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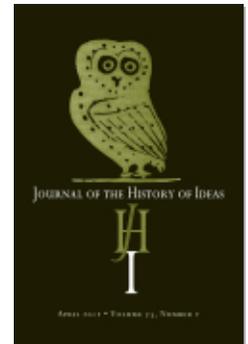
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*Celestial Divination and Arabic Science
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The History of Gerbert of Aurillac's Talking Head*

E. R. Truitt

In the *Gesta regum anglorum* (ca. 1125), William of Malmesbury, an Anglo-Norman monk and historian, interrupted his history of the kings of England with a lengthy digression on Gerbert of Aurillac, the scholar, teacher, and bishop who became Pope Sylvester II (999–1003). Gerbert was a controversial figure: lauded for his erudition, piety, and care for his students during his lifetime, after his death he became known as a medieval Faust—a nefarious pope and fallen monk whose intellectual concupiscence led him to practice necromancy and divination for personal gain.¹ One of the most persistent legends refers to a prophetic head that he created to learn his own destiny. According to William, Gerbert used astral science and observation to make his oracular statue.

After a careful observation of the stars (that is, at a time when all the planets were beginning their paths again), he cast for himself the head of a statue that could speak, if questioned, and answer the truth in the affirmative or the negative.²

¹ On clerical necromancy in the Middle Ages see *Conjuring Spirits: Texts and Traditions of Medieval Ritual Magic*, ed. C. Fanger (University Park: Pennsylvania State University Press, 1998). My gratitude goes to Jennifer Borland, Darin Hayton, Clare Gillis, Timothy McCall, Katharine Park, Sharrona Pearl, Jamie Taylor, and Adam Vine for their many helpful editorial comments. Any errors are in spite of their oversight.

² William of Malmesbury, *Gesta regum anglorum*, 2.172, ed. R. Mynors, R. Thomson,

Legends about Gerbert and his talking head had circulated for at least fifty years before William's early twelfth-century account, often conjoined to stories of how he had learned the impermissible arts of necromancy in Muslim Spain, and had summoned the Devil in order to enter into a diabolical pact. William repeated, embellished, and changed some aspects of Gerbert's biography, while adhering to the main elements of the narrative. According to William, Gerbert acquired the knowledge and skill to create his oracular head during a lengthy sojourn in Seville. After growing up in the Cluniac monastery of Saint-Géraud, Gerbert escaped the strictures of monastic rule to pursue his education. "[E]ither bored with monastic life or smitten with a desire for glory, he fled one night to Spain, intending primarily to learn the science of the stars and others of this kind of art from the Saracens."³ It was

[t]here he conquered Ptolemy in knowledge of the astrolabe, Alhandreus in the positions of the stars, Julius Firmicus in prophesying. There he learned what the song and flight of birds portended, there he learned to summon ghostly forms from hell; there he learned everything that is either harmful or healthful that has been discovered by human curiosity; but on the permitted arts, such as arithmetic, music, and astronomy, and geometry, I need say nothing. By the way he absorbed them he made them appear beneath his ability, and through great effort he recalled to Gaul those subjects that had been long obsolete. He was truly the first to snatch the abacus from the Saracens, and gave the rules for it that abacists, for all their intelligence, hardly understand.⁴

William's description of Gerbert's intellectual achievements, including the talking head, is more detailed than some of the earlier versions re-

and M. Winterbottom, 2 vols. (Oxford: Oxford University Press, 1998), 1: 292 (henceforth *GRA*). Unless noted, all translations are my own. David Rollo, *Glamorous Sorcery: Magic and Literacy in the High Middle Ages* (Minneapolis: University of Minnesota Press, 2000), 1–31; Arthur Dickson, *Valentine and Orson: A Study in Late Medieval Romance* (New York: Columbia University Press, 1929), 201–16; Sarah Lynn Higley, "The Legend of the Learned Man's Android," in *Retelling Tales: Essays in Honor of Russell Peck*, ed. Thomas Hahn and Alan Lupack (Cambridge: D.S. Brewer, 1997), 127–60; Kevin LaGrandeur, "The Talking Brass Head as a Symbol of Dangerous Knowledge in *Friar Bacon* and in *Alphonsus, King of Aragon*," *English Studies* 5 (1999): 408–22.

³ *GRA*, 2.167, 1: 280.

⁴ *Ibid.*

counted by chroniclers and polemicists. These details reveal important distinctions between conceptions of legitimate and illegitimate knowledge, and between established doctrine and new ideas. In his account, William emphasized that Gerbert learned what was permitted and what was prohibited. The subjects of the quadrivium—music, arithmetic, geometry, and astronomy—were a traditional part of a liberal arts education since late antiquity. Necromancy—summoning “ghostly forms from hell”—and augury—from birdsong and flight patterns—fell far outside the bounds of accepted intellectual practice. Yet William did not likewise condemn celestial divination—prophecy based on careful observation of heavenly bodies and their positions. Careful inspection of the skies, the use of astronomical instruments, and mathematics were central to astral science, one of the subjects of the quadrivium. It is important to note that the modern distinction between astrology and astronomy is not visible in medieval terminology, although celestial observation and prediction were differentiated conceptually and in practice in this period. *Astronodia* is a medieval term that covers the mathematical, predictive, and interpretive aspects of astral science, although it does not appear in William’s account, or in other sources referring to Gerbert and his intellectual practices.⁵ William linked celestial divination with the other aspects of astral science, conferring on it implicit intellectual legitimacy.

William’s account of Gerbert’s studies and his vatic head reveals an important development in Latin Christian intellectual culture. Both passages explicitly mention divination based on stellar observation and the disciplines of the quadrivium, instead of the forbidden methods of using demons (necromancy) or animals and animal parts (augury). Although astro-meteorological events had long been interpreted as portents, William’s description of the creation of Gerbert’s prophetic head does not refer to a singular event, such as a comet (which could be seen by an unskilled observer), but rather to learned interpretation of the heavens. In doing so, William obliquely revealed the extent to which scientific texts from the Arabic-speaking world permeated Latin intellectual culture in England. Admittedly, demonic magic and necromancy continued to be viewed as a method

⁵ Roger French, “Foretelling the Future: Arabic Astrology and English Medicine in the Late Twelfth Century,” *Isis* 87 (1996): 453–80, 454; Charles Burnett, “Adelard, Ergaphalau, and the Science of the Stars,” in *Adelard of Bath: An English Scientist and Arabist of the Early Twelfth Century*, ed. C. Burnett (London: Warburg Institute, 1987): 133–45, 137–38; French, “Astrology in Medical Practice,” in *Practical Medicine from Salerno to the Black Death*, eds. Luis García-Ballester, Roger French, Jon Arrizabalága, and Andrew Cunningham (Cambridge: Cambridge University Press, 1994), 30–59, at 33–34.

of prediction for centuries, yet William's description of Gerbert's efforts at divination demonstrates that the new astral science offered an equally possible and more acceptable route to foreknowledge.

