Asian Journal of
Islamic Studies and Da'wah

e-ISSN : 3025-4493
p-ISSN : 3025-5252

Index : Harvard, Boston, Sydney University, Dimensions, Lens, Scilit, Semantic, Google, etc

https://doi.org/10.58578/AJISD.v4i6.12467

In Search of the Roots of the University: Islamic Knowledge, the Madrasa, Medieval Europe, and the Development of Academic Traditions

Md. Abu Bakkar
Quepara J. C. Sen A & I Institution, Chattogram, Bangladesh
abubakrctg@gmail.com

Submitted:	Revised:	Accepted:	Published:
Sep 23, 2026	Oct 22, 2026	Nov 2, 2026	Nov 7, 2026

Abstract

The university is conventionally traced to Europe in the twelfth and thirteenth centuries, yet Islamic civilization contributed knowledge, institutions, and scholarly practices that informed Western higher education. This study examined these contributions through a comparative-historical review of classic and recent scholarship. The analysis distinguished three layers—knowledge transmission, institutions and scholarly practices, and corporate organization—and applied four evidentiary criteria to evaluate proposed connections. The review identified the Arabic–Latin translation movement as a well-documented channel through which mathematics, optics, astronomy, medicine, and natural philosophy entered Latin schools and shaped university learning for centuries. The *madrasa*, *waqf* endowment, teaching hospital, observatory, library, and certificate of authorization (*ijāzah*) constituted an organized infrastructure for teaching and inquiry. However, proposed connections between Islamic endowed colleges and their European counterparts remain plausible rather than established. The university as a corporation of masters and students was identified as predominantly European in origin. Overall, the strongest evidence concerns Islamic contributions to the content and practices of higher learning, while the extent of methodological and institutional influence requires differentiated assessment. The study concludes that understanding the university as an organized and certified community of learning reveals a documented debt to Islamic knowledge and plausible debts to Islamic scholarly methods and institutions. This distinction

AJISD Journal is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

clarifies the relationship between intellectual contributions, institutional parallels, and corporate origins in the development of academic traditions.

Keywords: History of Higher Education; Islamic Knowledge; *Madrasa*; Arabic–Latin Translation; University Origins

Introduction

Universities are so familiar that their origins are easily taken for granted. Haskins (1923) opened his classic survey by observing that universities, like cathedrals and parliaments, are a product of the Middle Ages and that the Greeks and Romans had none in the sense in which the word has been used for the past seven or eight centuries. Rüegg (1992, as cited in Peters, 2019) likewise describes the university as a creation of medieval Europe, and Verger (2003, as cited in Peters, 2019) maintains that, unless definite proof to the contrary appears, the medieval universities of the Latin West must be regarded as the sole source of the model that later spread across the world. These statements express what may be called the conventional account: the university arose in Paris, Bologna, and Oxford under European conditions and has no real link with comparable institutions elsewhere.

A second body of scholarship contests or qualifies that account along two lines. The first concerns institutions. George Makdisi argued in a series of studies (G. Makdisi, 1961, 1970, 1981, 1989) that the madrasa, an endowed college of law that spread across the eastern Islamic world from the eleventh century, anticipated central features of the Western college and that its certificates and scholastic methods have counterparts in Latin Europe. Other scholars extended the argument into legal and economic history. They suggested that the Islamic *waqf*, a perpetual charitable endowment, helped shape the English trust and the constitution of Merton College, Oxford (Adam, 2020; Gaudiosi, 1988; Koehler, 2010), and that some institutions of the English common law have Islamic antecedents that may have passed through Norman Sicily (J. A. Makdisi, 1999; Siddiqui & Ali, 2022). Arjomand (1999) captured the stakes of this line of argument: whatever the merits of the claim that the madrasa was the prototype of the European university, the significance of its development in medieval Islam cannot be doubted.

The second line concerns knowledge. Historians of science, medicine, and philosophy have shown that the Latin schools of the twelfth and thirteenth centuries received a large part of their scientific and philosophical substance from Arabic sources.

Hasse (2014) describes the influence of Arabic and Islamic philosophers on Latin thought as particularly dominant in natural philosophy, psychology, and metaphysics, and he notes that the translation movements transformed almost all philosophical disciplines in the medieval Latin world. This line of argument is less dramatic than claims about institutional borrowing, but it rests on manuscripts, translations, and university curricula rather than on analogy, and it is therefore better documented.

The question matters beyond antiquarian interest. It bears on how the history of higher education is told: Peters (2019) has argued that familiar lists of the oldest universities exclude non-European centers of learning on grounds of structural and legal dissimilarity that are asserted rather than demonstrated. It bears on how scientific research is understood, since organized and endowed forms of inquiry, such as observatories and teaching hospitals, are well attested in the Islamic world (Miller, 2006; Ragep, 2007b). And it bears on the standards of evidence used in transmission arguments: parallels between institutions are easy to find, whereas documented channels of transfer are rare.

This paper defends a qualified affirmative thesis in three parts. First, on knowledge, the case is strongest: the translation of Arabic scientific and philosophical works into Latin supplied much of the substance of university learning in mathematics, optics, astronomy, medicine, and natural philosophy. Second, on institutions, the Islamic world developed an organized infrastructure of teaching and research (the madrasa, the *waqf* endowment, the teaching hospital, the observatory, the library, and the certificate of authorization), whose influence on European institutions is plausible in some respects and unproven in others. Third, on corporate form, the university as a corporation of masters and students is best explained by European developments, although the essence of the university, understood as an organized and certified community of learning, cannot be separated from the knowledge, methods, and institutions that Europe received. The paper weighs each claim against explicit evidentiary criteria. It addresses five questions:

1. What knowledge cultures, institutions, and scholarly practices did Islamic civilization develop between the ninth and thirteenth centuries, and how did they support teaching and research?
2. What were the institutional and legal features of the madrasa and its *waqf* foundation?
3. Through what channels did texts, ideas, and institutional models move between the Islamic world and Latin Europe?

4. What Islamic content entered Latin higher learning, and which proposed institutional parallels (endowed colleges, *waqf* and trust, ***ijāzah*** and *licentia docendi*, the Inns of Court, and academic dress) are best supported by the evidence?
5. How have historians received these claims, and how should an affirmative thesis be stated so that it remains defensible?

The paper first sets out its method and criteria. It then examines Islamic knowledge culture and institutions of learning and research, reviews the channels of contact, documents the Islamic imprint on the content of Latin higher learning, assesses the proposed institutional parallels, and surveys the historiography. A discussion, a statement of limitations, and a conclusion follow.

Method and Evidentiary Standards

This study is a critical, comparative-historical review based on secondary scholarship. It draws on peer-reviewed articles, scholarly monographs, law-review studies, reference-work entries, public-domain classics, and institutional histories, and it uses primary sources only as mediated by that scholarship; it does not claim archival or philological research. Sources were selected for scholarly authority, relevance to the transmission question, and range of position, so that proponents, critics, and neutral surveys are all represented, and works freely accessible online were preferred where quality was comparable so that readers can verify claims without institutional subscriptions.

Four criteria were applied to each proposed link between an Islamic and a European institution or practice. The first is chronological precedence: the Islamic form must be demonstrably earlier. The second is structural correspondence: the two forms must share functionally significant features, not merely a name or an outward resemblance. The third is documented opportunity for contact: an evidenced channel, such as pilgrimage, crusade, trade, or translation, must connect the relevant people or places. The fourth is the sufficiency of local antecedents: a link weakens when a documented European precedent adequately explains the form without borrowing.

