John Willinsky, <u>*The Intellectual Properties of Learning: A Prehistory from Saint Jerome to John Locke*</u> (Chicago: University of Chicago Press, 2018).

# OPEN ACCESS FINAL DRAFT

# Chapter Six The Translation Movements of Islamic Learning

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#### Chapter 6

## The Translation Movements of Islamic Learning

In the year 967, the young monk Gerbert d'Aurillac left his abbey in the south of France to set off on an adventuresome journey across the Pyrenees into Catalonia. Gerbert was on his way to the cathedral school of Vic. He had been invited to study with Bishop Atto in light of his mathematical gifts. During his three years in Vic, he appears to have been one of the first Europeans to examine in any depth a series of Arabic works in astronomy, astrology, and mathematics, as well as an Arabic astrolabe (or armillary sphere, which had its origins in ancient Greece) and an abacus (originally from China). He was likely guided in these encounters by local Muslim scholars. Vic fell within the shifting contact zones among Christians, Muslims, and Jews on the Iberian Peninsula during the centuries-long Christian Reconquista, which was aimed at taking back the region from the Islamic caliphate that had been established there in the eighth century.

In his later writings, Gerbert makes no reference to Arabic works or Muslim scholars. Still, distinct traces of such learning can be found in his teaching at the cathedral school in Rheims. For example, he shared with his students an abacus designed with Hindu numerals and an astrolabe that was clearly of Arabic design.<sup>1</sup> Gerbert's instructional use of these instruments, in the years leading up to his election as Pope Sylvester II, contributed to his reputation of being not just a masterful teacher but, as one thirteenth-century writer had it, "the best necromancer in France, whom the demons of

<sup>&</sup>lt;sup>1</sup> The oldest known Arabic text on the astrolabe, from the mid-ninth century, is by Ahmad Ibn Muhammad al-Farghānī, which can be viewed online at the Qatar Digital Library.

the air readily obeyed."<sup>2</sup> An odd ascription for a pope, to be sure. But how could it be otherwise? Gerbert had stumbled into a mysterious and suspect world of ideas that lay beyond the confines of Christendom. Hindu numerals, for example, were indeed used for rites of divination and astrology in the medieval Islamic empire. Yet this demonic abacus proved an exceptionally useful teaching aid for those learning mathematics. In demonstrating the value of the Hindu number system in calculating and computing, Gerbert contributed to its spread through the West.

The poet and translator Helen Waddell judges Gerbert to be "not the first wandering scholar, but... the most famous," in her study of this medieval archetype.<sup>3</sup> The wandering scholar – known as *vagantes* in Latin – as well as the wandering monk, poet, and Jew, were common types of the time, and also not in a good sense, as in our word *vagrant*. Gerbert, however, strikes me as belonging to a different order. He did not so much wander as deliberately set out for a spot that he knew would advance his learning. If he wandered into entirely unexpected regions of mathematics at Vic, he was still very much on target in terms of his destination. In this, he was a prototype, if not a likely model for a medieval action figure.

Following Gerbert, many an intrepid scholar set off from the Christian West in a similarly determined pursuit of what soon became the legendary manuscripts and artifacts of the Islamic Empire. These adventurers sought instances from the great storehouse of Arabic learning that was known to include or represent Islamic, Greek, Persian, Indian, Chinese, Christian, or Jewish sources. On coming upon such works, often found in the contact zones among religions and cultures, many were fortunate enough to be able to

<sup>&</sup>lt;sup>2</sup> Cited by Charles Burnett, "The Translating Activity in Medieval Spain," in *The Legacy of Muslim Spain*, ed. Salma Khadra Jayyusi (Leiden: Brill, 1992), 1038.

<sup>&</sup>lt;sup>3</sup> Helen Waddell, *The Wandering Scholars of the Middle Ages* (London: Constable, 1927), 73.

collaborate with local Muslims, Mozarabs (Arabic-speaking Christians), and Jews to translate the Arabic text into Latin.

After the learned in the West had worked for many centuries with a relatively enclosed and self-contained body of texts, this form of medieval manuscript-tourism exposed Europe to a wave of new learning from other lands, languages, and traditions during the twelfth and thirteenth centuries. As more and more Arabic texts were translated, copied, and spread through Europe, it amounted to a Latin translation movement, one that would alter the shape and direction of learning in Europe.

Such a consequential movement of learning across languages was not without precedent. Four centuries earlier, Islamic scholars had similarly engaged in translating a great variety of Greek, Persian, Hindu, and Hebrew texts into Arabic. Opening access to this array of works had led to a great blossoming of learning across the Islamic Empire. The West was to benefit from the combined effects of the Arabic translations and the subsequent scholarly engagement by Islamic thinkers with these works from the eighth to the twelfth centuries.

The two related translation movements hold their own set of lessons on the intellectual properties of learning. What must first be noted is that the West's great indebtedness to this era of Arabic learning has long been underplayed in European histories of the period. <sup>4</sup> This would seem to reflect some of the "natural" limits of

<sup>&</sup>lt;sup>4</sup> Charles Homer Haskins exemplifies the belittlement of the Islamic contribution to the West: "Between 1100 and 1200, however, there came a great influx of new knowledge into western Europe partly through Italy and Sicily, but chiefly through the Arab scholars of Spain – the works of Aristotle, Euclid, Ptolemy, and the Greek physicians, the new arithmetic, and those texts of Roman law which lay hidden through the Dark Ages"; *The Rise of the Universities* (Ithaca: Cornell University Press, 1923), 4-5. More recently, Toby E. Huff addresses "The Problem of Arabic Science," which includes, despite its advancements, "the failure of Arabic science to give birth to modern science," and its "apparent decline and retrogression"; *The Rise of Early Modern Science: Islam, China, and the West*, 2<sup>nd</sup> ed. (Cambridge: Cambridge University Press, 2003), 47.

scholarship's autonomy, when it comes to rising above the ethnocentric prejudices of its time and place. A second point is how each of these translation movements point to the dramatic difference that access to learning can make across languages and cultures. To open great swaths of learning from other traditions to scholars over the course of a century or two not only proves immensely productive, but as I'll go on to show, can garner much support from court and public. Then, at the level of the works themselves, at least one of the titles translated across both movements, namely Aristotle's *On the Soul (De anima)*, speaks directly, as I will also discuss below, to intellectual properties of learning. Much thought was given in commentary and original work on this theme to what is common and what is individual in intellectual labor, raising germane questions on the ownership of ideas, as well as taking responsibility for them. As such, these Arabic and Latin translation movements from the eighth to twelfth centuries, followed by the wave of Latin translations in the twelfth and thirteen centuries.

Now, I realize that my efforts to credit Islamic developments and contributions that have been slighted in the West still demonstrates a certain eurocentricity. My focus is, after all, on how this Islamic history served the Western course of learning. As part of that, I use the Latinized names by which Islamic scholars became known in the medieval West and a Christian dating of Islamic history. Allowing for one historical correction at a time, my purpose here is to ensure that a history of learning in the West credits the full intellectual force of Islam involving issues of intellectual property creation, access, and use. What comes of it all is dealt with in the next chapter, which attempts to show how the cumulative intellectual force of these movements contributed to the emergence of the medieval university.

### The Abbasid Caliphate's Revival of Learning

The first section of this chapter is taken up with the Abbasid caliphate of the Islamic Empire, which was established by al-Saffāh in 750. This occurred after decades of rebellion against the ruling Umayyad family, and it led to establishing a caliphate that was to rule from the eighth until the sixteenth century. Al-Saffāh was proclaimed Abbasid's first caliph (with the Abbasid name assumed because of al-Saffāh's relation to Muhammad through the prophet's uncle Abbās). The Abbasid caliphate, which was to stretch from India to the Iberian Peninsula, ushered in an era of relative wealth and stability, thanks in good part to the improved farming techniques imported from India. A number of Abbasid caliphs took advantage of this prosperity to become great patrons of learning. They sponsored the importing of more than agricultural innovations, favoring those who were ready to learn from the practical, technical, and scientific works to be found in Greece, Persia, and India.<sup>5</sup> In the latter half of the eighth century, for example, the second Abbasid caliph, al-Mansur, supported the introduction of the Hindu numerical system into Arabic (which was to later fascinate Gerbert d'Aurillac). It was al-Mansur, and his son al-Mahdi, who together ruled from 754 to 785, who could be said to have initiated the Arabic translation movement that defined Islamic learning during this period.

<sup>&</sup>lt;sup>5</sup> Bernard Lewis observes that "according to the Arab tradition ... [the translations began] at the turn of the seventh-eighth centuries... [with] some Greek writings on alchemy," while noting that "there was no attempt to translate Greek poetry, drama, or history"; *The Muslim Discovery of Europe* (New York: Norton, 1982), 73, 75. Many of the works, including those by Aristotle and other Greek writers, were initially translated into Syriac by Eastern Christian scholars and then rendered in Arabic; F. E. Peters, *Aristotle and the Arabs: The Aristotelian Tradition in Islam* (New York: New York University Press, 1968), 38-39.

As later told by the fourteenth-century Islamic historian, Ibn Khaldun, this initial translation movement might be said to have begun with a gift of Euclid. Al-Mansur had apparently "sent [a request] to the Byzantine emperor" Ibn Khaldun writes, "and asked him to send him translations of mathematical works. The Emperor sent him Euclid's book and some works on mathematics."<sup>6</sup> Inspired by this start, al-Mansur went on, according to earlier historians, to acquire Aristotle's work on logic and Ptolemy's Almagest with an eye to having these translated into Arabic, as well as seeking out works in Syriac and Persian, including some that had originated in China and India. Not only were diplomatic requests for books made to other kingdoms, books would also roughly be taken as the booty of war.<sup>7</sup> Such expressions of court interest in learning led to multilingual scholars travelling throughout the Byzantine and Islamic empires, contributing to the discovery and acquisition of manuscripts by Aristotle, Plato, Euclid, Galen, Ptolemy, and many other lesser known authors.<sup>8</sup> The list of subjects translated from Greek alone extended from agriculture and alchemy to veterinary science and zoology.<sup>9</sup>

Al-Mansur sought to build Baghdad into the political and cultural capital of his empire. He set a grand palace at the center of the city in a complex that is said to be the site of the legendary House of Wisdom (*Bayt al-hikma*). Although few details have

<sup>&</sup>lt;sup>6</sup> Ibn Khaldūn, *The Muqaddimah: An Introduction to History*, trans. Franz Rosenthal (Princeton: Princeton University Press, 1969), 374.

<sup>&</sup>lt;sup>7</sup> L. E. Goodman, "The Translation of Greek Materials into Arabic," 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, 2006), 482. Goodman: "What was sought was what was useful, but the concept of the useful was itself enlarged" and could include efforts to "complete an author's canon or support the growth of a science"; ibid., 479, 483.

<sup>&</sup>lt;sup>8</sup> Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement In Baghdad* and Early 'Abbasid Society (2nd-4th/8th-10th Centuries) (London: Routledge, 1998), 15-16. Fredrick S. Starr, *Lost Enlightenment: Central Asia's Golden Age from the Arab Conquest to Tamerlane*, (Princeton: Princeton University Press, 2013), 156.

