

Licit medicine or 'Pythagorean necromancy'? The 'Sphere of Life and Death' in late medieval England*

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Abstract

The 'Sphere of Life and Death' is an onomantic divinatory device present in around sixty-two manuscripts of late medieval English provenance. It is an example of illicit divination, and as such is condemned in various theological and legal tracts. However, at the same time, one of the most frequent manuscript contexts of this device is medical, as it claims to predict the life or death of a sick person. This article aims to show that the 'Sphere' was at the same time both licit medicine and illicit divination, and that we must take a less rigid approach to the categorization of such devices.

At the end of the fourteenth century, John Mirfield (d. 1407), chaplain of the hospital of St. Bartholomew in Smithfield, London, produced two Latin encyclopedias, the *Breviarium Bartholomei*, dedicated to bodily health, and the *Florarium Bartholomei*, dedicated to spiritual health. In a chapter of the *Breviarium* entitled 'De signis malis', Mirfield lists a plethora of methods available to a physician to predict the life or death of a sick person, and includes an experiment to prognosticate life or death using the numbers that correlate to the letters of personal names: 'Take the name of the patient, the name of the messenger sent to summon the physician, and the name of the day upon which the messenger came to you; join all their letters together, and if an even number result the patient will not escape, if the number is odd then he will recover'.¹

Mirfield, then, advocates the prediction of life or death by recourse to number-letter divination. However, in the *Florarium*, talking about the kinds of magic and divinatory practices to be avoided by those seeking spiritual health, Mirfield copies verbatim a passage from Gratian's *Decretum*, which states that the prediction of the life or death of the sick by using 'certain numbers of letters' is nothing short of 'Pythagorean necromancy' and is therefore illicit.² Whether or not Mirfield was aware of this contradiction between his two works is not known, but the incident is nevertheless a neat illustration of the borderline status of this sort of predictive method – it is at the same time both licit medicine and illicit divination. In late medieval England, most educated physicians were, like Mirfield, clerics. Anyone who had completed a medical

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¹ John of Mirfield, 'De signis malis', *Breviarium Bartholomei*, in *Johannes de Mirfield of St. Bartholomew's, Smithfield: his Life and Works*, ed. and trans. P. Horton-Smith Hartley and H. R. Aldridge (Cambridge, 1936), pp. 70–1.

² British Library, Royal MS. 7 F XI fo. 227r (copied verbatim from Gratian, *Decretum*, C. 2, qu. 26, c. 26). The author owes this reference to Catherine Rider.

degree was obliged to have taken minor orders, at the very least, before they could receive a university education, and many medical students went on to take major orders.³ Additionally, many medical practitioners were also monks, who may or may not have attended university.⁴ This makes the dual nature of the 'Sphere' even more interesting, since the clerical status of many medical practitioners may have made them all the more aware of the dangers of making a prediction in this way.

This article will examine the evidence for the 'Sphere of Life and Death' – probably the most popular method of numerological prediction in late medieval England judging by the sheer number of surviving manuscripts – as a legally dubious technique of divination, by looking both at general condemnations of the divinatory arts, and specific condemnations of this device in canon law, pastoral manuals and theological tracts. It will then examine the manuscript evidence for the 'Sphere' as an item of interest to, and used by, the learned physician in later medieval England. The author hopes to demonstrate that the categories of 'licit' and 'illicit' break down when we examine items such as the 'Sphere of Life and Death'.

The 'Sphere of Life and Death' – hereafter referred to as the 'Sphere' for brevity – is a short prognostic device found in a range of medieval manuscripts. For the definition of 'prognostic' used here the author is indebted to László Sándor Chardonnes, who states that a prognostic is 'a codified means of predicting events in the life-time of an individual or identifiable group of individuals, using observation of signs and times, or mantic divination'.⁵ Within this category of prognostics, the 'Sphere' is an example of divination, belonging to the sub-category of onomancy.⁶ 'Divination' is the prediction of future events through the interpretation of signs, and 'onomancy' is a type of divination that seeks to predict the future by using the numbers that correlate to the letters of an individual's name. The 'Sphere', surviving in many redactions in the later middle ages, circulated in the ancient world in Greek and Syriac manuscripts – and possibly Arabic and Hebrew as well. A Greek example attributed to the ancient philosopher Democritus is found in Leiden Papyrus V, a fourth-century C.E. papyrus containing a host of magic and divinatory spells,⁷ and a Syriac version is present in a twelfth-century manuscript translated by E. A. Wallis Budge, whose contents have ancient roots.⁸ The 'Sphere', then, entered the Latin West from different cultures and languages, which partly explains the five different redactions present in early medieval manuscripts.

The 'Sphere' is a circular, square, rhomboid, scroll-shaped or tabular diagram, with varied accompanying texts. It is used to predict the outcome of a variety of temporal events, usually whether a sick person will live or die. It also variously claims to predict

³ See, e.g., H. E. Ussery, *Chaucer's Physician: Medicine and Literature in 14th-Century England* (New Orleans, La., 1971), p. 29.

⁴ See, e.g., D. W. Amundsen, *Medicine, Society and Faith in the Ancient and Medieval Worlds* (Baltimore, Md., 1996), esp. ch. 7.

⁵ 'Mantic divination' is defined by Chardonnes as 'non-observatory prognostics' – such as those which use dice, or letters of the alphabet (L. S. Chardonnes, *Anglo-Saxon Prognostics, 900–1100: Study and Texts* (Leiden, 2007), pp. 7–8).

⁶ 'Onomancy' is a shortened form of 'onomatomancy' or 'onomamancy'. This term was not employed in the middle ages but coined in the early modern period, so its use in this context is anachronistic. However, for brevity it will be used here as a catch-all term for the category of number-letter divination.

⁷ *The Greek Magical Papyri in Translation, Including the Demotic Spells*, i, trans. H. D. Betz (2nd edn., Chicago, Ill., 1996), pp. 165–6.

⁸ *The Syriac Book of Medicines*, ii, trans. E. A. Wallis Budge (1913), p. 539.

whether or not a combatant or general will win a duel or battle, whether or not lost property or a fugitive will be found, the outcome of a long journey, or anything else that permits a binary yes/no answer. To operate the 'Sphere' in the case of a sick person, you take the first name of the patient and convert the letters of his or her name into their numerical equivalents – which are found next to or inside the 'Sphere'. In the case of the first of two 'Spheres' found in Oxford, Bodleian Library, MS. Digby 46, a typical example of this device from a fourteenth-century fortune-telling miscellany (Figure 1), the letters and their numerical equivalents are found in the two outer bands of the diagram. The values of the letters are added up to make a total for the name. To this total, the number of the day of the moon on which the patient first fell sick, and usually the number of the planetary weekday, are added. The number for the day of the moon would be any value between one and thirty, and could be easily calculated by using lunar tables or an astrolabe, and the planetary weekdays and numerical equivalents are usually found listed within or next to the diagram – in this example, in sections of the outer band of the 'Sphere'. This grand total of name, lunar day and planetary day is then divided by thirty (sometimes twenty-nine, but this tradition had petered out by the later middle ages as there were perceived to be thirty days of the moon). The remainder provides the answer: if it is located in the top half of the diagram, the patient will live, if in the bottom, the patient will die. The central hemispheres are usually arranged in three columns, indicating whether recovery or death would be in the short, medium or long term – in this example from MS. Digby 46, 'parva', 'media' or 'magna vita' or 'mors'.

Mirfield's onomancy in his *Breviarium*, of course, does not work in exactly the same way as the 'Sphere'. Possibly to make the method simpler for the semi-literate, he takes

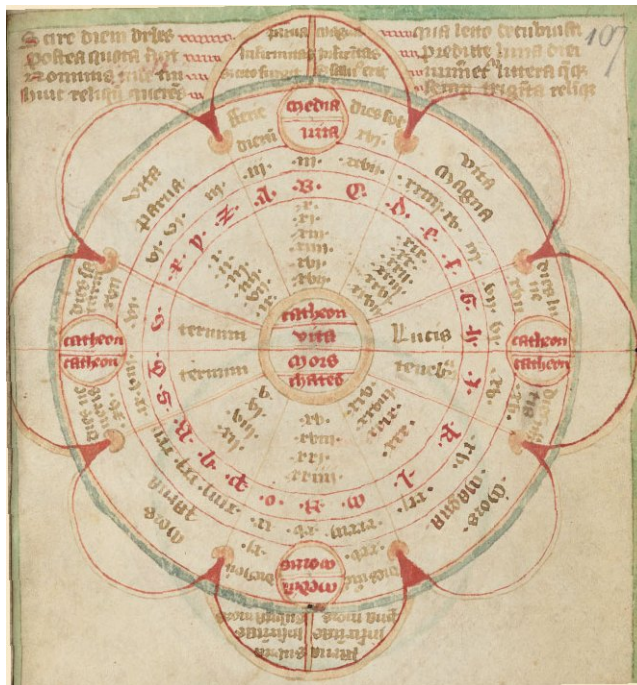


Figure 1. Oxford, Bodleian Library, MS. Digby 46 fo. 107r (© The Bodleian Libraries, University of Oxford)

the value of the name of the sick person, and adds to it a new element – the value of the name of the messenger. To this total is added the number of the planetary weekday, and the outcome depends on whether the total is odd or even. This method means that the number of the day of the moon does not need to be calculated, there is no division involved and no remainder numbers to be memorized, so it can be committed to memory much more easily than a 'Sphere'. Despite these differences, Mirfield's onomancy derives from the 'Sphere of Life and Death' or an earlier ancestor, although whether he actually composed this variation himself is not known.