On this basis each link is classified as *plausible* (the first three criteria are met and local antecedents do not fully explain the form), *suggestive* (a parallel exists, but contact is

generic or local antecedents are sufficient), *speculative* (the parallel is partial and undocumented), or *not supported* (a documented European lineage explains the form). A fifth category, *well documented*, is reserved for transfers of texts and ideas for which manuscripts, translations, and curricula provide direct evidence. These classifications are interpretive judgments rather than measurements, and they are presented so that readers can examine and contest them.

Islamic Knowledge Culture and Institutions of Learning

Any assessment of the Islamic contribution to higher education has to begin with the knowledge culture in which Islamic institutions operated. Between the ninth and thirteenth centuries, learned communities in Baghdad, Cairo, Damascus, Nishapur, Marāgha, and many other centers built an infrastructure for producing, copying, teaching, certifying, and applying knowledge. It included paper and books, a translation movement, teaching circles and colleges, hospitals, and observatories, and it was held together by patronage and by the legal device of the endowment. This section describes that infrastructure before the paper turns to its relationship with Europe.

Translation, Paper, and the Making of a Scientific Culture

The foundation of this culture was the assimilation of inherited knowledge. Toomer (2008) places the mathematician and astronomer al-Khwārizmī in the Baghdad of the early ninth century, when, encouraged by the patronage of the caliphs, Islamic civilization was beginning to assimilate Greek and Hindu science. The popular image of this movement centers on the House of Wisdom, which Toomer, writing in an older tradition, called a kind of academy of scientists. More recent reference scholarship is more cautious. The House of Wisdom was a royal library maintained by the Abbasid caliphs, with copyists and bookbinders on its staff. Some translation, almost exclusively from Persian into Arabic, took place there but was not among its primary functions, and although scholarship and translation flourished in eighth- and ninth-century Baghdad, there is little evidence that the library stood at the center of those trends (Encyclopaedia Britannica, n.d.). The translation movement is therefore better understood as a broad enterprise than as the work of a single institution.

The material basis of this culture was paper. Bloom (2017) traces the diffusion of papermaking from China, which Arabs encountered in the eighth century, to the Mediterranean, where European Christians learned the craft by the twelfth century, and observes that Europeans later forgot their debt to Muslim papermakers. Paper was being made in Baghdad by the late eighth century, and in Bloom's account its wide availability encouraged an extraordinary culture of book-learning across Muslim lands that had no parallel in contemporary Christendom, which still relied on costly parchment and so restricted the number of writers and readers. A learned culture that could copy, circulate, and annotate texts cheaply was well placed to sustain the teaching circles, libraries, and certificates of transmission described below.

Assimilation led to critique and original research. Al-Khwārizmī's treatise on algebra, which Toomer (2008) reports was the first written in Arabic, addressed practical problems of inheritance, legacies, partition, trade, and land measurement, and its longest section required knowledge of the Islamic law of inheritance, so that the earliest Arabic algebra was entangled with the practical needs of Islamic law. Toomer adds that algebra was developed in Islamic lands in the following centuries to a far more sophisticated level, with al-Karajī and ʿUmar al-Khayyām among its later practitioners. In optics, Ibn al-Haytham's *Kitāb al-Manāẓir* (c. 1027) settled a long dispute among the Greeks about vision in favor of an account of light entering the eye and, in El-Bizri's (2006) assessment, rested on anatomical examination and on experimental arrangements designed to test hypotheses under controlled conditions.

These achievements were not produced in isolation from religion and law. Ragep (2007b) notes that Naṣīr al-Dīn al-Ṭūsī (1201–1274) wrote on jurisprudence, theology, and Sufism as well as on mathematics and astronomy, regarded the certainty of the exact sciences as a path to understanding God's creation, and studied under Kamāl al-Dīn ibn Yūnus, a legal scholar renowned also for astronomy and mathematics. The learned networks of the Islamic world thus joined the religious, legal, and rational sciences in the same circles of teachers and students.

From Teaching Circles to Endowed Colleges

Following an earlier scheme proposed by Pedersen (1986, as cited in Arjomand, 1999), Makdisi described three stages in the development of Islamic collegiate learning, as

summarized by Arjomand (1999). The first was the teaching circle (*ḥalaqa*, plural *ḥalaqāt*) formed around a scholar, usually in a mosque, from the earliest period to the tenth century. The second was the *mosque-inn college*, which appeared toward the end of the tenth century and joined a mosque to a hostel (*khān*) for students. The third was the madrasa college of law, in which the functions of mosque and inn were combined in one institution established by a single deed of endowment (Arjomand, 1999). The best-studied example is the Niẓāmiyya of Baghdad, begun in 1065 and opened in 1067 under the patronage of the Seljuq vizier Niẓām al-Mulk (G. Makdisi, 1961).

Two features made this form significant for comparison. First, the madrasa was a foundation: a founder endowed property whose revenues paid for teaching posts, stipends, and sometimes lodging, and the deed named the school of law to be taught. Second, it trained students for the legal professions within a recognized school of law (*madhhab*). Tibawi (1962), however, cautioned against drawing the lines too sharply: the differences among the congregational mosque, the ordinary mosque, and the madrasa were often slight, and the endowment of the Niẓāmiyya, although associated with Shāfiʿī law, also provided for a Qurʾān reciter and a grammarian (Tibawi, 1962, p. 228, note 1; p. 234, note 4).

Later social historians qualified the institutional picture. Berkey (1992) and Chamberlain (1994), studying Cairo and Damascus, emphasized that much learning depended on personal relationships and patronage rather than on fixed curricula, entrance requirements, or degrees, whereas Leiser (2022), whose study of the early madrasas of Egypt began as a 1976 dissertation, looked for structure and order in madrasa curricula and practices. The disagreement does not decide whether madrasas existed or were endowed. It bears on how closely they can be compared with the formal, degree-granting structures of European universities.

Waqf as the Legal Architecture of Learning

The legal basis of the madrasa was the *waqf*, a perpetual dedication of property whose income supports a stated charitable purpose under the management of a trustee (*nāẓir* or *mutawallī*) and according to conditions laid down in the founder's deed. Arjomand (1999), summarizing Makdisi, notes that the first three Oxford colleges were

founded as charitable trusts in the mid-thirteenth century and presents this as part of the case for the Islamic origin of the college.

Two features of the waqf bear directly on the comparison. First, the founder's deed customarily specified how the institution was to operate, and the founder's capacity to shape its operation became established practice (Fındıklı, 2022). Second, Islamic law did not give the foundation the status of an autonomous corporate body. Fındıklı (2022) argues that this gap left madrasas open to the influence of rulers and founders and helps explain why madrasa and university developed different patterns of governance and autonomy, and he reports that Arjomand (1999, p. 291, as cited in Fındıklı, 2022) treats the same gap as one of the factors that distinguished the Christian and Islamic paths of higher education.

If the Western college borrowed anything from the waqf, therefore, it adapted rather than copied it. Adam (2020) treats Merton as an early documented example of the Western foundation, an endowed body with a legal existence of its own, a feature that, on Fındıklı's (2022) analysis, the madrasa lacked.

The waqf also funded institutions of research and care, not only colleges. Ṭūsī served the Ilkhanid ruler Hülegü as minister of religious endowments while also overseeing the construction of the Marāgha observatory (Ragep, 2007b), and hospitals in the Islamic world are described as having been financed by endowments (Asad et al., 2024). The endowment thus gave a wide range of learned institutions a durable material base.