<sup>&</sup>lt;sup>9</sup> Gutas, Greek Thought, Arabic Culture, 193-96.

survived, it appears that the House of Wisdom was home to a truly magnificent royal library in a city of libraries; it was also a center for translating Persian and other works into Arabic.<sup>10</sup> Sponsored libraries were the hallmark of Islamic learning during Abbasid caliphate not just in Baghdad but in various centers across the empire. Their wealthy patrons would at times provide these libraries with an endowment (*wakf*) for what might be called wandering scholar fellowships: "When a stranger came to [the library] seeking culture," as one description from the time had it, "if he happened to be in financial straits," the head of the library "gave him paper and money."<sup>11</sup>

The circulation of scholars and works among these libraries was also facilitated by a desert highway and postal system that the caliphs developed and maintained across the far reaches of the empire. Learning and libraries were also aided at the time by new ways to manufacture cheap, improved paper from flax and linen (compared to papyrus). The technique was gleaned, as legend has it, from the Chinese prisoners that the Abbasid forces captured at the battle of Talas in 751 against the Tang Dynasty.<sup>12</sup>

The Abbasid caliphs seemed to make it their mission to follow the precept, "seek knowledge even as far as China," attributed to the Prophet Muhammad.<sup>13</sup> There were undoubtedly political motives at play in the caliphs' interests in what could be learned, for example, from astrology, and there are indications that they viewed translation as a

<sup>&</sup>lt;sup>10</sup> George Makdisi, *The Rise of Colleges: Institutions of Learning in Islam and the West* (Edinburgh: Edinburgh University Press, 1981), 24-26. Gutas demonstrates that it was neither academy nor conference center: *Greek Thought, Arab Culture*, 59.

<sup>&</sup>lt;sup>11</sup> Cited by Makdisi, *The Rise of Colleges*, 26.

<sup>&</sup>lt;sup>12</sup> Jonathan M. Bloom, *Paper Before Print: The History and Impact of Paper on the Islamic World* (New Haven: Yale University Press, 2001), 42. China developed paper in the second century; ibid., 32.

<sup>&</sup>lt;sup>13</sup> Mark Halstead, "An Islamic Concept of Education," Comparative Education 40, no. 4 (2004), 521.

tool of intellectual conquest in empire-building.<sup>14</sup> But then the caliphs also supported importing works on astronomy to increase the accuracy of prayer times, the direction of Mecca, and the beginning of Ramadan.<sup>15</sup> The sheer range of interests facilitated a greater openness and tolerance toward Jews, Christians, and others who could assist in this intellectual acquisitiveness. While Arabic provided the Islamic Empire with linguistic unity, the Empire still represented a culturally and intellectually diverse region, dominated by Islam, but still marked by an openness to Hellenic philosophy, Hindu mathematics, Jewish astrology, and Nestorian Christian theology.

The Hellenized Christians in Syria and the Nestorian monks in Iraq, for example, had fled Byzantine persecution, with its eschewal of Greek paganism, and were thus in a good position to traffic in and translate Greek texts, as well as works in Persian and Hindi into Syriac and Arabic.<sup>16</sup> Foremost among these translators was the ninth-century Nestorian Christian Hunayn, a master of Arabic, Greek, Persian, and Syriac. Working with his son Ishak, they established a new standard for translation by consulting and collating various editions of a work in its original language in the process of translating it. Hunayn did not leave off with the translation of a work but went on to extend and build

<sup>&</sup>lt;sup>14</sup> Gutas, *Greek Thought, Arabic Culture*, 29-60. Gutas points to how the translation movement, as it represented the "recovery" of an ancient glory to bolster empire, was supported by "the highest posts of the administration"; ibid., 54.

<sup>&</sup>lt;sup>15</sup> F. Jamil Ragep and Alī al-Qūshjī, "Freeing Astronomy from Philosophy: An Aspect of Islamic Influence on Science," *Osiris* 16, 2nd Series (2001), 50-51.

<sup>&</sup>lt;sup>16</sup> Dimitri Gutas writes of how in late antiquity "philosophy died a lingering death before Islam appeared," while by the seventh and eighth "centuries – during, that is, the Iconoclastic controversy in Byzantium and the so-called 'Dark Ages' – philosophical treatises were not even copied, let alone composed"; "Origins in Baghdad," in *The Cambridge History of Medieval Philosophy*, ed. Robert Pasnau (Cambridge University Press, 2014), 11. He concludes that "Arabic philosophy internationalized Greek philosophy, and through its success it demonstrated to world culture that philosophy is a supranational enterprise. This, it seems, is what makes the transplantation and development of philosophy in other languages and cultures throughout the Middle Ages historically possible and intelligible"; ibid., 23. Jerrilynn D. Dodds, María Rosa Menocal, and Abigail Krasner Balbale point out how Christians had earlier shunned these same Greek works in Rome and Constantinople; *The Arts of Intimacy: Christians, Jews, and Muslims in the Making of Castilian Culture* (New Haven: Yale University Press, 2008), 206.

upon it. He followed his translation of Galen, for example, with his own medical treatises based on the Greek physician's work. Their work contributed to the mix of Greek, Syrian, Persian, and Jewish traditions in medicine that flourished in Gunde<u>sh</u>āpūr, not far from Baghdad, during the ninth century.<sup>17</sup>

Al-Ma'mun, the seventh caliph of Abbasidm during the first half of the ninth century, was another of the great cultural leaders in this translation movement. The large cadre of translators, tutors, physicians, and advisors, whom al-Ma'mun employed, worked on topics in mathematics, astronomy, astrology, and philosophy. They held what were, in effect, conferences that brought together still other learned figures for meetings in al-Ma'mun's palace.<sup>18</sup> These scholars were assisted by various caliphate officials who prided themselves on contributing their own translations to the pool or on commissioning translations of learned and literary works.<sup>19</sup> The caliph himself is said to have composed treatises in medicine and agriculture. Al-Ma'mun also saw to the building of observatories for studying the heavens, with one constructed just outside Baghdad and

<sup>&</sup>lt;sup>17</sup> Peter Adamson, "Al-Kindī and the reception of Greek Philosophy," in *The Cambridge Companion to Arabic Philosophy*, eds. Peter Adamson and Richard C. Taylor (Cambridge: Cambridge University Press, 2005), 3. Similarly, in Alexandria, the medical community had its scholars working on translating Aristotle and Galen into Arabic; Jacob Lassner, *Jews, Christians, and the Abode of Islam: Modern Scholarship, Medieval Realities* (Chicago: University of Chicago, 2012), 264.

<sup>&</sup>lt;sup>18</sup> Al-Ma'mūn is reported to have dreamt of meeting Aristotle and discussing the *good* with him, with different versions in circulation, at least one of which signals the triumph of Aristotle in Arabic philosophy; Gutas, *Greek Thought, Arab Culture*, 97-104. Compare this to Saint Jerome's dream, discussed in Chapter 2, warning him against his love of Cicero. Later caliphs, during the ninth century, such as Ja'far al-Mutawakkil, withdrew their support from learning, Jacob Lassner points out, and placed restrictions on Jews and Christians: "Nevertheless, the legacy of ancient learning lived on," Lassner concludes, "particularly the more practical aspects that found favor with rulers and important notables"; *Jews, Christians*, 268.

<sup>&</sup>lt;sup>19</sup> George Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge: MIT Press, 2007), 58-62. Gutas in reference to the commissioning of translations: "The translation movement made intellectuals, in broad terms, out of all members of the ruling elite"; *Greek Thought, Arab Culture*, 124-25.

another near Damascus, earning him, a millennium later, the honor of having a crater on the moon named after him.<sup>20</sup>

The Baghdad polymath al-Kindi was among the most distinguished scholars of the period. Al-Kindi led a circle of scholars and translators who introduced a more fluid and interpretative set of translations into Arabic. These works included Aristotle's *Metaphysics, Meteorology, On the Heavens,* and a compendium of *On the Soul,* as well as Platonic dialogues and other works.<sup>21</sup> "Al-Kindi's output was vast," Peter Adamson, historian of philosophy at Ludwig Maximillian University of Munich, has written, "A list of his work shows that he wrote hundreds of treatises in a startling array of fields, ranging from metaphysics, ethics, and psychology (i.e., the study of the soul), to medicine, mathematics, astronomy, and optics, and further afield to more practical topics like perfumes and swords."<sup>22</sup> Alas, these works are largely known only through others' reference to them.<sup>23</sup>

What has remained of his work speaks to al-Kindi's intellectual brashness and determination: "We wish to complete the mathematics," he wrote in his work on optics, to "increase that which [the ancients] began and in which there are for us opportunities of attaining all the goods of the soul."<sup>24</sup> Much indebted to Euclid's *Elements* and *Optics*, al-Kindi's reference to the (intangible) goods of the soul suggests, in my reading, a

<sup>&</sup>lt;sup>20</sup> A crater on the moon was named Almanon in the 1930s to honor al-Ma'mūn's support for astronomical observations.

<sup>&</sup>lt;sup>21</sup> Gutas, *Greek Thought, Arab Culture*, 145. Gutas identifies seven stylistic cues that make such translation identifications possible; ibid., 146.

<sup>&</sup>lt;sup>22</sup> Peter Adamson, "Al-Kindī and the reception of Greek Philosophy," in *The Cambridge Companion to Arabic Philosophy*, eds. Peter Adamson and Richard C. Taylor (Cambridge: Cambridge University Press, 2005), 33.

<sup>&</sup>lt;sup>23</sup> Ibid.

<sup>&</sup>lt;sup>24</sup> Cited by D. M. Dunlop, *Arab Civilization to A.D. 1500* (New York: Praeger, 1971), 228. Bennison also reports that court intrigue led to the caliph al-Mutawakkil having al-Kindī beaten and his library confiscated, with others eventually negotiating its return to him; *Great Caliphs*, 191.

conception of mathematics as a body of work resulting from the labor of scholars from different traditions. As he writes in *On First Philosophy*, "we should not be ashamed to recognize truth and assimilate it, from whatever quarter it may reach us."<sup>25</sup> More than that, al-Kindi advises the Islamic scholars on whose behalf he speaks – in his use of we – to labor over what he clearly sees as a body of work held in common. This right of access is marked by the responsibilities of learning – "to complete the mathematics" – whether that completion involved tidying up loose ends, assimilating Greek and Hindi mathematical traditions, or something far greater.

Al-Kindi's ideas about these goods of the soul also reflect his wrestling with the concept of the intellect that Aristotle developed in *On the Soul*. Aristotle's book was the center of much commentary on the nature of intellect and intellectual work, not only for al-Kindi but for the Islamic philosophers Alfarabi, Avicenna, and Averroes who followed him. And it is this thread that I want to follow (if not in all of the overwhelming intricacies of the multiple intellects interacting in their philosophies) as they employed a concept of intellect to establish the nature of learning and the contribution of the learned. These Islamic scholars appear to be responding to Aristotle throwing down a gauntlet of philosophical difficulties invoked by thinking about the nature of thought.

"That part of the soul," writes Aristotle in *On the Soul*, "then that is called intellect (by which I mean that whereby the soul thinks and supposes) is before it thinks in actuality none of the things that exist."<sup>26</sup> He further illustrates the intellect's state of readiness "before it thinks" with the analogy of a tablet awaiting someone to use it to

<sup>&</sup>lt;sup>25</sup> Cited by Al-Khalili, *House of Wisdom*, 132. Charles Burnett notes that the first of al-Kindi's works to be translated into Latin, by Robert of Ketton, was his *Forty Chapters* on astrology; "Al-Kindī, Latin Translations of," *Encyclopedia of Medieval Philosophy: Philosophy Between 500-1500*, ed. Henrik Lagerlund (Dordrecht: Springer, 2011), 676.

<sup>&</sup>lt;sup>26</sup> Aristotle, *De Anima (On the Soul)*, trans. Hugh Lawson-Tancred (London: Penguin, 1986), 3.4.429a 202.

express ideas: "The intellect is in a way potentially the objects of thought, but nothing in actuality before it thinks, and the potentiality is like that of the tablet on which nothing is actually written."<sup>27</sup> Thought may seem to arise out of nothing, within this potential intellect, but is prompted, for Aristotle, by an external, active intellect: "An intellect characterized by that to bring all things about, and to bring them about in just the way that a state, like light, does. (For in a way, light also *makes* things that are potentially colors, colors in actuality.) Now this latter intellect is separate, unaffected and unmixed, being in substance activity."<sup>28</sup> Thus, the external active intellect allows ideas to be perceived, worked on, and expounded by shining a light on what has yet to be revealed within the passive intellect. In Aristotle's thinking, the active intellect is not the source of ideas, but the means of illuminating potential ideas and gaining insight from them.