The legend of Gerbert's head, as narrated by William, is far more than an entertaining diversion; it reveals the depth of scientific knowledge in England during that time. Specifically, that prediction could be part of the legitimate subjects of the quadrivium, rather than illicit knowledge based on un-Christian practices. I argue that scholarly interest in reading the heavens is evident in Latin Europe throughout the early medieval period, but especially in the tenth and early eleventh centuries. Gerbert was part of a group of Latin scholars interested in translations of Arabic texts on celestial science, including different kinds of prognostication. These texts affirmed a different kind of prophecy, one that was predicated on understanding celestial bodies, their movements, and their effect on earthly bodies, and using precise astronomical calculations to ascertain the outcomes of planetary influences on earth. These new practices enriched and reconfigured existing Christian concerns about divination and foreknowledge. William's account testifies that by the end of the first quarter of the twelfth century divination could be understood as a predictive science, rather than something that was practiced by necromantic means or was largely interpretive (dreams, portents, and animal augury). I begin by reconstructing the origins and development of the legend of Gerbert's oracular head, illustrating that Gerbert's posthumous reputation arose from polemicists trying to discredit papal reform movements and from contemporary anxieties about knowledge from outside Latin Europe. I then examine the transmission of texts and ideas about astral science from al-Andalus into northern Europe, particularly England, in the late eleventh and early twelfth century, and confirm that these new methods and conceptual frameworks gained early traction among scholars in England. Lastly, I analyze the rhetoric William of Malmesbury used to portray Gerbert's accomplishments and demonstrate that he was one of the earliest Latin writers to apprehend the epistemological and moral distinctions between demonic and astral divination. My study further reflects the pluralistic nature of medieval intellectual culture, especially with regard to the interplay between science and religion.⁶

THE ORIGINS OF THE GERBERT LEGEND

The stories surrounding Gerbert's education and erudition, especially in the mathematical sciences, inscribe a dramatic trajectory over the span of a

⁶ For example, see Kocku von Stuckrad, "Interreligious Transfers in the Middle Ages: The Case of Astrology," *Journal of Religion in Europe* 1 (2008): 34–59.

century. Gerbert of Aurillac was a monk, scholar, teacher, bishop, and pope, and was renowned in his lifetime as a monastic reformer and the most learned man in Latin Christendom. Some of his students and younger colleagues wrote of him in laudatory terms, remarking on his intellectual gifts, his patience as a teacher, his piety, and many good works. Due to his own efforts and the testimony of his students, Gerbert acquired a reputation for being especially knowledgeable in the quadrivium, including those subjects related to studying the heavens. After his death, this erudition was recast as necromantic by chroniclers writing political polemic during the Investiture Controversy. These later polemicists emphasized Gerbert's intellectual concupiscence and illicit knowledge, and asserted that he went to al-Andalus to complete his education in sorcery.

Contemporary sources for Gerbert's biography are scant, yet there is enough to give the outline of his early life and education. Gerbert was born in the Auvergne, probably sometime in the 940s, and entered the monastery of Saint-Géraud in Aurillac in his childhood. As an oblate, he studied the trivium (grammar, rhetoric, and dialectic) and showed great interest in the Latin classics, particularly the works of Boethius.⁷ According to Richer of Reims, Gerbert's student and main biographer, the abbot, Géraud of St.-Céré, noticed Gerbert's intellectual aptitude and, upon hearing from a visitor, Borrell, Count of Barcelona, that his territory "possessed men well-versed in the arts," arranged in 967 for Gerbert to accompany Borrell back to Barcelona. While there for the next three years, Gerbert studied thoroughly and extensively in the quadrivium (*mathesi*) "under the direction of Atto," the bishop of Vic.⁸

Atto's interest and patronage expanded Gerbert's intellectual horizons. Catalonia was a cosmopolitan region and a trading zone for scientific knowledge, as diplomats and scholars traveled between the Spanish March and the caliphate of Córdoba exchanging treatises and treaties. Between 941 and 974 five ambassadors from Barcelona traveled to Córdoba; similarly, representatives from Córdoba traveled to Barcelona.⁹ Gerbert spent

⁷ Richer, *Historiarum Libri Quatuor* MGH SS. *Rer. Ger.*, 3.43, ed. G. Waitz (Hanover: Hahn, 1877), 192; F. Picavet, *Gerbert: Un pape philosophe, d'après la légende* (Paris: E. Leroux, 1897), 27–37; Duc de la Salle de Rochemaure, *Gerbert. Silvestre II. Le savant, le "faiseur de rois," le pontife* (Paris: E. Paul, 1914), 38–42; Pierre Riché, *Gerbert d'Aurillac: Le Pape de l'an mil* (Paris: Fayard, 1987), 21, 279; Jason Glenn, *Politics and History in the Tenth Century: The Work and World of Richer of Reims* (Cambridge: Cambridge University Press, 2004).

⁸ Richer, *Historiarum*, 3.43, 192.

⁹ Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: University of Chicago Press, 1997); Marco Zuccato, "Gerbert of Aurillac and a Tenth-Century Jewish Channel for the Transmission of Arabic Science to the West," *Speculum* 80 (2005):

some time at the monastery of Santa Maria de Ripoll, which had an extensive library containing classical material, theology, and scientific treatises, though it is true that the library had texts with Arabic notations only after Gerbert's lifetime.¹⁰ At Santa Maria de Ripoll and Atto's court at Vic, Gerbert became part of a network of Jewish, Christian, and Muslim scholars and diplomats.

Although Gerbert remained in Spain for only a few years, he learned a tremendous amount. He accompanied Atto on a trip to Rome, where he impressed Pope John XII with his erudition, especially in the quadrivium. The pope informed Otto I, king of Germany and Italy and later Holy Roman Emperor, "that such a young man had arrived, one who had perfectly mastered astral science [*mathesis*] and was able to teach it to his men."¹¹ Otto engaged Gerbert to tutor his son, Otto II. Two years later Gerbert relocated to Reims, and taught the quadrivium to the students at the cathedral school there. In 983 his former pupil, Emperor Otto II, appointed Gerbert abbot of the monastery of Bobbio. Gerbert's attempts to repair the monastery's finances and reform its practices met with resistance, and he returned to Reims a year later, where he became the master of the school and remained (with some interruptions) until 997.

Under Archbishop Adalbero and Gerbert, the cathedral school at Reims flourished and was known for its focus on ethics, Ciceronian rhetoric, classical authors, and the quadrivium. Richer credited his teacher with introducing principles of music and astronomy "which were at that time in Italy completely unknown" (a credit which William of Malmesbury echoed in the above quotation).¹² Gerbert familiarized his students with far more

742–63, at 752–55; David Juste, *Les Alchandreana Primitifs: Études sur les plus anciens traits astrologiques latins d'origine arabe, X^e siècle* (Leiden: Brill, 2007), 234–35.

¹⁰ Picavet, *Gerbert*, 30; Rudolf Beer, *Die Handschriften des Klosters Santa Maria de Ripoll*, Akademie der Wissenschaften in Wien, Philosophisch-Historische Klasse, Sitzungsberichte, 155/3 and 158/2 (Vienna: A. Hölder, 1907–8); Rochemaure, *Gerbert*, 53; Juste, *Alchandreana*, 235; Miquel dels Sants Gros i Pujol, "La vila de Vic i el monestir de Ripoll en els anys 967–970," in *Actes del Congrés internacional Gerbert d'Orlhac i el seu temps: Catalunya i Europa a la fi del 1r mil·lenni. Vic-Ripoll, 10–13 de novembre de 1999* (Vic: 1999), 747–61.