Hospitals and Observatories as Institutions of Research

Hospitals (*bīmāristāns*) combined care, teaching, and record-keeping. Miller (2006) traces the Islamic hospital to a synthesis of Persian, Greek, Indian, and other medical traditions at centers such as Jundishapur, credits the bimaristans with pioneering written medical records kept by students and with physician licensure, and argues that they resembled contemporary academic medical centers in philosophy, structure, and function and served as a model for the institutions that followed in Europe. Among the major examples he names the ʿAḍudī hospital of Baghdad (981) and the Manṣūrī hospital of Cairo (1284). A recent review adds that bimaristans were financed by waqf, served as sites of clinical teaching, and operated within a system of regulation in which, after a patient's

death in Baghdad in 931, the caliph ordered that physicians be examined before they were allowed to practice (Asad et al., 2024). These claims should be read with care, because accounts of hospital teaching concern a limited number of well-documented institutions and the route by which hospital models reached Europe is argued rather than documented. Even so, the Islamic hospital is among the clearest examples of an institution that joined an endowed physical plant, professional training, and systematic observation of cases.

The observatory offers an equally clear example of organized research. According to Ragep (2007b), the observatory at Marāgha, built under Ṭūsī's supervision for Hülegü from 1259, also comprised a library and a school, attracted scholars and students from across the Islamic world and even from China, and may be considered the first full-scale observatory. It lasted only about fifty years, but its legacy reached from China to Europe: its astronomers compiled the *Zīj-i Īlkhānī*, Ulugh Beg's fifteenth-century observatory at Samarqand was inspired by its remains, and its scholars devised new planetary models that preserved uniform circular motion while matching the accuracy of Ptolemy's system.

These institutions supported recognizable research practices. Observation was organized in the observatories and their instruments (Ragep, 2007b), controlled experiment was cultivated in optics (El-Bizri, 2006), and the systematic observation of cases was part of hospital medicine (Asad et al., 2024; Miller, 2006). Critical editing and commentary were also practiced on a large scale: Ragep (2007b) reports that Ṭūsī's recensions of Euclid's *Elements*, Ptolemy's *Almagest*, and the intermediate mathematical works became standard texts, that he treated trigonometry as an independent discipline, and that his attempted proof of Euclid's parallel postulate proved important for the later development of non-Euclidean geometry. The point is not that Islamic scholars anticipated every feature of modern research, which would be anachronistic, but that observation, experiment, critique, and the collaborative improvement of inherited texts were organized, funded, and taught within institutions.

Taken together, libraries, hospitals, and observatories show that Islamic societies organized inquiry institutionally, with buildings, endowments, staff, instruments, collections, and students, and tied teaching to research. These were not colleges in Makdisi's sense, but they belong to the same infrastructure of learning and are indispensable to any argument about the Islamic contribution to scientific research.

Certification, Disputation, and Scholarly Method

Teaching in this infrastructure was organized around the personal authority of the teacher and its certification. Stewart (1998) explains that the practice of giving, receiving, and collecting certificates (*ijāzāt*) grew out of the science of Prophetic tradition and became an essential part of Islamic education in nearly all academic fields. Certificates of transmission placed a student in a chain of transmitters, and the license to teach law and issue legal opinions recognized its holder as a fully qualified jurist, a practice that appears to have become standard by the eleventh century (Stewart, 1998). The system gave scholarship a method of verification. Knowledge was valid because it could be traced, teacher by teacher, to an authorized source, and the certificate bound the student to a named teacher who vouched for the student's competence.

G. Makdisi (1989) argued that disputation held a central place in the scholastic method of both classical Islam and the Christian West, a comparison that remains one of the most debated parts of his thesis (see the discussion of the essence of the university below). What can be said here is that the madrasa was organized around a school of law (Arjomand, 1999; Tibawi, 1962), that its teachers could also be accomplished in the rational sciences, as the case of Ṭūsī's teacher shows (Ragep, 2007b), and that religious and rational learning were often acquired in the same circles of teachers and students.

Channels of Contact and Transmission

Contact between the Islamic world and Latin Europe in the twelfth and thirteenth centuries is not in doubt. The question is what moved along the available channels. Three have figured in the literature.

The Latin East and Pilgrimage

Makdisi's argument, as summarized by Arjomand (1999), emphasizes the Levant. In this account the college form was carried to Europe by Westerners who saw madrasas in the Near East, among them the Knights Templar, said to have founded the Inns of Court in London, and a figure Arjomand calls John of London, who endowed the Collège des Dix-Huit in Paris for eighteen poor students in 1180 after, in Makdisi's reconstruction, seeing madrasas in or on the way to Jerusalem. The founder is more commonly named

Josse (Latin *Jocius*) of London. A chronological caution applies: Jerusalem was under Latin rule from 1099 to 1187, so any encounter with madrasas would have occurred in Muslim-ruled Syria or Egypt or along the way. Beckwith (2012) infers that Josse must have spent time in the Islamic Near East, in his view in Syria, because Jerusalem lies inland. The inference is reasonable but remains an inference. The founding charter, translated in Thorndike (1944, p. 21), records that Josse returned from Jerusalem and was moved by the care given to the poor and sick in the hospital of Notre-Dame in Paris; it does not refer to Islamic institutions.

Sicily and the Mediterranean

A second channel runs through Norman and Hohenstaufen Sicily, where Latin, Greek, and Arabic legal and administrative cultures overlapped. J. A. Makdisi (1999) argued that three institutions of the common law that developed under Henry II (the action of debt, the assize of novel disseisin, and trial by jury) may trace their origins to Islamic legal institutions, and he pointed to Sicily as the historic opportunity for such transplants. Siddiqui and Ali (2022) tested part of this claim by comparing the English assize with the development of possessory rights in Indian law and concluded that Makdisi's claim about the assize and the Islamic doctrine of ***istiḥqāq*** stands validated. These studies concern law rather than education and test doctrinal analogy rather than documentary transmission, but they supply a mechanism, the movement of legal ideas through Sicily, that proponents of an educational link also invoke.

Toledo and the Translation Movement

The best-documented channel is textual. Burnett (2001) reassesses why Toledo became the leading center of Arabic–Latin translation in the second half of the twelfth century and shows that its two principal translators, Gerard of Cremona and Dominicus Gundissalinus, concentrated on different areas of knowledge, with Gerard following a deliberate program of translation. Hasse (2014) identifies the motives behind the Spanish translation movement: the interest of individual translators, the demand of French schools for scientific texts, the availability of Arabic manuscripts in newly conquered cities, the patronage of the archbishop of Toledo, and clerical interest in promoting Latin scientific culture. Weisser (1987) adds that Salerno had been an earlier gateway, where a scholastic

medicine drawing on Arabic material spread to the medical schools and new universities of France and Italy and prepared the ground for the *Canon* that Gerard later translated at Toledo. The movement was also finite: Hasse notes that Arabic–Latin translation almost ceased after about 1300 and resumed only after 1480. Translation moved texts, and through texts curricula, but not institutional forms, and Tibawi (1962, p. 235, note 1) observed that the madrasa, an eastern Sunni institution, was not adopted in al-Andalus, where the mosque remained the principal setting for higher learning. Iberia is therefore a strong route for ideas and a weak route for the madrasa itself, which makes the Levant and Sicily the more probable routes for any institutional model.

