

Folios	Author	Title or incipit
1r-15r	John of Harelbeke	Tractatus de spera solida
15r-16v	-	Tractatus de mediis coniunctionibus
17r-30v	Richard of Wallingford	Exafrenon
30v-34r	-	De naturalibus effectibus planetarum
34r-36r	-	Debilitas stellarum
36r-38r	Roger of Hereford	Judicial astrology
38r-40r	-	Ad proiciendum eclipsim Solis
40v-55v	Pseudo-Masha'Allah	De compositione astrolabii
55v-76v	Judeo Marciliensis	Ars et operatio novi quadranti
76v-77r	-	Generalis doctrina
77r-83v	Richard of Wallingford	Tractatus horologii astronomici
84r-90r	-	Tables
90v-111v	William Rede	Oxford tables
112r-116v	-	Tables
116v-118r	-	Fiat triangulus rectangulus quod est triangulus ABC
118r-159r	Richard of Wallingford	Tractatus Albionis
159v-165r	Richard of Wallingford	Tractatus rectanguli
165v-166v	-	Tabulam stellarum fixarum
167r-167v	-	Drawings of instruments
168r-171r	-	Pro compositione motus Solis in rotis
171v-172r	-	Memorandum quod in isto instrumento Sol movetur
172v	-	De 564 actonis
173r-175v	Thabit ben Qurra	De hiis que indigent expositione antequam legatur
176r	-	Drawing of an instrument
176v-178v	-	Memorandum quod si Sol in 32 diebus
178v	-	Proprietates signorum
179r-179v	-	Astronomical figures
180r-180v	-	Cognito vero gradus telle in ecliptica
181r-188v	-	Astronomical tables and drawings
189r-189v	-	Si habueris declinationem alicuius stelle a circulo
190r-197r	-	Astronomical tables
197v-201v	-	Notes and unfinished drawings and figures

T: Oxford, Bodleian Library, Laud misc 594, ff.136r-137r.

Folios	Author	Title or incipit
1r-5r	-	Tabula minutorum proportionabilium
6r-14r	-	Almanack for Saturn, Jupiter and Mars, 1300
14v	-	Tabula de veris literis dominicalibus
15r-20r	-	True calendar
21r	-	Solar table
22r-40r	John of Sicily	Toledan tables
41r-45r	William Rede	Table of average motion
46r-73r	-	Alphonsine tables
74r-81r	-	Planetary latitudes
82r-83r	-	Latitudes of the three superior planets
84r-92r	-	Tables for the latitude of Oxford
92v-93r	Masha'Allah	Lunar eclipses
94r-105r	Abu 'Ali al-Khayyat	Nativities
106r-114r	Abu Ma'shar	Revolution of the years
115r-116r	-	Libellus de praesagiis tempestatum
116v-118r	Masha'Allah	Epistolae
118v-119r	Hermes Trismegistus	Liber de aphorismis astrorum
120r-122r	Almansoris	Judicia
123r-135v	Abu Ma'shar	Book of experiments
136r-137r	Roger of Hereford	Judicial Astrology
137r-141r	Peter of Abano	Albumasar in Sadan
141v	-	Fragments of judicial astrology
142r-143r	Amitegni	Liber astrologicus
144r-152r	Hermann of Carinthia	De indagatione cordis
153r	-	De inveniundo ducem
154r-155r	-	Toledan tables
156r	-	Arabic names of constellations
157r-158r	-	Figurae theoricæ motus aspectus
159r	Robert Grosseteste	Use of the astrolabe

U: Oxford, Bodleian Library, Ashmole 192, pp.1-17.

Folios	Author	Title or incipit
I.1.pp.1-106	John of Eschenden	Conjunction of Saturn and Jupiter in 1365
I.2.pp.1-17	Roger of Hereford	Judicial Astrology
I.3.ff.1-10	-	Conjunction of Saturn and Jupiter in 1345
I.4.f.12	John of Eschenden	On the Three Conjunctions
I.5.f.17	Eusebius	Notandum est secundum Eusebium Caesarionsem
I.6.f.19	Milonis Toletani	Conjunction of 1357
I.7.f.20	Jean de Murs	Conjunction of Saturn, Jupiter and Mars in 1345
I.8.f.21b	Levi ben Gerson	Conjunction of Saturn and Jupiter in 1345
I.9.f.26-36	-	Nativitas nocturna
II.p.75	Edward Gresham	Astrostereon
III.f.2-19	Christopher Heydon	Celestial apparitions of the present Trigon
IV.f.35-52	-	What is direcone, and how many folde

V: Munich, Bayerische Staatsbibliothek, CLM 588, ff.137ra-137vb.

Folios	Author	Title or incipit
2r-4r	-	Tables of Sun/Moon conjunctions 1340-1365
6r-55v	William of Moerbeke	Opusculum geomancie
56r-87r	-	Geomancy
87v-93r	-	Almanacs with example for 1343
93r-96v	Guillelmus Anglicus	De urina non visa
96v-100r	-	On the quadrant
100v-108v	-	Ex libro novem iudicum
109r-112r	-	Tables of astrometeorology
112v-113r	Pseudo-Ptolemy	De cometis
113v-115r	Haly	Saturnus in Ariete sub radiis
115r-120r	-	Elucidatio theoricæ planetarum
120v-121v	-	Astronomical tables
122r-130v	-	Predictions and tables 1345-1386
131r-136v	John Maudith	Ars et operatio novi quadranti
137r-137v	Roger of Hereford	Judicial Astrology
137v-141r	Pseudo-Masha'Allah	De compositione astrolabii
142r-181r	Leopold of Austria	De astrorum scientia Books III-VIII
184v-186v	Masha'Allah	Libellus interpretationum
186v-188v	Hermes	Centiloquium
189r-219v	Sahl	Liber iudiciorum
220r-233r	Pseudo-Ptolemy	Liber iudicialis Ptolomei
233v-236v	Jerjis	De significatione septem planetarum in domibus
236v-237v	-	Dicuntur significat se aspicere
238r-238v	-	Sicut ex pluribus actoribus colligitur querens

Medieval catalogues

Benedictines: Canterbury-St Augustin's: BA1

Catalogue is from the fifteenth century, and has nearly four thousand entries, so only the ones listed close to Roger's *Judicial Astrology* are shown here.

1132a	Robert Grosseteste	Kalendarium
1132c	Robert Grosseteste	De sphaera
1132d	Iohannes de Sacro Bosco	Tractatus de sphaera
1132e	Iohannes de Sacro Bosco	Algorismus
1132f	Alexander de Villa Dei	Algorismus
1132g	Robert Grosseteste	De impressionibus aeris seu De prognosticatione
1132h	Iohannes de Sacro Bosco	Computus
1132i	Profatius Iudaeus	Quadrans nouus
1132l	Robert Grosseteste	Computus correctorius
1132m	Petrus Peregrinus de Maricourt	Epistola de magnete
1132p	Robertus Anglicus of Montpellier	Tractatus quadrantis ueteris
1132q	-	De compositione chilindri
1133a	Claudius Ptolemaeus	Almagesta
1133c	Arzachel	Canones ad tabulas Toletanas
1134a	Claudius Ptolemaeus	Almagesta
1134c	William of Saint-Cloud	Almanach planetarum
1135a	Albategni	De scientia astrorum
1135c	Albumasar	De magnis coniunctionibus
1135d	Roger of Hereford	De iudiciis astronomiae
1136	Claudius Ptolemaeus	Quadripartitum
1137a	Aristotle	Iudicia ad Aristonem
1137b	-	Liber Rasielis
1137c	Ps. Cleopatra	De ornatu mulierum
1137d	-	Solamen pauperum
1137e	-	Historia Apollonii regis Tyri
1137f	-	Pictaleon, a collection of proverbs
1138	Alhazen	De aspectibus
1140a	John Pecham	Perspectiua
1140c	Johannes Harlebeke	De sphaera solida
1140d	Abraham Ibn Ezra	De natiuitatibus et reuolutionibus earum
1140e	Thebit ben Corat	De recta imaginatione sphaerae
1140f	Thebit ben Corat	De quantitate stellarum
1140g	John Pecham	Sphaera
1140i	Campanus of Novara	Computus maior
1140j	Arzachel	Opus astrolabii
1140k	Abraham Ibn Ezra	De natiuitatibus et reuolutionibus earum
1140n	-	Tabulae stellarum fixarum
1140o	Alkindus	De radiis stellarum
1140p	Aristotle	Theorica Aristotelis
1140x	Arzachel	Opus astrolabii

Benedictines: The shorter catalogues: Winchester: B113

Catalogue is from early sixteenth century. The manuscript in this catalogue is the only copy of *Judicial Astrology* that can be positively identified with an extant manuscript – it is now bound in Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v (designated manuscript A in this thesis).