¹¹ Richer, *Historiarum*, 3.44, 192–93.

¹² Richer, *Historiarum*, 3.44, 192. Picavet, *Gerbert*, 76–84; Oscar Darlington, "Gerbert, the Teacher," *American Historical Review* 52 (1947): 456–76, 461; John Williams, "The Cathedral School of Rheims in the Eleventh Century," *Speculum* 29 (1954): 661–67; Riché, *Education and Culture in the Barbarian West, Sixth through Eighth Centuries*, trans. John J. Contreni (Columbia: University of South Carolina Press, 1976), 422–23; Hélène Gasc, "Gerbert et la pédagogie des arts libéraux à la fin du dixième siècle," *Journal of Medieval History* 12 (1986): 111–21; C. Stephen Jaeger, *The Envy of Angels*:

advanced mathematics and astronomy than had previously been taught, including Arabic numerals and the abacus. He also built geometric and celestial models to use as teaching aids. Richer detailed the four different types of spheres Gerbert used to illuminate astral science for his students: a solid sphere, a hemisphere, an armillary sphere (which may have been the first in northern Europe), and a star sphere.¹³ Additionally, Gerbert wrote scientific treatises on the use of spheres and the astrolabe and remained in contact with scholars in the Spanish March with whom he corresponded about scientific texts. For example, in 984, Gerbert wrote to Miró Bonfill, bishop of Gerone, for a copy of *De multiplicatione et divisione numerorum*, which may have been a treatise on the abacus, and in 988 and 989 he corresponded with Remi of Trier about a difficult treatise on the sphere, as well as how to use an abacus.¹⁴

In addition to his long association with Reims, Gerbert maintained his ties to the imperial court, and in 997 moved to Magdeburg and Ravenna to take up the role of advisor and scholar at the court of the newly crowned Holy Roman Emperor Otto III.¹⁵ Magdeburg, like Reims, was the seat of an archdiocese, and had a robust cathedral school in the latter half of the tenth century.¹⁶ Gerbert was a respected and valued advisor to the sixteen year-old Otto, who often sought him out to discuss philosophy and mathematics. The two men also collaborated on constructing tools for astronomical observation, as Gerbert was interested in making instruments. According to a younger contemporary of Gerbert's, writing just a decade after his death (ca. 1015):

Cathedral Schools and Social Ideas in Medieval Europe, 950–1200 (Philadelphia: University of Pennsylvania Press, 1994), 56–57.

¹³ Richer, *Historiarum*, 3.50, 195; 3.51, 196; 3.52, 197; 3.53, 197; Zuccato, "Gerbert of Aurillac," 758–59; Uta Lindgren, *Gerbert von Aurillac und das Quadrivium: Untersuchungen zur Bildung im Zeitalter der Ottonen*, Sudhoffs Archiv 18 (Weisbaden: Franz Steiner, 1976), 28–32; Emmanuel Poulle, "L'astronomie de Gerbert," in *Gerberto: Scienza, storia e mito*, ed. M. Tosi (Bobbio: Archivi storici Bobiensi, 1985), 597–617.

¹⁴ Julien Havet (ed.), *Lettres de Gerbert* (Paris: A. Picard, 1889), ep. 24. See also Zuccato, "Gerbert of Aurillac," 754–55. On his correspondence with Remi, see Havet, ep. 134, 148, and 152; Richer, *Historiarum*, 3.50–54, 195–98; Darlington, "Gerbert, the Teacher," 467. On Gerbert's other astronomical texts, see Burnett, "King Ptolemy and Alchandreus the Philosopher: The Earliest Texts on the Astrolabe and Arabic Astrology at Fleury, Micy, and Chartres," *Annals of Science* 55 (1998): 329–68; Jean-Patrice Boudet, *Entre science et nigromance. Astrologie, divination et magie dans l'Occident medieval (XIIe-XVe siècle)* (Paris: Sorbonne, 2006), 51.

¹⁵ Gerbert of Aurillac, *De rationali et ratione uti*, *Patrologia Latina*, ed. J.-P. Migne, 139:158–68. Quoted in French in Riché, *Gerbert d'Aurillac*, 182–83.

¹⁶ Jaeger, *Envy of Angels*, 47–48.

He could perfectly observe the courses of the stars and surpassed all his contemporaries in his understanding of many and varied disciplines, . . . in daily discussion with [Otto] in Magdeburg, he made an *orologium*, positioning it accurately by observing the star that is the mariners' guide through a tube.¹⁷

The *orologium* is an astronomical instrument that was likely invented in the ninth century by Pacificus of Verona.¹⁸ Gerbert also made an *orologium* while at Reims, along with the spheres he used as teaching aids.¹⁹

Otto III, as Holy Roman Emperor, controlled the papal elections. Given his relationship with Gerbert, it is unsurprising that Otto handpicked his close advisor for the pontificate. Gerbert was elevated to the papacy in 999 and chose Sylvester II as his papal name: a significant choice, as Sylvester I was pope during the reign of Emperor Constantine I. Otto III, ruler of a vast territory and the son of a Byzantine princess, had ambitions to be the new Constantine, and aspired to place himself at the head of a theocratic Christian empire.²⁰ Gerbert, as his pope, signaled that he would be as closely allied to Otto's secular ambitions as Sylvester had been to Constantine's. He advocated moral reform of the clergy, speaking out against simony and concubinage. As at Bobbio, his reformist agenda—coupled with his status as an interloper—met with resistance, and he had to leave Rome for a period when the city rebelled against him. His papacy was short, as he fell ill in May of 1003 while celebrating Mass at the Church of the Holy Cross of Jerusalem, and died nine days later. Immediately after his death, he was lionized as a statesman and scholar, praised for his wisdom by his successor, John XVIII (1003–9), as well as by Thietmar of Merseburg and Richer of Reims. Only a few decades later, Helgaud of Fleury, biographer of Capetian king Robert the Pious, wrote of Gerbert's reputation for erudition, his enlightenment of Latin Europe, his lifelong piety, and his many virtuous works. According to William, Robert the Pious had been a student of Gerbert's during his youth. Certainly, Gerbert had been instrumental in

¹⁷ Thietmar of Merseburg, *Thietmari Merseburgensis Episcopi Chronicon*, MGH SS. *Res. Ger.*, 7.40, ed. F. Kurze (Hanover: Hahn, 1889), 191; David A. Warner, *Ottoman Germany: The Chronicon of Thietmar of Merseburg* (Manchester: University of Manchester Press, 2001), 49–63.

¹⁸ Emmanuel Pouille, "À propos du Scriptorial," *Revue de l'Avranche et du pays de Granville* 83 (2006): 489–92.

¹⁹ Havet, *Lettres de Gerbert*, ep. 153; *GRA* 2.168, 1:284.