The Islamic Imprint on the Content of Latin Higher Learning

If the institutional parallels remain contested, the transfer of knowledge does not. The strongest evidence for an Islamic contribution to European higher education lies in the content of what Latin scholars studied, and that evidence is of the kind historians trust most: manuscripts, named translators, datable translations, and university statutes and syllabi. Table 1 summarizes five fields in which the transfer is documented, and the subsections below discuss each. The pattern is consistent with Hasse's (2014) overview, which describes the Arabic and Islamic influence on Latin thought as particularly dominant in natural philosophy, psychology, and metaphysics and notes that Latin translations of Averroes were available in the new universities about thirty years after his death in 1198.

Table 1: Documented Transfers of Islamic Scientific and Philosophical Works to Latin Higher Learning

Field	Islamic works and figures	Latin reception	Principal sources
Mathematics	Al-Khwārizmī's treatises on algebra and on Hindu numerals	Twelfth-century Latin translations (Robert of Chester and Gerard of Cremona for the algebra); the algorismus tradition; Fibonacci's Liber abaci (1202)	Toomer (2008); O'Connor & Robertson (n.d.)
Optics	Ibn al-Haytham's *Kitāb al-Manāẓir* (c. 1027)	Latin De aspectibus; used by Roger Bacon, John Peckham, and Witelo	El-Bizri (2006)

Field	Islamic works and figures	Latin reception	Principal sources
Astronomy	Al-Khwārizmī's *Zīj*, the Toledan Tables, and the models of al-Ṭūsī, al-ʿUrḍī, and Ibn al-Shāṭir	Adelard of Bath's translation of al-Khwārizmī's tables (in al-Majrīṭī's revision); Toledan Tables used across Europe for at least a century; mathematically equivalent devices in Copernicus (route of transmission debated)	Toomer (2008); Ragep (2007a)
Medicine	Avicenna's (Ibn Sīnā's) Canon of Medicine	Translated by Gerard of Cremona at Toledo; in university courses from the fourteenth century (Montpellier, Paris); twenty-five complete Latin editions by 1608	Weisser (1987)
Natural philosophy, metaphysics, and the arts curriculum	Al-Fārābī, Avicenna, and Averroes; Arabic classifications of the sciences	Translations from the late eleventh century onward; Averroes available in the new universities within about thirty years of his death in 1198; Paris arts statutes of 1255 required all known works of Aristotle; Gundisalvi's Division of Philosophy transmitted Arabic classifications of the sciences	Hasse (2014); Thorndike (1944)

Note. Dates and attributions follow the sources cited in each row. The table records documented transfers of texts and does not assess the scientific or philosophical consequences of their reception.

Mathematics: Algebra, Numerals, and Commercial Arithmetic

Toomer (2008) concludes that al-Khwārizmī's algebra, translated into Latin twice in the twelfth century by Robert of Chester and by Gerard of Cremona, was the chief influence on medieval European algebra, shaping its rhetorical form and some of its vocabulary, and that the English word *algebra* comes, through the Latin translations, from the Arabic *al-jabr* in the title of his book. His treatise on Hindu numerals survives only in Latin, and Toomer reports that its introduction to the West in the early twelfth century gave rise to the *algorismus* tradition and the word *algorithm*. In 1202 Fibonacci's *Liber abaci*, written after his education in Bugia in North Africa, presented the Hindu–Arabic numeral system to a wider European audience, with many problems similar to those in Arabic sources and a large collection aimed at merchants (O'Connor & Robertson, n.d.). Høyrup (2014) cautions that Fibonacci is better seen as a witness to the commercial mathematics thriving in the Mediterranean world than as its sole protagonist, since Romance abbacus culture arose in a broad process of interaction with Arabic non-scholarly traditions. University arithmetic and algebra were thus built on Arabic foundations, and the

commercial arithmetic taught in the schools of Italian cities drew in part on Arabic practical traditions.

Optics and the Experimental Tradition

Ibn al-Haytham's *Kitāb al-Manāẓir* provides the clearest case of a research tradition passing into Latin scholarship. El-Bizri (2006) reports that the work was translated into Latin as *De aspectibus*, that it decisively shaped the emerging theory of perspective in medieval and Renaissance science and art, and that it influenced Roger Bacon, John Peckham, and Witelo and, later, the Renaissance theorists Alberti and Ghiberti. Claims that Ibn al-Haytham *founded* experimental science are common in popular accounts and are better stated with care. What El-Bizri's entry supports is that he sought rigorous, controlled experimental tests of theoretical hypotheses and that his *Optics* was an outstanding achievement in the study of light and vision between Ptolemy and Kepler.

Astronomy: From the Toledan Tables to Copernicus

Astronomy shows both the documented and the debated parts of the transfer. The documented part is textual and tabular. Toomer (2008) reports that al-Khwārizmī's astronomical tables, in the revision of al-Majrīṭī, were translated by Adelard of Bath early in the twelfth century and that the Toledan Tables, drawing on al-Khwārizmī, al-Battānī, and al-Zarqālī and probably translated by Gerard of Cremona in the late twelfth century, enjoyed immense popularity throughout Europe for at least a hundred years. The debated part concerns the planetary models of the Marāgha school, which grew out of a critical tradition that included Ibn al-Haytham's *Doubts against Ptolemy* (Ragep, 2007a). Ṭūsī devised a geometrical device, now called the Ṭūsī couple, and al-ʿUrḍī and Ibn al-Shāṭir developed related models that preserved uniform circular motion while reproducing the accuracy of Ptolemy's system (Ragep, 2007a, 2007b). Ragep (2007a) summarizes the growing recognition that a number of the mathematical models used by Copernicus had first been developed by these Islamic astronomers, and he notes that this has prompted speculation about how Copernicus learned of them. Saliba (n.d., 2007) has argued that Arabic astronomical manuscripts and Byzantine Greek intermediaries were available to Copernicus's contemporaries and that scholars such as Guillaume Postel could read the Arabic texts directly. The route of transmission remains undocumented, however, and the

case is best described as a strong mathematical parallel with plausible but unproven channels of access.

Medicine in the University Curriculum

Medicine shows the transfer entering the formal curriculum. Weisser (1987) documents that Gerard of Cremona translated Avicenna's *Canon of Medicine* at Toledo in the second half of the twelfth century, that the work was in use among medical scholars in the thirteenth century and in university courses in the fourteenth, and that it appears in a papal bull of 1309 as an optional textbook in the syllabus for candidates for the mastership at Montpellier, where it was firmly established by 1340. The Paris faculty mentions it as lecture material in 1330, German universities followed, and in all there were eleven complete incunable editions and fourteen further complete Latin editions up to 1608. From the early fourteenth to the mid-sixteenth century Avicenna ranked with Hippocrates and Galen as an authority in Western medical studies, and the *Canon* remained obligatory into the eighteenth century at Valladolid, Salamanca, and Padua (Weisser, 1987). Weisser adds a caution: the effect of Avicenna on the rise of scientific medicine cannot yet be assessed because systematic studies are lacking. The documented fact is the presence of an Arabic medical text at the center of the medical curriculum for several centuries.

Philosophy, the Arts Faculty, and the Organization of Knowledge

Philosophy shows the transfer reaching the core of the arts curriculum. Hasse (2014) reports that the first Arabic–Latin translations to carry philosophical material into Latin Europe, produced in Italy toward the end of the eleventh century and mostly by Constantine the African, were texts on medicine and natural philosophy, and that the translation movements went on to transform almost all philosophical disciplines in the medieval Latin world, with an influence he describes as particularly dominant in natural philosophy, psychology, and metaphysics. Latin translations of Averroes became available in the newly developing universities about thirty years after his death in 1198, and in 1255 the statutes of the Paris arts faculty declared all known works of Aristotle mandatory reading, a step that helped make Averroes's commentaries the principal secondary literature of Latin university culture (Hasse, 2014). The Paris arts regulations of 1255 are translated in Thorndike (1944, p. 64). Arabic classifications of the sciences, transmitted chiefly through

Gundisalvi's *Division of Philosophy*, also shaped how Latin scholars organized knowledge (Hasse, 2014). Two cautions apply. Hasse records that Arabic–Latin translation almost ceased after about 1300 and that interest in Arabic philosophy and science declined in the second half of the sixteenth century, and he finds the influence less pronounced in logic and ethics than in natural philosophy, psychology, and metaphysics.