For my purposes, al-Kindi's contribution to this tradition comes from taking up Aristotle's notion of the intellect as a blank tablet: "[The soul] makes it apparent so that it will exist for others as something that comes from it," al-Kindi writes, "[This is] like writing in the writer: it belongs [to the writer] as a possible disposition that he obtained and that is established in his soul, after which he brings it into action and uses it whenever he wants."<sup>29</sup> This interest in using the intellect is what defines a thinker. The thinker then needs to act on this disposition by, say, setting down thoughts in a text to be shared with others. This is the form of "intellect that appears from the soul whenever it brings it into action," al-Kindi continues, "at which point it is something that exists for

<sup>&</sup>lt;sup>27</sup> Ibid., 3.4.429b 203. Herbert A. Davidson: "The most intensely studied sentences in the history of philosophy are probably those in Aristotle's *De anima* that undertake to explain how the human intellect passes from its original state, in which it does not think, to a subsequent state, in which it does"; *Alfarabi, Avicenna, and Averroes on Intellect: Their Cosmologies, Theories of the Active Intellect, and Theories of Human Intellect* (Oxford: Oxford University Press, 1992), 3.

<sup>&</sup>lt;sup>28</sup> Aristotle, *De Anima (On the Soul)*, 3.5.430a10 204-205.

<sup>&</sup>lt;sup>29</sup> Al-Kindī, "On the Intellect," in *Classical Arabic Philosophy: An Anthology of Sources*, eds. Jon McGinnis and David C. Reisman (Indianapolis: Hackett, 2007), 18.

others as something coming from it actually."<sup>30</sup> What originally comes to the soul is something universal and available to all, to restate al-Kindi, while what the intellect makes of the original concept belongs to the writer, even as it is intended for others. In other words, the human intellect works with what is given in common to create something distinctive for the benefit of others. This is a familiar pattern for the intellectual properties of learning reviewed in this book, if with many variations.

Although the eclectic al-Kindi and his circle did much to further access to learning from near and far, he also understood this work to be in the service of those in power. He dedicated his works to the caliph and the caliph's son, whom he may have tutored.<sup>31</sup> He worked out a genealogy that made Muslims the descendants of the ancient Greeks, and Islam the rightful heir of both Greek science and earlier Mediterranean empires.<sup>32</sup> Al-Kindi was exercising his own intellectual acts of aggression in the border skirmishes with the Byzantium Empire (while the West would later recast this Greek genealogy as its own). Yet it also needs to be made clear that al-Kindi's thought was a matter of high culture, rather than something that pervaded Islam and the empire as a whole. He may well have had the support of the caliph, but the empire's religious schools were not noticeably influenced by his work on Aristotle or on Islamic theology, even as he left his mark on Islamic learning.<sup>33</sup>

What followed from the interpretative translations and syntheses of al-Kindi's circle was a great wave of commentaries on the works of Aristotle, as if the Greek

<sup>&</sup>lt;sup>30</sup> Ibid.

<sup>&</sup>lt;sup>31</sup> Zimmermann, "Al-Kindī," 364.

<sup>&</sup>lt;sup>32</sup> Gutas, *Greek Thought, Arab Culture*, 88. Gutas on the imperial translation mission: "The moral is thus there for everybody to draw… the superiority of Islam over Christianity in this context, therefore, is solely based on the Muslim acceptance of the fruits of the translation movement"; ibid.

<sup>&</sup>lt;sup>33</sup> Peters, Aristotle and the Arabs, xxiii; Zimmerman, "Al-Kindī," 368-69.

philosopher was the light that effectively illuminated and sparked others' potential intellect. The commentary is the most academic of genres. It is a work that painstakingly and explicitly works with each of the intellectual qualities of its subject text. The commentary leaves little doubt that its subject text is a distinct property to which the commentator has complete access rights, in assessing its value and accrediting the achievement of its author. As such, a commentary's title might advertise itself in this way: *The Philosophy of Aristotle, the Parts of his Philosophy, the Rank Order of its Parts, the Position from which He Started and the One He Reached.*<sup>34</sup> This tenth-century commentary is by Alfarabi. Alfarabi was a Muslim scholar who had trained with a Syrian Christian cleric. He was counted among the largely Christian collection of philosophers known as the Baghdad Peripatetics, in light of their adherence to Aristotle.

Alfarabi went on to earn a reputation as the "second teacher" or "second master," which is to say, second to Aristotle. He was regarded in this way not only for his philosophy but for this effort to teach humankind about the nature of the world. He was committed to furthering, as he put it, "the *principles of instruction*.. through which the student is led to the certain truth about what he seeks to know."<sup>35</sup> This is from a work that students must have found promisingly entitled as *The Attainment of Happiness*. It sets out how the "theoretical virtues" and "deliberative virtues" are the means "through which nations and citizens of cities attain earthly happiness in this life and supreme happiness in the life beyond."<sup>36</sup> Alfarabi was to turn these theoretical virtues, which are to be found

<sup>&</sup>lt;sup>34</sup> Alfarabi, *Philosophy of Plato and Aristotle*, trans. Muhsin Mahdi (Ithaca: Cornell University Press, 1962), 71.

<sup>&</sup>lt;sup>35</sup> Ibid., 14

<sup>&</sup>lt;sup>36</sup> Ibid., 13.

everywhere in Aristotle's work, into a program of study within Islam.<sup>37</sup> "Therefore, Aristotle saw fit to make known at the outset," Alfarabi writes in the commentary cited above, "what the certain science is, how many classes it has, in which subjects it exists, how it exists, and by what and from what it exists in every question."<sup>38</sup> Alfarabi continues classifying the sciences in this paragraph, until he finally arrives at "the art... from which the power of all the classes of ways of instruction proceeds."<sup>39</sup> It is ultimately the art of teaching of Aristotle that Alfarabi's commentaries cultivate. He did much to ensure that the Greek peripatetic philosopher became a mainstay of medieval higher learning, first among Muslim scholars and then, centuries later, within the medieval universities of Christianity.<sup>40</sup>

Although Alfarabi took on the breadth of Aristotle's work available in the Islamic Empire at the time, the commentary he offered on the philosopher's *On the Soul* is, again, what bears directly on my theme. Alfarabi extends al-Kindi's Neoplatonic treatment by casting the first and active intellect as a finite and fixed body of knowledge, representing a singular truth, that existed in an incorporeal state apart from humanity. He writes that the active intellect is the source of "the first intelligible thoughts common to all men, such as [the principle] that the whole is greater than the parts."<sup>41</sup> Using their Aristotelian tablets, the learned work on articulating, accumulating, possessing, and sharing these thoughts that are at least potentially common to all. "Excellent discernment" Alfarabi

<sup>&</sup>lt;sup>37</sup> David C. Reisman, "Al-Farabi and the Philosophical Curriculum," in *The Cambridge Companion to Arabic Philosophy*, eds. Peter Adamson and Richard C. Taylor (Cambridge: Cambridge University Press, 2005), 53.

<sup>&</sup>lt;sup>38</sup> Alfarabi, *Philosophy of Plato and Aristotle*, 81.

<sup>&</sup>lt;sup>39</sup> Ibid.

<sup>&</sup>lt;sup>40</sup> "The relation of the Active Intellect to man is like that of the Sun to vision," Alfarabi writes on this theme, adding that we are not only able to see by virtue of the sun but that our "vision sees the Sun itself which is the cause of its actually seeing"; "On the Intellect," in *Classical Arabic Philosophy*, 84.

writes, "allows us to come into possession of the knowledge of everything people can know."<sup>42</sup>

Although *to possess knowledge* is a familiar phrase, Alfarabi is being clear that this ownership of knowledge is earned through the discerning quality of an intellect willing to weigh and judge the quality of ideas. It begins with the right to know but involves responsibilities of earning a claim to that knowledge. Alfarabi is among those concerned with protecting learning from misuse and distortion. He identifies, for example, in his commentary on Plato's *Laws*, how the philosopher "followed the practice of using symbols, riddles, obscurity, and difficulty, so that science would not fall into the hands of those who do not deserve it and be deformed, or into the hands of one who does not know its worth or who uses it improperly."<sup>43</sup> Plato reserved learning for those "trained in that art itself" and "skilled in the science that is being discussed."<sup>44</sup> As stewards of the active intellect's gifts to humankind, the learned walk a fine line between, on the one hand, facilitating access through copying, translation, teaching, and commentary, and, on the other, restricting it to those who could be trusted and trained in its proper use (which I return to below).

During the eleventh century, two Muslim thinkers contributed much, in one case, to the development of a scientific method, with the other returning us to philosophical

<sup>&</sup>lt;sup>42</sup> Al-Fārābī, "On the Intellect," in *Classical Arabic Philosophy: An Anthology of Sources*, eds. Jon McGinnis and David C. Reisman (Indianapolis: Hackett, 2007), 115. Davidson adds to this question of knowing everything: "To gain all possible thoughts is no small enterprise for a man of flesh and blood, but the medieval physical universe was finite, and Alfarabi here assumes that wholly comprehensible knowledge does lie within man's power"; ibid., 49.

<sup>&</sup>lt;sup>43</sup> Alfarabi, "Plato's Laws," trans. Muhsin Mahdi in *Medieval Political Philosophy: A Source Book*, eds. Ralph Lerner and Muhsin Mahdi (New York: Free Press, 1963), 85. Mahdi identifies this as "the only commentary by a Muslim author on a Platonic writing of which we possess the original Arabic text"; "The Editio Princeps of Fārābī's Compendium Legum Platonis," *Journal of Near Eastern Studies* 20, 1 (1961), 1-2.

<sup>&</sup>lt;sup>44</sup> Alfarabi, "Plato's Laws," 85.

matters of intellect. The first is Alhazen, who was living in Cairo during the early decades of the century. Alhazen established a reputation in the study of optics for conducting, what we would call today, a physics experiment. After conducting a literature review covering Euclid and Ptolemy on the topic, he developed a *camera obscura* to track light's physical properties, while working out an aesthetic theory to account for the human experience of light.<sup>45</sup> The resulting *Book of Optics* was to be consulted in Arabic and Latin by mathematicians and philosophers down to the time of Johannes Kepler in the seventeenth century. His method of carefully building on and testing the work of others became a model of scientific practice in the West.<sup>46</sup>

In addition to breaking new ground in optics, Alhazen drew on more recent astronomical observations to reanalyze Ptolemy's second-century *Almagest*: "The contradiction in the configuration of the upper planets that is taken against him," Alhazen wrote, "was due to the fact that he assumed the motions to take place in imaginary lines and circles and not in existent bodies."<sup>47</sup> The new observational techniques and standards of Islamic astronomers led to new, more accurate mathematical models of heavenly motion. These models eventually contributed to the Copernican revolution in the sixteenth century, even if Islamic astronomers did not seek to dislodge the earth from the center of the universe.

<sup>&</sup>lt;sup>45</sup> Hans Belting traces the influence of Alhazen's optical experiments and theory on the Renaissance refinement of perspective in art; *Florence and Baghdad: Renaissance Art and Arab Science* (Cambridge: Harvard University Press, 2011), 102-111.

<sup>&</sup>lt;sup>46</sup> Huff, *Early Modern Science*, 90-91; A. I. Sabra, "Ibn al-Haytham's Revolutionary Project in Optics: The Achievement and the Obstacle" in *The Enterprise of Science in Islam: New Perspectives*, eds. Jan P. Hogendijk and Abdelhamid I. Sabra (Cambridge: MIT Press, 2003), 42.