²⁰ Gerd Althoff, *Otto III*, trans. Phyllis G. Jestice (University Park: Pennsylvania State University Press, 2003), 65–89.

elevating Hugh Capet, Robert's father, to the kingship of the Franks, thus effectively ending the Carolingian dynasty.²¹

Yet beginning around the same time, accounts of Gerbert that opposed the positive, almost reverential, testimonials of his peers and pupils began to surface. Adhémar of Chabannes (d. ca. 1030), like his contemporary Richer a monk and chronicler, was the earliest to hint at Gerbert's lust for learning when he stated that Gerbert went to Córdoba rather than Barcelona for the sake of wisdom.²² Despite the fact that Adhémar was the only contemporary of Gerbert's who stated that he studied in Córdoba, subsequent writers for the next several centuries repeated Adhémar's account, rather than Richer's testimony that Gerbert was educated in Christian Catalonia. Interestingly, although medieval sources after Adhémar agree almost unanimously that Gerbert studied in al-Andalus, most recent historians have concluded that this is a complete fabrication, and that Gerbert remained in Barcelona.²³ Yet even some contemporary scholars continue to repeat the canard of Gerbert's sojourn among the Muslims, indicating the persistence of entrenched attitudes regarding the superiority of Arab science in the tenth century and mistaken ideas about the lack of intellectual community among Jews, Christians, and Muslims in al-Andalus and Christian Spain at that time.²⁴

The earliest source for the assertion that Gerbert trafficked with demons comes from Beno, a cardinal writing at the height of the Investiture Controversy (ca. 1085). Some scholars posit that this was a German, Benno, who was the cardinal of Osnabruck, while others state that it was an Italian, Beno, who was a cardinal-priest of the Church of SS Marino and Silvestro in Rome.²⁵ The Investiture Controversy was a political struggle between advocates of papal reform and independence from secular author-

²¹ Riché, *Gerbert d'Aurillac*, 232. On his immediate posthumous reputation, see *Autour de Gerbert d'Aurillac, le Pape de l'an mil*, eds. O. Guyotjeannin and E. Poulle (Paris: Champion, 1996), 337; Helgaud of Fleury, *Vie de Robert le Pieux*, ed. R.-H. Bautier (Paris: Gillette, 1965), 60; *GRA*, 2.168, 1:284.

²² Adhémar of Chabannes, *Historiarum libre tres*, *PL*, 141:49; *Adémar de Chabannes: Chronique*, ed. Jules Chavanon (Paris: Picard, 1897), 154 n. 2.

²³ See Picavet, *Gerbert*, 34–37; Rochemaure, *Gerbert*, 55; Anna Marie Flusche, *The Life and Legend of Gerbert of Aurillac: The Organ-BUILDER Who Became Pope Sylvester II* (Lampeter, Wales: Edwin Mellen Press, 2005), 115; Juste, *Alchandreana*, 234–50.

²⁴ See, for example, E. M. Butler, *The Myth of the Magus* (Cambridge: Cambridge University Press, 1948), 95; Higley, "The Legend of the Learned Man's Android," 138; La Grandeur, "The Talking Brass Head," 412–13.

²⁵ See Riché, *Gerbert d'Aurillac*, 10; I. S. Robinson, *Authority and Resistance in the Investiture Contest: The Polemical Literature of the Late Eleventh Century* (Manchester: University of Manchester Press, 1978), 45.

ity, and secular rulers, particularly the Holy Roman Emperor, who wished to retain a measure of political control over Church appointments (including abbacies, bishoprics, and the papacy). From the second half of the eleventh century through the first half of the twelfth, reformers and reactionaries wrote letters, manifestos, and jeremiads defending their positions and accusing the opposition of every kind of depravity.²⁶ Beno was a supporter of the Holy Roman Emperor Henry IV during his struggle over the appointment of bishops with Hildebrand, the zealous reformer who became Pope Gregory VII in 1073. In trying to discredit the efforts of the current pope, Beno portrayed the recent popes of Rome, starting with Sylvester II, as sorcerers who had corrupted the papacy with their unholy behavior. According to Beno, Hildebrand had been a student of Benedict IX and Lawrence of Amalfi, both of whom had studied under Gerbert at the school of sorcery in Rome he had established. From these teachers Hildebrand learned “the false doctrine of demons”; they had in turn learned it from their teacher, Gerbert of Aurillac. In another echo between Gerbert and Hildebrand, the latter was accused at the Synod of Brixen in 1080 of having studied magic in Toledo and was impugned as a necromancer.²⁷ “The wicked deeds of Gerbert” included summoning a demon that he interrogated about the date of his death. The demon replied that Gerbert would not die until he said Mass in Jerusalem. Not recalling that there was a church in Rome nicknamed “Jerusalem,” he celebrated Mass in it. “Immediately after he died a horrid and miserable death, and in between those dying breaths, he begged his hands and tongue to be cut to pieces, by which having sacrificed them to demons he had dishonored God.”²⁸ Interestingly, Beno and later chroniclers always referred to Gerbert by his birth name, rather than his papal name, Sylvester, just as anti-papal partisans called Gregory VII by his birth name, Hildebrand.²⁹ Gerbert’s reputation was susceptible in part because of his connection with the hated Hildebrand, as his scholarly ancestor and also as a fellow reformer, but also largely due to his mastery of subjects previously unknown in the Latin West, gained during his early years in Spain.

²⁶ Robinson, *Authority and Resistance*, 156–59; 175–78.

²⁷ Beno, *Benonis aliorumque cardinalium schismaticorum contra Gregorium VII et Urbanum II, MGH, Libelli de lite imperatorum et pontificum saeculi XI*, ed. K. Francke (Hanover, 1891), 2:376. Johann Joseph Döllinger, *Die Pabst-fabeln des Mittelalters* (Munich: J. G. Cotta, 1863), 151–59. On the longer rhetorical tradition of papal denunciation, see Edward Peters, *The Magician, the Witch, and the Law* (Philadelphia: University of Pennsylvania Press, 1978), 28.

²⁸ Beno, *Contra Gregorium VII*, 2:377.

²⁹ Oldoni, “Gerberto e la sua storia,” I, *Studi Medievali* 18 (1977): 629–704, 670.

This story of Gerbert's commerce with demons became more widely known when, just a few decades after Beno's polemic, others repeated his claim. Sigebert of Gembloux (ca. 1035–1112), a Benedictine monk, was, like Beno, a vigorous imperial partisan in the Investiture Contest. The *Chronicon* was his best-known work and was widely transmitted throughout the Middle Ages.³⁰ Writing about Gerbert, Sigebert echoed Beno's account, repeating it as contemporary commonplace.

Regarding Gerbert and Silvester . . . he shone even among those who were the most illuminated by the wisdom of the sciences . . . yet it is said that Silvester did not enter by this door [of proper study], as one might expect of one who is still accused of necromancy; also, there is something crooked about his death; truthfully, it is said that he died from a violent beating at the hands of the Devil; but we leave off these things in the middle, [and] he is seen to be excluded from the number of popes.³¹

Even polemicists opposed to the imperial position repeated the anti-Gerbertian tales from Beno and Sigebert. Hugh of Flavigny (writing ca. 1100), the French monk and chronicler, was a supporter of the emperor but later became an adherent of papal reform.³² Yet despite his eventual support of Gregorian reforms, Hugh repeated, albeit in muted terms, the repeated accounts of Gerbert's questionable practices, noting that he became archbishop of Ravenna “by trickery.”³³

The assertion that a pope was in league with the devil is not as far-fetched as one might imagine. The papacy was, in the early medieval period, far from the powerful office that it became after the Investiture Controversy and, even later, under Innocent III. Popes during the early medieval period routinely flouted Church doctrine: they bought and sold the papacy, solicited bribes, and openly carried on sexual relationships. Gregory VII's reforms of Church doctrine and administration were in part due to the excesses of his predecessors, although his efforts at restoring Church integ-

³⁰ Jutta Beumann, *Sigebert von Gembloux und der Traktat de investitura episcoporum* (Sigmaringen: Thorbecke, 1976), 7–14; Mireille Chazan, *L'Empire et l'histoire universelle de Sigebert de Gembloux à Jean de Saint-Victor* (Paris: Champion, 1999), 33–59; 80–92; 253–310.