Assessing the Proposed Institutional Parallels

Table 2 summarizes the assessments of the institutional and practical links developed in this section; the transfer of texts, documented in the preceding section, is included as a contrast case because it shows what a well-documented transfer looks like. The subsections proceed from the best-supported parallels to the least supported, and one distinction governs them throughout: a parallel of form is not evidence of transmission. Two institutions may resemble each other closely without either having influenced the other, and resemblance raises the likelihood of borrowing only when a channel of contact is also shown and local European explanations prove insufficient.

Table 2: Assessment of Proposed Institutional and Practical Links Between Islamic and Western Learning

Proposed link	Islamic precedent and European counterpart	Main caution	Assessment
Endowed college	Madrasa college of law founded by a deed of endowment by the eleventh century (Arjomand, 1999; G. Makdisi, 1961). Counterparts: the Collège des Dix-Huit (1180) and the first Oxford colleges (1249–1264; University of Oxford, n.d.-b).	Contact with madrasas is inferred, not documented. The 1180 charter points to an existing Parisian hospital custom (Thorndike, 1944).	Plausible
Waqf, the trust, and Merton College	Waqf as a perpetual charitable endowment under a trustee (Gaudiosi, 1988). Counterparts: the English trust and Merton's statutes of 1264 (Adam, 2020; Koehler, 2010).	No document links an English founder to a waqf deed. Roman, Germanic, and ecclesiastical explanations persist. The madrasa lacked corporate personality (Fındıklı, 2022).	Plausible, contested
Ijāzah and licentia docendi	License to teach law and issue legal opinions, standard by the eleventh century (Stewart, 1998). Counterpart: the Latin license to teach, regulated by 1179 (Thorndike, 1944).	The Islamic license was issued by an individual teacher, the Latin license under corporate or ecclesiastical authority (Stewart, 1998). No evidence of transfer.	Suggestive

Proposed link	Islamic precedent and European counterpart	Main caution	Assessment
Inns of Court	Islamic guilds of law and Templar transmission, as proposed by G. Makdisi (1985) and summarized by Arjomand (1999). Counterpart: the Inns of Court, London.	Makdisi concedes that no direct evidence exists. The origins of the Inns remain obscure and have native explanations (Headlam, 1909; Rider, n.d.).	Speculative
Academic dress	Islamic scholarly dress (the claimed source). Counterpart: gowns, hoods, and caps of Oxford and other universities.	Documented lineage from medieval European clerical dress (Kerr, 2023; University of Oxford, n.d.-a).	Not supported
Arabic–Latin transfer of texts (contrast case)	Arabic scientific, medical, and philosophical texts. Counterpart: Latin translations made at Toledo and their use in university curricula (Burnett, 2001; Hasse, 2014; see Table 1).	Transfers texts and curriculum content, not institutional forms.	Well documented

Note. Assessments are the author's interpretive judgments based on the four criteria described in the Method and Evidentiary Standards section: chronological precedence, structural correspondence, documented opportunity for contact, and sufficiency of local European antecedents.

Endowed Colleges

Chronology favors the Islamic precedent. On Arjomand's (1999) account, madrasa colleges of law rested on single deeds of endowment by the eleventh century, whereas the earliest known European college, the Collège des Dix-Huit, dates to 1180, and the first Oxford colleges (University, Balliol, and Merton) were established between 1249 and 1264 (University of Oxford, n.d.-b). Structure also corresponds. Oxford's own account says that the earliest colleges began as endowed houses or halls of residence under the supervision of a master (University of Oxford, n.d.-b), a description that fits the madrasa's combination of endowment, residence, and teaching. Beckwith (2012) goes further than Makdisi. He argues that the early European colleges were modeled on the small endowed madrasas of the Near East, whose own origins he traces to Central Asia.

The documentary record, however, also points to local precedent. According to the foundation charter translated in Thorndike (1944, p. 21), Josse acquired a room in the hospital of Notre-Dame in which, by long-standing custom, poor clerics were already lodged, and he arranged that eighteen clerical students would have beds and a small monthly allowance drawn from the hospital's alms. This European charitable practice shows that the earliest colleges functioned as hospices for poor scholars before they

became teaching communities, so the parallel with the madrasa does not require a borrowing, although it does not exclude one. The link is best described as plausible but unproven: precedence, correspondence, and general opportunity for contact are present, but contact with madrasas is inferred rather than documented, and European charitable foundations offer a partial explanation.

Waqf, the Trust, and Merton College

The legal-historical argument is more specific. Gaudiosi (1988) argued that the English trust, long traced to Roman or Germanic law, may owe a debt to the Islamic waqf and that the structure of Merton College satisfies a number of the conditions required for a waqf. Koehler (2010), in a short article, makes a broader claim: early Islamic charities were catalysts of institutional innovation, common-law trusts may have copied Islamic legal concepts, and the constitutions of the earliest Oxford and Cambridge colleges replicated the design of charitable madrasas. Adam (2020) proposes that the first Western foundations emerged in the twelfth and thirteenth centuries, the age of the Crusades, out of contacts and transfers between Islam and Christianity.

The proposal has strengths and weaknesses. The waqf is attested centuries before the English trust, and the functional analogy is close: property is dedicated in perpetuity to a charitable purpose and managed by trustees under the founder's instructions (Gaudiosi, 1988). Yet no document shows an English founder or lawyer consulting a waqf deed, and Adam (2020) acknowledges that the case remains circumstantial. Khafagy (2025) argues that Islamic endowments and Western foundations developed under distinct founding and legitimizing mechanisms and along incompatible institutional trajectories, and, as noted above, Merton's statutes created a self-governing scholarly community whereas the waqf did not create an autonomous legal person (Fındıklı, 2022). Under the criteria used here the link is plausible but contested.

The License to Teach and Scholastic Method

The *ijāzah* is the second major comparison. As described above, the license to teach law and issue legal opinions (*ijāzat al-tadrīs wa'l-iftā'*) recognized its holder as a fully qualified jurist (Stewart, 1998). Stewart reports that Makdisi likened this license to a doctorate of law and suggested that the Latin *licentia docendi* may ultimately derive from it (G. Makdisi, 1981, as cited in Stewart, 1998).

The comparison is suggestive, but it also illustrates the difficulty of the transmission argument. Stewart (1998) identifies a fundamental difference: the Islamic certificate was issued by an individual teacher, whereas the European license was granted under the authority of a corporate university or institution. Church authorities were already regulating the licensing of teachers in the later twelfth century, as the decree of the Third Lateran Council in 1179 shows (Thorndike, 1944, p. 21), so a local antecedent exists. Makdisi himself, in a passage quoted by Peters (2019), affirmed that the university as a form of social organization was peculiar to medieval Europe (G. Makdisi, 1970, as cited in Peters, 2019). The ***ijāzah*** and the *licentia docendi* may therefore be cousins rather than parent and child, and parallels in scholastic method likewise do not by themselves show direct transmission (G. Makdisi, 1989). The link is classified as suggestive.