1	Innocent III	Sermones
3	Cassiodorus Senator	De institutionibus diuinarum scripturarum
4a	Algazel	Liber philosophiae
4b	Algazel	Physica
5	Ps. Hermes Trismegistus	Dialogus de natura deorum
6a-b	L. Apuleius	De Platone et eius dogmate
7b	Philo Iudaeus	De somnis
8	Alkindus	De intellectu
9	Vigilius Thapsensis	Solutiones obiectionum arianorum
10	Hugh of Fleury	Historia ecclesiastica siue Chronicon
11a-b	Roger of Hereford	De iudiciis astronomiae
12	William of Malmesbury	Gesta regum Anglorum
71a 71c	Philo Iudaeus	De uasis, De ratione sui et de forma rationis

Friars: York Austin Friars: FA8

Catalogue is from 1382, and has well over a thousand entries, so only the ones listed close to Roger's *Judicial Astrology* are shown here.

450a	Boethius	Philosophiae consolation
450b	Boethius	De disciplina scholarium
450c	Giles of Rome	Contra gradus et pluralitatem formarum
451a	Macrobius	Saturnalia
451c	M. Tullius Cicero	Orationes in Catilinam
451b	M. Tullius Cicero	De amicitia
452a	Ps. Hermes Trismegistus	Dialogus de natura deorum
452b	L. Apuleius	De deo Socratis
452d	Roger of Hereford	Computus
452e	Alkindus	De radiis stellarum
452f	Roger of Hereford	De iudiciis astronomiae
452k	-	Theorica planetarum
452m	Arzachel	Opus astrolabii
453d	Muscio	Gynaecia seu de morbis mulierum
453f	Master Alexander	De coitu
453g	Hippocrates	Phlebotomia
453h	Hippocrates	Prognostica
453i	Copho	Modus medendi

University and college libraries of Cambridge: Peterhouse: UC49

Catalogue provenance is from Leland, c. 1535.

1	Elias of Assisi	Alchemical writings
2	Alphidius	De lapide philosophorum
3	Roger of Hereford (dubious)	Expositiones de rebus metallicis
4	Plinius Secundus	Medicina
5	Avicenna	De anima
8	Thetel (Zahel)	De lapidibus
8x	Albertus Magnus	Mineralia
9	Rosinus	Epistola ad Euthesiam
10	M. Valerius Martialis	Epigrammata
11	Aimoin of Fleury	Abbreuiatio historiarum
12	Maximianus	Elegiae
14	Ricardus Anglicus	Signa
15	Moses Maimonides	De uenenis
16	William Holme	De simplicibus medicinis
17	Philip the Chancellor	Sermones dominicales
18	Thomas Waleys	De modo et forma praedicandi
19	Odo of Cheriton	Sermones
20	John Lathbury	Alphabetum morale siue Distinctiones theologicae
25	Origen	Epithalamium super Cantica canticorum
26	Gilbert of Hoyland	Sermons on the Song of Songs 3
27	Thomas Ringstead	Commentary on Proverbs
29	Alexander Bonini de Alexandria	Commentary on Aristotle's Metaphysica
31	Roger Bacon	Communia naturalium
33	Roger Bacon	De multiplicatione specierum
35	Jordanus de Nemore	Elementa super demonstrationem ponderum
36	Euclid	De ponderibus
37	Theodosius	Sphaerica
38	Archimedes	De mensura circuli
39	John of Tynemouth	De curuis superficiebus
41	Walter Burley	Commentary on Aristotle's Ethica
42	Eustratius	Commentary on Aristotle's Ethica
43	John Pecham	Perspectiua
44	Simon Bredon	De aequatorio planetarum
47	Alhazen	De aspectibus
48	Alhazen	De crepusculis siue De ascensionibus nubium
55	Proclus	Elementatio theologica
55	Byrhtferth	Glosses on Bede's De temporum ratione
56	Alfred of Shareshill	De motu cordis
57	Hermes	De legibus astrorum
58	Hermes	Practica astrolabii
60	Abraham Ibn Ezra	De luminaribus et creticis diebus
61	Robert Grosseteste	De impressionibus aeris seu De prognosticatione
62	Roger of Hereford	De iudiciis astronomiae
63	William Heytesbury	Sophismata XXXII
64	Roger Bacon	Summulae dialectics
65	Richard Kilvington	Quaestiones on Aristotle's De generatione et corruption
66a	Albertus Magnus	De natura et origine animae
66b	Albertus Magnus	Commentary on Aristotle's De sensu et sensate
66c	Albertus Magnus	Commentary on Aristotle's De senectute et iuuentute
66d	Albertus Magnus	Commentary on ps. Aristotle's De respiratione et inspiratione
66x	Albertus Magnus	Commentary on Aristotle's De longitudine et breuitate uitae

Appendix 1: Codices containing *Judicial Astrology*

67	Bartholomew the Englishman	De proprietatibus rerum
69	Alkindus	De mutatione temporum
71	Thomas Bradwardine	Geometria speculatiua
72	Euclid	De speculis
74	Thomas Bradwardine	De proportione uelocitatum in motibus
75	Galen	De semine, inc. 'Sperma hominis descendit'
76	Constantinus Africanus	Liber maior de coitu
77	Campanus of Novara	Computus maior
78	Iohannes de Sacro Bosco	Algorismus
79	John Walter	Tabulae et canones
80	John Killingworth	Algorismus
82	John Ashendon	De significatione coniunctionis Saturni et Martis in Cancro que erit 1357 et de significatione coniunctionis magnae Saturni et Iouis quae erit 1365
83-4	John Holbroke	Tabulae cum canonibus
86	Simon Bredon	Commentary on Boethius's Arithmetica
89	Roger Bacon	Commentary on Avicenna's De anima