³¹ Sigebert of Gembloux, *Chronologium*, PL, 160:196–97.

³² Patrick Healy, *The Chronicle of Hugh of Flavigny: Reform and the Investiture Contest in the Late Eleventh Century* (Aldershot: Ashgate, 2006), 76–101; 228–41.

³³ Hugh of Flavigny, *Chronicon*, PL, 154:196.

riety revolved largely around curtailing secular involvement in Church business, especially in making ecclesiastical appointments. To those, such as Beno and Sigebert, who resisted Gregorian reform and adhered instead to those reforms proposed by the Holy Roman Emperor, the papacy was the root of corruption in the Church. Thus, the idea that a pope would be so degenerate as to sell his soul to the devil was of a piece with details about earlier popes, as well as a useful tool for political polemic. Despite Gerbert's close relationship with the emperor and his attempts at clerical reform, first as the abbot of Bobbio and then later as pope, his intellectual legacy to Gregory VII, his alleged sojourn in al-Andalus rather than Barcelona, and his mastery of new and alien knowledge (the abacus, astral science) made it easy to depict him as depraved and iniquitous: exemplary of everything corrupt about the papacy.

ASTRAL SCIENCE IN EUROPE

Gerbert's erudition in the quadrivium, including ancient Latin treatises and more recent translations of Arabic texts, illustrates growing interest in those areas of study in the late tenth and early eleventh centuries, as well as some Latin exposure to Arabic science. The subjects of the quadrivium, including the science of the stars, were known piecemeal in the early medieval period, especially in comparison with the robust and programmatic inquiry sustained over centuries in the Dar al-Islam.³⁴ Periods of renewed interest in astral observation and prediction in the Latin Christian West provided the impetus for the creation and circulation of some texts, old and new. Although there were strong ethical and theological objections to horoscopic astrology and celestial divination, many remained interested in these practices as part of the quadrivium.

A significant focus of astral science in the early medieval Latin tradition was on celestial observation, timekeeping, and the computus (assessment of celestial phenomena for the liturgical calendar).³⁵ The Divine Office—the eight daily prayer services that monks needed to attend—required that two of the offices, Matins (just before dawn) and Vigils (late at night) take place

³⁴ David Pingree, "Astrology," in *Religion, Learning, and Science in the 'Abbasid Period*, eds. M. J. L. Young, J. D. Latham, and R. B. Serjeant (Cambridge: Cambridge University Press, 1990), 290–300; Fuat Sezgin, *Geschichte des Arabischen Schrifttums: VIII, Astrologie—Meteorologie und Verwandtes bis ca. 430 H* (Leiden: Brill, 1979).

³⁵ Arno Borst, *The Ordering of Time*, trans. Andrew Winnard (Chicago: University of Chicago Press, 1993), 24–32.

in the dark.³⁶ Thus monastic communities relied principally on the observation of the stars to achieve the correct timing of the offices. Gregory of Tours, writing in the seventh century, codified this practice in his treatise *De cursu stellarum*. In it, he explained how to tell time during the night by noting the moments that particular stars rise above the horizon.³⁷ The Venerable Bede wrote a treatise on the computus, *De temporum ratione* (ca. 722–25), which addressed a different challenge of ecclesiastical time keeping—reckoning the date of Easter for the liturgical calendar. However, he rejected judicial astrology—observing planetary positions in order to forecast human events.³⁸ And astral science was taught to students as part of the quadrivium, although without the same depth with which it would be taught in later centuries. Alcuin, an Anglo-Saxon monk at the court of Charlemagne, wrote that he had been educated in the zodiac, and passed this knowledge on to his students.³⁹

An equally important and sustained focus of astral science was prognostication based on celestial phenomena. Although there are far more texts on this subject from the second half of the Middle Ages, there is compelling evidence in favor of ongoing Latin interest in prediction and augury, despite ongoing scholarly debate and disagreement.⁴⁰ General information about the elements, the characteristics of the planets, and the zodiacal houses appears in the well-known and oft-copied works of Pliny, Macrobius, and Martianus Capella. Two ancient Latin texts, *De astronomica* by

³⁶ Benedict of Nursia, *Regula*, chs. 8–11, 16–17: <http://www.intratext.com/X/LAT0011.htm>; English translation: http://www.ccel.org/ccel/Gregory/life_rule.i.html (both accessed July 8, 2011). See also Gerhard Dohrn-van Rossum, *History of the Hour: Clocks and Modern Temporal Orders*, trans. Thomas Dunlap (Chicago: University of Chicago Press, 1996), 31–37.

³⁷ Gregory of Tours, *De cursu stellarum*, *MGH SS. Rer. Ger.*, ed. B. Krusch, vol. 1, pt. 2 (Hanover, 1885), 854–72. Stephen C. McCluskey, “Gregory of Tours, Monastic Time-keeping, and Early Christian Attitudes to Astronomy,” *Isis* 81 (1990): 8–22; and McCluskey, *Astronomies and Cultures in Early Medieval Europe* (Cambridge: Cambridge University Press, 1998), 101–10; Katharine Park “Observation in the Margins, 500–1500,” in *Histories of Scientific Observation*, eds. Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 15–44.

³⁸ Bede, *The Reckoning of Time*, ed. and trans. F. Wallis (Liverpool: Liverpool University Press, 1999), 275.

³⁹ Bruce Eastwood, “Astronomy in Christian Latin Europe, c. 500–c. 1150,” *Journal for the History of Astronomy* 28 (1997): 235–58; Eastwood, “The Astronomies of Pliny, Martianus Capella, and Isidore of Seville in the Carolingian World,” in *Science in Western and Eastern Civilization in Carolingian Times*, eds. P. L. Butzer and D. Lohrmann (Basel: Birkhauser Verlag AG, 1993), 161–80.

⁴⁰ Juste, *Alchandreana*, 18; Valerie Flint, *The Rise of Magic in Early Medieval Europe* (Princeton: Princeton University Press, 1991); Tamsyn Barton, *Ancient Astrology* (London: Routledge, 1994).