The 'Sphere' is often called the 'Sphere of Life and Death' ('Spera de Vita et Morte') in manuscripts, but it also takes many other names which attribute it to various ancient and early Christian authorities, although it is highly unlikely that any of these authorities was responsible for the composition of this device. Pseudepigrapha are more than common in the middle ages, as the attribution of a respected authority was seen to add sophistication as well as proof of veracity or reliability to a text. The most common attribution of the 'Sphere' in the later middle ages is to Pythagoras, and it is not difficult to see why. Pythagoras (c.570–c.495 B.C.E.) was famously associated with number mysticism as well as medicine throughout the middle ages.⁹ Another very common attribution is to Apuleius (c.125–c.180 C.E.), the second-century Roman author of the *Golden Ass*, a novel on magic and metamorphosis. While this work did not circulate widely in the Latin West between the sixth and fourteenth centuries, Apuleius had a reputation in the early middle ages as a magician due to his *Apologia*, a work written in self-defence against a charge of magic.¹⁰ Apuleius had also been spuriously associated with a fairly popular medical herbal since late antiquity, which survives in at least sixty manuscripts from the sixth to the fifteenth centuries.¹¹ So Apuleius was associated with both the occult and medicine in the early middle ages. A third common acknowledgement is to Apollonius – although, as Chardonnens has shown, this is probably a corruption of Apuleius.¹² However, the attribution still makes sense. While there were many ancient authorities with this name, one of the most well known was Apollonius of Tyana (c.15–c.100 C.E.) – a Greek Neopythagorean philosopher, about whom we know very little, but who was thought, by his biographer Philostratus at least, to have predicted a plague by means of magic.¹³ Furthermore, medieval Islamic scholars dubbed Apollonius the 'Lord of the Talismans' and spuriously credited him with having written several occult works.¹⁴ There are further ascriptions to other ancient authorities, such as Petosiris, and early Christian authorities such as Crato (a Greek philosopher who converted to Christianity) and St. Donatus.

Sigerist postulates that the translation of the 'Sphere' from Greek into Latin probably took place in the sixth century, as 'such translations were made in large numbers' at this time,¹⁵ and although this is pure speculation, most scholars have since agreed on this

⁹ On Pythagoras's influence in the middle ages, see, e.g., C. L. Joost-Gaugier, *Measuring Heaven: Pythagoras and his Influence on Thought and Art in Antiquity and the Middle Ages* (Ithaca, N.Y., 2006).

¹⁰ See J. Haig Gaisser, *The Fortunes of Apuleius and the 'Golden Ass': a Study in Transmission and Reception* (Princeton, N.J., 2008), chs. 1, 2.

¹¹ M. Collins, *Medieval Herbs: the Illustrative Traditions* (2000), p. 165.

¹² Chardonnens, p. 181, n. 1.

¹³ Philostratus, *The Life of Apollonius of Tyana*, ed. and trans. C. P. Jones (Cambridge, 2005), pp. 30–1.

¹⁴ U. Weisser, *Das 'Buch über das Geheimnis der Schöpfung' von Pseudo-Apollonios von Tyana (Ars Medica)* (Berlin, 1980), pp. 29–39.

¹⁵ H. E. Sigerist, 'The Sphere of Life and Death in early medieval manuscripts', *Bull. Hist. Medicine*, xi (1942), 292–303, at p. 293.

date. In any case, the first surviving Latin example that we have dates to 805 (Cologne, Erzbischöflichen Diözesan- und Dombibliothek, 83.II fo. 218v), and there are many more extant examples from the ninth to the eleventh centuries. However, an interesting problem occurred in the translation of the 'Sphere' from Greek into Latin. All Greek letters have corresponding numbers, but in Latin, only certain letters do, and not the commonest ones by any stretch of the imagination – C, D, I, L, M, V and X.¹⁶ The results of this were fourfold. First, the number-letter correlations varied widely from device to device, as confusion over the values assigned to particular letters and errors in copying occurred. Second, multiple examples frequently appear close to each other in the same manuscript with different remainders. For example, Oxford, St. John's College, MS. 17, a very famous computistical manuscript dating from c.1110, has two examples of 'Spheres' copied next to each other on fo. 41r (Figure 2); but twenty-one is the remainder signifying 'life' in the upper (left) example, and signifying 'death' in the lower (right). Third, the same remainder might appear in both hemispheres of a single device, such as a second 'Sphere' in Oxford, Bodleian Library, MS. Digby 46 fo. 107v (Figure 3), which has eight as a remainder signifying both 'life' and 'death'. Finally, certain remainders simply do not appear at all, such as in Cambridge, St. John's College, MS. 37 fo. 53v (Figure 4), a fifteenth-century medical miscellany, in which twenty is not present in either hemisphere.

Thus, if the 'Sphere' was corrupted – and obviously so in the minds of scribes who copied different devices together, perhaps trying to find the right version – then why did it survive? As Boudet points out, this corruption in fact paradoxically contributed to the device's endurance, since if it failed to predict the outcome accurately, this could be blamed not on the system, but on the version used.¹⁷ And, as we shall see, the

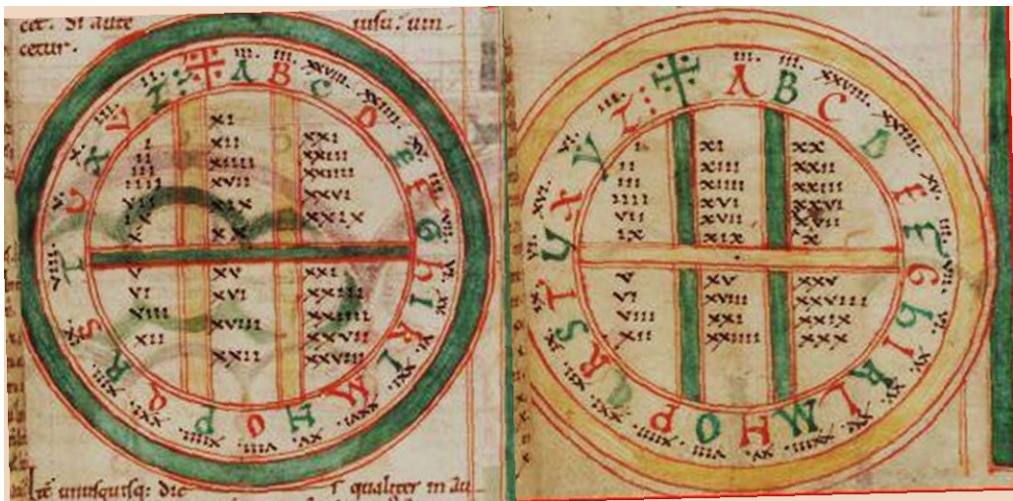


Figure 2. Oxford, St. John's College, MS. 17 fo. 41r (reproduced by permission of the president and fellows of St. John's College, Oxford)

¹⁶ On the problems with the translation of onomantic devices into Latin, see D. Juste, 'Non-transferable knowledge: Arabic and Hebrew onomancy into Latin', *Annals of Science*, lxxviii (2011), 517–29.

¹⁷ J.-P. Boudet, *Entre science et nigromance: astrologie, divination et magie dans l'occident médiéval (XIIe–XVe siècle)* (Paris, 2006), p. 43.