Bibliography

Manuscripts of *Judicial Astrology*

- Berlin, Staatsbibliothek Preußischer Kulturbesitz, Lat. fol. 54 (964), ff.87va-95vb
- Cambridge, University Library, Gg 6.3, ff.139r-153r
- Cambridge, University Library, Ii 1.1, ff.40r-59r
- Dijon, Bibliothèque Municipale, 1045 (116), ff.172v-180r
- Erfurt, Wissenschaftliche Allgemeinbibliothek, Ampl. Oct. 84, ff.39r-52r
- Limoges, Bibliothèque Municipale, 9 (28), ff.124v-128v
- Munich, Bayerische Staatsbibliothek, CLM 588, ff.137ra-137vb
- Oxford, Bodleian Library, Ashmole 192, pp.1-17
- Oxford, Bodleian Library, Ashmole 1796, ff.36r-38r
- Oxford, Bodleian Library, Auct F III 13, ff.148r-151v
- Oxford, Bodleian Library, Digby 38, ff.96v-99v
- Oxford, Bodleian Library, Digby 57, ff.146r-151v
- Oxford, Bodleian Library, Digby 58, ff.33r-34v
- Oxford, Bodleian Library, Digby 149, ff.189r-194v
- Oxford, Bodleian Library, e Musaeo 181, ff.1r-31v
- Oxford, Bodleian Library, Laud misc 594, ff.136r-137r
- Oxford, Bodleian Library, Laud misc 644, ff.221r-224r
- Oxford, Bodleian Library, Selden Supra 76, ff.3r-19v
- Paris, Bibliothèque nationale de France, Lat. 7434, ff.72r-79r
- Paris, Bibliothèque nationale de France, Nouv. acq. Lat. 693, ff.135va-138vb
- Soest, Stadtbibliothek, Codex 24, ff.33r-45v
- Vatican City, Biblioteca Apostolica Vaticana, Pal. Lat. 1414, ff.220r-224r

Other manuscripts

Alchandreana, Barcelona, Archivo de la Corona de Aragón, Ripoll 225

Alchandreana, Paris, Bibliothèque Nationale Lat. 17868, ff.2r-13r

De observatione lunae, Vatican, Biblioteca Apostolica Vaticana, Vat. Lat. 3101, ff.26r-28r

Daniel of Morley, *De philosophia*, London, British Library, Arundel 377, ff.88r-103v

Firmicus Maternus, *Mathesis*, Paris, Bibliothèque Nationale Lat. 7311, ff.4r-49r

Pliny, *Natural History*, Munich Bayerische Staatsbibliothek CLM 14436, ff.58v-61v

Pseudo-Ptolemy, *Iudicia*, Paris, Bibliothèque nationale de France, Lat. 16208, ff.50r-65r

Ptolemy, *Almagest*, Florence Biblioteca Medicea Laurenziana, Plut. 89, sup. 45 1ra-183va

Raymond of Marseilles, *Liber iudiciorum*, Madrid, Biblioteca Nacional, 10009, ff.133r-143r

Roger of Hereford, Various astronomical tables, London, British Library, Arundel 377, ff.77r-87v

Roger of Hereford, *Computus*, Oxford, Bodleian Library, Digby 40, ff.25r-51v

Roger of Hereford, *Liber de divisione astronomie atque de eius quatuor partibus*, Paris, Bibliothèque Nationale, Lat. 10271, ff.179r-201v

Roger of Hereford (questionable), *Theorica Planetarum*, Oxford, Bodleian Library, Bodleian 300, ff.1-19v

Roger of Hereford (questionable), *Theorica Planetarum*, Oxford, Bodleian Library, Digby 168, ff.69v-83v

Roger of Hereford (questionable), *Theorica Planetarum*, Oxford, Bodleian Library, Savile 21, f.42

Sahl, *Liber iudiciorum*, Paris, Bibliothèque nationale de France, Lat. 16204, pp.433a-500a

Tractatus de ortu et occasione signorum, Oxford, Bodleian Library, Bodleian 300, ff.84-90

Treatise on bloodletting, London, British Library, Cotton Titus D XXVII, ff.2r-8v

Primary sources

- Abu Ma'shar, *The Abbreviation of the Introduction to Astrology*, C. Burnett (trans.) (Leiden: Brill, 1994)
- Abu Ma'shar, *The Book of Religions and Dynasties (On the Great Conjunctions)*, K. Yamamoto and C. Burnett (trans.) (Leiden: Brill, 2000)
- Abu Ma'shar, *The Great Introduction to Astrology* (2 Vols), K. Yamamoto and C. Burnett (trans.) (Leiden: Brill, 2019)
- Abu Ma'shar, *Liber introductorii maioris ad scientiam judiciorum astrorum*, John of Seville (trans.), R. Lemay (ed.), Volume 5 (Napoli: Istituto Universitario Orientale, 1995)
- Abu Ma'shar, *Liber introductorii maioris ad scientiam judiciorum astrorum*, Hermann of Carinthia (trans.), R. Lemay (ed.), Volume 8 (Napoli: Istituto Universitario Orientale, 1995)
- Abu Ma'shar, *The Book of Religions and Dynasties (On the Great Conjunctions)*, K. Yamamoto and C. Burnett (trans.) (Leiden: Brill, 2000)
- Adelard of Bath, 'Questiones naturales' in C. Burnett (ed.), *Adelard of Bath, Conversations With His Nephew* (Cambridge: Cambridge University Press, 1998)
- Adelard of Bath, 'De eodem et diverso' in C. Burnett (ed.), *Adelard of Bath, Conversations With His Nephew* (Cambridge: Cambridge University Press, 1998)
- Al-Biruni, *The Book of Instruction in the Elements of the Art of Astrology*, R. Ramsay Wright (ed.) (London: Luzac & Co, 1934)
- Al-Kindi, *The Forty Chapters of al-Kindi*, B.N. Dykes (ed., trans.) (Minneapolis: Cazimi Press, 2011)
- Al-Qabisi, *The Introduction to Astrology*, C. Burnett, K. Yamamoto, and M. Yano (trans.) (London: Warburg Institute, 2004)
- Petrus Alfonsi, 'Epistola ad peripateticos' in Tolan, *Petrus Alfonsi and his Medieval Readers* (Gainesville: University Press of Florida, 1993)
- Aristotle, *Generation of Animals*, A.L. Peck (trans.), Loeb Classical Library 366 (Cambridge, MA: Harvard University Press, 1942)
- Augustine, *Confessions, Volume I: Books 1-8*, C. Hammond (trans.), Loeb Classical Library 26 (Cambridge, MA: Harvard University Press, 2014)
- Augustine, *City of God, Volume II: Books 4-7*, W.M. Green, (trans.), Loeb Classical Library 412 (Cambridge, MA: Harvard University Press, 1963)
- Augustine, *The Letters of St. Augustine*, J.G. Cunningham (trans.) (Altenmünster: Jazzybee Verlag, 2015)

- Bede, *Ecclesiastical History, Volume II*, J.E. King (trans.) Loeb Classical Library 248 (Cambridge, MA: Harvard University Press, 1930)
- Bede, *Bede: The Reckoning of Time*, F. Wallis (trans.) (Liverpool: Liverpool University Press, 1999)
- Bonatti, G., *Book of Astronomy*, B.N. Dykes (trans.) (Golden Valley, Minnesota, 2007)
- Bonatti, G., *Liber astronomiae*, R. Zoller (trans.) and R. Hand (ed.) (Salisbury, Queensland: Spica Publications, 1998)
- Cassiodorus, *Institutions of Divine and Secular Learning, On the Soul*, J. Halporn (trans.) (Liverpool: Liverpool University Press, 2004)
- Firmicus Maternus, *Ancient Astrology Theory and Practice, Matheseos Libri VIII*, J.R. Bram (trans.) (Park Ridge, NJ: Noyes Press, 1975)
- Gerardi Cremonensis, *Geomantiae astronomicae libellus* in Henrici Cornelii Agrippae, *Opera* (Basel: T. Guarin, 1578)
- Hermann of Carinthia, *Hermann of Carinthia: The Search of the Heart*, B.N. Dykes (ed.) (Minneapolis: Cazimi Press, 2011)
- ibn Ezra, A., *The Beginning of Wisdom: An Astrological Treatise*, R. Levy and F. Cantera (trans.) (Baltimore: The Johns Hopkins Press, 1939)
- ibn Ezra, A., *Book of the Beginning of Wisdom* in S. Sela (ed., trans.), *Introductions to Astrology* (Leiden: Brill, 2017)
- ibn Ezra, A., *Book of Elections* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011)
- ibn Ezra, A., *Book of Interrogations* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011)
- ibn Ezra, A., *Book of the Judgments of the Zodiacal Signs* in S. Sela (ed., trans.), *Introductions to Astrology* (Leiden: Brill, 2017)
- ibn Ezra, A., *Book of the Luminaries* in S. Sela (ed., trans.), *On Elections, Interrogations, and Medical Astrology* (Leiden: Brill, 2011)
- ibn Ezra, A., *Book of Nativities* in S. Sela (ed., trans.), *On Nativities and Continuous Horoscopy* (Leiden: Brill, 2017)
- ibn Ezra, A., *Book of Reasons*, S. Sela (ed., trans.) (Leiden: Brill, 2007)
- ibn Ezra, A., *Book of Revolution* in S. Sela (ed., trans.), *On Nativities and Continuous Horoscopy* (Leiden: Brill, 2017)
- ibn Ezra, A., *Book of the World*, S. Sela (ed., trans.) (Leiden: Brill, 2010)
- Isidore of Seville, *Etymologies*, S. Barney, W.J. Lewis, J.A. Beach, and O. Berghof (eds) (Cambridge: Cambridge University Press, 2006)