Marcus Manilius (ca. 9–16 CE) and *Mathesis* by Julius Firmicus (ca. 337), circulated for centuries throughout monasteries and cathedrals in Europe. Both of these texts, on horoscopic prediction, were fairly well known from the tenth century onward. Gerbert wrote to Rainaud of Bobbio in 988 for a copy of Manilius's *De astrologia*, and around the year 1000 an English monk, Leofnoth, transcribed the first four books of Firmicus at Fleury.⁴¹ A number of texts on astral prediction survive from the eighth through twelfth centuries, including lunar divination and zodiologia, critical and planetary days (for example, the *dies caniculaires*), and interpreting comets.⁴² Celestial prognostication also appears in historical chronicles and at court, where it is revealed to be a fairly common practice. The *Anglo-Saxon Chronicle* contains many examples of astrological and astronomical activities and portents, such as comets, solar and lunar eclipses, and the Northern Lights.⁴³ Additionally, Carolingian Emperor Louis the Pious directed an astronomer at his court to interpret the importance of a comet.⁴⁴

Gerbert's interest in the quadrivium, including astral science and prediction, is indicative of a renewed attentiveness to these subjects in the late tenth and eleventh centuries. The *Alchandreana*, a corpus of texts that first appear and circulate together in this period, comprises treatises on natal, elective, and judicial astrological divination, explications of calculations, and characteristics of the zodiac and the planets that were translations of Arabic scientific works. Furthermore, some of the manuscripts containing the *Alchandreana* also contain material on the astrolabe. The earliest extant manuscript of the *Alchandreana* in the Latin West (Paris, BnF, MS Lat. 17868) is from the fourth quarter of the tenth century.⁴⁵ Further evidence of Gerbert's interest in the *Alchandreana* comes from his own hand. In 984 he wrote to Lupitus of Barcelona requesting a copy of his translation of a *liber de astrologia*, which historian David Juste has convincingly demonstrated to be part of the *Alchandreana*, the *Liber Alhandrei de astrologia*.⁴⁶

⁴¹ Havet, *Lettres de Gerbert*, ep. 130; Juste, *Alchandreana*, 24.

⁴² Juste, *Alchandreana*, 20–23.

⁴³ *Anglo-Saxon Chronicle*, ed. and trans. M. J. Swanton (London: Routledge, 1998), ann. 1, 664, 678, 729, 800, *et passim*. J. D. North, "Medieval Concepts of Celestial Influence: A Survey," in *Astrology, Science and Society, Historical Essays*, ed. P. Curry (Woodbridge: D. S. Brewer, 1987), 5–18.

⁴⁴ McCluskey, *Astronomies and Cultures*, 145–49.

⁴⁵ Juste, *Alchandreana*, 9. On the tenth- and eleventh-century Carolingian renaissance, see Lindgren, *Gerbert von Aurillac*; Riché, *Gerbert d'Aurillac*, 35–56, 80–82; Riché, "Fulbert de Chartres et son école," in *Le temps de Fulbert. Actes de l'Université d'été du 8 au 10 juillet, 1996* (Chartres: Association des amis du Centre médiéval européen, 1996), 27–32; Juste, *Alchandreana*, 24–25.

⁴⁶ Havet, *Lettres de Gerbert*, ep. 24; Juste, *Alchandreana*, 250–53.

Juste's work assertively answers those scholars who have been reluctant to ascribe to Gerbert any familiarity with Arabic scientific texts.⁴⁷ Due to renewed interest in astral science during the tenth century, especially on the part of Gerbert and his circle of students (such as Fulbert of Chartres) and correspondents, monastic and cathedral schools of Francia and Lotharingia were loci of transmission of the *Alchandreana*.⁴⁸ Gerbert, Lupitus, and others emphasized the nobility of astral science as part of the quadrivium.⁴⁹ The perfection and wonder of the cosmos was the clearest example of the glory of divine creation and power, and studying the perfect and invisible spheres prepared the mind to comprehend the perfect and invisible God.

Yet this renewed interest in and promotion of the science of the stars—including prediction—conflicted with centuries of Christian doctrine. Many clerical writers, such as St. Augustine, objected to divination on doctrinal and moral grounds. Augustine had an enormous influence on later Christian attitudes to natural knowledge, including astral science. Celestial observation for timekeeping was necessary and legitimate, but horoscopes and other kinds of prediction violated the doctrine of free will as well as the notion of an omnipotent God.⁵⁰ In *De doctrina Christiana*, Augustine placed idol-worship, divination through demons, charms, and augury into the same category of superstition.⁵¹ According to Augustine, celestial divination was not allowed. “We must not omit from this category of deadly superstition [*mathesi*] the people called *genethliaci* because of their study of natal days, or now in common parlance *mathematici* [astrologers] [*sic*].”⁵² *Mathesi* and *mathematici* can refer to the subjects of the quadrivium, like astral science or mathematics, as well as to divination and augury.⁵³ Indeed,

⁴⁷ Guy Beaujouan, “Les apocryphes mathématiques de Gerbert,” in *Gerberto: Scienza, storia e mito*, 645–58; Poulle, “L’astronomie de Gerbert.”

⁴⁸ Eastwood, “Astronomy in Christian Latin Europe”; Eastwood, “The Astronomies of Pliny, Martianus Capella, and Isidore of Seville in the Carolingian World”; Juste, *Alchandreana*, 258–64.

⁴⁹ Lupitus of Barcelona, *Fragmentum de astrolabio* in José Maria Millás Vallicrosa, *Assaig d’Història de les idees físiques i matemàtiques a la Catalunya Medieval* (Barcelona, 1931), 1:271–75; Borst, *The Ordering of Time*, 54–55; Jaeger, *Envy of Angels*, 172–79; McCluskey, *Astronomies and Cultures*, 175.

⁵⁰ McCluskey, *Astronomies and Cultures*, 32–33, 38–40; Juste, *Alchandreana*, 16–17.

⁵¹ Augustine, *De doctrina Christiana*, ed. and trans. R. P. H. Green (Oxford: Oxford University Press, 1995), 2.20.30–32, 90–93. I have used this edition for both the Latin text and English translation.

⁵² Augustine, *Doctrina.*, 2.22.32, 92–93.

⁵³ F. Blatt et al., eds. *Novum glossarium mediae Latinitatis, 350–1200* (Copenhagen: Munksgaard, 1957–69), s.v. “mathesis.” Cf. Richer, *Historiarum*, 3.43, 192, cited above, n. 8.

Augustine continued, the “the idea of using [the stars] to predict the character and future actions and experiences of the new-born is a great mistake,” as shown by the very different destinies of Jacob and Esau, who were born so close together that distinguishing between their distinct horoscopes would have been impossible. Divination and prophecy, even from the stars, “must be classed among those contracts and agreements made with devils.”⁵⁴ These beliefs and practices, according to Augustine, are forbidden in Scripture and are a direct contravention to divine prerogative, as they negate free will. Clerical mistrust of this knowledge was not uncommon, and the penalty for pursuing an interest in these illicit subjects could be extreme. William of Malmesbury, in the *Gesta pontificum anglorum* (ca. 1125), recounted the story of the death of Gerard of Hereford, Archbishop of York in 1108. Gerard was said to be a student of the black arts, based on his practice of reading Julius Firmicus in private every afternoon and the fact that he died with a “book of curious arts” (*curiosarum artium codicem*) underneath his pillow. The canons at York refused to bury him in the minster, and “would hardly suffer a lowly clod of earth to be thrown on the body outside the gates.”⁵⁵

Before Gerard was the archbishop of York he was the bishop of Hereford, and part of a larger community of learned men in the West Country at the end of the eleventh and start of the twelfth centuries who were interested in astral science.⁵⁶ Walcher, the Lotharingian prior of Great Malvern (not far from Hereford), was a noted abacist and user of the astrolabe. He studied with Peter Alfonsi (1062–1110), a Spanish Christian convert from Judaism, natural philosopher, and physician who came to England in this period.⁵⁷ Walcher likely helped Peter translate the astronomical tables of al-Khwarizmi into Latin.⁵⁸ In 1092 he used an astrolabe to ascertain the elevation of the moon during a lunar eclipse, fixing its time and also the time of the astronomical full moon. This, in turn, allowed him to create a set of

⁵⁴ Augustine, *Doctrina*, 2.22.33–34, 58, 94–97.