<sup>&</sup>lt;sup>47</sup> Cited by Saliba, *Islamic Science*, 101. Saliba argues that "Classical Greek scientific texts could easily be acclimatized within the current Arabic science of the time, thus transforming the translation process into a simultaneous creative process as well"; ibid., 18.

The second highly regarded Islamic thinker that I want to consider from the eleventh century is the philosopher and physician known among Latin readers as Avicenna (*Ibn Sina*). A Persian from central Asia, Avicenna proved himself an adept student of astronomy, geology, metaphysics, medicine, psychology, optics, and other fields, as well as being a rare denier of alchemy. Among the details we have of Avicenna's early life is his description of gaining access to the library of the Samaid ruler Nuh ibn Mansur: "One day I asked permission to enter the library, look through it, and read its contents. He gave me permission and I was admitted to a building with many rooms. ... I saw books whose very names are unknown to many and which I had never seen before nor have I seen since. I read those books, mastered their teaching, and realized how far each man had advanced in his science."<sup>48</sup> Avicenna's comments reaffirm how vital access to the intellectual commons of a library is to the mastery of this learned trade compared to the apprentice working with a single master.

Avicenna was caught up in multiple regime changes that played havoc with his patronage, while still succeeding in making major contributions in the field of health and healing with his *Canon medicinae*. This compendium of medical wisdom and pharmacological advice was to be another of the works translated from Arabic into Latin,

<sup>&</sup>lt;sup>48</sup> Cited by David C. Reisman, "Stealing Avicenna's Books: A Study of the Historical Sources for the Life and Times of Avicenna," in *Before and after Avicenna: Proceedings of the First Conference of the Avicenna Study Group*, eds. David C. Reisman and Ahmed H. Al-Rahim (Leiden: Brill, 2003), 121. Ibn Funduq, who composed a mid-twelfth-century biography of Avicenna, a century after the philosopher's death, adds what is now believed to be an apocryphal (according to Reisman) statement on Avicenna's hand in the fiery fate of this library: "It is agreed that this library was burned down and all the books were consumed. An adversary said that Abū 'Alī [Avicenna] set fire to the library in order that those sciences and [their] precious knowledge would accrue to him alone and that credit for their intellectual benefits (*fawā'id*) would be cut off from their proper authors"; cited by ibid., 122. Despite the slander, Ibn Funduq's accusation reinforces the extent to which authors were credited for the intellectual properties of their work, in terms of my book's theme.

this one serving university masters and students until well into the seventeenth century.<sup>49</sup> Beyond the *Canon*'s practical applications, it introduced philosophical distinctions in medicine between theory and practice: "When we say that practice proceeds from theory," Avicenna explains in the *Canon*, it is important to realize "that these two aspects are both sciences," and that one science is needed for "the basic problems of knowledge" and one for "the mode of operation in these principles."<sup>50</sup>

In the realms of practice and theory, Avicenna relied on sharp observation and careful distinctions. With practice, he identified seven conditions for ascertaining a medical treatment's efficacy and sixteen sources of data – from imaginative data to suppositional data – crucial for arriving at conclusions "based on testing and proving."<sup>51</sup> In the case of theory, he was among the first to utilize the thought experiment or hypothetical case in natural philosophy.<sup>52</sup> And in the name of medical practice and bedside manner, he expanded the goal of physicians, from curing the ill to advising people on how to live healthy lives, an approach that is still very much with us to this day.<sup>53</sup>

<sup>&</sup>lt;sup>49</sup> Raphaela Veit points out how Avicenna's *Canon* drew on Indian medical knowledge, with some possible Chinese influences, as well Persian, but principally Greek sources, with efforts in the fifteenth and sixteenth centuries that "padded it out with numerous references to its textual background"; "Greek Roots, Arab Authoring, Latin Overlay," in *Vehicles of Transmission*, 354, 361.

<sup>&</sup>lt;sup>50</sup> Avicenna, *Canon*, trans. O. Cameron Gruner, in *A Source Book in Medieval Science*, ed. Edward Grant (Cambridge: Harvard University Press, 1974), 716.

<sup>&</sup>lt;sup>51</sup> Cited by Dimitri Gutas, "The Empiricism of Avicenna," *Oriens* 40 (2012), 393 [391–436]. Avicenna's "testing and proving" is cited by Gutas, ibid., 410. In contrast, Dag Nikolaus Hasse points to how Avicenna puzzlingly allows for "two ways to acquire universal forms: either by abstraction from particular forms [i.e., empiricist], or by directly receiving them from the active intellect" [i.e., Aristotelian]"; "Avicenna's Epistemological Optimism," in *Interpreting Avicenna: Critical Essays*, ed. Peter Adamson (Cambridge: Cambridge University Press, 2013), 111.

<sup>&</sup>lt;sup>52</sup> Taneli Kukkonen, "Ibn Sīnā and the Early History of Thought Experiments," *Journal of the History of Philosophy* 52, no. 3 (2014), 433.

<sup>&</sup>lt;sup>53</sup> Harold J. Cook, "Medicine," in *Early Modern Science*, eds. Katharine Park and Lorraine Daston, vol. 3 of *The Cambridge History of Science* (Cambridge: Cambridge University Press, 2006), 409.

In his philosophical work, Avicenna also dealt with Aristotle's thoughts on the nature of soul and intellect. He regarded the soul as a source of perfection for the body. The soul begins to take shape shortly after a child is born, with that part of it known as the intellect free of innate ideas but open to investigating and abstracting concepts or "intelligibles" from external and internal data. "Man is naturally endowed," Avicenna writes, "to come into possession of knowledge and to perceive things by way of the senses and then by way of estimation."<sup>54</sup> This emphasis on the individual's active role in taking hold of knowledge on empirical principles sets Avicenna apart from al-Kindi and Alfarabi. In analyzing Avicenna's empiricism, Dimitri Gutas, Yale professor of Islamic Studies, has compared the Islamic philosopher's stance to that of John Locke, who framed it this way: "Experience furnisheth the Understanding with Ideas." <sup>55</sup>

For my purposes, however, the resemblance of note here is between Avicenna's work on the intellect coming into possession of knowledge and Locke's theory of property and labor: "He hath mixed his *Labor* with, and joyned to it something that is his own," Locke writes in *Two Treatises of Government*, "and thereby makes it his *property*."<sup>56</sup> While I discuss the application of Locke's theory to intellectual property in Chapter 11, what can be said here in Lockean terms is that Avicenna offers an image of the scholar laboring over a world given in common, resulting in works in which the scholar "might come to have a *property*," in Locke's language, or might come "into

<sup>&</sup>lt;sup>54</sup> Cited by Gutas, "The Empiricism of Avicenna," 406. Sander Wopke de Boer. *The Science of the Soul: The Commentary Tradition on Aristotle's De Anima, C. 1260-C. 1360* (Leuven: Leuven University Press, 2013), 23-24.

<sup>&</sup>lt;sup>55</sup> Gutas, "The Empiricism of Avicenna," 424-25. John Locke, *Essay Concerning Human Understanding*, ed. Peter H. Nidditch (Oxford: Oxford University Press, 1975), 2.1.4 105. Gutas speculates that Locke, who likely studied Arabic as part of his medical education, may have encountered Avicenna's work amid the increased interest in Arabic literature during that time; ibid., 424-25.

<sup>&</sup>lt;sup>56</sup> John Locke, *Two Treatises of Government*, ed. Peter Laslett (Cambridge: Cambridge University Press, 1988), 2.27, 306.

possession of knowledge," as Avicenna writes, with these works ultimately intended for the benefit of others or as Locke puts it: "To increase the common stock."<sup>57</sup>

It should be clear that this Aristotelean wrestling with soul and intellect has much to do with establishing learning's place in the world. These philosophers are offering a commentary, above all, on the soul and intellect of the scholar. Not surprisingly, then, they lend a particular weight to the work of the learned, setting it apart from other practices by giving the intellect a place in the very structure of "the human soul," as Avicenna set it out, between "a faculty related to scientific investigation and so is called the theoretical intellect" for determining "what is necessary, possible and impossible," and "a faculty related to action and so is called the practical intellect," which deals in "what is right, wrong, and the permissible."<sup>58</sup> Avicenna was a great champion of those whom he described as "the [learned] individual whose soul is strengthened by such intense purity... that he blazes with intuition," which is to say, "intuition about all or most scientific investigation."59 And in this case, no one burned more brightly than Avicenna. "The scope of Avicenna's authority overcame the boundaries of the disciplines taught in universities, and the borders of academic faculties," writes Amos Bertolacci, professor of Islamic philosophy at the Scuola Normale Superiore (Pisa), "his thought also entered other fields of Latin culture, like literature (as in the case of Dante Alighieri, among others), and society in general (as its traces in ecclesiastic documents witness)."60

These properties of intellect take on a further radical twist in the hands of this chapter's final Muslim commentator on Aristotle's *On the Soul*, namely, Averroes (*Ibn* 

<sup>&</sup>lt;sup>57</sup> Locke, *Two Treatises*, 2.2, 304, 2.37 312; Avicenna is cited by Gutas, "The Empiricism of Avicenna," 406.

<sup>&</sup>lt;sup>58</sup> Ibn Sīnā, "The Soul," 187.

<sup>&</sup>lt;sup>59</sup> Ibid., 205.

<sup>&</sup>lt;sup>60</sup> Amos Bertolacci, "The Reception of Avicenna in Latin Medieval Culture," Interpreting Avicenna, 242.

*Rushd*). Averroes was a twelfth-century polymath born in Córdoba, the great center of learning in al-Andalus.<sup>61</sup> Islam had established itself in the Iberian peninsula early in the eighth century and had given rise to a remarkably vibrant, multi-cultural life. Córdoba's Great Mosque was endowed by the caliph with teaching positions, while the local schools were free to the young.<sup>62</sup> The collection of books in the Royal Library in the Old Palace (*Alcazar*) there, which had been established in the tenth century, was by then far greater than any library in Europe. It had been stocked by book-buyers in Cairo, Baghdad, Damascus, Alexandria, and elsewhere; the library was equipped with a catalogue of its treasures that ran to many volumes.<sup>63</sup>

In such a setting, Averroes created a body of philosophical work, with much of it given to explicating Aristotle. He was referred to in works on Aristotle as simply "the Commentator," much as Alfarabi was known as the "second teacher". The translation of his work into Latin began within decades of his death in 1198, in the earliest years of the medieval universities, and his Aristotelian commentaries were part of the university

<sup>62</sup> Robert Hillenbrand, "'Ornament of the World': Medieval Córdoba as a Cultural Centre," in *Legacy of Muslim Spain*, eds. Salma Khadra Jayyusi and Manuela Marín (Leiden: Brill, 1992), 120-22.

<sup>63</sup> Dorothee Metlitzki, *The Matter of Araby in Medieval England* (New Haven: Yale University Press, 1977), 10. Martin Levey writes of millions of volumes probably existing during this period in the Islamic Empire. In Córdova alone, scholars boasted of a library of 250,000 books, although much of it was to be lost: "Owing to the depredations of various groups many libraries were burned and otherwise destroyed"; "Mediaeval Arabic Bookmaking and Its Relation to Early Chemistry and Pharmacology," *Transactions of the American Philosophical Society*, New Series 52, no. 4 (1962), 6. George F. Hourani reports that the Córdova library catalogue ran to forty-four volumes, even as he is cautious about providing totals for the number of book in the library; "The Early Growth of the Secular Sciences in Andalusia," *Studia Islamica*, no. 32 (1970), 149. Hillenbrand compares this great monastic library at St. Gall, which had 600 volumes; "Ornament of the World"; 121. In the fourteenth century, the university in Paris had 2,000 manuscripts in its collection; Huff, *Early Modern Science*, 76.