Figure 3. Oxford, Bodleian Library, MS. Digby 46 fo. 107v (© The Bodleian Libraries, University of Oxford)

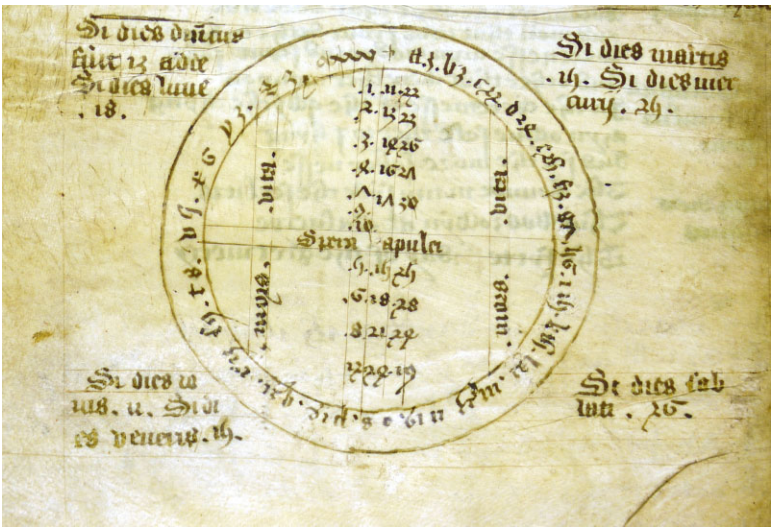


Figure 4. Cambridge, St. John’s College, MS. 37 fo. 53v (reproduced by permission of the master and fellows of St. John’s College, Cambridge)

corruption and ambiguity that the ‘Sphere’ could produce might also be helpful to the late medieval physician, as he negotiated the tricky path between caring for the body and caring for the soul of his patient.

Once translated into Latin, the ‘Sphere’ was passed down to the later middle ages via the early medieval computistical miscellanies that flourished from the ninth to the

eleventh centuries.¹⁸ Computus, that is, the measurement of time with recourse to the heavens in order to calculate major Christian feasts such as Easter, has little in common with the 'Sphere', except an element of calculation and time-keeping. So it seems that the main reason for this companionship of 'Spheres' and computistical texts is largely an attraction between diagrams. The example of Oxford, St. John's College, MS. 17 (Figure 5) neatly shows how divinatory 'Spheres' became disguised as respectable computistical tables. On fo. 40v is a round computistical chart, and on the opposing recto fo. 41r are the two 'Spheres' we have just seen, which look totally in place within this manuscript, but are in fact illicit divinatory items. The 'Sphere' had cleverly

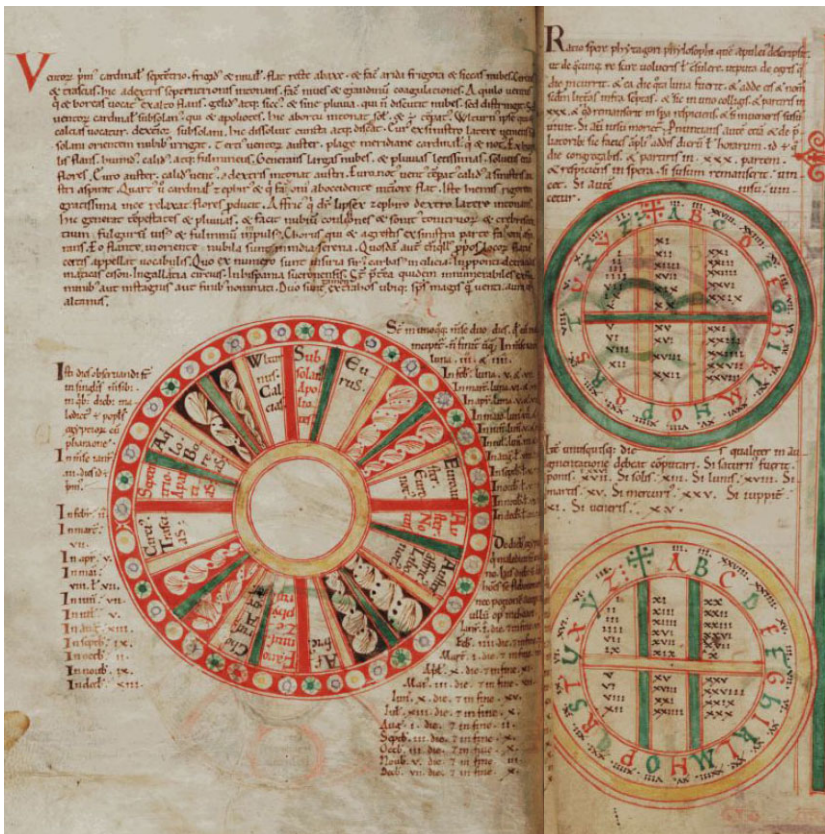


Figure 5. Oxford, St. John's College, MS. 17 fos. 40v–41r (reproduced by permission of the president and fellows of St. John's College, Oxford)

¹⁸ On the early medieval 'Spheres', see E. Wickersheimer, 'Figures médico-astrologiques des IXe, Xe et XIe siècles', *Janus: archives internationales pour l'histoire de la médecine et la géographie médicale*, xix (1914), 157–77; Sigerist; C. Singer, *From Magic to Science: Essays on the Scientific Twilight* (1928), pp. 144–6; A. Van de Vyver, 'Les plus anciennes traductions latines médiévales (Xe–XIe siècles) de traités d'astronomie et d'astrologie', *Osiris*, i (1936), 658–91; D. Juste, 'Comput et divination chez Abbon de Fleury', in *Abbon de Fleury: philosophie, science et comput autour de l'an mil*, ed. B. Obrist (Oriens-Occidens: sciences, mathématiques et philosophie de l'antiquité à l'âge classique, vi, Paris, 2004), pp. 95–127; R. M. Liuzza, 'The Sphere of Life and Death: time, medicine, and the visual imagination', in *Latin Learning and English Lore: Studies in Anglo-Saxon Literature for Michael Lapidge*, ii, ed. K. O'Brien O'Keefe and A. Orchard (Toronto, 2005), pp. 28–52; and Chardonnens.

disguised itself as a legitimate computistical table.¹⁹ But while the earlier medieval instances – at least in English manuscripts – are found almost solely in a computistical context,²⁰ the examples dating from 1100 onwards are found in all kinds of manuscripts and with a dazzling array of travelling companions.

In the later middle ages, the 'Sphere' is located in a great number of manuscripts. This author has so far found examples in around 200 of European provenance from throughout the middle ages and beyond, sixty-two of which were produced in England between 1100 and 1500.²¹ These manuscripts are extremely varied in content – from scientific miscellanies, to occult books, to those containing theological works; as well as a great variety of treatises on medicine, from books used by the educated physician to the commonplace books of householders. And, unlike the early medieval 'Sphere', very little scholarly work has been carried out on its late medieval counterpart, aside from two articles by Linda Ehrsam Voigts,²² and a short section in a book by Benedek Láng, writing about eastern European manuscripts of ritual magic.²³ Other works make nothing much more than a passing reference to the late medieval 'Sphere'.²⁴ This lack of scholarly attention renders the study and analysis of this extremely popular item even more pertinent.

Helpfully, several of the manuscripts in the late medieval English corpus can be confidently placed with particular owners. These owners neatly illustrate the range – both socio-cultural and geographic – of people who owned such a device in late medieval England. Cambridge, Trinity College, MS. O.1.57 belonged to an early fifteenth-century family of the lower gentry – the Haldenbys of Isham, Northamptonshire. A contents list in a contemporary hand tells us that this manuscript once contained a 'Sphere', which is now lost.²⁵ Another Trinity manuscript, MS. O.2.5, written in the early fourteenth century, has 'Spheres' on fos. 8r and 10r–11r. The second flyleaf contains a copy of a deed from 'Robertus de Barry rector ecclesie de Begeley', and then a sixteenth-century hand tells us that 'Nomen totius huius libri Miscellanea Roberti de Barry quondam rector de Begeley qui vixit sub an. Dom. 1270'.²⁶ The de Barrys were an ancient aristocratic family of Irish and Welsh origin, whose notable members include Gerald of Wales (c.1146–c.1223). The family resided at Manorbier

¹⁹ On the attraction between medical items such as 'Spheres' and *computus*, see F. Wallis, 'Medicine in medieval calender manuscripts', in *Manuscript Sources of Medieval Medicine: a Book of Essays*, ed. M. R. Schleissner (New York, 1995), pp. 105–43.

²⁰ Chardonnes, p. 30.

²¹ A working list of manuscripts is included as app. 2.