⁵⁵ William of Malmesbury, *Gesta pontificum anglorum*, 3.118, ed. and trans. M. Winterbottom and R. Thomson, 2 vols. (Oxford: Oxford University Press, 2007), 1: 394. Burnett, “Mathematics and Astronomy in Hereford and Its Region in the Twelfth Century,” in *Hereford: Medieval Art, Architecture, and Archaeology*, ed. D. Whitehead (Leeds: University of Leeds Press, 1995): 50–59, 50, n. 1; French, “Foretelling the Future,” 458.

⁵⁶ Charles Burnett, “Mathematics and astronomy in Hereford.”

⁵⁷ See Burnett, *The Introduction of Arabic Learning*; Burnett, “The Works of Petrus Alfonsi,” *Medium Aevum* 66 (1997): 42–79; John V. Tolan, *Petrus Alfonsi and his Medieval Readers* (Gainesville: University Press of Florida, 1993).

⁵⁸ Charles Burnett, *The Introduction of Arabic Learning into England* (London: British Library, 1997), 38–39; McCaffrey, *Astrology*, 192–93.

lunar tables that were more accurate than the ecclesiastical ones (based on Bede's treatise), and that gave the exact time and date of each new moon between 1036 and 1111.⁵⁹ Gerard, as noted above, was interested in Firmicus's *Mathesis*. Slightly later, Adelard of Bath traveled to the Dar al-Islam, where he studied Arabic astral science, eventually translating several works on the subject, including prediction and the use of talismans, into Latin from Arabic.⁶⁰

WILLIAM OF MALMESBURY AND GERBERT OF AURILLAC

William of Malmesbury chronicled Gerard's death and Gerbert's divination a few years later, not far from Hereford and Great Malvern. William confirmed many prior accounts that mention Gerbert's education in Spain and reiterated the claim that Gerbert was in league with the Devil, conjoining that with the story of the prophecy and the church where Gerbert fell ill.⁶¹ Although William repeated prior assertions that Gerbert trafficked with the Devil, he did not present Gerbert's oracular head as the product of demonic magic, as Beno had done, but rather as the product of astral science. Furthermore, he referred to specific authors and practices, revealing the extent to which Arabic scientific texts were known in England at that time.

William, who wrote the *Gesta regum anglorum* only a dozen years after Sigebert, introduced a new element to the legends surrounding Gerbert: the link between Gerbert's education and Arabic science. As I noted earlier, Richer, Gerbert's earliest biographer, wrote that, while in Christian Spain, Gerbert studied *mathesis*—which can refer to both mathematics and divination—yet Adhémar of Chabannes stated that he went to al-Andalus

⁵⁹ Park, "Observation in the Margins"; Walcher, *De experientia scriptoris*, Bodleian Library, MS. Auct. F. 1. 9, fols. 86r-99r, partially edited in C. H. Haskins, "The Reception of Arabic Science in England," *English Historical Review* 30 (1915): 56-69, 57; McCluskey, *Astronomies and Cultures*, 180-84.

⁶⁰ Marie-Thérèse Alverny, *La transmission des textes philosophiques et scientifiques au moyen âge* (Aldershot: Ashgate, 1994); Burnett, "Adelard, Ergaphalau, and the Science of the Stars," in *Adelard of Bath*; Burnett, *The Introduction of Arabic Learning into England*.

⁶¹ For William's familiarity with Sigebert's *Chronologium*, see Rodney Thomson, *William of Malmesbury* (Woodbridge: D. S. Brewer, 2003), 123-24. For William's sources more generally, see Monika Otter, *Inventiones: Fiction and Referentiality in Twelfth-Century Historical Writing* (Chapel Hill: University of North Carolina Press), 96-102; Thomson, *William of Malmesbury*, 40-75; 119-36.

(Córdoba) for the sake of knowledge.⁶² William followed Adhémar's account, rather than Richer's, but offered more detail on the kind of knowledge that Gerbert sought. According to William, Gerbert went to Seville, where they "study divination and enchantment, according to their custom."⁶³ The scholars in al-Andalus studied things—old and new—that were unknown in Christian Europe at the time, such as astral science (*astrologiam*), but they also studied things that were more intellectually and morally problematic, like divination (*diuiniatio*) and spells (*incantationes*). More important, however, is that these enterprises are linked to one another. William did not try to downplay the extent of Gerbert's erudition, but as in the passage quoted above, he chose to focus on these broadly overlapping areas: the quadrivium, predictive sciences (such as augury), and necromancy. As William made plain, Gerbert surpassed the ancient authorities, such as Ptolemy, and more contemporary Arabic scholars, such as Alhandreus (the recognized author of part of the *Alchandreana*), on the science of the stars; he mastered relatively new scientific technology—the astrolabe and the abacus—in the latter instance inventing new paradigms for use; he unlocked the language of birds for the purpose of augury; he summoned demons. These areas of knowledge are all linked by their use in foreknowledge and the promise of Seville: "*There* he conquered Ptolemy. . . . *There* he learned what the song and flight of birds portended, *there* he learned to summon ghostly forms from hell, *there* he learned everything that is either harmful or healthful that has been discovered by human curiosity. . . ."⁶⁴ Muslim Spain offered Gerbert ample opportunity to study licit subjects, as well, and William painted Gerbert as a conqueror bringing back intellectual treasure: "recalling those subjects that had long been obsolete" back to the Latin West.⁶⁵

Despite Gerbert's reputation for erudition, especially in the quadrivium, and his role as a teacher, William went into even greater detail about the dark arts of necromancy that Gerbert studied in Spain. He lodged with a Saracen philosopher who "sold his knowledge" and provided Gerbert with books to copy, except for "one volume into which he had written all his art. . . ."⁶⁶ Unable to win his teacher's trust with flattery, promises, or bribes, Gerbert seduced this man's daughter, and persuaded her to help him

⁶² Richer, *Historiarum* 3.43, 191. Adhémar of Chabannes, *Historiarum libre tres*, PL, 141:49.

⁶³ GRA, 2.167, 1: 280.

⁶⁴ *Ibid.*, italics mine.

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

get his teacher drunk and steal the book from under the man's pillow.⁶⁷ Once he had escaped with the book, "he called up the devil with incantations" and agreed to pay homage to the devil forever if the devil would protect him from his teacher's vengeance.⁶⁸ Gerbert broke his vow of chastity, stole from his teacher, and entered into a pact with the devil in order to slake his lust for knowledge. In the century after his death, Gerbert went from an intellectually gifted and inquisitive youth whose intellect was fostered and encouraged by powerful ecclesiastical and secular lords to an impious monk who "fled" to un-Christian Spain in order to study dangerous subjects in an attempt to satiate his yearning for glory.

