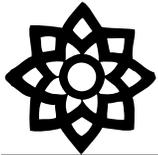


# Education and Scholarship



LOOK IT UP:

THE TECHNOLOGY OF STORING IDEAS

Among the characteristics of the Renaissance in Europe, the spread of learning and the development of scholarship is probably the most important. Supported by the increase in trade and communication, learning set the tone and style for other Renaissance expressions, such as education and the arts. During this period a great quantity of literature was produced, edited, translated, and collected from old manuscripts. This burst of activity brought ideas and learning to more Europeans than ever before. Books became available to a wider audience. Literacy spread rapidly among the middle, and even some of the lower classes, where a few generations before, only a few nobles and clergymen possessed these skills.

Europe's private and royal libraries grew in size, in number, and in the quality and variety of material they contained. At the same time, older libraries were searched for the "lost" (or misplaced) treasures they contained, and librarians began cataloging to keep track of what they had. To this end, the format of European books changed from being a hodgepodge of writings bound together, into a clearly-labeled document. Communication of ideas among the scholars and even casual readers of Europe changed attitudes toward knowledge, changed education, changed religion, changed the arts and raised the level of science and technology. Commerce was greatly affected by these new developments, as book publishers and printers became the first real capitalists in the West.

The humble book, and its main component—paper—contributed a great deal to these historical changes and achievements. As in other cultures, during the Renaissance, books became common—and highly valued—items of trade, wealth and knowledge in Europe, as they already were in some other cultures. The invention of printing during the mid-15th century took these developments to new heights, and continued the reign of the book until our Electronic Age.

## THE DEVELOPMENT OF BOOKS

For almost two millennia, books have been the main vessels for storing knowledge and transferring ideas across time and geographic space. Today, we take books for granted, and our society seems about to be buried under a mountain of paper. We do not think much about the skills and techniques behind the simple act of "looking something up" in a book. However, between the close of the Roman Empire and the Renaissance, a wide variety of cultures participated in developing just those skills and techniques that make up the knowledge system that we take for granted. That system is just now undergoing another important development through the use of computers. Even computer-aided storage and transfer of knowledge, however, still owes much to systems that were developed for books.

The first improvement toward bookmaking was the material on which ideas were stored in writing. This technology has a story all its own. Increasing storage of ideas in a portable, durable format has been a gradual technical achievement. Making multiple copies of a text is another technical problem, along with making them attractive and durable. Finally, the skills of retrieving, or finding information from a book—things like titles,

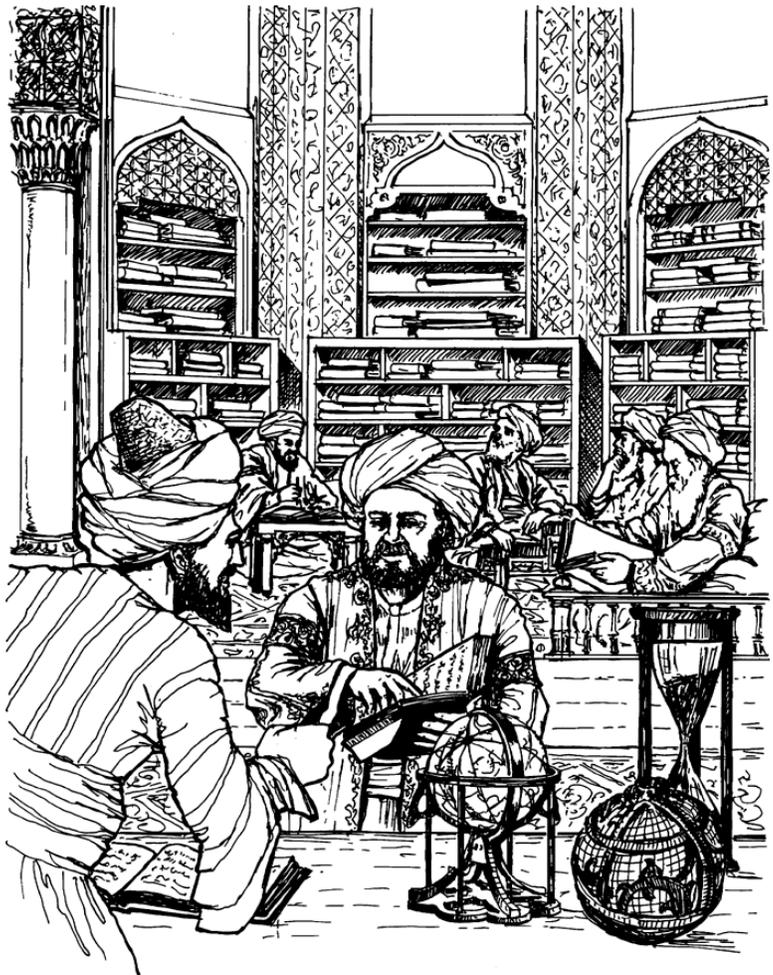
tables of contents, the index, the library catalogue are all things that developed over time. Writing, paper manufacture, bookmaking, inks, printing, and libraries developed step-by-step with technical developments in Asia, Africa and Europe.