The Inns of Court

The Inns of Court hypothesis is the most distinctive and the most speculative element of Makdisi's case. In a paper prepared for a conference on Islamic law and the common law, G. Makdisi (1985) observed that medieval English law, with its judge-made case law and its law schools in the Inns of Court, stood apart from the civil and canon law traditions of the Continent and shared these features only with Islam, and he proposed that the Inns originated as guilds of law comparable to those of Baghdad. Arjomand (1999) summarizes the proposal as the claim that the Knights Templar of the Levant introduced the form, the Temple in London being the site of two of the Inns. Makdisi was candid about the evidence: the extant sources contain no direct evidence of a connection between the two systems, although he held that their similarities were peculiar to them alone (G. Makdisi, 1985).

The English evidence offers a different explanation. A former archivist of the Inner Temple notes that the origins of the Inns remain obscure and that the name *inns of court* is not found until about 1425 (Rider, n.d.), and older institutional histories describe lawyers and students gathering in hostels near the royal courts and forming voluntary associations of teachers and learners of law, a native process that needs no foreign model (Headlam, 1909). J. A. Makdisi (1999) and Siddiqui and Ali (2022) strengthen the case for doctrinal parallels in the common law, but doctrine and legal education are separate questions. The Inns of Court hypothesis is therefore classified as speculative.

Academic Dress

Claims that gowns, hoods, and caps derive from Islamic scholarly dress are sometimes repeated, but the documentary evidence points to a European clerical lineage. The University of Oxford (n.d.-a) states that the form of its academic robes can be traced to the coats and ecclesiastical robes of medieval Europe and that present dress is very much the same as that worn in medieval times. Kerr (2023) shows that the Oxford Convocation habit has its origins in one of the medieval outer habits and also notes that graduates of the medieval English universities were required to wear a habit of one of two types, the cloak (*cappa*) or the tabard. Thorndike (1944, pp. 150, 191) translates regulations of academic dress issued at Toulouse in 1314 and at Paris in 1339. A documented European antecedent suffices, so the claim fails the fourth criterion and is classified as not supported.

Scholarly Reception and Critique

Makdisi's thesis met criticism from its first statement. Tibawi (1962) acknowledged that Makdisi's 1961 study deserved careful attention and then disputed many of its terminological and interpretive choices, among them the sharp distinction between mosque and madrasa, the use of the terminology of chairs and professors, and the portrait of Niẓām al-Mulk's foundation as a college of law. His reply is best read as a critique of detail rather than a rejection of the madrasa's importance.

Social-historical and legal critiques followed. Berkey (1992) and Chamberlain (1994) stressed informality in the transmission of knowledge, and Leiser (2022) sought structure within it. Fındıklı (2022) concludes that differences in legal tradition and political authority help explain the divergent outcomes of madrasa and university in internal governance and institutional autonomy, and Khafagy (2025) reaches a parallel conclusion about the endowment form. These studies do not deny contact or influence; they argue that the institutions developed along different paths.

Supportive scholarship has come largely from legal and economic history rather than from the history of universities: Gaudiosi (1988), J. A. Makdisi (1999), Koehler (2010), Adam (2020), and Siddiqui and Ali (2022). These works identify specific institutional forms and doctrinal analogies that can be tested, but their conclusions rest mainly on structural

similarity and general opportunity for contact, and Adam (2020) acknowledges the limits of the evidence.

A third strand questions the conventional account on historiographical grounds. Peters (2019) argues that the claim that the university is a distinctively European institution depends on definitions of the university that are drawn from the Latin case, and that lists of the world's oldest universities exclude non-European centers of learning without demonstrating the dissimilarities they assert. Peters nonetheless concedes that there may be good reason to insist on the distinctiveness of the medieval university form.

The knowledge-transfer claims have drawn less opposition because they rest on manuscripts and curricula, but they are not free of debate. Toomer (2008) judged al-Khwārizmī's own achievements modest in originality yet uncommonly influential, Høyrup (2014) questions the single-gateway account of Fibonacci, Saliba (n.d.) questions the autonomy of Renaissance astronomy from Islamic work while Ragep (2007a) notes that how Copernicus gained access to the Marāgha models is not documented, and Weisser (1987) stresses that the consequences of Avicenna's reception for scientific medicine remain unstudied. Hasse (2014) finds the Arabic influence less pronounced in logic and ethics. These qualifications refine rather than weaken the central point, which is that Arabic and Islamic learning supplied much of the content of Latin higher education for several centuries.

Part of the persistence of the conventional account may lie in what Europeans came to forget. Bloom (2017) observes that Europeans forgot their debt to Muslim papermakers, Weisser (1987) records that sixteenth-century humanist physicians attacked Arabic medicine and that Paracelsus burned the *Canon* in 1527, and Hasse (2014) notes that interest in Arabic authorities declined in the second half of the sixteenth century. When the Renaissance narrative of a recovered classical antiquity took hold, the Arabic intermediaries were easy to omit. This is an interpretation rather than a demonstrated cause, but it helps explain why the Islamic role in the formation of European learning has been underrepresented in standard accounts of the university (Peters, 2019).

Taken together, the literature supports a division of labor. The university as a corporation of masters and students, with its legal personality and privileges, is best explained by European developments, as Makdisi himself conceded (G. Makdisi, 1970, as cited in Peters, 2019) and as Haskins (1923) assumed. The content of higher learning in

mathematics, optics, astronomy, medicine, and natural philosophy owes a documented and substantial debt to Arabic and Islamic scholarship. The college, the endowment, and the license to teach are the places where an Islamic institutional contribution is both chronologically possible and structurally plausible.

Discussion

A Model of Mixed Origins

The evidence reviewed above fits a model of mixed origins better than either a purely indigenous or a purely borrowed account. European colleges grew from local practices of charity for poor scholars, from monastic and cathedral discipline, and from hospital hospitality, as the charter of the Collège des Dix-Huit illustrates. At the same time, Western founders, translators, and lawyers worked in a Mediterranean world in which texts, ideas about endowment and trusteeship, and models of teaching authority circulated, and the Islamic world supplied some of the earliest and most developed examples. Adaptation, not imitation, is the operative idea: the Western college joined the endowment with corporate self-government, a combination that neither the madrasa nor the hospital hostel had provided.

What Is the Essence of the University?

What counts as the essence of the university determines how much weight the Islamic contribution can bear. If the essence is the legal form of a self-governing corporation of masters and students, the evidence points to Europe (Fındıklı, 2022; G. Makdisi, 1970, as cited in Peters, 2019). But the university can also be understood as an organized community of learning with four components: a body of knowledge, a method of teaching and argument, institutions that house and fund teaching, and a means of certifying teachers and graduates. On the first, the Islamic contribution is documented: the arts and medical curricula rested in large part on Arabic works (Hasse, 2014; Weisser, 1987). On the second, G. Makdisi (1999) argued that scholasticism, as a movement and a method, originated in Islam and appeared in the Christian West in the twelfth century, with the college as its institution par excellence in classical Islam and the university in the West. The claim is contested, but it names the right question, which is whether the university's characteristic practices of commentary and disputation were inherited. On the third, the

endowed college is the best candidate for institutional inheritance. On the fourth, the Islamic license shows a parallel, but the Latin license had ecclesiastical roots of its own (Stewart, 1998; Thorndike, 1944). The essence of the university in this broader sense is therefore composite, with an Islamic contribution that is large in content, substantial in method and institutional culture, and limited in corporate form.