Once Gerbert had mastered the dark arts contained in his teacher's *grimoire*, he had few scruples about using this intellectually and morally abhorrent wisdom for personal gain. His elevation to the bishopric of Ravenna and the papacy were a direct result of his unholy contract, as "he pressed for his own preferment with the assistance of the devil."⁶⁹ Not satisfied with gaining mere power, Gerbert also used his diabolical knowledge to attain personal wealth, using his "necromantic arts" to unearth buried treasure.⁷⁰

Yet it was not diabolical knowledge that led to Gerbert's death, but rather his inability to interpret accurately the oracular head he made using astral science. When describing the final reckoning, William repeated Beno's account. Gerbert asked the head, "Shall I die before I sing Mass in Jerusalem?" The head replied that he would not. But Gerbert forgot that there was a church in Rome nicknamed Jerusalem, and sickened after celebrating Mass in this church. On his deathbed he lamented his daily sins and "went insane and, out of his mind with pain, he ordered that he should be cut into small pieces and violently cast out. 'Let him have the service of my members who sought their obedience; my soul never accepted that oath of sacrament, nay, rather, sacrilege.'"⁷¹ It is interesting that William ascribed the creation of the oracular head to fairly technical astral phenomena because Gerbert was, according to William, equally adept in the quadrivium, the mechanical arts, and in necromancy and augury. The explicit mention of careful scientific observation (*certa inspectione siderum*) and implied

⁶⁷ *Ibid.*, 1: 282.

⁶⁸ *Ibid.*

⁶⁹ *GRA*, 2.168, 1: 284.

⁷⁰ *Ibid.*

⁷¹ *GRA*, 2.172, 1: 294. See William of Malmesbury, *Gesta regum anglorum*, ed. William Stubbs, 2 vols. (London: Rolls Series, 1887), 1: li; 2: lxxiii-iv; Rollo, *Glamorous Sorcery*, 11-12.

expert knowledge (being able to ascertain “when all the planets were beginning their paths again”) signifies Gerbert’s erudition in astral science. There is no mention of necromancy or demonic assistance. It is possible that the “planets beginning their paths again” is an elliptical way of referring to the Great Year, related to the precession of the equinoxes, the phenomenon that explains the apparent movement of the fixed stars from west to east, counter to their movement across the ecliptic, and relative to the equinoxes. In the medieval period, it was thought that the fixed stars returned to their starting point every 26,000, 30,000, or 36,000 years. It is equally possible that William’s phrase is a notation that the planets were returning to their positions at the moment of creation. Either way, this moment was extremely potent, and it was believed that this rare occurrence could have extraordinary effects on the sublunary realm.⁷² Yet, as William makes plain, celestial divination was still morally problematic, given its roots in un-Christian knowledge and the Arabic world.

In William’s view, divination could result from celestial knowledge, and he emphasized this part of the quadrivium in his account of Gerbert’s erudition: the astrolabe, the positions of the stars, and divination. His description of Gerbert’s acquisition of new knowledge in Spain strikingly reflects the contents of a manuscript from the middle of the eleventh century. The old corpus on the astrolabe, the *Mathesis* of Julius Firmicus, and the *Alchandreana* appear in MS Munich, BSB, Clm 560.⁷³ Rodney Thomson has published a list of works that William knew directly; it contains several texts on celestial science, including works on the astrolabe and the abacus, some of which were ascribed to Gerbert, among many more works of history, biblical commentary, theology, and hagiography.⁷⁴ Even though there is no copy of all the works that William named, it seems likely that his examples derive from MS Munich, BSB, Clm 560. Additionally, Walcher, an acquaintance of William, may have introduced him to astral treatises and new scientific concepts.⁷⁵ Thus, William knew that a number of Latin texts on astral science (including celestial prediction) had been translated from Arabic and contained information about how to read the stars and foretell the future. He linked Gerbert’s reputation for mastery of mathematical sciences with Adhémar’s mistaken account of Gerbert’s sojourn in al-Andalus. And, as I noted earlier, William not only asserted that Gerbert

⁷² North, “Medieval Concepts of Celestial Influence.”

⁷³ Juste, *Alchandreana*, 254, 340–41.

⁷⁴ Thomson, *William of Malmesbury*, 202–14.

⁷⁵ Stubbs, 2: lxx.

studied in Seville, but that he studied these subjects with a Saracen teacher, and brought this knowledge back to the Latin West. Previous scholars have noted that William is the earliest writer to credit Gerbert with importing Arabic science into England, or indeed, Europe.⁷⁶

CONCLUSION

The emphasis on Gerbert's celestial erudition and specialized knowledge to create a prophetic head demonstrates that William was familiar with new and fairly technical astral science, and understood it as a less problematic method of divination than necromancy or augury. Although William is known for his work as a historian, it appears that he was also aware of ideas and texts from the quadrivium. He concluded that Gerbert's extensive knowledge gave him the tools (if not the understanding) to predict the future, which, prior to William's account, required demonic intervention. Gerbert, in William's portrayal, is a complicated figure. He is neither the wise, pious scholar depicted by Richer, Pope John XVIII, and Helgaud of Fleury, nor is he the wicked Faustian figure Beno and Sigebert claimed him to be. Instead, in the *Gesta*, Gerbert comes across as a gifted scholar with a prodigious intellect, who ultimately succumbed to intellectual, sexual, and material concupiscence. Given Gerbert's peerless erudition during his lifetime, especially in the tenth-century quadrivium, it is unsurprising that William grafted the early twelfth-century quadrivium onto earlier accounts of Gerbert's towering intellect and fluency in strange and new subjects, in much the same way that authors of romances recounted tales of the ancient past, updating them with twelfth-century concepts and terminology in order to resonate with contemporary audiences.⁷⁷ Beno viewed Gerbert's efforts at divination as the clear result of diabolical magic, while William emphasized that Gerbert's oracular automaton was animated by the science of the stars. The tale of Gerbert's talking head in the *Gesta* signals a shift in thinking about divination and its place within the quadrivium among the scholars of the West Country of England in the early twelfth century. Wil-

⁷⁶ Professor Charles Burnett, cited as a personal communication in *GRA*, 2:151. On William's openness to contact with Judaism and Islam, see Thomson, *William of Malmesbury*, 168–77.

⁷⁷ Otter, *Inventiones*; Douglas Kelley, *The Art of Medieval French Romance* (Madison: University of Wisconsin Press, 1992); Renate Blumenfeld-Kosinski, *Reading Myth: Classical Mythology and Its Interpretation in Medieval French Literature* (Stanford, Calif.: Stanford University Press, 1997).

liam wrote popular history for a courtly audience, and his version of Gerbert's legend was read and heard by the Anglo-Norman court. It seems that his version of Gerbert's head made an impression. Twenty-five years later, John of Salisbury, courtier, scholar, and bishop of Chartres, spoke out against divination and astrology in his *Policraticus* (1154). Some people were so misguided "they say that it is possible to form an image under the position of certain constellations, and which might be formed . . . so that it would receive the spirit of life at the nod of the stars and will reveal the secrets of hidden truth."⁷⁸ Indeed. Yet, despite John's repudiation of such knowledge, the lure of creating a prophetic statue endured for centuries, and Gerbert's dubious accomplishment was later attributed to Albertus Magnus, Roger Bacon, as well as Hermetic philosophers during the Renaissance.

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⁷⁸ John of Salisbury, *Policraticus, sive nugis curialium et vestigiis philosophorum, libri VIII* 2.19, ed. C. Webb, 2 vols. (Oxford: Clarendon Press, 1909), 1:112.