- Firmicus Maternus, *Matheseos libri VIII*, W. Kroll and F. Skutsch (eds) (Leipzig: Teubner, 1897)
- Masha'Allah, *Liber receptionis*, John of Seville (trans.), J. Heller (ed.) (Nürnberg: Johannes Montanus & Ulricus Neuberus, 1549)
- Masha'Allah, *On Hidden Things*, in B.N. Dykes, *Works of Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008)
- Masha'Allah, *On Reception* in B.N. Dykes, *Works of Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008)
- Plato, *Timaeus*, R.G. Bury (trans.), Loeb Classical Library 234 (Cambridge, MA: Harvard University Press, 1929)
- Pliny, *Natural History, Volume I: Books 1-2*, H. Rackham (trans.), Loeb Classical Library 330 (Cambridge, MA: Harvard University Press, 1938)
- Ptolemy, *Ptolemy's Almagest*, G.J. Toomer (trans.) (London: Duckworth, 1984)
- Ptolemy, *Ptolemy Tetrabiblos*, F.E. Robbins (ed., trans.), Loeb Classical Library 435 (Cambridge, MA: Harvard University Press, 2001)
- Sahl, 'Introduction' in B.N. Dykes, *Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008)
- Sahl, 'On Elections' in Dykes, *Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008)
- Sahl, 'On Questions' in Dykes, *Sahl and Masha'Allah* (Minneapolis: Cazimi Press, 2008)
- Vettius Valens, *Anthologies*, M. Riley (trans.) (2010),
<http://www.csus.edu/indiv/r/rileymt/Vettius%20Valens%20entire.pdf> [22 December 2012]

Secondary sources

- Adamson, P., 'Abu Ma'shar, al-Kindi and the Philosophical Defense of Astrology', *Recherches de Théologie et Philosophie Médiévales*, 69.2 (2002), pp.245-270
- Adorno, T.W., *The Stars Down to Earth* (London: Routledge, 1994)
- Arribas, R., 'The Terminology of Historical Astrology according to Abraham Bar Hiyya and Abraham Ibn Ezra', *Aleph*, 11.1 (2011), pp.10-54
- Arribas, R., 'Testimonies in Medieval Astrology: Finding Degrees of Certitude in Astrological Judgements' in P. Hummel (ed.), *Doxa: Études sur les Forms et la Construction de la Croyance* (Paris: Philologicum, 2010), pp.115-133
- Ashdowne, R.K., Howlett, D.R., and Latham, R.E. (eds), *Dictionary of Medieval Latin from British Sources* (Oxford: British Academy, 2018)
- Aylmer, G.E. and Tiller, J. (eds), *Hereford Cathedral: A History* (London: Hambledon Press, 2000)
- Azzolini, M., *The Duke and the Stars* (Cambridge, MA: Harvard University Press, 2013)
- Barrow, J., 'A Lotharingian in Hereford: Bishop Robert's Reorganisation of the Church of Hereford 1079-1095' in D. Whitehead (ed.), *Medieval Art, Architecture and Archaeology at Hereford* (Oxford: British Archaeological Association, 1995), pp.29-47
- Barthel, P. and van Kooten, G. (eds), *The Star of Bethlehem and the Magi: Perspectives from Experts on the Ancient Near East, the Greco-Roman World, and Modern Astronomy* (Leiden: Brill, 2015)
- Bernd, M. and Brandis, T., *Die Mittelalterlichen Handschriften der Wissenschaftlichen Stadtbibliothek Soest* (Wiesbaden: Harrassowitz, 1990)
- Black, W.H., *Catalogue of the Manuscripts Bequeathed unto the University of Oxford by Elias Ashmole* (Oxford: Oxford University Press, 1845)
- Bolgar, R.R., *The Classical Heritage and its Beneficiaries* (Cambridge: Cambridge University Press, 1954)
- Borelli, A., *Aspects of the Astrolabe* (Stuttgart: Franz Steiner, 2008)
- Bos, G., Burnett, C., Langermann, Y., 'Hebrew Medical Astrology: David Ben Yom Tov, Kelal Qatan', *Transactions of the American Philosophical Society*, 95.5 (2005), pp.1-121
- Bouché-Leclercq, A., *L'Astrologie Grecque* (Paris: E. Leroux, 1899)
- Boudet, J., 'Les Horoscopes Princiers dans l'Occident Médiéval (XIIe-XVe Siècle)', *Knowledge at the Courts*, *Micrologus* 16 (2008), pp.373-392
- Boudet, J., 'Astrology Between Rational Science and Divine Inspiration: The Pseudo-Ptolemy's *Centiloquium*' in S. Rapisarda and E. Niblaeus (eds), *Dialogues*

- Among Books in Medieval Western Magic and Divination*, Micrologus' Library 65 (Firenze: SISMEL, 2014), pp.49-75
- Boudet, J., 'Ptolémée dans l'Occident Médiéval: Roi, Savant et Philosophe', *The Medieval Legends of Philosophers and Scholars*, Micrologus 21 (2013), pp.193-217
- Boyer, C.B. and Merzbach, U.C., *A History of Mathematics* (New York: Wiley, 1989)
- Brockliss, L.W.B., *The University of Oxford: A History* (Oxford: Oxford University Press, 2016)
- Brooke, Z.N., (ed.), *The Letters and Charters of Gilbert Foliot* (Cambridge: Cambridge University Press, 1967)
- Burke, J., *History of the Landed Gentry*, Volume 3 (London: Henry Colburn, 1838)
- Burnett, C., 'Adelard of Bath and the Arabs' in J. Hamesse and M. Fattori (eds), *Rencontres De cultures* (Louvain-la-Neuve-Cassino: Institut d'Études Médiévales, 1990), pp.89-107
- Burnett, C., 'Al-Qabisi's *Introduction to Astrology*: From Courtly Entertainment to University Textbook', *Studies in the History of Culture and Science: A Tribute to Gad Freudenthal* (Leiden: Brill, 2010), pp.43-70
- Burnett, C., 'Aristotle as an Authority on Judicial Astrology', *Florilegium Mediaevale* (Louvain-la-Neuve: Fédération Internationale des Instituts d'Études Médiévales, 2009), pp.39-62
- Burnett, C., 'The Arrival of the Pagan Philosophers In The North: A Twelfth-century Florilegium In Edinburgh University Library' in J. Canning, E.J. King and M. Staub (eds), *Knowledge, Discipline and Power in the Middle Ages* (Leiden: Brill, 2011), pp.79-94
- Burnett, C., 'Hebrew and Latin Astrology in the Twelfth century: The Example of the Location of Pain', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 41.2 (2010), pp.70-75
- Burnett, C., *The Introduction of Arabic Learning into England* (London: British Library, 1997)
- Burnett, C., 'Late Antique and Medieval Latin Translations of Greek Texts on Astrology and Magic' in P. Magdalino and M. Mavroudi (eds), *The Occult Sciences in Byzantium* (Geneva: La Pomme d'or, 2006), pp.325-360
- Burnett, C. (ed.), *Magic and Divination in the Middle Ages: Texts and Techniques in the Islamic and Christian Worlds* (Aldershot: Variorum, 1996)
- Burnett, C., 'Magister Iohannes Hispanus: Towards the Identity of a Toledan Translator' in D. Jacquart (ed.), *Comprendre et Maîtriser la Nature au Moyen Âge* (Geneva: Droz, 1994), pp. 425-436