<sup>&</sup>lt;sup>61</sup> María Rosa Menocal explains that the German nun, Hroswitha of Gandersheim, called it an "ornament of the world" in 995, after learning of its splendors from a Muslim ambassador to the German court of Otto the Great; *The Ornament of the World: How Muslims, Jews and Christians Created a Culture of Tolerance in Medieval Spain* (Boston: Little, Brown, 2002), 32.

curriculum down to sixteenth century.<sup>64</sup> To gain a sense of what he had to offer a master teaching a course on Aristotle's *Metaphysics*, consider the opening of his commentary on this work: "We shall start by supplying information on the aim of this science, its usefulness, its parts, its place [in the order of the sciences] and its relationship [with the other sciences], in short, we begin with that the consideration of which may help to get access to this science."<sup>65</sup> Student and teacher alike appreciated what amounted to a systematic, three-fold approach to the works of Aristotle: Averroes began with a summary of the philosopher's ideas; then he paraphrases the work in its entirety; and finally he offers a much-revered "long commentary" (*tafsīr*) featuring a line-by-line analysis in light of others' commentaries.

Among the long commentaries, Averroes offered a late treatment of Aristotle's *On the Soul* that gives the material intellect a new twist. Where others had each individual's material intellect receive and absorb ideas that emanated from the external active intellect, Averroes posited that the material intellect, which is to say our ideas about the world, is not particular to each of us but is a singular, eternal entity of which individuals more or less take part through study and cogitation that enables them to share these ideas: "We have held the opinion that the material intellect is one for all human beings and also on the basis of this we have held the opinion that the human species is eternal... The material intellect must not be devoid of the natural principles common to the whole human species, namely, the primary propositions and singular conceptions common to

<sup>&</sup>lt;sup>64</sup> Charles B. Schmitt: "During the fifty years around 1500 numerous Averroistic texts relating to Aristotle were newly translated from the extant Hebrew versions into Latin"; *Aristotle and the Renaissance* (Cambridge: Harvard University Press, 1983), 23.

<sup>&</sup>lt;sup>65</sup> Averroes (Ibn Rushd), *Averroes on Aristotle's* Metaphysics: *An Annotated Translation of the So-called Epitome*, ed. Rüdiger Arnzen (Berlin: Walter de Gruyter, 2010), 21. Attesting to his commentary's value in the West, Burnett notes that more copies of Averroes survive in Latin than in Arabic; "Translating Activity," 1050.

all."<sup>66</sup> Such an account, which became known as monopsychism, explains why people can feel confident that they are able to reason their way to the same conclusion or are similarly applying a theorem as others. Averroes builds his analysis on what is common and shared in human thought and how the world is rendered intelligible across centuries and languages, even as one's thinking can be refined or redirected, indicating a greater grasp of what the material intellect holds and makes available to all.

Averroes points to how the realization "that what is known is the same in the teacher and the student in this way caused Plato to believe that learning was recollection."<sup>67</sup> For Averroes, teacher and student are not recalling innate Platonic forms out of which ideas are fashioned, but are tapping into "the primary propositions and singular conceptions" (which is to say, the particular ideas) that constitute this external material intellect. They are coming to these ideas like so many works in a great library that is potentially open to all but that can be difficult to fully grasp and fathom. To do so is such an accomplishment, Averroes writes from his own sense of having come close, that one is then "made like unto God in that he is all beings in a way and one who knows these in a way, for beings are nothing but his knowledge and the cause of beings is nothing but his knowledge. How marvelous is that order and how mysterious is that mode of being!"<sup>68</sup> Averroes was as intent on bringing reason and faith into alignment as Anselm of Canterbury had been a century earlier. In *On the Harmony of Religions and Philosophy (Kitab fasl al-maqal*), he writes: "The Law urges us to observe creation by

<sup>&</sup>lt;sup>66</sup> Averroes (Ibn Rushd) of Cordoba, *Long Commentary on the* De Anima *of Aristotle*, trans. Richard C. Taylor and Thérèse-Anne Druart (New Haven: Yale University Press, 2009), 322.

<sup>&</sup>lt;sup>67</sup> Ibid., 329.

<sup>68</sup> Ibid.

means of reason and demands the knowledge thereof through reason. This is evident from different verses of the Qur'an."<sup>69</sup>

Some Muslims were ready to denounce the place that Averroes gave to reason in faith – as well as his critique that "our society allows no scope for the development of women's talents... From this stems the misery that pervades our cities."<sup>70</sup> The most vehement of his critics succeeded in having him banished from Córdoba and his works publically burned. While he was able to find political favor again, some years before his death, his writings remained controversial. He proved more of an influence on Christian and Jewish thinkers than on those working in the tradition of Islamic philosophy, with his work giving rise, most notably, to a group of Latin Averroists at the university in Paris during the thirteenth century, who faced their own set of critics, including Thomas Aquinas (see next chapter).

Despite the attacks on his work, Avicenna was ready to defend the right of "the brothers [on] seeing this work [of his] to write down their questions, and perhaps by this the truth concerning this will be found, if I have not yet found it."<sup>71</sup> Still, the censure faced by Averroes, Avicenna and other philosophers left them leery of "the unlearned classes," as Averroes names them.<sup>72</sup> Avicenna had earlier warned that "it is not proper for any man to reveal that he possesses knowledge he is hiding from the common people. Indeed he should not even permit an intimation of this. Rather he should inform them of

<sup>&</sup>lt;sup>69</sup> Averroes (Ibn Rušhd), "On the Harmony of Religions and Philosophy," trans. Mohammed Jamil-al-Rahman (1921) *Medieval Sourcebook*, Fordham University, New York, online. Etienne Gilson credits Averroes' influential defense of Aristotle as "the origins of modern rationalism" in the West and judges his "conscious reaction against the theologism of the Arabian divines" as influential on "the evolution even of Christian philosophy"; *Reason and Revelation in the Middle Ages* (New York: Charles Scribner, 1938), 37, 38.

<sup>&</sup>lt;sup>70</sup> Cited by Robert Hillenbrand, "'Ornament of the World': Medieval Córdoba as a Cultural Centre," in *Legacy of Muslim Spain*, 122.c

<sup>&</sup>lt;sup>71</sup> Ibn Rushd, *Long Commentary*, 315.

<sup>&</sup>lt;sup>72</sup> Ibn Rushd, "The Decisive Treatise," in Classical Arabic Philosophy, 322

God's majesty and greatness through symbols."<sup>73</sup> Averroes held that "demonstrative books should be banned to the unqualified but not the learned."74 He condemns Al-Ghazali who "wanted to increase the number of learned men, but in fact increased the number of the corrupted not the learned! As a result one group came to slander philosophy, another to slander religion."<sup>75</sup> The double-edged sword of this risk – to philosophy and religion – warrants something less than open access for all to this philosophizing. Averroes advises that "a skillful doctor... cures the diseases of all the people by prescribing for them rules that can be commonly accepted"; he knows that "he is unable to make them all doctors."<sup>76</sup>

These Islamic philosophers, from al-Kindi to Averroes, created complex intellectual orders in their efforts to reconcile soul and world. They agreed on some of the properties of ideas, including their potential for being common to all, and thus belonging to no one. Through their labor and intuition, however, they were willing to take possession of these ideas to help others (if only the worthy) to find their way to greater understanding, or to collectively see the ideas through to completion, much as al-Kindi aspired to do with mathematics. They saw their work as rendering intelligible what was given in common to the human intellect by the prime mover. The process began for these Islamic scholars by bringing into Arabic works that which had been composed in (or

<sup>&</sup>lt;sup>73</sup> Cited by Dimitri Gutas, Avicenna and the Aristotelian Tradition: Introduction to Reading Avicenna's Philosophical Works (Leiden: Brill, 2014), 339.

<sup>&</sup>lt;sup>74</sup> Ibn Rushd, "The Decisive Treatise," in *Classical Arabic Philosophy*, 322. Demonstrative books would likely include syllogistic reasoning and other forms of Aristotelian logic. <sup>75</sup> Ibid.

<sup>&</sup>lt;sup>76</sup> Ibid. Taking the broadest of historical timeframes, Leo Strauss describes the protective writing strategies of those facing persecution for their independence of thought, placing Avicenna and Averroes, in this regard, in the company of Socrates, Plato, Aristotle, Maimonides, Grotius, Descartes, Hobbes, Spinoza, Locke, Bayle, Wolff, Montesquieu, Voltaire, Rousseau, Lessing and Kant, among others; "Persecution and the Art of Writing," Social Research 8, no. 4 (1941), 499. Strauss also points out how Alfarabi highlighted Plato's ability to "safely tell a very dangerous truth provided one tells it in the proper surroundings"; "How Farabi Read Plato's Laws" in What Is Political Philosophy? And Other Studies (Chicago: University of Chicago Press, 1959), 136.

translated into) Greek, Aramaic, Persian, Syriac, and Hebrew. During the twelfth century, this productive infusion of ideas was about to happen again, only this time into Latin.

#### The Latin Translation Movement

Although Gerbert introduced elements of Arabic learning into the European classroom in the tenth century, among the first translations of an Arabic text into Latin took place in the eleventh century, by the hand of Constantine the African. While a number of his translations have survived, our knowledge of his life is based on a solitary account a century after his death, which may explain why it resembles a heroic Christian conversion tale.

As the story begins, a Muslim merchant from Carthage is plying his trade at the court of the Lombard prince of Salerno. The man learned that many who travelled to Salerno to become physicians were not able to find medical works to support their learning. In what might seem inspired opportunism but proved to be something nobler, he returned to Kairouan, a North African Islamic intellectual center, where he spent the next few years gathering up copies of Arabic medical works from local physicians. After a perilous sea voyage that damaged and destroyed some of the manuscripts, he arrived back in Salerno around 1065. He quickly converted to Christianity, took the name Constantine, and joined the Monte Cassino monastery north of Salerno (where Benedict is thought to have composed his Rule).

Constantine joined the highly literate monks in the scriptorium who must have been willing to collaborate with him on translating into Latin the Arabic medical texts that had survived the journey. He translated Hippocrates' *Aphorisms* and *Prognostics*,

28

Galen's commentaries on Hippocrates, a summary of Galen's *Grand Art (Megatechne)*, and medical works by Algizar and Isaac Israeli.<sup>77</sup> Constantine's approach is best described as rough adaptation. The translations were intended for physicians seeking a way to heal the ill, rather than the scholar hoping to learn more about Greek and Islamic approaches to medicine. Constantine sometimes identifies himself in the text as the translator while at others suggests that he is the author.<sup>78</sup> He was happy to credit Galen and Hippocrates when it suited him, rather than, say, the Persian source from whose text he pulled the words of these two Greeks.

His translation of the *Book on Fevers* by the tenth-century Jewish physician, Isaac Israeli, remained a part of the medical curriculum at Montpellier, Paris, Bologna, and Oxford until the fourteenth century.<sup>79</sup> This "Constantinian program of translation," in the judgment of Michael McVaugh, a University of North Carolina historian, "did not merely enlarge the sphere of practical competence of the Salernitan physicians; it had the added effect of stimulating them to try to organize the new material into a wider, philosophical framework."<sup>80</sup> Constantine's impulse to share what was known elsewhere with those who could benefit from this knowledge inspired a number of Latin scholars to develop a knowledge of Arabic, as well as work with Muslim and Jewish writers of Arabic, in undertaking more formal, scholarly transfer of knowledge from Arabic into Latin. What Constantine had initiated, linking monastic scriptorium and medical school, would grow

<sup>&</sup>lt;sup>77</sup> Michael McVaugh, "Constantine the African," in *Complete Dictionary of Scientific Biography*, vol. 3 (Detroit: Scribner's Sons, 2008), 393.

<sup>&</sup>lt;sup>78</sup> Herbert Bloch credits Constantine and two associates, Afflacius and Atto, with twenty-six translations or compilations; *Monte Cassino in the Middle Ages* (Cambridge: Harvard University, 1986), 130.