²² L. Ehrsam Voigts, 'The Latin verse and Middle English prose texts on the Sphere of Life and Death in Harley 3719', *Chaucer Rev.*, xxi (1986), 291–302; and L. Ehrsam Voigts, 'The golden table of Pythagoras', in *Popular and Practical Science of Medieval England*, ed. L. M. Matheson (Woodbridge, 1994), 123–39.

²³ B. Láng, *Unlocked Books: Manuscripts of Learned Magic in the Medieval Libraries of Central Europe* (University Park, Pa., 2008), pp. 130–1.

²⁴ E.g., P. Murray Jones, *Medieval Medicine in Illuminated Manuscripts* (1998), p. 53; and H. M. Carey, 'What is the folded almanac? The form and function of a key manuscript source for astro-medical practice in later medieval England', *Social History of Medicine*, xvi (2003), 481–509, at p. 491.

²⁵ For an analysis of this manuscript, see L. T. Mitchell, 'Cultural uses of magic in 15th-century England' (unpublished University of Toronto Ph.D. thesis, 2011), ch. 2. The author owes this reference to Peter Murray Jones.

²⁶ 'The name of this book is the Miscellany of Robert de Barry, former rector of Begelly, who lived in 1270' (Cambridge, Trinity College, MS. O.2.5, second flyleaf).

castle, Pembrokeshire, after the Norman conquest, and the family's estate included the manor of Begelly, where this Robert was rector.²⁷

Several of the manuscripts – some of the earliest in the corpus written in the early twelfth century – can be placed in monastic ownership, thanks to their computistical context, which makes reference to specific saints' days. Oxford, St. John's College, MS. 17, written c.1110, was copied at Thorney abbey, Cambridgeshire; Los Angeles, J. Paul Getty Museum, MS. Ludwig XII.5 was possibly made at Worcester abbey at around the same time; and Cambridge, Trinity College, MS. O.7.41 was produced at Colchester Abbey c.1120. Two of these early twelfth-century manuscripts can be placed at Peterborough abbey: British Library, Cotton MS. Tiberius C I and British Library, Harleian MS. 3667.

Some later medieval manuscripts were also copied in and/or owned by monasteries. Cambridge, Trinity College, MS. O.2.45/British Library, Egerton MS. 843, both of which contain 'Spheres' and were once a whole manuscript, can be placed at Cerne abbey, Dorset, in the second half of the thirteenth century.²⁸ Additionally, a now-missing manuscript which contained a 'Sphere', which we know about thanks to a catalogue made by the Austin Friars of York in the fifteenth century, belonged to John Erghome, canon and regent master of York in the second half of the fourteenth century. Erghome bequeathed this manuscript to the Austin Friars, who possessed it in the fifteenth century.²⁹ Finally, the first of three sections of British Library, Royal MS. 12 G IV, written in the fourteenth and early fifteenth centuries, can be placed in the hands of John of Greenborough, infirmarer of St. Mary's priory, Coventry, due to a revealing colophon (fo. 187v), which will be discussed in more depth. Just from these few examples, then, we can see that 'Spheres' were owned by aristocracy and gentry, monks, abbeys and medical practitioners from Dorset to west Wales, the Midlands, East Anglia and York. But it is to the medical context of the 'Sphere' that this article will turn, in order to try to cast some light on why an item so condemned in canon law, and so completely devoid of any Hippocratic-Galenic medical theory, was copied and used by learned medical practitioners in the British Isles throughout the later middle ages.

The 'Sphere', of course, was by no means the only way of predicting the future in late medieval England – far from it. Techniques for predicting the future ranged from sophisticated, learned methods such as judicial astrology and complex forms of divination such as geomancy, chiromancy and scapulimancy,³⁰ to those used mainly by the learned physician, such as the Hippocratic-Galenic *Signs of Death*, sphygmology (pulse-reading) and uroscopy. Further down the scale were simple prognostics based on the lunar cycle, such as lunaries (moon books) and the propitious and non-propitious days for performing activities such as blood-letting. There were also magic rituals and experiments in the so-called 'common tradition' of magic to predict the outcomes of certain situations. But this article aims to show that the 'Sphere' is an item worthy of focused analysis, partly because of its ambiguous status between licit and illicit.

²⁷ The Revd. E. Barry, *Barrymore: Records of the Barrys of County Cork from the Earliest to the Present Time. With Pedigrees* (Cork, 1902), p. 2.

²⁸ M. Rhodes James, *The Western Manuscripts in the Library of Trinity College, Cambridge: a Descriptive Catalogue* (4 vols., Cambridge, 1902), iii, 151.

²⁹ K. W. Humphreys, *The Friars' Libraries* (Corpus of British Medieval Library Catalogues, 1990), p. 96. The author owes this reference to Sophie Page.

³⁰ Respectively, divination by drawing points in the earth, palm-reading, and from the lines on the shoulder-blades of animals, usually sheep.

Simply put, it was not licit in the eyes of the church to practise divination, and there were three main objections: it usurped divine providence – the idea that only God can know the future; it went against the idea of man's free will; and, from late antiquity, it was perceived to operate with the express involvement of demons. Many theologians and canonists since the early Christian fathers had written condemnations of divination. Among the general condemnations, the most significant are book II of Augustine's *On Christian Doctrine* (397) and his *City of God* (before 417); Isidore of Seville's (d. 636) *Etymologiae*; John of Salisbury's *Policraticus* (c.1159); and Thomas Aquinas's *Summa Theologiae* (1265–74). None of these works condemns the 'Sphere' explicitly, though John of Salisbury does vaguely refer to 'tables which are called Pythagorean' in his condemnation of superstitious practices,³¹ but all four writers make it very clear that divination in general is an illegal practice.³²

The *Decretum*, or to give it its original name, *Concordia Discordantium Canonum*, composed sometime in the eleven-forties at Bologna, is a vast corpus of canon law collected together by Gratian, a lawyer-monk. In condemning superstitious practices of all kinds, this work does specifically mention the 'Sphere', 'sive per quosdam numeros litterarum, et lunae, per Pitagoricam nigromantiam egrotantium vitam vel mortem, vel prospera vel adversa futura inquirunt'.³³ This is not the vague 'Pythagorean tables' of John of Salisbury but rather definite censure of the 'Sphere'. Gratian was collecting canons from a vast array of sources, and it is not clear from where this section of the work was copied, or when it was written, but it seems likely that the condemnation of the 'Sphere', at least, cannot have been written much before Gratian's own time, the clue being the use of the word 'nigromantia'. In its original, ancient Greek meaning, this word literally meant 'divination by the dead' (*nekros* = 'dead' and *manteia* = 'divination'), and Isidore of Seville had, in the seventh century, given it its original definition in his *Etymologiae*. However, by the later middle ages, this term had come to mean something quite different. 'Necro' had become confused with 'nigro' – coming from 'niger', the Latin for black. 'Nigromantia' became the translation for the Arabic word for magic 'sihr', and so 'necromantia' or 'nigromantia' was often used in a vague sense to define illicit magical practices. The earliest known attestation of this new meaning of necromancy is in Petrus Diaconus's biography of Constantine the African, the eleventh-century translator of Arabic medical texts into Latin, written sometime in the eleven-thirties.³⁴ The use of the word 'nigromantia' in Gratian is the later definition – in this case it seems to be describing a general sort of impermissible magic – and so we can safely say that this condemnation was probably not written before the start of the twelfth century, and may even have been written in Gratian's own time.³⁵

³¹ Boudet believes that this is not a reference to the 'Sphere' but to a lot-drawing text of the middle ages called the *Prenostica Pictagore* (Boudet, p. 95).

³² On condemnations of divination in the middle ages, see J. R. Veenstra, *Magic and Divination at the Courts of Burgundy and France: Text and Context of Laurens Pignon's 'Contre les devineurs' (1411)* (Leiden, 1998); and J. R. Veenstra, 'Cataloguing superstition: a paradigmatic shift in the art of knowing the future', in *Pre-Modern Encyclopaedic Texts: Proceedings of the Second COMERS Congress, Groningen, 1–4 July 1996*, ed. P. Binkley (Leiden, 1997), pp. 169–80.

³³ Gratian, *Decretum*, C. 2, qu. 26, c. 26. *Corpus Iuris Canonici*, ed. A. Friedberg (Graz, 1950), bk. I, p. 1045.

³⁴ C. Burnett, 'Talismans: magic as science? Necromancy among the seven liberal arts', previously unpublished talk given to the London Medieval Society in 1994 and at a conference in memory of Donald Hill in 1995, pr. in C. Burnett, *Magic and Divination in the Middle Ages: Texts and Techniques in the Islamic and Christian Worlds* (Aldershot, 1996), pp. 1–3.