- Burnett, C., 'Mathematics and Astronomy in Hereford and its Region in the Twelfth Century' in D. Whitehead (ed.), *Hereford: Medieval Art, Architecture, and Archaeology* (Leeds: British Archaeological Association Conference Transactions, 1995), pp.50-59
- Burnett, C., 'On Judging and Doing in Arabic and Latin Texts on Astrology and Divination', *The Impact of Arabic Sciences in Europe and Asia*, *Micrologus* 24 (2016), pp.3-11
- Burnett, C., 'Petrus Alfonsi and Adelard of Bath Revisited' in C. de Hartmann and P. Roelli (eds), *Petrus Alfonsi and his Dialogus* (Firenze: Sismel, 2014)
- Burnett, C., 'The Twelfth-Century Renaissance' in D. Lindberg and M. Shank (eds), *The Cambridge History of Science* (Cambridge: Cambridge University Press, 2013), pp.365-384
- Burnett, C., 'The Works of Petrus Alfonsi: Questions of Authenticity', *Medium Aevum* 66 (1997), pp.42-79
- Burnett, C. and Greenbaum, D., *From Masha'Allah to Kepler: Theory and Practice in Medieval and Renaissance Astrology* (Lampeter: Sophia Centre Press, 2015)
- Burnett, C. and Juste, D., 'A New Catalogue of Medieval Translations into Latin of Astronomy and Astrology', in F. Wallis and R. Wisnovsky (eds), *Medieval Textual Cultures* (Berlin: De Gruyter, 2016)
- Burnett, C. and Mantas-España, P. (eds), *Ex Oriente Lux* (Córdoba: UCO Press, 2016)
- Cambridge University, *A Catalogue of the Manuscripts Preserved in the Library of the University of Cambridge Vol III* (Cambridge: Cambridge University Press, 1858)
- Campion, N., *A History of Western Astrology Volume II - The Medieval and Modern Worlds* (London: Continuum, 2009)
- Campion, N. and Dreyer, R., 'Indian Astrology' in D. Kim (ed.), *Religious Transformation in Modern Asia* (Leiden: Brill, 2015), pp.163-191
- Carey, H.M., 'Astrological Medicine and the Medieval English Folded Almanac', *Social History of Medicine*, 17.3 (2004), pp.345-363
- Carey, H.M., 'Astrology at the English Court in the Later Middle Ages' in P. Curry (ed.), *Astrology, Science and Society* (Woodbridge: Boydell Press, 1987), pp.41-56
- Carey, H.M., 'Astrology in the Middle Ages', *History Compass* 8.8 (2010), pp.888-902
- Carey H.M., 'Henry VII's Book of Astrology and the Tudor Renaissance', *Renaissance Quarterly*, 65.3 (2012), pp.661-710
- Carey, H.M., 'Medieval Latin Astrology and the Cycles of Life: William English and English Medicine in Cambridge, Trinity College MS O.5.26' in A. Akasoy, C. Burnett, and R. Yoeli-Tlalim (eds), *Astro-Medicine: Astrology and Medicine, East and West*, *Micrologus' Library* 25 (Firenze: SISMEL, 2008), pp.33-74

- Carmody, F.J., *Arabic Astronomical and Astrological Sciences in Latin Translation: A Critical Bibliography* (Berkeley: University of California Press, 1956)
- Casulleras, J., 'The Instruments and the Exercise of Astrology in the Medieval Arabic Tradition', *Archives Internationales d'Histoire des Sciences* 63.170-171 (2013), pp.517-540
- Casulleras, J., 'Métodos para Determinar las Casas del Horóscopo en la Astrología Medieval Árabe', *Al-Qantara* 30.1 (2009), pp.41-67
- Chabás, J., 'Πτολεμαίου Πρόχειροι Κανόνες. Les «Tables Faciles» de Ptolémée/Ptolemy's Handy Tables. Tables A1-A2 by Anne Tihon and Raymond Mercier', *Aestimatio* 10 (2013), pp.106-109
- Chardonens, L.S., *Anglo-Saxon Prognostics, 900-1100* (Leiden: Brill, 2007)
- Cochrane, L., *Adelard of Bath: The First English Scientist* (London: British Museum Press, 1994)
- Cohen, M., *Under Crescent and Cross* (Princeton: Princeton University Press, 1996)
- Crosby, E., *Bishop and Chapter in Twelfth-century England* (Cambridge: Cambridge University Press, 1994)
- D'Alverny, M., 'Translations and Translators' in R.L. Benson, G. Constable, and C.D. Lanham (eds), *Renaissance and Renewal in the Twelfth Century* (Toronto: University of Toronto Press, 1999), pp.421-462
- Dales, R.C., *The Intellectual Life of Western Europe in the Middle Ages* (Washington, DC: University Press of America, 1980)
- De Ricci, S., *English Collectors of Books and Manuscripts: 1530-1930* (Cambridge: Cambridge University Press, 2011)
- Deimann, D. and Juste, D., (eds), *Astrologers and their Clients in Medieval and Early Modern Europe* (Köln: Böhlau Verlag, 2015)
- Delisle, L., *Catalogue des manuscrits des fonds Libri et Barrois* (Paris: H. Champion, 1888)
- Derolez, A., *The Palaeography of Gothic Manuscript Books: From the Twelfth to the Early Sixteenth Century* (Cambridge: Cambridge University Press, 2003)
- Drecker, J. 'Hermannus Contractus Über das Astrolab', *Isis*, 16.2 (1931), pp.200-219
- Duhem, P., 'L'Astronomie Latine au Moyen Age', *Le système du monde: histoire des doctrines cosmologiques de Platon à Copernic*, 3 (Paris: Librairie Scientifique Hermann, 1959)
- Dykes, B.N., *Introductions to Traditional Astrology: Abu Ma'shar and al-Qabisi* (Minneapolis: Cazimi Press, 2010)
- Eastwood, B.S., *Ordering the Heavens* (Leiden: Brill, 2007)