<sup>&</sup>lt;sup>79</sup> Lola Ferre and Raphaela Veit, "The Textual Traditions of Isaac Israeli's *Book on Fevers* in Arabic, Latin, Hebrew, and Spanish," *Aleph: Historical Studies in Science and Judaism* 9, no. 2 (2009), 314. Ferre and Raphaela refer to how the *Book on Fevers* stopped being used "when new translations of medical texts done in Toledo – notably Avicenna's *Canon* – entered the universities"; ibid.

<sup>&</sup>lt;sup>80</sup> McVaugh, "Constantine the African," 394.

into a flow of Muslim and Jewish learning more generally that found its way into the Christian West.

The Jewish physician Moses of Huesca offers a second take on Constantine's conversion-translation story. Moses, who had perhaps been a rabbi in al-Andalus, converted to Christianity in 1106, at the age of forty-four, taking on the Latin name, Petrus Alfonsi. He then made his way to England, where his newfound religion –further affirmed by his book, *Dialogue Against the Jews* – served him well as court physician to Henry I. <sup>81</sup> He was best known for his *Rule of Life (Disciplina clericalis)*, which introduced Christians to Arab thought and literature. <sup>82</sup> But he also undertook important Latin translations, including the ninth-century *Astronomical Tables (Zīdj)* by al-Khwarazmi, which recorded the position in Baghdad of the sun, moon, and five planets in relation to the calendar and astrology, as well as latitudes and longitudes for 2,402 locations on earth.<sup>83</sup>

Petrus demonstrated how the techniques of Islamic astronomy and astrology could be used to calculate local tides and harvest times, as well as the best time for bloodletting and cauterizing a wound. This mix of astronomy, astrology, and medicine was another of the Islamic influences that pervaded European healthcare for centuries.<sup>84</sup> In his letters, Petrus speaks of a universal intellectual compulsion behind his work: "Since it is proper

<sup>&</sup>lt;sup>81</sup> Petrus Alfonsi, *Dialogue against the Jews*, trans. Irven M. Resnick (Washington: Catholic University of America Press, 2006), 42. On Petrus' contribution to the myth of Islamic idolatry, see Bernard Septimus, "Petrus Alfonsi on the Cult of Mecca," *Speculum* 56, no. 3 (1981), 517-33.

<sup>&</sup>lt;sup>82</sup> Metlitzki describes the *Rule* as compiled "partly from the sayings of Arabic philosophers, partly from Arabic proverbs, and Arabian tales," and, as such, that it stands "as a milestone in the development of medieval literature"; *Matter of Araby*, 18-19.

<sup>&</sup>lt;sup>83</sup> Tolan, *Petrus Alfonsi*, 55. Tolan points out that while Adelard, who retranslated the work in 1126, is "more careful in his calculations... there are places, too, where Alfonsi's figures are correct and Adelard's are not"; ibid., 61.

<sup>&</sup>lt;sup>84</sup> John Victor Tolan, *Petrus Alfonsi and His Medieval Readers* (Gainesville: University of Florida Press, 1993), 174.

that all those who have drunk of any philosophical nectar to love each other, and that anyone who might have anything rare, precious, and useful, which is unknown to others, should impart it generously."<sup>85</sup> Although he was not above feeding the prejudices of his readers against Islam and Jew, as noted, Petrus encouraged an openness toward *all* philosophies, while calling on the learned to generously share what is precious and useful.

Petrus' contemporary, Adelard of Bath, was another who brought together translation and application from Islamic science. It later earned him the title of the first English scientist, not to mention the country's number one astrologer, given the horoscopes that he cast for those at court.<sup>86</sup> In or around 1100, he set out, as a young man, on a seven-year quest of *Arabum studia*, travelling through Salerno, Sicily, Misis (Turkey), and Antioch, after he had spent time tutoring at the cathedral school of Laon. Although his skills in Arabic have been questioned (while his mastery of quadratic equations, geometry, and astrology have not), he is credited with translating, with assistance, scientific, mathematical, and musical works.<sup>87</sup> He appears to have conducted medical experiments, based on Arabic and Hebrew texts that had been translated into Latin by Constantine the African and others.<sup>88</sup> His own translation of Euclid's *Elements* included supplemental lessons in geometry that he prepared as part of his commentary.

<sup>&</sup>lt;sup>85</sup> Petrus Alfonsi, "Epistola ad peripateticos" in John Victor Tolan, *Petrus Alfonsi and his Medieval Readers* (Miami: University of Florida Press, 1993), 172-73.

<sup>&</sup>lt;sup>86</sup> Louise Cochrane, *Adelard of Bath: The First English Scientist* (London: British Museum Press, 1994). See Burnett, "Translating Activity," 1038.

<sup>&</sup>lt;sup>87</sup> Adelard of Bath, *Conversations with his Nephew: On the Same and the Different, Questions on Natural Science*, and *On Birds*, trans. Charles Burnett (Cambridge: Cambridge University Press, 1998), III 90, 107. Burnett: "Adelard's conception of *Arabum studia* was... nourished – if anything – by *lack* of direct acquaintance with Arabic scholarship"; ibid, 107.

<sup>&</sup>lt;sup>88</sup> A. C. Crombie, *Robert Grosseteste and the Origins of Experimental Science 1100-1700* (Oxford: Oxford University Press, 1953), 23, 29.

Adelard's best-known work is his semi-autobiographical *Quaestiones Naturales*. It takes the form of a dialogue between himself, as one given to "investigate the studies of the Arabs," and his irreverent nephew, whom he uses to put his own loyalties to the test with such remarks as: "For you both extol the Arabs shamelessly and invidiously accuse our people of ignorance."<sup>89</sup> In a daring move for the times, he opposes his own reasoned engagement with his Arab teachers to his nephew's captivation with the traditional authority of the Church: "For I have learned one thing from my Arab masters, with reason as guide, but you another: you follow a halter, being enthralled by the picture of authority."<sup>90</sup> Adelard makes it clear that he was particularly impressed by the methods of experimentation and observation described by Islamic thinkers.

Arabic was the principal but not the only channel through which ancient learning entered the Latin West during this period. In the twelfth century, James of Venice and Burgundio of Pisa travelled to Constantinople, where they were able to find and translate a good deal of Aristotle from the original Greek into Latin, with others translating Greek works that they found in Antioch, southern Italy, and Sicily. Yet it was the commentaries of the Islamic philosophers that made Aristotle so teachable.<sup>91</sup> And much of the translational activity involving the Aristotelian commentaries took place in the Castilian city of Toledo, beginning in the twelfth century. The Christians had retaken the city without a battle in 1085, on the promise of Alfonso VI, King of Leon and Castile, to protect the religious rights of the city's Muslims and preserve Toledo as the center for learning that it had been for al-Andalus. As Charles Burnett, professor at the Warburg

<sup>&</sup>lt;sup>89</sup> Adelard of Bath, *Conversations*, 91.

<sup>&</sup>lt;sup>90</sup> Ibid., 91, 103.

<sup>&</sup>lt;sup>91</sup> Charles Burnett, "Arabic into Latin: The Reception of Arabic Philosophy into Western Europe," in *The Cambridge Companion to Arabic Philosophy*, eds. Peter Adamson and Richard C. Taylor (Cambridge: Cambridge University Press, 2005), 375.

Institute, explains, "the Islamic élite had left the city, but a rump of learned Muslims may have remained in Toledo."<sup>92</sup> It was not long before the translation of Arabic works into Latin had begun, led initially by works of astrology favored by the kings of Europe.<sup>93</sup>

King Alfonso declared himself "Emperor of Spain and the Two Faiths" (although it clearly should have been three, given the significant number of Jews in the region). Yet his plan went somewhat awry. Toledo's principal mosque was forcibly converted into a cathedral. Still, it was possible for learned Christians, Jews, Mozarabs, and Mudejars (Muslims living in Christian lands) to gather together and share their studies of mathematics, astronomy, and other sciences, often working from Arabic texts from the many remaining Islamic libraries. Toledo gained a reputation as a learned contact zone. It became a destination city for the young and learned, whose curiosity was piqued by the rumors of lost learning awaiting translation.<sup>94</sup> Some took up residence and joined in the translation movement; some made quick copies of translations; and no one left, it seems, without carrying copies of Latin translations, which soon spread throughout European centers of trade and learning.

By the mid-twelfth century, translating Arabic texts into Latin was among Toledo's principal trades. It was not that such work paid well. For while the company of translators undertook commissions from learned visitors and placed copies of their work with booksellers, records show that they also worked as tutors to the children of the

<sup>&</sup>lt;sup>92</sup> Charles Burnett, "Communities of Learning in Twelfth-Century Toledo," in *Communities of Learning: Networks and the Shaping of Intellectual Identity in Europe, 1100-1500*, eds. Constant J. Mews and John N. Crossley (Turnhout: Brepols, 2011), 10.

<sup>93</sup> Ibid., 11.

<sup>&</sup>lt;sup>94</sup> Dodds, Menocal, and Balbale note that twelfth-century Toledo, was "poised to become the charismatic center of European intellectual life" and "a warehouse of the great books of mathematics and the sciences"; *The Arts of Intimacy*, 202. Metlitzki: "Alfred [the Englishman] evidently worked to the dictation of a Mozarab or Jew, turning the text into Latin while the whole or part of it was read and explained to him in the vernacular Spanish [Castilian] from the Arabic copy that was being used as the original"; *Matter of Araby*, 41.

wealthy and served in civic and church positions. The translators did have something of a patron saint in Archbishop Raymond of Toledo. During his time as church leader, from 1126 to 1152, Raymond supported their work, building his own great Latin archiepiscopal library in the process.<sup>95</sup>

The translators also had an outstanding model in prolificacy, quality, and modesty in Gerard of Cremona, a canon with Toledo's cathedral and a physician. He prepared Latin translations of Arabic editions of Ptolemy, Theodosius, Menelaus, and Archimedes, which were often preferred by scholars over translations made from the original Greek.<sup>96</sup> Gerard had arrived in Toledo around 1144, having been inspired to make the journey from Italy by rumors that Arabic copies of Claudius Ptolemy's *Almagest*, the great second-century work of mathematics and astronomy, were to be found there. He soon acquired two copies of the work, only to spend perhaps a decade, as his Arabic gradually improved, on revising and refining his Latin translation. Given his medical interests and likely contact with Muslim doctors, Gerard also translated a number of important medical works by Galen from Arabic (some of which are no longer available in the original Greek), as well as al-Kindi's medical work and Avicenna's *Canon medicinae*, with the *Canon* destined to have an especially long run in the universities, as well as in popularized forms.<sup>97</sup>

<sup>&</sup>lt;sup>95</sup> Menocal, *Ornament of the World*, 195. Burnett identifies the remaining question of "who organized the production and who paid for it" with the West's translation movement more generally; "The Coherence of the Arabic-Latin Translation Program in Toledo in the Twelfth Century," in *Arabic into Latin in the Middle Ages: The Translators and Their Intellectual and Social Context* (Surrey: Ashgate, 2009), VII 269-70.

<sup>&</sup>lt;sup>96</sup> Charles Burnett, "The Transmission of Arabic Astronomy via Antioch and Pisa in the Second Quarter of the Twelfth Century," in *The Enterprise of Science in Islam: New Perspectives*, eds. Jan P. Hogendijk and Abdelhamid I. Sabra (Cambridge: MIT Press, 2003), 42.