³⁵ On the changing meaning of 'necromancy', see Boudet, pp. 92–4.

Gratian's influence across the Latin West cannot be overstated,³⁶ and so it is not surprising to find his condemnation of the 'Sphere' copied verbatim into several pastoral manuals that circulated in England in the later middle ages. These manuals were intended for use by priests to work out the penance to be administered for particular sins which had been admitted during confession. The earliest of these was Thomas of Chobham's extremely popular *Summa Confessorum* (finished by 1216).³⁷ The second of which this author is aware is the aforementioned *Florarium Bartholomei* of John Mirfield, produced at the turn of the fifteenth century.³⁸ Finally, this condemnation is paraphrased in Middle English in the late medieval vernacular self-help treatise *Dives and Pauper* (c.1405–10), probably intended for well-to-do families as a guide to living a virtuous life. *Dives and Pauper* lays out sins and punishments arranged by the Ten Commandments. Under the First Commandment, chapter thirty-four gives a lengthy list of condemned superstitious practices, including 'dyvynyn of mannys lyf or deth be numbrys and be þe sper of Pittagoras'.³⁹ This is an even more definite reference to the 'Sphere' than the condemnation in Latin on which it is based, since it refers to the device by one of its common names – the 'Sphere of Pythagoras'.

So, canon law, in theory, said that it was illicit to use a 'Sphere'. But, in practice, was anybody actually prosecuted for using such a device? This author has yet to uncover any evidence from the middle ages of someone being reprimanded for using this item specifically, but the rare court records that survive from the period show that people in medieval England were occasionally punished – though usually not severely – for engaging in divinatory practices and claiming to predict life or death.⁴⁰ The only evidence of prosecution for the use of a 'Sphere' is from 1564, when John Betson, a clergyman, was ordered by the northern court of high commission to hand in his copies of 'Plato's Sphere' and 'Pythagoras's Sphere', which he had used to recover stolen goods, before doing public penance by declaration in the markets of Yarm, Richmond and Northallerton.⁴¹ Looking at the evidence from medieval trials for divination and the case of Betson, then, it is likely that if a prosecution for using a 'Sphere' did take place pre-1500, then the punishment would not have been particularly severe, ranging from the handing over of the device to the authorities to performing public penance.

The use of a 'Sphere of Life and Death', then, was not permissible in the eyes of the church. But it seems that this law was not followed, because, as we have seen, its manuscript context reveals that such a device appealed to all sorts of people, including the university-trained physician. We know that many of the people who used the 'Sphere' were aware of its corruptions, because multiple redactions were often copied together, seemingly with the intention of locating the right version. Therefore, on first impression, it might appear strange that the 'Sphere' was an item which appealed to the learned, university-trained physician. But on further examination, several reasons emerge as to why such a device could and did hold interest for such a professional.

³⁶ On Gratian's influence, see, e.g., A. Winroth, *The Making of Gratian's Decretum* (Cambridge, 2004), p. 2.

³⁷ Thomas of Chobham, *Summa Confessorum*, ed. F. Broomfield (Louvain, 1968), p. 485.

³⁸ Brit. Libr., Royal MS. 7 F XI fo. 227r.

³⁹ *Dives and Pauper*, ed. P. Heath Barnum (Oxford, 1976), p. 157.

⁴⁰ See the examples in K. Jones and M. Zell, "The divels speciall instruments": women and witchcraft before the "great witch-hunt", *Social Hist.*, xxx (2005), 45–63, at p. 54.

⁴¹ *Tudor Parish Documents of the Diocese of York: a Selection*, introduction and notes by J. S. Purvis (Cambridge, 1948), p. 198.

Turning to the manuscript evidence, the 'Sphere' appears in the same hand as tracts of learned Hippocratic-Galenic medicine, as well as, in several instances, treatises on the curriculum of the medical faculty at Oxford and Cambridge universities, and universities further afield. The only firm evidence of an Oxbridge-trained physician possessing manuscripts containing 'Spheres' relates to Roger Marchall (d. 1477), trained in medicine at Peterhouse College, Cambridge, and later physician to Edward IV. Marchall, then, was a medical practitioner of the highest rank. His distinctive hand means that several manuscripts can be traced to his ownership, as he made selective contents lists of those he acquired, which indicate the precise items in which he was interested within them. Three manuscripts of the corpus can be placed in Marchall's ownership: British Library, Harleian MS. 267, British Library, Harleian MS. 531 and Cambridge, MS. Peterhouse 222. While Marchall leaves the 'Spheres' in Harleian MS. 267 and MS. Peterhouse 222 out of his contents lists, he includes 'Spera Pictagore cum usu et opere' in his contents list of Harleian 531 – although sadly this 'Sphere' is no longer extant.⁴² So Marchall took an active interest in the 'Sphere', as he included it in one of his contents lists, and this is striking evidence that one of the most important physicians in England of his time, who attended the king, owned and perhaps used the 'Sphere'.

Other 'Spheres', too, can be placed firmly in the context of learned medicine, for example British Library, Sloane MS. 3229, a fifteenth-century manuscript of the *Regimen Sanitatis Salernitanum*. Written in the same hand throughout, it incorporates a 'Sphere' into the main body of the work at fos. 6v–7v. This work on regimen, organized by the six non-naturals (air; food and drink; sleep and waking; motion and rest; excretions and retentions; and dreams and passions of the soul) was based firmly in Galenic medicine, held in high regard as a scholarly medical text until the end of the middle ages and beyond, and was, of course, associated with the School of Salerno, thought to be the first medical university in the Latin West.⁴³ This text was therefore firmly in the realm of the learned physician. The most interesting facet of the inclusion of the 'Sphere' in this manuscript is the fact that it is not tacked on at the beginning or end, on a flyleaf or blank page, but rather incorporated into the work itself. A comparison with the critical edition of two related manuscripts⁴⁴ shows that, in the second part of the work, a section on winds, *De Ventis*, is followed immediately by that on diet, *De Comodo Bone Diete*, but in Sloane MS. 3229, the verses on winds end at the bottom of fo. 6r, and overleaf the scribe has decided to copy in a circular wind diagram (fo. 6v), followed by the 'Sphere' instructions in verse; and overleaf again (fo. 7r) is the 'Sphere' diagram, with the numbers corresponding to the planetary weekdays set out below, going over onto fo. 7v (see Figure 6). This is followed immediately by a further onomantic technique to determine the winner in a duel, before picking up again with the *Regimen* text, *De Comodo Bone Diete*. The rubricator of the manuscript later added the part of the work to which each folio pertained at the top of each page, but resisted doing so for fos. 6v–7r, perhaps in acknowledgement that the 'Sphere' was not a recognized part of the main *Regimen*.

⁴² See L. Ehrens Voigts, 'A doctor and his books: the manuscripts of Roger Marchall (d. 1477)', in *New Science out of Old Books: Studies in Manuscripts and Early Printed Books in Honour of A. I. Doyle*, ed. R. Beadle and A. J. Piper (Aldershot, 1995), pp. 249–314.

⁴³ The best general work on medieval texts of regimen is M. Nicoud, *Les régimes de santé au moyen âge: naissance et diffusion d'une écriture médicale, XIIIe–XVe siècle* (2 vols., Rome, 2007).

⁴⁴ V. de Frutos González, 'Edición crítica del *Regimen Sanitatis Salernitanum* transmitido por los manuscritos Add. 12190 y Sloane 351 de la British Library de Londres' <http://dialnet.unirioja.es/servlet/fichero_articulo?codigo=3359937> [accessed 22 Nov. 2012].