- Eastwood, B.S., *The Revival of Planetary Astronomy in Carolingian and Post-Carolingian Europe* (Aldershot: Ashgate, 2002)
- Edwards, G.M., 'The *Liber introductorius* of Michael Scot', Unpublished PhD Thesis, University of Southern California (1978)
- Edwards, K., *The English Secular Cathedrals in the Middle Ages* (Manchester: Manchester University Press, 1967)
- Eyton, R.W., *Court, Household and Itinerary of King Henry II* (London: Taylor, 1878)
- Farrer, W., *Early Yorkshire Charters* (Edinburgh: Ballantyne, Hanson and Co, 1915)
- Federici-Vescovini, G., 'La storia astrologica universale. L'oroscopo delle religioni tra Medioevo e Rinascimento', *Philosophical Readings*, 7.1 (2015), pp.8-41
- Federici-Vescovini, G., *Medioevo magico : la magia tra religione e scienza nei secoli XIII e XIV* (Torino: UTET, 2008)
- Flint, V., 'The Transmission of Astrology in the Early Middle Ages', *Viator* 21 (1990), pp.1-28
- Flint, V., *The Rise of Magic in Early Medieval Europe* (Princeton, NJ: Princeton University Press, 1994)
- Freely, J., *Aladdin's Lamp: How Greek Science Came to Europe Through the Islamic World* (New York: Alfred A. Knopf, 2009)
- French, R., 'Foretelling the Future: Arabic Astrology and English Medicine in the Late Twelfth Century', *Isis*, 87.3 (1996), pp.453-480
- French, R., 'Roger of Hereford: Astrology and the School of Hereford' in D. Whitehead and J. Eisel (eds), *A Hereforshire Miscellany* (Hereford: Lapridge, 2000), pp.247-255
- Gansten, M., *Primary Directions* (Bournemouth: Wessex Astrologer, 2009)
- Gázquez, J.M., *The Attitude of the Medieval Latin Translators Towards the Arabic Sciences*, Micrologus' Library 75 (Firenze: SISMEL, 2016)
- Grant, E., *Planets, Stars, and Orbs: The Medieval Cosmos, 1200-1687* (Cambridge: Cambridge University Press, 1994)
- Grant, E., *A Source Book in Medieval Science* (Cambridge, MA: Harvard University Press, 1974)
- Greatrex, J., 'Horoscopes and Healing at Norwich Cathedral Priory' in C. Barron and J. Stratford (eds), *The Church and Learning in Later Medieval Society*, Harlaxton Medieval Studies, XI (Donington: Shaun Tyas, 2002). pp.170-177
- Halm, C. and Laubmann, G., *Catalogus codicum latinorum Bibliothecae Regiae Monacensis* (Munich: Bibliothecae Regiae, 1868)

- Hamdani, A., 'A critique of Paul Casanova's dating of the *Rasa'il Ikhwan al-Safa*' in F. Daftary (ed.), *Isma'ili History and Thought* (Cambridge: Cambridge University Press, 1996), pp.145-152
- Harding, C., 'Time, History and the Cosmos: The Dado in the Apse of the Church of the Eremitani, Padua' in L. Bourdua and A. Dunlop (eds), *Art and the Augustinian Order in Early Renaissance Italy* (Aldershot: Ashgate, 2007), pp.127-142
- Harmening, D., *Astrologie und Öffentlichkeit im Mittelalter* (Stuttgart: Anton Hiersemann, 2005)
- Haskins, C.H., *The Renaissance of the Twelfth Century* (Cambridge, MA: Harvard University Press, 1933)
- Haskins, C.H., *Studies in the History of Mediaeval Science* (Cambridge, MA: Harvard University Press, 1924)
- Headland, T.N., Pike, K.L., and Harris, M., *Emics and Etics: The Insider/Outsider Debate* (Newbury Park, CA: Sage, 1990)
- Hegedus, T., *Early Christianity and Ancient Astrology* (New York: Lang, 2007)
- Hillaby, J., 'Petrus Alfonsi' in J. Hillaby, *The Palgrave Dictionary of Medieval Anglo-Jewish History* (Basingstoke: Palgrave Macmillan, 2013)
- Hillaby, J., 'Hereford Gold: Irish Welsh and English Land, Part 2 – The Jewish Community at Hereford and Its Clients 1179–1253: Four Case studies', *Transactions of the Woolhope Naturalists' Field Club*, 45.1 (1985), pp.193-270
- Hilty, G., '¿Existió una tercera versión latina del Libro conplido?', *Revista de Literatura Medieval* 23 (2011), pp.287-296
- Hogendijk, J.P. and Casulleras, J., 'Progressions, Rays and Houses in Medieval Islamic Astrology: A Mathematical Classification' *Suhyal* 11 (2012), pp.33-102
- Hunt, R.W., 'English Learning in the Late Twelfth Century', *Transactions of the Royal Historical Society* 19 (1936), pp.19-42
- Hunt, R.W. and Gibson, M., *The Schools and the Cloister* (Oxford: Clarendon Press, 1984)
- Huscroft, R., *Expulsion: England's Jewish Solution* (Stroud: Tempus, 2006)
- Jacquart, D., 'Medicine and Theology' in S.E. Young (ed.), *Crossing Boundaries at Medieval Universities* (Leiden, Brill: 2011), pp.213-226
- Jacobs, J., *The Jews of Angevin England: Documents and Records from Latin and Hebrew Sources Printed and Manuscript* (London: Nutt, 1893)
- Jones, R., *The Medieval Natural World* (Harlow: Pearson, 2013)
- Juste, D., 'Hermann der Lahme und das Astrolab im Spiegel der neuesten Forschung' in F. Heinzer and T. Zotz (eds.), *Hermann der Lahme: Reichenauer Mönch und Universalgelehrter des 11. Jahrhunderts* (Stuttgart: Kohlhammer, 2016), pp.273-284

- Juste, D. 'The Impact of Arabic Sources on European Astrology: Some Facts and Numbers', *Micrologus*, 24 (2016), pp.195-226
- Juste, D., *Les Alchandreana Primitifs* (Leiden: Brill, 2007)
- Juste, D., 'Neither Observation nor Astronomical Tables: An Alternative Way of Computing the Planetary Longitudes in the Early Western Middle Ages' in C. Burnett, J.P. Hogendijk, K. Plofker and M. Yano (eds), *Studies in the History of the Exact Sciences in Honour of David Pingree* (Leiden: Brill, 2004), pp.181-222
- Kennedy, E., *Astronomy and Astrology in the Medieval Islamic World* (Brookfield, VT: Ashgate, 1998)
- Kennedy E.S. and Kennedy M.H., *Geographical Coordinates of Localities from Islamic Sources* (Frankfurt: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 1987)
- Ker, N.R., *Books, Collectors and Libraries: Studies in the Medieval Heritage* (London: Hambledon, 1985)
- Krusch, B. (ed.), *Vita Elgii Episcopi Noviomagensis* (Hannover: Hahn, 1902)
- Kunitzch, P., 'Translations from Arabic (Astronomy/Astrology): The Formation of Terminology', *Archivum Latinitatis Medii Aevi*, 63 (2005), pp.161-168
- Lawrence-Mathers, A. and Escobar-Vargas, C., *Magic and Medieval Society* (Abingdon: Routledge, 2014)
- Leach, A.F., *The Schools of Medieval England* (London: Methuen, 1915)
- Leedham-Green, E.S. and Webber, T., *The Cambridge History of Libraries in Britain and Ireland* (Cambridge: Cambridge University Press, 2008)
- Leicht, R., 'The Reception of Astrology in Medieval Ashkenazi Culture', *Aleph* 13.2 (2013), pp.201-234
- Lemay, R., *Abu Ma'shar and Latin Aristotelianism in the Twelfth Century* (Beirut: American University of Beirut, 1962)
- Lemay, R., 'The Teaching of Astronomy in Medieval Universities, Principally at Paris in the Fourteenth Century', *Manuscripta* 20 (1976), pp.197-217
- Lemay, R., 'The True Place of Astrology in Medieval Science and Philosophy: Towards a Definition' in P. Curry (ed.), *Astrology, Science and Society* (Woodbridge: Boydell Press, 1987), pp.57-73
- Lepine, D., 'Cathedrals and Charity: Almsgiving at English Secular Cathedrals in the Later Middle Ages', *The English Historical Review*, 126.522 (2011), pp.1066-1096
- Lilly, W., *The Life of William Lilly, Student in Astrology*, S. Ward (ed.) (Tradition Library, 2009)
- Lilly, W., *Christian Astrology* (London: Tho. Budenell, 1642)