<sup>&</sup>lt;sup>97</sup> Nancy G. Siraisi: "For about the first two hundred years after its introduction into university curricula in the thirteenth century, the *Canon*, although subjected to occasional criticism, was generally and on the whole rightly esteemed as a sophisticated systematization and summary of almost all available medical learning. By about the mid-seventeenth century, despite the Canon's great historical importance, its

Gerard also prepared the first Latin edition of al-Khwarizmi's The Compendious Book on Calculation by Completion and Balancing. It not only introduced the practical mathematical powers of algebra to the West (with translations of other Arabic texts introducing trigonometry and advanced geometry), but was the first to offer a systematic treatment of decimal notation.<sup>98</sup> Al-Khwarizmi's goal had been to introduce what was "easiest and most useful in arithmetic," as the Islamic mathematician put it, "such as men constantly require in cases of inheritance, legacies, partitions, lawsuits, and trade, and in all their dealings with one another, or where the measuring of lands, the digging of canals, [or] geometrical computations... are concerned."99 It is hard to imagine promising anything more mathematically useful at the time, and as for "easiest," well, it may have been so for al-Khwarizmi. In astronomy, health, and mathematics, the translation project was less about the rarified classics, as we might think of it today, than the practical and the needed. These were works of a particular and demonstrable value, which gave the translation movement its impetus and led to the copying and diffusion of these works through Europe.

No less significantly, Gerard worked with "shadow" assistants to bring much of Aristotle into Latin from Arabic, including the *Posterior Analytics*, *Physics*, *On the Heavens*, *On Generation and Corruption*, and *Meteorology*. They also translated the *Book of Causes*, the author of which was later designated as pseudo-Aristotle, although it

irrelevance to current developments in European physiology was clearly apparent"; *Avicenna in Renaissance Italy: The Canon and Medical Teaching in Italian Universities after 1500* (Princeton: Princeton University Press, 1987), 6. As well, excerpts and paraphrases of Avicenna found their way into popular medical works; *Prognosticacion, Drawen Out of the Bookes of Ipocras [Hippocrates], Avicen [Avicenna], and other Notable Auctours of Physycke, Shewynge the Daunger of Dyvers Syckenesses* (London: Robert Wyer, c. 1545).

<sup>&</sup>lt;sup>98</sup> Saliba, *Islamic Science*, 17ff; Metlitzki, *Matter of Araby*, 35. Al-Khwārizmī originated the concept of an *algorithm*, with the Latin word based on his name.

<sup>&</sup>lt;sup>99</sup> Cited by Starr, Lost Enlightenment, 169.

still proved influential.<sup>100</sup> Gerard also translated many of the Arabic commentaries on Aristotle, some of which had originated in Greek during antiquity, while others were composed by Gerard's contemporary, Averroes, working in Córdoba, a couple of hundred miles south of Toledo (which did not fall to the Christian Reconquista until 1236).

The translations of Aristotle's works and commentaries helped to establish the Greek philosopher in Europe as "the master of those who know," as Dante put it at the turn of the thirteenth century. Intellectual histories of Europe through the High Middle Ages make such frequent reference to "Aristotle and the Arabian commentators" that the phrase might be mistaken for the name of an early music group.<sup>101</sup> The educational force of this commentary tradition is summed up by Charles Burnett, Professor of the History of Islamic Influences in Europe at the Warburg Institute: "Arabic texts, therefore, contributed massively to the building up of a coherent curriculum of Aristotelian philosophy."<sup>102</sup> The buildup of this educational program in the sciences and philosophy cried out, as I argue in the next chapter, for a new institutional form in which it could be effectively studied and taught.

<sup>101</sup> References to "Aristotle and the Arabian commentators" are found in Maurice de Wulf, "The Teaching of Philosophy and the Classification of the Sciences in the Thirteenth Century," *The Philosophical Review* 27, no. 4 (1918), 368; Burnett, "Arabic into Latin," 380; James Bass Mullinger, *From the Earliest Times to the Royal Injunctions of 1535*, vol. 1 of *The University of Cambridge* (Cambridge: Cambridge University Press, 1873), 175; and Livingstone Thompson, *Modern Science* (Bern: Peter Lang, 2009), 30. They are not to be mistaken for "the pseudo-Aristotle and his Arabian commentators"; Brother Azarias, *Aristotle and the Christian Church* (London: Kegan Paul, Trench, 1888), 52. Dante places Aristotle in "Circle one: Limbo (Virtuous pagans)" of the Inferno: "Aristotle, the master of those who know / Ringed by the great souls of philosophy /...Hippocrates, Galen, Avicenna / And Averroës of the Great Commentary"; *Inferno of Dante Alighieri*, trans. John Ciardi (New York: New American Library, 1982), IV 31.

<sup>&</sup>lt;sup>100</sup> Edward Grant points out that *The Book of Causes* attracted commentaries from Albertus Magnus and Thomas Aquinas; *The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional and Intellectual Contexts* (Cambridge: Cambridge University Press, 1996), 31.

<sup>&</sup>lt;sup>102</sup> Charles Burnett, "Arabic-Latin Translation," 375. Montgomery describes how "pedagogic" editions were generally favored for translation, having been "corrected, edited, and sometimes reorganized or even partly rewritten for students"; *Science in Translation*, 157-58.

All told, Gerard was involved in the translation of at least eighty-five works in medicine, astronomy, mathematics, optics, logic geometry, and natural philosophy, with more than half of them originating with Islamic authors. Yet, in the forty years devoted to this work, he did not place his name on a translation.<sup>103</sup> Fortunately, not long after his death, his students prepared a list (in light of his humility), to honor his achievement. They were asserting, in effect, one of learning's principal intellectual property rights (and responsibilities) in the crediting of the labor that goes into authorship, translation, editing, indexing, and so on: "Lest, then, master Gerard of Cremona lie hidden under the darkness of silence," his students wrote, "lest he lose the favor of the renown that he has merited, lest through presumptuous theft an alien heading be affixed to the books translated by him – especially since he himself inscribed none of them with his name – all the works translated by him... have been listed very carefully by his students (*socii*)."<sup>104</sup> The students point to the service that such accreditation of authorship and translation provides to readers: "So that anyone who is an admirer," the students of Gerard added, "looking for one of his works, through the lists he might find it more quickly and become more confident about it."<sup>105</sup> This accreditation is not about, they assert, "clutching at clouds and vanities," which Gerard clearly shunned, given his stance as the anonymous handmaid of this great transfer of learning to the Latin West.<sup>106</sup>

The second great figure among Toledian translators, and sometime collaborator of Gerard, is Dominicus Gundissalinus, archdeacon of Segovia and resident of Toledo from 1162 to 1181. Gundissalinus' circle included a number of Jewish scholars, most notably

<sup>105</sup> Cited ibid.

<sup>&</sup>lt;sup>103</sup> Starr, Lost Enlightenment, 168; Montgomery, Science in Translation, 155.

<sup>&</sup>lt;sup>104</sup> Cited by Burnett, "Arabic-Latin Translation," 254-55.

<sup>&</sup>lt;sup>106</sup> Cited ibid., 255.

the philosopher and historian, Avendauth, who had joined others in fleeing the persecution of Jews by the Almohads when they became the rulers of al-Andalus. Gundissalinus, Avendauth, and others saw to the Latin translation of many works from Arabic, including the commentaries on Aristotle's *On the Soul* by al-Kindi, Avicenna, and Averroes, of which I made much earlier in this chapter.

Given how these works deal with the human intellect, it is worth noting that this additional act of translation – much as with commentary, critique, and citation – demonstrates a use and regard for a text as a distinctive and integral work, which is to say, a property. The translation recognizes a text as originating with the author, certainly, but through this process it becomes a studied work in the hands of others, in which its intellectual properties take on a further standing in introducing something new into the commonwealth of learning within the West.

In their translation of Avicenna's *De anima*, Gundissalinus and Avendauth add a dedication that makes clear how valuable this Graeco-Arabic wrestling with soul-and-intellect is for the state of Christianity. They honor Archbishop John of Toledo's support, while explaining that they had "taken care of your demand to translate this book on the soul by the philosopher Avicenna, in order that, through your generosity and my work, the Latins may attain certainty about...[the] true reasons that the soul exists."<sup>107</sup> They comment on how the Archbishop regards the Islamic philosopher's work as a theological corrective for "those [Christians] who have abandoned themselves to the senses."<sup>108</sup> The translation movement had the effect of raising the interest in a work's intellectual

<sup>&</sup>lt;sup>107</sup> Cited by Alexander Fidora, "From Arabic into Latin into Hebrew: Aristotelian Psychology and Its Contribution to the Rationalisation of Theological Traditions," in *Philosophical Psychology in Arabic Thought and the Latin Aristotelianism of the 13th century*, eds. Luis Xavier López-Farjeat and Jörg Alejandro Tellkamp (Paris: Vrin, 2013), 19.

<sup>&</sup>lt;sup>108</sup> Cited ibid.

properties, as well as the philosopher's project. There may be something universal about the thought in a work that can serve Islam and Christianity alike, given their belief in one God, but still, the translator works to preserve, and open access to, the distinctive intellectual properties that it is thought to embody in one language and then another.

Gundissalinus, however, did not let it go at translating these works. In his efforts to bring greater reason to bear on an understanding of the soul, he prepared a compilation of his own and others' ideas on this theme in *Tractatus de anima*. He brought in Avicenna, as well as Jewish and Christian philosophers (including Avencebrol and Costa ben Luca) whose works were "concealed in Greek and Arabic archives," as he put it: "I have found reasoned arguments among philosophers, and have taken care to collect this in a single treatise" so that "Latins... get to know about the soul not only by faith but also through reason."<sup>109</sup> The translations and the compilation can be seen to work in tandem. The one demonstrates Avicenna's intellect working out each step in establishing the nature of the soul; the other reviews and synthesizes the thoughts of leading figures who have similarly taken on this theme, perhaps reflecting the broader influence of the active (divine) intellect on human thought.

Gundissalinus also took steps to further enhance Gerard's translation of *Alfarabi's Classification of the Sciences*. He localized it by introducing Latin examples of how the sciences were organized in the West, while further polishing its Latin in the process.<sup>110</sup> He then went on to write the handbook *On the Division of the Sciences (De divisione philosophiae*), blending Greek, Islamic, and Christian sources, such as Isidore of Seville. This double art of synthesis and classification – in the assembling, integrating, and

<sup>&</sup>lt;sup>109</sup> Cited ibid., 20.

<sup>&</sup>lt;sup>110</sup> Burnett, "Communities of Learning," 16.

ordering of the work of earlier thinkers – was another of the markedly educational properties of intellectual works during this period. It was a way of helping readers answer the question of what to make of it all, as they confronted the Latin opening of this world of Greek, Indian, Persian, Hebrew, and Arabic learning.

A third, and for my purposes, final figure among the translators of Aristotle and company, was Michael Scot, who brings us to the thirteenth century. Michael first studied Arabic in Toledo, seeing through translations of Averroes, before setting up shop in Palermo, Sicily in 1225, under the most enlightened of emperors, Frederick II Hohenstaufen.<sup>111</sup> Sicily was at the crossroads of Greek, Arabic, Jewish, and Latin intellectual activity, following its capture from Muslim forces in 1091.<sup>112</sup> The Sicilian kings, beginning with Roger II in 1105, sponsored Latin translations from Arabic, with this work continuing into the thirteenth century. Frederick appointed Michael Scot as well as Muslim teachers to court positions, where they worked closely with Jewish scholars on translations. This Sicilian school of translation led to the first Latin editions of Plato's *Menon* and *Phaedo*, as well as further editions of Euclid and Ptolemy.<sup>113</sup> Michael Scot's translations of Aristotle's Analytics, Metaphysics, and On the Soul – supported by his translations of Averroes' commentaries – as well as some nineteen works of natural philosophy, found their way into the scholastic curriculum of the cathedral schools and later, the universities.<sup>114</sup> As with Gundisalvi and others in the

<sup>&</sup>lt;sup>111</sup> Majid Fakhry, *Averroes: Ibn Rushd* (Oxford: One World, 2001), 133. Fakhry also notes a Jewish Averroist tradition emerging at this time, with Hebrew and Latin translations completed in Toledo, Naples, Arles, and Marseilles; ibid., 132-133.