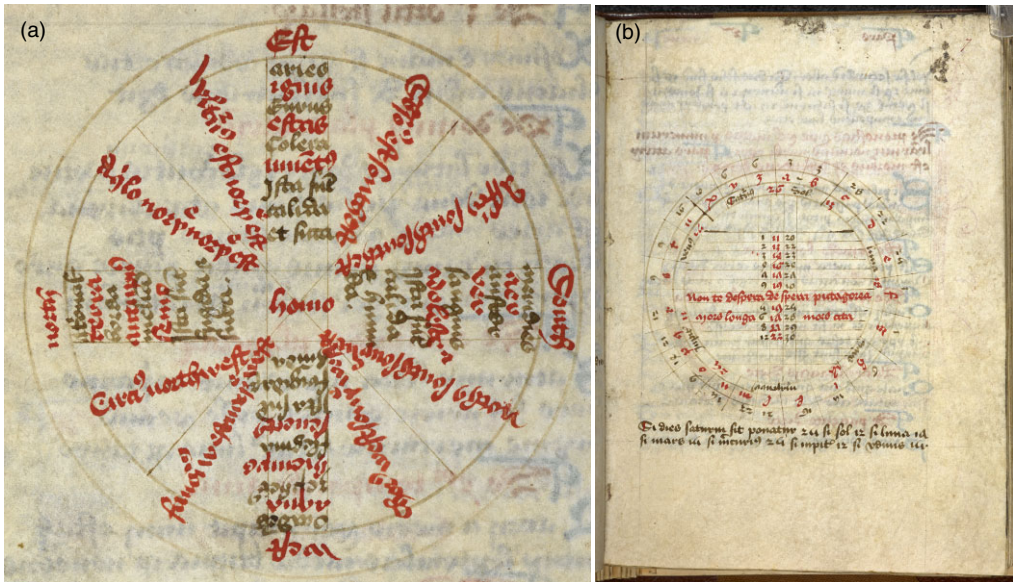


Figure 6. British Library, Sloane MS. 3229 fos. 6v–7r (© The British Library Board)

As well as being incorporated into this work of regimen, 'Spheres' are also found with Nicholas of Salerno's (fl. 1150) *Antidotarium*. There can be no doubt that this work was on the curriculum of the faculty of medicine at Oxford University in the fourteenth century, as it is included in the *Chancellor's and Proctor's Book* of the university, written sometime before 1350, which set out the standard texts that medical students were expected to know and be able to lecture on.⁴⁵ 'Spheres' appear in the same hand as this work in two fifteenth-century manuscripts: Oxford, Bodleian Library, MS. Digby 29 has a 'Sphere' (fos. 193r–194r) and Nicholas's work (fo. 244r); and Cambridge, Trinity College, MS. O.9.10 has an Anglo-Norman 'Sphere' (fo. 75v) and the *Antidotarium* (fo. 27r). The 'Sphere' also appears with Giles of Corbeil's extremely popular poem on uroscopy, *De Urinis*, which was often included in the *Articella* – the corpus of medical texts that university-trained students were expected to know. MS. Digby 29 contains Giles's poem (fo. 76v) and the 'Sphere' (fos. 193r–194r); and the fourteenth-century British Library, Sloane MS. 521 contains *De Urinis* (fo. 25r) and the 'Sphere' (fo. 45r–v). There is also a 'Sphere' in British Library, Harleian MS. 5311 leaf J (Figure 7),⁴⁶ a physician's almanac designed to be worn on the belt, which is beautifully illuminated and contains a wealth of material of interest to the learned doctor – uroscopy diagrams, a zodiac man and lunar tables. This was probably as much an item to be worn to give status to the physician as it was useful – as Jones points out, it was probably there mainly to reassure the patient of the doctor's capabilities.⁴⁷ It is

⁴⁵ 'Incepturi igitur in medicina . . . quantum ad practicam, librum *Regimenti acutorum* vel librum *Februm* Ysaac, seu *Antidotarium* Nicholai, legisse tenetur' (*Statuta Antiqua Universitatis Oxoniensis*, ed. S. Gibson (Oxford, 1931), p. 41).

⁴⁶ Transcribed as app. 1.

⁴⁷ P. Murray Jones, 'Image, word and medicine in the middle ages', in *Visualizing Medieval Medicine and Natural History, 1200–1550*, ed. J. A. Givens, K. Reeds and A. Touwaide (Aldershot, 2006), pp. 1–24, at p. 10; see also Carey.

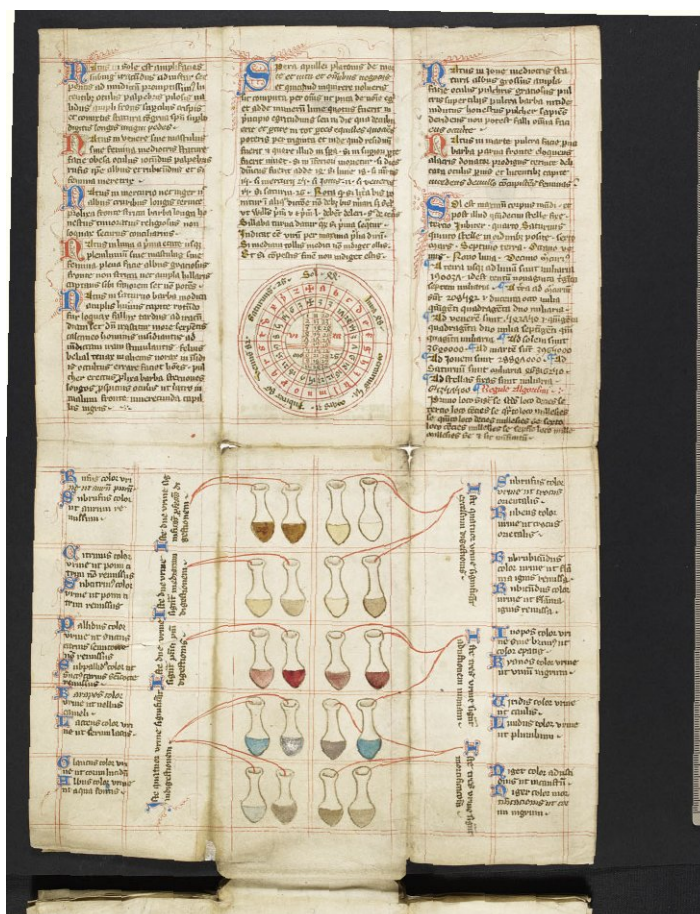


Figure 7. British Library, Harleian MS. 5311 fo. 1 (© The British Library Board)

likely that the (mainly basic) information within it was committed to memory by the physician, but its luxurious nature and ease of display on the belt give the impression that it was designed for an upmarket, learned practitioner.

As well as this undeniable appeal to the learned physician, the 'Sphere' was also of interest to medical practitioners slightly lower down the scale – those who were literate, but not university trained – hence its appearance in the thirteenth- and fourteenth-century manuscript British Library, Royal MS. 12 G IV fo. 160r (Figure 8), along with Gilbert the Englishman's *Compendium Medicinae* – a treatise which made theoretical medicine easy for the non-university-trained physician.⁴⁸ As we have seen, this manuscript was owned and presumably used by John of Greenborough, infirmarer of St. Mary's abbey, Coventry. While this manuscript was compiled in three different stages across two centuries, and the 'Sphere' is in a later hand than Gilbert's work, we

⁴⁸ On Gilbert and his works, see M. McVaugh, 'Who was Gilbert the Englishman?', in *The Study of Medieval Manuscripts of England: Festschrift in Honor of Richard W. Pfaff*, ed. G. Hardin Brown and L. Ehrens Voigts (Tempe, Ariz., 2010), pp. 295–324.



Figure 8. British Library, Royal MS. 12 G IV fo. 160r (© The British Library Board)

know that it all travelled together at the same time due to the revealing colophon at the end of the work on fo. 187v (Figure 9), written in the same hand as the 'Sphere':

Frater Iohannes de Grenborough per xxx annos et plus nuper infirmarius emebat istum librum vocatum Gilbertinum ad utilitatem infirmorum in ecclesia Couentre existentium, et ea que in nouis quaternis sunt scripta compilauit a practicis phisicorum Anglie Hibernie Iudeorum Saracenorum Lumbardorum et Salernita[no]rum et expendebat multa in medicis circa compilationem illarum medicinarum. Multa in nouis quaternis suprascripta per practicam sunt vera, set plures phisici nolunt approbare ea, quia multi illorum ignorant practicam sed multa verba et vacua in ventum seminant.⁴⁹

⁴⁹ 'Brother John of Greenborough, for 30 years and more recently infirmarer, gained this book called Gilbertian for the use of the patients in the church of Coventry, and that which is written on new pages was compiled from the practical [work] of English, Scottish, Jewish, Saracen, Lombard and Salernitan physicians and used by many doctors in the compilation of their medicine. Much in the new pages written above is true through practice, but several physicians do not wish to endorse it, because many of them are ignorant of practice, but spread many empty words into the wind' (Brit. Lib., Royal MS. 12 G IV fo. 187v).