- Limor, O., 'The Erection of Essential Boundaries: Christians and Jews' in M. Rubin and W. Simons (eds), *The Cambridge History of Christianity Volume 4: Christianity in Western Europe, c.1100-c.1500* (Cambridge: Cambridge University Press, 2009), pp.135-148
- Lindberg, D.C., *The Beginnings of Western Science* (Chicago: University of Chicago Press, 1992)
- Liuzza, R. (ed., trans.), *Anglo-Saxon Prognostics* (Cambridge: Brewer, 2010)
- Lobel, M.D. (ed.), *British Atlas of Historic Towns 1* (London: Cook, Hammond and Kell, 1969)
- Lohr, A. (ed.), *Opera de computo saeculi duodecimi: Reinheri Paderbornensis computus emendatus, Magistri Cunestabuli computus, Rogeri Herefordensis computus in Corpus Christianorum Continuatio Mediaevalis 272* (Turnhout, Belgium: Brepols, 2015)
- Malkiel, D., 'Jews and Apostates in Medieval Europe – Boundaries Real and Imagined', *Past and Present*, 194.1 (2007), pp.3-34
- McCluskey, S., *Astronomies and Cultures in Early Medieval Europe* (Cambridge: Cambridge University Press, 1998)
- Mentgen, G., *Astrologie und Öffentlichkeit im Mittelalter* (Stuttgart: Anton Hiersemann, 2005)
- Mercier, R., 'Astronomical Tables in the Twelfth Century' in C. Burnett (ed.), *Adelard of Bath, an English Scientist and Arabist of the Early Twelfth Century* (London: Warburg Institute, 1987), pp.87-188
- Metlitzki, D., *The Matter of Araby in Medieval England* (New Haven: Yale University Press, 1977)
- Montgomery, S., *Science in Translation* (Chicago: University of Chicago Press, 2000)
- Moreton, J., 'Before Grosseteste: Roger of Hereford and Calendar Reform in Eleventh and Twelfth-Century England', *Isis*, 86.4 (1995), pp.562-586
- Mosshammer, A.A., *The Easter Computus and the Origins of the Christian Era* (Oxford: Oxford University Press, 2008)
- Mynors, R.A.B. and Thomson R.M., *Catalogue of the Manuscripts of Hereford Cathedral Library* (Hereford: D.S. Brewer, 1993)
- Neugebauer, O., 'The Study of Wretched Subjects', *Isis*, 42.2 (1951), p.111
- North, J.D., *Horoscopes and History* (London: Warburg Institute, 1986)
- Nothaft, C.P.E., *Dating the Passion: The Life of Jesus and the Emergence of Scientific Chronology (200-1600)* (Leiden: Brill, 2012)
- Nothaft, C.P.E., *Medieval Latin Christian Texts on the Jewish Calendar* (Leiden: Brill, 2014)

- Nothaft, C.P.E., *Walcher of Malvern* (Turnhout: Brepols, 2017)
- Obrist, B., *La Cosmologie Médiévale* (Firenze: SISMEL, 2004)
- Obrist, B., 'La Représentation Carolingienne du Zodiaque', *Cahiers de Civilisation Médiévale* 44 (2001), pp.3-33
- Oestmann, G., Rutkin, H., and von Stuckrad, K., 'Introduction: Horoscopes and History' in G. Oestmann, H. Rutkin and K. von Stuckrad (eds), *Horoscopes and Public Spheres* (Berlin, New York: Walter de Gruyter: 2005), pp.1-9
- Orme, N., *Education and Society in Medieval and Renaissance England* (London: Hambledon Press, 1989)
- Orme, N., *English Schools in the Middle Ages* (London: Methuen, 1973)
- Orme, N., 'The Medieval Schools of Herefordshire', *Nottingham Medieval Studies* 40 (1996), pp.47-62
- Page, S., *Astrology in Medieval Manuscripts* (Toronto: University of Toronto Press, 2002)
- Page, S., *Magic in Medieval Manuscripts* (Toronto: University of Toronto Press, 2004)
- Page, S., 'Richard Trewythian and the Uses of Astrology in Late Medieval England', *Journal of the Warburg and Courtauld Institutes*, 64 (2001), pp.193-228
- Park, D. and Pender, R., 'Henry III's Wall Paintings of the Zodiac in the Lower Ward of Windsor Castle' in L. Keen and E. Scarff (eds), *Windsor: Medieval Archaeology, Art and Architecture of the Thames Valley* (Leeds: British Archaeological Association, 2002), pp.125-131
- Pedersen, F.S., 'The Treatise on the Rising and Setting of Signs, Ascribed to Roger of Hereford', *Cahiers de l'Institut du Moyen-Âge Grec et Latin*, 75 (2004), pp.3-6
- Pingree, D., 'Classical and Byzantine Astrology in Sassanian Persia', *Dumbarton Oaks Papers* 43 (1989), pp. 227-239
- Pouille, E., 'Raymond of Marseilles' in C.C. Gillispie (ed.), *Dictionary of Scientific Biography* 11 (New York: Scribner, 1990), pp.321-323
- Pullin, C., 'Cathedrals as Centres of Learning' in A. Johnson and R. Shoesmith (eds), *The Story of Hereford* (Wootton, Herefordshire: Logaston Press, 2016), pp.81-84
- Ratson, M., 'Politics and Astrology in the Thought of R. Abraham Ibn Ezra', *Journal of Jewish Studies*, 64.2 (2013), pp.326-346
- Riske, K., *Llewellyn's Complete Book of Astrology* (Woodbury, MN: Llewellyn, 2008)
- Robbins, M., 'Medieval Astrology and the Buke of the Sevyne Sagis', *Forum for Modern Language Studies*, 38.4 (2002), pp.420-434
- Rodriguez, J., *Muslim and Christian Contact in the Middle Ages: A Reader* (Toronto: University of Toronto Press, 2015)

- Russell, J.C., 'Hereford and Arabic Science in England about 1175-1200', *Isis*, 18.1 (1932), pp.14-25
- Rutkin, H.D., 'Understanding the History of Astrology (and Magic) Accurately: Methodological Reflections on Terminology and Anachronism', *Philosophical Readings*, 7.1 (2015), pp.42-54
- Saliba, G., 'The Development of Astronomy in Medieval Islamic Society', *Arab Studies Quarterly*, 4.3 (1982), pp.211-225
- Saliba, G., 'Islamic Astronomy in Context: Attacks on Astrology and the Rise of the Hay'a Tradition', *Bulletin of the Royal Institute for Inter-Faith Studies*, 4.1 (2002), pp.25-46
- Saliba, G., *Islamic Science and the Making of the European Renaissance* (Cambridge, MA: MIT Press, 2007)
- Samsó, J., *Astronomy and Astrology in al-Andalus and the Maghrib* (Abingdon: Routledge, 2007)
- Schum, W., *Beschreibendes Verzeichniss der Amplonianischen Handschriften-Sammlung zu Erfurt* (Berlin: Weidmann, 1887)
- Sela, S., 'Astrology in medieval Jewish thought' in G. Freudenthal (ed.), *Science in Medieval Jewish Cultures* (Cambridge: Cambridge University Press, 2011), pp.292-300
- Sen, S.N., 'Al-Biruni on the Determination of Latitudes and Longitudes in India', *Indian Journal of the History of Science*, 10.2 (1975), pp.185-197
- Shank, M., 'Intellectual Consulting in Fifteenth-Century Vienna: The Case of Astrology' in E. Sylla and M. McVaugh (eds), *Texts and Contexts in Ancient and Medieval Science* (Leiden: Brill, 1997), pp.245-270
- Singer, C., 'Daniel of Morley. An English Philosopher of the XIIIth Century', *Isis*, 3.2 (1920), pp.263-269
- Smithuis, R., 'Science in Normandy and England under the Angevins: The Creation of Abraham Ibn Ezra's Latin Works on Astronomy and Astrology', in G. Busi (ed.), *Hebrew to Latin, Latin to Hebrew: The Mirroring of Two Cultures in the Age of Humanism* (Berlin: Institut für Judaistik, 2006), pp. 23-59
- Southern, R.W., *Medieval Humanism and Other Studies* (Oxford: Blackwell, 1970)
- Southern, R.W., *Robert Grosseteste* (Oxford: Clarendon Press, 1992)
- Steel, C., Vanden Broecke, S., Juste, D., and Sela, S. (eds), *The Astrological Autobiography of a Medieval Philosopher: Henry Bate's Nativitas (1280-81)* (Leuven: Leuven University Press, 2018)
- Steinschneider, M., *Die Europäischen Übersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts* (Graz: Akademische Druck u. Verlagsanstalt, 1956)
- Stiefel, T., 'The Heresy of Science: A Twelfth-Century Conceptual Revolution', *Isis*, 68.3 (1977), pp. 346-362