Books began as an improvement over earlier ways of assembling large amounts of written material. A collection of loose sheets was stitched together into a continuous scroll in Biblical and classical times, like the form still used for reciting from the Jewish scripture, the Torah. We still roll up large maps, and computer jargon describes moving through a document as “scrolling.” Scrolls became very cumbersome as the size of a work increased. They were not very portable, and it was not very easy to look up a quote. The book was first developed by stacking written surfaces and attaching them together. Some historians think that “the book” developed in Roman times from a stack of wax-covered wooden tablets laced together and used as a notebook by Roman officers in the field. Later, parchment was used in the same way. Remarkably, once the basic form of books developed, it stayed almost the same until modern times. A large sheet of parchment was folded into fourths, and groups of these pages were stitched together. These *quires* were then sewn to a strip of fabric. Finally, the pages of the book were protected with an outer cover, or binding, made of wood and often covered with leather.

More than the form of bookbinding, the material used for its pages has changed over time. Papyrus was a cheap, plentiful writing material that originated in Egypt. It was made from reeds pounded together. Unfortunately, papyrus was unsuitable for books, because it is very brittle, and not very smooth. It could not be folded and stitched into a bound book. Parchment, perfected at Greek Pergamum around 200 BCE, was made by scraping, stretching, soaking and drying animal skin. Parchment was smooth and durable. It held inks and pigments well, and could even be written on both sides. Leaves of parchment were stitched into a *codex*, or book. Many fine examples of ancient *codices*, or books, survive in museums.

Parchment served well until the spread of Chinese technology for making paper from vegetable fibers. It was extremely expensive, however, and its rarity confined the use of books to a privileged, wealthy few. Some of these rare, parchment books had bindings decorated with jewels and precious metals. In addition to the knowledge they stored, the books became treasures to be hoarded. Religious and royal institutions held most books in their treasuries. The classical library collections stored in monasteries, palaces and other libraries of former Roman, Byzantine and Persian lands consisted of papyrus and parchment scrolls as well as bound books.

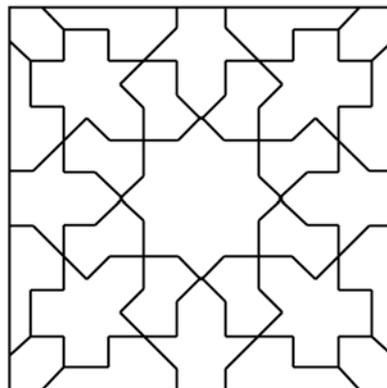
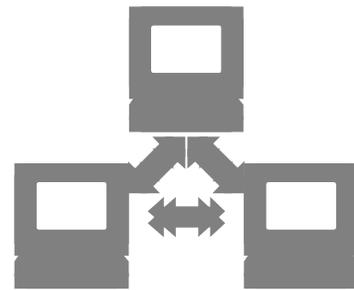
Over the centuries that passed between the fall of Rome and the expansion of Muslim culture, the technology of storing knowledge remained at this level. It was not long, however, before Islam’s stimulus to learning, wealth from the huge Muslim territories, transfer of paper-making technology from China, and refinement of the book-making craft combined to spawn enormous libraries in every Muslim city. Even the catalogues, or lists, of books in