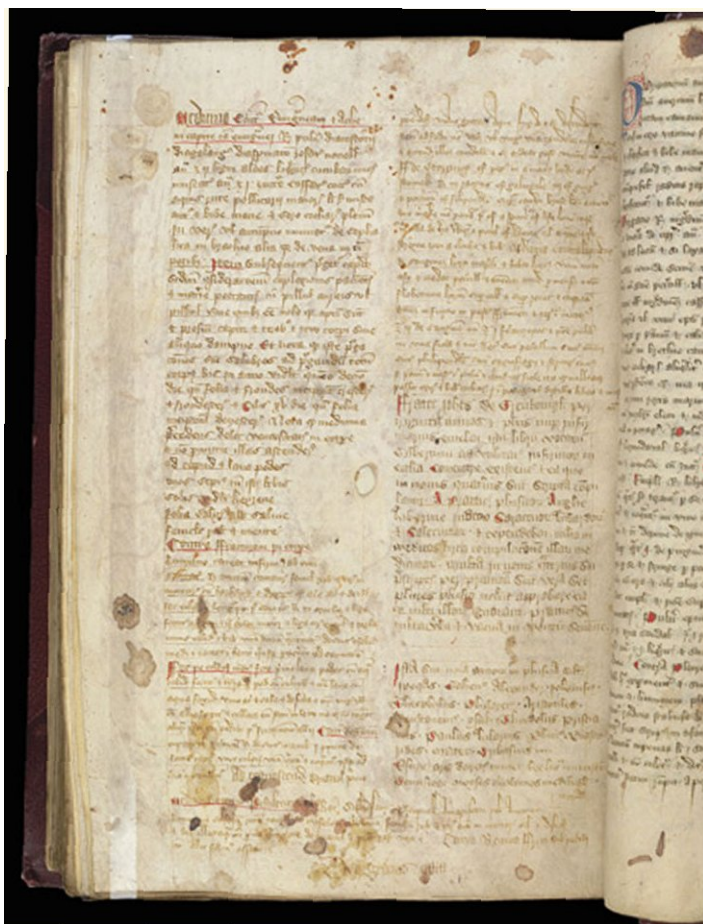


Figure 9. British Library, Royal MS. 12 G IV fo. 187v (© The British Library Board)

Why would this device appeal to the university-trained and literate practitioner, as the manuscript evidence suggests, since it was corrupted, and very simple to use? There are in fact several possible reasons for its popularity among medical elites. First, the 'Sphere' makes use of a lunar and planetary element that was perfectly in line with mainstream medical principles. It is well known that the macrocosm of the universe was thought to have an effect on the microcosm – in this case, the human body. Texts on the Egyptian days – the twenty-four days of the year that were considered to be especially unlucky for all enterprises, including medicine – are popular in medieval manuscripts,⁵⁰ as are more specifically medically oriented texts, such as those outlining the days of the moon considered good or bad for activities such as bloodletting. Hippocratic and Galenic medicine spoke of the 'critical days' of acute illnesses, that is, when the physician could expect a crisis in the patient's health.⁵¹ And, of course, in the

⁵⁰ See, e.g., D. C. Skemer, 'Armis gunfe: remembering Egyptian days', *Traditio: Studies in Ancient and Medieval History, Thought and Religion*, lxx (2010), 75–106.

⁵¹ See, e.g., C. O'Boyle, *Medieval Prognosis and Astrology: a Working Edition of the Aggregationes de Crisi et Creticis Diebus* (Cambridge, 1991).

later middle ages there existed a complex, sophisticated medical astrology which was the domain of the learned physician, who drew up nativities and elections to make all kinds of prognostications regarding the health of his patients.⁵² While the astrological elements of the 'Sphere' are very basic, the intellectual link between this device and more complex astrology was nevertheless present. The inclusion of this lunar and planetary element in the 'Sphere', then, associated it with learned medicine, even if its onomantic component did not.

Second, we must acknowledge that of all the methods of prognosis available to the learned physician – from the Hippocratic and Galenic art of observing the patient carefully to produce a prognosis, to uroscopy and sphygmology, other divinatory methods and complex astrology – the 'Sphere' was probably one of the quickest ways of obtaining a definite answer. The *Signs of Death* of Hippocratic-Galenic medicine depended strongly on the doctor having good knowledge of his patient's usual demeanour; uroscopy could only be done once the patient had produced urine and even then, making a prognostication was an interpretative 'art' rather than an exact 'science'. Other forms of divination like geomancy were tricky and required a good deal of skill and training – the very fact that professional geomancers existed is testament to this⁵³ – and astrology could also take years to master correctly, and was open to interpretation. The 'Sphere' was also much quicker to use than many other prognostics. For example, the anonymous thirteenth-century pulse-reading tract *Summa Pulsuum* gives instructions on predicting death with recourse to the pulse:

The hour of death can be foretold by the failing pulse on a critical day, and the hour of convalescence by a rising one. Suppose, for example, that the patient has a failing pulse; whether he will die or not from this sickness is determined thus. You must reckon from the first failure of his pulse to the second, [finding] the time of day when it happens and the number of beats between the two – say you find thirty beats between the first and second failures at the third hour of the day. But since it is improper for you to stay there in continual calculation, come back the next day at the same hour and count the beats of his pulse again. The first day you counted thirty beats between one failure of the pulse and the next; if now the failure comes on the fifteenth beat, so that you have fifteen strong beats where before you had thirty, it is a sign that when the same number of hours have passed once more, having lost [a further] fifteen beats, the patient will die at that moment. You should treat a rising pulse in the same manner . . .⁵⁴

Therefore it could take up to two days to work out when the patient might die, so if s/he was already critically ill, there was a chance that the patient would die before an answer could be reached. In contrast, the 'Sphere' could produce an answer in under a minute – and it offered a definite answer seemingly not open to interpretation. The patient would live or die, quickly or slowly.

However, while the 'Sphere' claimed to offer a definite answer, as we have seen, its corruptions and ambiguities meant that sometimes it did not. Ambiguity was often a very useful tool for the learned physician, because the prediction of death was a very tricky area. On the one hand, it was important to keep the patient's spirits high at all

⁵² See, e.g., R. French, 'Astrology in medical practice', in *Practical Medicine from Salerno to the Black Death*, ed. L. García-Ballester and others (Cambridge, 1994), pp. 30–59; and *Astro-Medicine: Astrology and Medicine, East and West*, ed. A. Akasoy, C. Burnett and R. Yoeli-Tlalim (Florence, 2008).

⁵³ On professional geomancers, see L. Braswell-Means, 'The popular art of geomancy in the medieval West and contemporary Asia', *Jour. Popular Culture*, xxiii (1990), 135–43, at p. 135.

⁵⁴ Anonymous, 'Summa pulsuum', in *Medieval Medicine: a Reader*, ed. and trans. F. Wallis (Toronto, 2010), pp. 262–3.

times even if the case looked hopeless, but it was also vital that a patient did not die without confessing his sins to a priest and receiving the last rites. In his *Breviarium*, Mirfield explains why a doctor must never tell a patient that he might die:

[The physician should] permit his patients to indulge themselves in whatever is pleasing to them (provided that this be not prejudicial to his treatment), and by means of blandishments, and of pleasant and soothing speeches, he should comfort his patient, and on every occasion should promise him restoration to health, even if the physician himself shall regard the case as desperate; for by means of such heartening words the sick man is imbued with a courage which strengthens his constitution and fortifies it to resist the disease; so that from Nature herself there proceeds a reaction which is more efficacious than that produced by the physician with his instruments and medicines. Let the physician, however, acquaint the friends of his patients with the truth, and discuss the case fully with them as he shall deem best, lest he incur scandal or loss of reputation from inability to proffer a satisfactory statement of the case, and lest the friends of the patient regard him with distrust: nor will he be held responsible for having caused the death of the patient who shall die; but he will be given credit for having cured the man who lives and is restored to health.⁵⁵

Mirfield here is copying almost verbatim from the introduction of William of Saliceto's (fl. c.1275) *Cyrugia*, which was itself copied in part from the *Visit of the Physician to the Patient* of Archimatheus the Salernitan (fl. 1100). Therefore, Mirfield was echoing a widely held view among medieval medical practitioners: a doctor must never tell a patient that s/he will die, but instead, to avoid any censure, warn the patient's family that death is likely. Canon twenty-two of the Fourth Lateran Council held in 1215 also states that a patient's spirits should be kept high, decreeing that all patients should confess before receiving medical treatment, because the sight of a priest alone could make a patient lose hope and therefore the will to live. This way, no one patient felt singled out:

when physicians of the body are called to the bedside of the sick, before all else they admonish them to call for the physician of souls, so that after spiritual health has been restored to them, the application of bodily medicine may be of greater benefit, for the cause being removed the effect will pass away. We publish this decree for the reason that some, when they are sick and are advised by the physician in the course of the sickness to attend to the salvation of their soul, give up all hope and yield more easily to the danger of death.⁵⁶

Medical and theological authorities, then, agreed that the patient's hopes must be kept high at all times. But at the same time a physician could not risk the patient dying without receiving the last rites. So sometimes the ambiguity raised by using a device such as a 'Sphere' was a good thing, as it could help the physician to extract himself from a hard-to-call case with his reputation intact, and without lying.