The Weight of the Islamic Contribution

The weight of the Islamic contribution differs by layer, and stating the differences plainly is what gives the thesis its authority. In knowledge, the contribution is large, documented, and sustained, and in natural philosophy, psychology, and metaphysics it was dominant in Hasse's (2014) assessment. Algebra, the Hindu–Arabic numerals, the optics of Ibn al-Haytham, the Toledan Tables, the *Canon* of Avicenna, and the commentaries of Averroes were not marginal additions to Latin learning but texts and traditions that shaped teaching and scholarship in the schools and universities (El-Bizri, 2006; Hasse, 2014; Toomer, 2008; Weisser, 1987). In institutions of learning and research, the Islamic world built and endowed colleges, hospitals, observatories, and libraries and developed a system of certification. Its colleges and its observatory at Marāgha preceded comparable arrangements in Latin Europe, although the channels by which these forms influenced Europe are undocumented (Arjomand, 1999; Miller, 2006; Ragep, 2007b; Stewart, 1998). In corporate form, the debt runs the other way: the self-governing university of masters and students is a European creation, and the madrasa's lack of corporate autonomy is one of the clearest differences between the two traditions (Fındıklı, 2022).

Implications for the History of Higher Education and Research

Four implications follow. First, genealogies of institutions should be constructed component by component: asking whether Islam or Europe invented the university presumes a single origin and a single definition, whereas asking where the college, the endowment, the license, the curriculum, and corporate autonomy came from yields more precise and more defensible answers. Second, Peters's (2019) critique of lists of the oldest universities shows that definitions matter: if the university is defined by corporate autonomy, the medieval European case is distinctive, but if it is defined as an organized center of higher learning, a longer and more global history is appropriate. Third, histories

of scientific research should include the institutions through which inquiry was organized, such as observatories, hospitals, libraries, and networks of certified teachers, which are amply attested in the Islamic world. Fourth, parallels are cheap and channels are costly, so claims should be proportioned to the kind of evidence available.

Evidence That Would Strengthen or Weaken the Case

Several lines of research could advance the debate: (a) systematic comparison of waqf deeds with the statutes of early colleges such as Merton, looking for shared formulas; (b) prosopographical study of founders and their travels, including Josse of London and the circle of Walter de Merton; (c) examination of Latin documents from the crusader states and Sicily for exposure to Islamic endowments; (d) comparison of how licenses to teach were drafted in Arabic and in Latin; and (e) study of how translated Arabic works were actually taught, through statutes, syllabi, commentaries, and student notebooks. Shared formulas or direct exposure would strengthen the institutional case considerably, whereas evidence that early colleges followed hospital or monastic statutes in every relevant clause would weaken it.

Limitations and Directions for Future Research

This paper has several limitations. It relies on secondary scholarship in English and does not analyze Arabic or Latin primary sources directly, so claims about charters, deeds, statutes, and translations are mediated. Some central works, notably Makdisi's *The Rise of Colleges* and the monographs of Berkey and Chamberlain, are not freely available online, even though freely accessible alternatives were preferred wherever their quality allowed. Several sources on Islamic science and medicine are reference-work entries or review articles that summarize rather than test claims, and popular claims about scientific firsts were deliberately set aside. The literature is also uneven: supportive studies are concentrated in legal and economic history, whereas critical studies are concentrated in Islamic social history and the history of European universities. The classification scheme in Table 2 is an interpretive device, not a measurement. Finally, the paper treats the Islamic contribution through selected fields. It does not examine chemistry, geography, agriculture, engineering, the mosque-universities of al-Qarawiyyin and al-Azhar (whose claims to be

among the oldest universities remain disputed; Peters, 2019), or the later Ottoman, Safavid, and Mughal systems of learning.

Conclusion

The question of the roots of the university cannot be answered by choosing between Europe and Islam, but the answer is not symmetrical. The strongest, best-documented, and most consequential Islamic contribution is to the content and methods of higher learning. Through the Arabic–Latin translation movement, mathematics, optics, astronomy, medicine, and natural philosophy entered the Latin schools in forms that supplied working texts for university teaching in several fields for centuries, and in natural philosophy, psychology, and metaphysics the Arabic influence was dominant (Hasse, 2014). The Islamic world had also built an organized infrastructure of learning and research, consisting of the madrasa and its endowment, the teaching hospital, the observatory, the library, and the certificate of authorization, that is well attested and, in the cases of the college and the observatory, preceded comparable European arrangements.

In the institutional layer the evidence is more mixed. The endowed college and the legal logic of perpetual endowment are plausible borrowings or adaptations, the license to teach is a suggestive parallel, the Inns of Court hypothesis is speculative, and an Islamic origin for academic dress is not supported. The university in the strict medieval sense, a corporation of masters and students with legal personality and privileges, is a European creation, a point acknowledged by Makdisi and his critics alike. Yet the university's essence, understood as an organized and certified community of learning, cannot be told without the Islamic knowledge, methods, and institutions that it received.

A qualified affirmative thesis is therefore warranted: Islamic knowledge and institutions were a major, though not exclusive, strand in the formation of Western higher education and scientific research. The thesis would be strengthened by documentary evidence of contact, by close comparison of waqf deeds with early college statutes, and by studies of how translated Arabic works were taught, and it should always distinguish demonstrated influence from plausible inference.

References

Adam, T. (2020). The contribution of the Islamic wakf to the formation of the modern and Western institution of the foundation. *Journal of Muslim Philanthropy & Civil Society, 4*(1). https://scholarworks.iu.edu/iupjournals/index.php/muslimphilanthropy/article/view/1916

Arjomand, S. A. (1999). The law, agency, and policy in medieval Islamic society: Development of the institutions of learning from the tenth to the fifteenth century. *Comparative Studies in Society and History, 41*(2), 263–293. https://doi.org/10.1017/S001041759900208X

Asad, M. R., Almansour, M., Kazmi, S. Y., Alzahrani, R. E., Ahmed, M. M., & Nazeer, M. (2024). Educational paradigms in Islamic medical history: A review. *Journal of Pharmacy and Bioallied Sciences, 16*(Suppl. 1), S56–S59. https://doi.org/10.4103/jpbs.jpbs_969_23

Beckwith, C. I. (2012). *Warriors of the cloisters: The Central Asian origins of science in the medieval world*. Princeton University Press. https://doi.org/10.23943/princeton/9780691155319.001.0001

Berkey, J. P. (1992). *The transmission of knowledge in medieval Cairo: A social history of Islamic education*. Princeton University Press. https://doi.org/10.1515/9781400862580

Bloom, J. M. (2017). Papermaking: The historical diffusion of an ancient technique. In H. Jöns, P. Meusburger, & M. Heffernan (Eds.), *Mobilities of knowledge* (pp. 51–66). Springer. https://doi.org/10.1007/978-3-319-44654-7_3

Burnett, C. (2001). The coherence of the Arabic-Latin translation program in Toledo in the twelfth century. *Science in Context, 14*(1–2), 249–288. https://doi.org/10.1017/S0269889701000096

Chamberlain, M. (1994). *Knowledge and social practice in medieval Damascus, 1190–1350*. Cambridge University Press.