- Svenberg, E., *De Latinska Lunaria* (Göteborg: Elanders Boktryckeri Aktiebolag, 1936)
- Thompson, J.W., *The Medieval Library* (New York: Hafner, 1957)
- Thompson, J., 'The Introduction of Arabic Science into Lorraine in the Tenth Century', *Isis*, 12.2 (1929), pp.184-193
- Thomson, R.M., *Books and Learning in Twelfth-century England: The Ending of 'alter orbis'* (Hitchin: Red Gull Press, 2006)
- Thorndike, L., *A History of Magic and Experimental Science*, Volume 2 (New York: Columbia University Press, 1923)
- Thorndike, L., 'John of Seville', *Speculum*, 34.1 (1959), pp.20-38
- Thorndike, L., 'Notes on Some Astronomical, Astrological and Mathematical Manuscripts of the Bibliothèque Nationale, Paris', *Journal of the Warburg and Courtauld Institutes*, 20.1-2 (1957), pp.112-172
- Tihon, A. and Mercier, R., *Les «Tables Faciles» de Ptolémée/Ptolemy's Handy Tables* (forthcoming)
- Tobyn, G., 'Dr Reason and Dr Experience : Culpeper's assignation of planetary rulers in The English Physitian' in C. Burnett and D. Gieseler-Greenbaum (eds), *From Masha'Allah to Kepler: Theory and Practice in Medieval and Renaissance Astrology* (Lampeter: Sophia Centre Press, 2015), pp.473-490
- Tolan, J.V., *Petrus Alfonsi and his Medieval Readers* (Gainesville: University Press of Florida, 1993)
- Truitt, E.R., 'Celestial Divination and Arabic Science in Twelfth-Century England: The History of Gerbert of Aurillac's Talking Head', *Journal of the History of Ideas*, 73.2 (2012), pp.201-222
- Van Rhijn, C., 'Pastoral Care and Prognostics in the Carolingian Period', *Revue Bénédictine*, 127.2 (2017), pp.277-284
- Voigts, L.E., 'The medical astrology of Ralph Hoby, fifteenth-century Franciscan' in N. Rogers (ed.), *The Friars in Medieval Britain: Proceedings of the 2007 Harlaxton Symposium* (Donington: Shaun Tyas, 2010), pp.152-168
- Von Stuckrad, K., 'Interreligious Transfers in the Middle Ages: The Case of Astrology', *Journal of Religion in Europe*, 1.1 (2008), pp.34-59
- Wallis, F. (trans.), *Bede: The Reckoning of Time* (Liverpool: Liverpool University Press, 1999)
- Wallis, F., 'Medicine in Medieval Calendar Manuscripts' in M.R. Schleissner (ed.), *Manuscript Sources of Medieval Medicine: A Book of Essays* (Abingdon: Routledge, 2014), pp.105-143
- Weill-Parot, N., *Les "images astrologiques" au Moyen Âge et à la Renaissance : spéculations intellectuelles et pratiques magiques (XII. - XV. siècle)* (Paris: Champion, 2002)

- Weill-Parot, N., 'Astrology, Astral Influences, and Occult Properties in the Thirteenth and Fourteenth Centuries', *Traditio*, 65 (2010), pp.201-230
- Whyte, L., 'Medical Astrologers and Late Medieval Technology', *Viator*, 6 (1975), pp.295-308
- Williams, M., 'Astrological Poetry in Late Medieval Wales: The Case of Dafydd Nanmor's "To God and the Planet Saturn"', *Culture and Cosmos*, 12.2 (2008), pp.3-22
- Wright, T., *Biographia Britannica Literaria: Anglo-Norman Period* (London: John W Parker, 1846)
- Zambelli, P., *Astrology and Magic from the Medieval Latin and Islamic World to Renaissance Europe* (Farnham: Ashgate, 2012)
- Zuccato, M., 'Gerbert of Aurillac and a Tenth-Century Jewish Channel for the Transmission of Arabic Science to the West', *Speculum*, 80 (2005), pp.742-763

Online secondary sources

- Bibliography of British and Irish History*, <http://www.brepolis.net> [10 April 2019]
- 'The Early History of Project Hindsight', <http://www.projecthindsight.com/archives/history.html> [2 November 2017]
- 'Hereford family mourns "Bobby"', *Hereford Times*, 27 September 2001, online version at <https://www.herefordtimes.com/news/5698723.hereford-family-mourns-bobby/> [12 April 2019]
- Herefordshire and Wye Valley Life*, 14 September 2012, updated 20 February 2013, online version at <https://www.herefordshirelife.co.uk/people/actor-henry-hereford-1-1572019> [12 April 2019]
- International Medieval Biography*, <http://www.brepolis.net> [10 April 2019]
- 'An Interview with Dr Liana Saif on the Present and Future Study of Islamic Esotericism', <https://shwep.net/2018/08/23/an-interview-with-dr-liana-saif-on-the-present-and-future-study-of-islamic-esotericism/>, 23 August 2018 [16 April 2019]
- Burnett, C., 'Ketton, Robert of (fl. 1141–1157)', *Oxford Dictionary of National Biography* (Oxford: OUP, 2004) <http://www.oxforddnb.com/view/article/23723> [5 September 2017]
- Juste, D., *Ptolemaeus Arabus et Latinus. Manuscripts*, <http://ptolemaeus.badw.de/> [7 December 2018].
- Medieval Libraries of Great Britain* (MLGB3), <http://mlgb3.bodleian.ox.ac.uk/> [11 March 2019].
- Museum of the History of Science, 'The astrolabe: an online resource', <http://www.mhs.ox.ac.uk/astrolabe/images/47632/> [11 November 2017]

- Museum of the History of Science, 'Astrolabe catalogue',
http://www.mhs.ox.ac.uk/astrolabe/catalogue/imageReport/Astrolabe_ID=179.html [11 November 2017]
- Positional Astronomy Centre, 'History', <http://www.packolkata.gov.in/history.php> [11 September 2017]
- 'Robert James Hereford', <https://www.ancestry.co.uk/family-tree/person/tree/10965519/person/6071538543> [12 April 2019]
- St. John's College, University of Cambridge, 'The way to the stars: build your own astrolabe', <http://www.joh.cam.ac.uk/way-stars-build-your-own-astrolabe> [9 November 2017]
- Whyte, N., 'Roger of Hereford's *Liber de astronomice iudicandi*: A Twelfth-Century Astrologer's Manual' (MPhil dissertation, Clare College, University of Cambridge, 1991), <http://www.nicholaswhyte.info/MPhil.rtf> [10 May 2017]
- Wymarc, R., 'Drafting the Astrolabe 11: The Unequal Hour Arc',
<http://www.astrolabeproject.com/26/02/2012/drafting-the-astrolabe-11-the-unequal-hour-arcs/> [6 May 2017]