<sup>&</sup>lt;sup>112</sup> Dodds, Menocal, and Balbale, *Arts of Intimacy*, 212; Burnett, "Arabic-Latin Translation," 253, 262-3. <sup>113</sup> Gordon Leff, *Paris and Oxford Universities in the Thirteenth and Fourteenth Centuries: An Institutional and Intellectual History* (New York: Wiley, 1968), 130.

<sup>&</sup>lt;sup>114</sup> Rega Wood, "The Influence of Arabic Aristotelianism on Scholastic Natural Philosophy: Projectile Motion, the Place of the Universe, and Elemental Composition," in *The Cambridge History of Medieval Philosophy*, ed. Robert Pasnau (Cambridge: Cambridge University Press, 2009), 53, 248.

translation movement, Michael Scot felt sufficiently well-equipped by the experience to compose works of his own in astrology, medicine, music, and geography.

For his part, Frederick II added Leonardo of Pisa (also known as Fibonacci) to his set of court intellectuals, only to have him set off for Syria and North Africa to study Islamic advances in mathematics, before arriving at his famous and influential sequence of Fibonacci numbers, as they are now known, which he introduced in his *Book of Calculations (Liber abaci)* in 1202.<sup>115</sup> Frederick also set in motion something of an early empire of letters, through the wide-ranging correspondence on questions of geometry, astronomy, and philosophy that he conducted with scholars in Egypt, Syria, Iraq, Arabia, Yemen, Morocco, and Spain.<sup>116</sup> He also emerges in the next chapter, in which he is among the first founders of a medieval university by royal decree.

With Toledo and Sicily acting as translation movement gateways, supplemented by Antioch and southern Italy, Europe was subject to a new age of learning. Although the considerable import of Islamic learning generated much excitement among the learned, it was not universally welcomed. Michael Scot, for example, was condemned to a spot on the eighth circle of Dante's *Inferno*: "The one beside him [Eurypylus] with the skinny shanks / was Michael Scott, who mastered every trick / of magic fraud, a prince of mountebanks"<sup>117</sup> Translating Arabic texts struck some as clearly consorting with deceitful infidels. On the Islamic side, Ibn 'Abdun, a jurist in Islamic Seville, instigated a form of intellectual-property backlash by seeking a ban on the selling of Arabic books to Jews and Christians in the early twelfth century. He was particularly offended by

<sup>&</sup>lt;sup>115</sup> Fibonacci numbers, which begin 0, 1, 1, 2, 3, 5, 8, 13 (with each number the sum of the previous two), have many mathematical applications including the golden spiral and the arrangement of leaves on a stem. <sup>116</sup> Metlitzki, *Matter of Araby*, 7.

<sup>&</sup>lt;sup>117</sup> Dante, *Inferno*, Canto XX, 115-117, 311.

translators who took credit for writing what they had only translated into Latin, although there are few indications that his actions had any effect on the flow of translations.<sup>118</sup>

It also has to be remembered that the Latin translation movement took place against the clamorous broadsword backdrop of the Crusades, which the West launched against Islam, beginning in the eleventh century. Pope Urban II is said to have initiated the First Crusade with a sermon in 1095 calling on the church council, according to Fulcher of Chartres, "to persuade all people of whatever rank, foot-soldiers and knights, poor and rich, to carry aid promptly to those Christians [in Byzantium] and to destroy that vile race from the lands of our friends," to which he reassuringly added, "all who die by the way, whether by land or by sea, or in battle against the pagans, shall have immediate remission of sins."<sup>119</sup> The nine major Crusades that followed over a two-century period, in a Christian military campaign to recapture the Holy Land, made ongoing exchanges among Christian, Muslim, and Jew, merchant and scholar, that much more difficult.<sup>120</sup>

Some scholars, however, sought to do their part for the Crusades. Peter the Venerable, whom you may recall from the previous chapter as the great defender and friend of Peter Abelard, travelled to Spain, prior to the launching of the Second Crusade in 1145. Once there, he commissioned the first Latin translation of the Qur'an, as well as a life of Muhammad and other Islamic texts (while Muslims had translated portions of the

<sup>&</sup>lt;sup>118</sup> Burnett, "Translating Activity," 1041.

<sup>&</sup>lt;sup>119</sup> Fulcher of Chartres, "Urban's Speech," in *Muslim and Christian Contact in the Middle Ages*, ed. Jarbel Rodriguez (Toronto: University of Toronto Press, 2015), 56.

<sup>&</sup>lt;sup>120</sup> In setting up this contrast between Crusades and learning, it is worth noting Otto of Freising, a leader of the German army on the Second Crusade, a Cistercian monk, and "a scholar and thinker of exceptional learning, intellectual power and piety," according to Giles Constable, "whose high hopes in the crusade were sadly dashed by its failure, and he could never bring himself to write a connected account of its disasters"; "The Second Crusade as Seen by Contemporaries," *Traditio* 9 (1953), 219-220.

Christian Bible into Arabic centuries earlier).<sup>121</sup> Peter sought, in this "Toledan collection," as it became known, to expose the "errors" of Islam. "I attack you," he wrote, "not as some of us often do by arms, but by words; not by force, but by reason; not in hatred, but in love. I love you; loving you, I write to you, writing to you, I invite you to salvation."<sup>122</sup> Peter's suspicions of all things Muslim crept into his observations of the Cluniac monks in Spanish scriptoriums; he referred to the paper they used – in a process borrowed from Arabic craftsmen that had not yet caught on in the West – as "scraps of old rags, or, perhaps, from even viler stuff."<sup>123</sup>

Still, the Christian capture of Antioch and Tripoli during the Crusades led to further translation work of Arabic works found there, and the twelfth-century Second Crusade, which was largely a disaster for the West, managed to extend the Latin translation zone to the south in Andalusia. The Crusades reflected a Christian sensibility that may go some way in explaining why, amid so much traffic in Arabic texts and Islamic learning, few Muslim scholars were invited or took the initiative to follow that same path into the West. The exceptions are often found in the border regions, such as the Sicilian court of Roger II. Muhammad al-Idrisi, for example, was commissioned by

<sup>&</sup>lt;sup>121</sup> Dominique Iogna-Prat points out that "literate Muslims in Baghdad and al-Andalus had had Arabic versions of the Christian Scriptures for over two centuries"; *Order and Exclusion: Cluny and Christendom Face Heresy, Judaism, and Islam (1000-1150)*, trans. Graham Robert Edwards (Ithaca, NY: Cornell, 2002), 338.

<sup>&</sup>lt;sup>122</sup> Cited by R. W. Southern, *Western Views of Islam in the Middle Ages* (Cambridge: Harvard University Press, 1987), 39. Dominique Iogna-Prat, *Order and Exclusion: Cluny and Christendom Face Heresy, Judaism, and Islam (1000-1150)*, trans. Graham Robert Edwards (Ithaca, NY: Cornell, 2002), 338.

<sup>&</sup>lt;sup>123</sup> Cited by Bloom, *Paper before Print*, 206. Although Christians had managed to pick up the Islamic art of making paper by the eleventh century, it was slow to take hold in northern Europe, at least until the fifteenth century when, following Gutenberg, book production began on a whole new scale; ibid., 212-13.

Roger to produce a work of geography in 1138, because as al-Idrisi explains, "it pleased him to know the nature of the land and to know it with certainty and with precision."<sup>124</sup>

Those involved in the sharing of this learning demonstrated remarkably little of the prejudices of their times, while their stewardship and curation of this learning points toward more modern conceptions of intellectual property. The translators may have Latinized Ibn Rusd's name – with *Averroes* based on a Hebrew version of his name – yet every effort was made to properly preserve and credit, as well as faithfully render, his works in translation. The integrity of these works was no less important to those who took issue with Averroes, as Aquinas was to do on the very question of intellectual responsibility during the thirteenth century (which is dealt with in the next chapter).

Still, as the scholarly project remains more or less part of the larger world, it is fair to ask whether the Latin translation movement represents its own crusade to restore the West's intellectual property and heritage claims. The Graeco-Arabic translations of the Abbasid caliphate had shown similar imperialist tendencies three-to-four centuries earlier. Yet it was only much later that the West constructed an elaborate claim on the Aryan origins of its Greek heritage, to the exclusion of the Semitic contributions.<sup>125</sup> During the remainder of the medieval period and beyond, however, many European thinkers gave a full and fair measure of credit to Alfarabi, Avicenna, Averroes, and others

<sup>&</sup>lt;sup>124</sup> Al-Idrisi, "A Muslim Geographer in King Roger's Court," in *Muslim and Christian Contact in the Middle Ages: A Reader*, ed. Jarbel Rodriguez (Toronto: University of Toronto Press, 2015), 385.
<sup>125</sup> For all of the controversy surrounding Martin Bernal's multi-volume *Black Athena: The Afroasiatic Roots of Classical Civilization*, with the first volume, *The Fabrication of Ancient Greece, 1785–1985* (New Brunswick; Rutgers University Press, 1989), critics have generally accepted Bernal's judgment on the extent to which ancient Greece was made foundational to European culture during the nineteenth century. See Mary R. Lefkowitz and Guy Maclean Rogers, eds. *Black Athena Revisited* (Chapel Hill: University of North Carolina Press, 1996). Consider Richard Walzer writing of an era not so long ago: "The study of this Muslim medieval philosophy is of course no longer part of any philosophical syllabus in Western universities, as it was – in Latin translation – from the twelfth century until the eighteenth"; "Early Islamic Philosophy," in *The Cambridge History of Later Greek and Early Medieval Philosophy*, ed. A. H. Armstrong (Cambridge: Cambridge University Press, 1970), 644.

for their work in astronomy, mathematics, medicine, optics, philosophy, psychology, and the list goes on (and into the next chapter). No less a part of this contribution was the Islamic philosophers' project, following Aristotle, of setting out how this movement of thought was all the work of an intellectual order within the human soul. The philosophers differed on the status of the various intellects; they did not trust the unlearned classes with such demonstrative works; but they were forging a concept of learning's distinctive intellectual properties. And that sense of a proprietary system operating within a commonwealth of learning was only reinforced by the cross-referencing waves of translation, classification, synthesis, and commentary that invested these immaterial texts with gravity and value.

In the early part of the twelfth century, Bernard of Chartres, chancellor of the cathedral school, was among those who observed that the itinerant scholars bearing these new translations, sometimes by the cartload, were changing the face of learning in the West: "With humble spirit, eager learning, and peaceful life; in silence and poverty, to explore the most distant lands; many now endeavor to unlock through study what has long been unknown."<sup>126</sup> It was Bernard who was credited by John of Salisbury in 1159 for the observation that we are as "dwarfs perched on the shoulders of giants" and "that we see more and farther than our predecessors, not because we have keener vision or greater height, but because we are lifted up and borne aloft on their gigantic stature."<sup>127</sup> What is often lost in thinking about Western learning is the extent to which those giants

<sup>&</sup>lt;sup>126</sup> Cited by Montgomery, Science in Translation, 141.

<sup>&</sup>lt;sup>127</sup> John of Salisbury, *The Metalogicon: A Twelfth-Century Defense of the Verbal and Logical Arts of the Trivium*, trans. Daniel D. McGarry (Berkeley: University of California Press, 1962), 167. Bernard's saying has, of course, stuck with us, not least of all as Isaac Newton famously used it in a letter, and as it is the motto of Google Scholar; see Robert K. Merton, *On the Shoulders of Giants: The Post-Italianate Edition* (University of Chicago Press, 1965).

came from outside Christendom and that what these dwarfs are standing on is not so much their shoulders but on the stacks of books on which they worked so hard.