El-Bizri, N. (2006). Ibn al-Haytham, or Alhazen. In J. W. Meri (Ed.), *Medieval Islamic civilization: An encyclopedia* (Vol. 1). Routledge. https://iis.ac.uk/wp-content/uploads/2024/10/ibn-al-haytham-el-bizri-2006-601109220.pdf

Encyclopaedia Britannica. (n.d.). *Bayt al-Ḥikmah*. Retrieved October 14, 2026, from https://www.britannica.com/place/Bayt-al-Hikmah

Fındıklı, B. (2022). Rethinking ancient centers of higher learning: Madrasa in a comparative-historical perspective. *British Journal of Educational Studies, 70*(2), 129–144. https://doi.org/10.1080/00071005.2021.1901853

Gaudiosi, M. M. (1988). The influence of the Islamic law of waqf on the development of the trust in England: The case of Merton College. *University of Pennsylvania Law Review, 136*(4), 1231–1261. https://doi.org/10.2307/3312162

Haskins, C. H. (1923). *The rise of universities*. Henry Holt and Company. https://www.gutenberg.org/ebooks/63574

Hasse, D. N. (2014). Influence of Arabic and Islamic philosophy on the Latin West. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Spring 2014 ed.). Stanford University. https://plato.stanford.edu/archives/spr2014/entries/arabic-islamic-influence/

Headlam, C. (1909). *The Inns of Court*. A. & C. Black. https://www.gutenberg.org/ebooks/55062

Høyrup, J. (2010). *Fibonacci—Protagonist or witness? Who taught Catholic Christian Europe about Mediterranean commercial arithmetic?* [Preprint]. Roskilde University. https://rucforsk.ruc.dk/ws/portalfiles/portal/34896490/Hoyrup_2010_e_Fibonacci_Protagonist_or_Witness_preprint.PDF

Kerr, A. (2023). The Oxford Convocation habit: An endangered species of academic dress. *Transactions of the Burgon Society, 22*, 46–61. https://doi.org/10.4148/2475-7799.1213

Khafagy, R. A. (2025). Islamic endowments (waqf) and Western philanthropic foundations: Historical institutionalist insights. *Journal of Muslim Philanthropy & Civil Society, 9*(1). https://scholarworks.iu.edu/iupjournals/index.php/muslimphilanthropy/article/view/5893

Koehler, B. (2010). Early Islamic charities as catalysts of institutional innovation. *Economic Affairs, 30*(3), 6–8. https://doi.org/10.1111/j.1468-0270.2010.02014.x

Leiser, G. (2022). *The restoration of Sunnism: The early history of Islamic law schools and the professoriate in Egypt, 495–647/1101–1249*. Lockwood Press. https://doi.org/10.5913/2022792

Makdisi, G. (1961). Muslim institutions of learning in eleventh-century Baghdad. *Bulletin of the School of Oriental and African Studies, 24*(1), 1–56. https://doi.org/10.1017/S0041977X0014039X

Makdisi, G. (1970). Madrasa and university in the Middle Ages. *Studia Islamica*, (32), 255–264. https://doi.org/10.2307/1595223

Makdisi, G. (1981). *The rise of colleges: Institutions of learning in Islam and the West*. Edinburgh University Press. https://www.fulcrum.org/concern/monographs/rx913q04n

Makdisi, G. (1985). The guilds of law in medieval legal history: An inquiry into the origins of the Inns of Court. *Cleveland State Law Review, 34*(1), 3–18. https://engagedscholarship.csuohio.edu/clevstlrev/vol34/iss1/4/

Makdisi, G. (1989). Scholasticism and humanism in classical Islam and the Christian West. *Journal of the American Oriental Society, 109*(2), 175–182. https://doi.org/10.2307/604423

Makdisi, G. (1999). Religion and culture in classical Islam and the Christian West. In R. G. Hovannisian & G. Sabagh (Eds.), *Religion and culture in medieval Islam* (pp. 3–23). Cambridge University Press. https://assets.cambridge.org/97805216/23506/sample/9780521623506wsc00.pdf

Makdisi, J. A. (1999). The Islamic origins of the common law. *North Carolina Law Review, 77*(5), 1635–1739. https://scholarship.law.unc.edu/nclr/vol77/iss5/2/

Miller, A. C. (2006). Jundi-Shapur, bimaristans, and the rise of academic medical centres. *Journal of the Royal Society of Medicine, 99*(12), 615–617. https://doi.org/10.1177/014107680609901208

O'Connor, J. J., & Robertson, E. F. (1998, October). *Leonardo Pisano Fibonacci*. MacTutor History of Mathematics Archive, University of St Andrews. Retrieved October 14, 2026, from https://mathshistory.st-andrews.ac.uk/Biographies/Fibonacci/

Peters, M. A. (2019). Ancient centers of higher learning: A bias in the comparative history of the university? *Educational Philosophy and Theory, 51*(11), 1063–1072. https://doi.org/10.1080/00131857.2018.1553490

Ragep, F. J. (2007a). Copernicus and his Islamic predecessors: Some historical remarks. *History of Science, 45*(1), 65–81. https://doi.org/10.1177/007327530704500103

Ragep, F. J. (2007b). Ṭūsī: Abū Jaʿfar Muḥammad ibn Muḥammad ibn al-Ḥasan Naṣīr al-Dīn al-Ṭūsī. In T. Hockey, V. Trimble, T. R. Williams, K. Bracher, R. A. Jarrell, J. D. Marché, F. J. Ragep, J. Palmeri, & M. Bolt (Eds.), *The biographical encyclopedia of astronomers* (pp. 1153–1155). Springer. https://doi.org/10.1007/978-0-387-30400-7_1398

Rider, C. (n.d.). *The Inns of Court and Inns of Chancery and their records*. Honourable Society of the Inner Temple. Retrieved October 13, 2026, from https://www.innertemple.org.uk/who-we-are/history/historical-articles/the-inns-of-court-and-inns-of-chancery-and-their-records/

Saliba, G. (n.d.). *Whose science is Arabic science in Renaissance Europe?* Columbia University. Retrieved October 14, 2026, from https://www.columbia.edu/~gas1/project/visions/case1.html

Saliba, G. (2007). Arabic science in sixteenth-century Europe: Guillaume Postel (1510–1581) and Arabic astronomy. *Suhayl, 7*, 115–164. https://raco.cat/index.php/Suhayl/article/view/199951

Siddiqui, N. A., & Ali, A. Z. (2022). Could common law have Islamic roots? Testing John Makdisi's hypothesis in the light of section 6 of the Indian Specific Relief Act, 1963. *Manchester Journal of Transnational Islamic Law and Practice, 18*(1), 8–29. https://pure.jgu.edu.in/id/eprint/4797/

Stewart, D. J. (1998). Ejāza. In *Encyclopaedia Iranica* (Vol. 8, Fasc. 3, pp. 273–275). https://doi.org/10.1163/2330-4804_EIRO_COM_8942

Thorndike, L. (1944). *University records and life in the Middle Ages*. Columbia University Press.

Tibawi, A. L. (1962). Origin and character of al-madrasah. *Bulletin of the School of Oriental and African Studies, 25*(2), 225–238. https://doi.org/10.1017/S0041977X00063709

Toomer, G. J. (2008). Al-Khwārizmī, Abū Jaʿfar Muḥammad ibn Mūsā. In *Complete dictionary of scientific biography*. Charles Scribner's Sons. https://mathshistory.st-andrews.ac.uk/DSB/Al-Khwarizmi.pdf

University of Oxford. (n.d.-a). *Academic dress*. Retrieved October 13, 2026, from https://www.ox.ac.uk/events/encaenia/academic-dress

University of Oxford. (n.d.-b). *Our history*. Retrieved October 13, 2026, from https://www.ox.ac.uk/about/the-university/history

Weisser, U. (1987). Avicenna xiii. The influence of Avicenna on medical studies in the West. In *Encyclopaedia Iranica* (Vol. 3, Fasc. 1, pp. 107–110). https://www.iranicaonline.org/articles/avicenna-xiii/