John Mirfield's inclusion of a 'Sphere'-like prognostic in his medical manual, and his condemnation of the 'Sphere' in his pastoral work, perfectly illustrates the ambiguous status of this device in later medieval England. It was, on the one hand, an item of illicit divination that was specifically condemned in canon law and pastoral manuals, referred to even as 'necromancy' in Gratian's *Decretum*, which linked it to much more sinister black magic. At the same time, the 'Sphere' was a useful medical tool, associated with licit computistical tables and medical astrology, which could be used quickly and in the absence of the patient if necessary. It also contained some corruptions from its

⁵⁵ John of Mirfield, *Breviarium Bartholomei*, p. 125.

⁵⁶ H. J. Schroeder, *Disciplinary Decrees of the General Councils* (St. Louis, Mo., 1937), p. 263.

translation into Latin which could have made it even more useful to the learned physician as he cared for his patients. The 'Sphere of Life and Death', then, was partly licit medicine, and partly illicit divination, and shows that a more nuanced approach to categorization must be taken when dealing with such ambiguous items.

Appendix 1

Transcription and translation of accompanying text, British Library, Harleian MS. 5311 leaf J

Transcription

Spera Apullei Platonis de mor // -te et vita et omnibus negociis // et quicquid inquirere volueris. // Sic computa per omnis ut puta de nomine egri // et adde numerum lune quotus fuerit in // principio egritudinis seu in die qua decubu // -erit et partire in tot partes equales quociens // poteris per triginta et inde quid residuum // fuerit et quere illud in spera. Si in superiori parte // fuerit vivet si in inferiori morietur. Si dies // dominicus fuerit adde 14, si lune 18, si martis // 15, si mercurii 25, si jovis 11, si veneris // 15, si saturni 26. Notaque si litera bis po // -nitur in aliquam dictione non debet bis numerari sed semel // ut Willelmus primus V et primus L debent deleri sic de ceteris.

Translation

The Sphere of Platonic Apuleius of death and life and of all business and whatever you want to find out. In this way count up everything, for example the name of the sick person and add the number of the moon at the start of the illness or the day on which the patient fell ill and divide by thirty as often as you are able and that which remains will be [the answer], and search for it in the sphere. If it is in the top part they will live, if in the bottom half they will die. If it is Sunday add 14, if Monday 18, if Tuesday 15, if Wednesday 25, if Thursday 11, if Friday 15, if Saturday 26. And note that if a double letter is present in any language, two letters should not be counted but one, as in William: the first V and first L should be ignored, etc.

Appendix 2

*Working list of manuscripts of English provenance containing 'Spheres', 1100–1500*⁵⁷

Boston

Countway Medical Library

MS. 7 (20) fo. 69v (s. xiv)

Cambridge

Gonville and Caius College Library

MS. 225/240 fo. 143r (s. xiii^{ex})

MS. 336/725 fos. 63v–66v (s. xv)

⁵⁷ For the purposes of this study, one manuscript – Cambridge, Trinity College, MS. O.2.5 – whose provenance could well be Pembrokeshire in Wales is included as an English manuscript.

St. John's College Library

MS. 37 fo. 53v (s. xv)

Trinity College Library

MS O.1.57 – 'Sphere' not extant (s.xv¹)

MS O.2.5 fos. 8, 10r–11r (s. xiv)

MS O.2.45 fo. 1r (s. xiii²)

MS O.7.41 fo. 1r (1120)

MS O.9.10 fo. 75v (s. xv)

University Library

MS. Peterhouse 222 fo. 32r (s. xiii–xiv)

Durham

University Library

MS. Cosin V.iv.7 fos. 5v–10v (s. xv)

London

British Library

Additional MS. 4698 fo. 2r (s. xv^{ex})

Additional MS. 10362 fos. 109r–109v, 113r (s. xiv)

Additional MS. 15236 fo. 108r–v (s. xiii–xiv)

Cotton MS. Tiberius C I fo. 7v (s. xiiⁱⁿ)

Cotton MS. Vespasian E VII fo. 23v (s. xv)

Egerton MS. 821 fo. 15r–v (s. xii)

Egerton MS. 843 fos. 31v–32r (s. xiii)

Egerton MS. 2852 fo. 111v (s. xiv^{med})

Harleian MS. 267 fos. 226v–227r (s. xiii)

Harleian MS. 531 – 'Sphere' not extant (before 1474)

Harleian MS. 2274 fo. 59v (s. xiv–xv)

Harleian MS. 3383 fo. 85 (s. xv)

Harleian MS. 3667 fos. 4v–5r (s. xiiⁱⁿ)

Harleian MS. 3719 fos. 175v–176v (s. xv)

Harleian MS. 5311 leaf J (1406)

Royal MS. 7 D XXV fo. 75v (s. xii^{ex})

Royal MS. 12 E XXV fos. 164v–165v (1300)

Royal MS. 12 G IV fo. 160r (s. xiv^{ex})

Royal MS. 17 A XXXII fo. 2v (s. xv)

Sloane MS. 389 fos. 93r–95v (s. xv)

Sloane MS. 475 fos. 132v–133r (s. xiiⁱⁿ)

Sloane MS. 521 fo. 45r–v (s. xiv)

Sloane MS. 1620 fos. 65r–66v, 70v–71r (s. xv)

Sloane MS. 3229 fos. 6v–7r (s. xv)

Sloane MS. 3526 fos. 6v–7v (s. xv)

Society of Antiquaries Library

MS. 306 fos. 29v–30r (s. xv^{ex})

University College Library

MS. Angl. 6 fos. 33v–35v, 11r–v, 36r–v (s. xv²)

Wellcome Collection

MS. 21 fo. 7r (s. xiiⁱⁿ)

MS. 559 fos. 46r–47r (s. xv^{med})

Los Angeles

John Paul Getty Museum

MS. Ludwig XII.5 fos. 46r–47r (s. xiiⁱⁿ)

Madrid

Biblioteca Nacional de España

MS. 10016 fos. 3r, 85v (s. xiiiⁱⁿ)

New York

Columbia University Library

MS. Plimpton 260 fos. 5r–13v (s. xvⁱⁿ)

Oxford

Bodleian Library

MS. Ashmole 189 fos. 72r–83v (s. xv)

MS. Ashmole 340 pt. IV fo. 107r (s. xv^{ex})

MS. Ashmole 391 pt. V fo. 8r (s. xiv)

MS. Ashmole 396 fos. 200r–203r (s. xv)

MS. Ashmole 789 fo. 367r (s. xvⁱⁿ)

MS. Bodleian 26 (Bernard 1871) fos. 207r, 216v (s. xiii–xiv)

MS. Bodleian 177 (Bernard 2072) fos. 1r–v, 22r (s. xiv^{ex})

MS. Digby 29 fos. 193r–194r (s. xv)

MS. Digby 46 fos. 106v–107v (s. xiv^{med})

MS. Digby 58 fo. 1v (s. xiv)

MS. Digby 88 fo. 15r (s. xv)

MS. Fairfax 27 fo. 69r (s. xivⁱⁿ)

MS. Lyell 36 fo. 33r (1476)

MS. Rawlinson C. 506 fos. 15v–16r (s. xv)

MS. Rawlinson D. 893 fo. 34r–v (s. xiv)

MS. Savile 39 fo. 10v (s. xiv^{ex})

St. John's College Library

MS. 17 fos. 8r, 41r (1110)

San Marino, California

Henry E. Huntington Library

MS. 64 (Phillipps 6883) fos. 14v–16v (s. xv)

York

Minster Library

MS. XVI.E.32 fo. 1v (s. xv)

Missing manuscript

Thanks to a fifteenth-century catalogue of the library of the Austin Friars at York, we know that John Erghome, canon and regent master at York in the second half of the fourteenth century, owned a manuscript containing a 'Sphere', which was then bequeathed to the Friars. This manuscript has not been identified, and is presumed lost, as its contents do not precisely match any of the manuscripts in this database.