these libraries boasted many volumes. Muslim writers served the organization of knowledge by developing encyclopedias on many topics, dictionaries of languages and biographies of many types, as well as systematic descriptions of the branches of science, arts and crafts. During the latter part of Europe’s Middle Ages, these techniques, along with the accumulation of stored knowledge, stimulated the growth of libraries and scholarship in the West.

The next major development in the culture of the book was the invention of printing, also developed first in China, and moveable type. During the Renaissance, these ideas were combined with use of the printing press in Germany, around 1450. Development of various styles of type, or fonts, new techniques for printing illustrations and simple improvements like the “Table of Contents”, made it ever easier to read and look up information. Think about the simple idea of putting page numbers in a book! Simply by printing a number on the corner of a page, two scholars, or a classroom full of students, could all be—well, on the same page together. The use of Arabic numerals, which also became popular in Europe at about the same time, made printing and reading page numbers even easier. Page numbers make indexing and tables of contents possible, so that finding information in a book is efficient. Scholars in distant places could discuss and refer to ideas on a certain page. Numbered chapter and verse markings in holy scriptures made understanding and communicating about religious topics much easier. With all these inventions, learning and books became available to a mass audience. Science received a huge boost, as more minds put themselves to the task of invention and discovery.

In our own time, a new revolution is underway for storing knowledge and transmitting ideas—paperless information, “printed” only with electrons on a screen, and stored with the help of lasers on round plastic sheets. It is the humble book, however, that has brought us here from there—from the knowledge of the ancients to modern science and technology.





## STUDY QUESTIONS AND STUDENT ACTIVITIES

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1. List some features of books and other places where ideas are stored (like libraries, databases, etc.) that make it easier to “look things up” and share information with others. How does each system work? Think of some future systems that could be invented to make it even easier.
2. Using an encyclopedia or dictionary and your computer’s word processor, learn the meaning and story behind the names of some common typefaces, or fonts. (Examples are Roman, Palatino, Helvetica, Sans serif, Gothic, Miniscule, Majuscule, Italic, Cursive)
3. Learn about and practice fancy calligraphy to write your name or a special message. What tools are needed, and how do they differ from other writing tools? Investigate the art of calligraphy in other languages, such as Chinese, Japanese, and Arabic.
4. Get a book from the library that tells how to bind pages together into a bound book. Make yourself a datebook, personal telephone book or diary and decorate its cover.





## THE ROLE OF SCHOLARS IN MUSLIM CIVILIZATION

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Who are the VIPs in any society? Who are the *notables*, the people to whom others listen and to whom they look for guidance and leadership? Who helps to maintain stability and order in society? In Europe, scholars, religious officials, and political leaders were among the groups that contributed to cultural developments that we call the Renaissance. Business leaders were also important figures in Renaissance society, buying artwork, imported and domestic luxuries, and investing in books and education. The main stage on which they played these roles was the city—first in Italy, then in northern Europe. Notables surely play important roles in every culture. In Muslim civilization, notables surely include political leaders such as governors, *sultans* and the *khalifah* (caliph) himself. There are, however, other groups who had authority at the local level, in cities across the Muslim world. These were, as you read earlier, the *urban notables*—military leaders, merchants, landowning families, and especially scholars.

In Muslim culture, however, one group of notables played a particularly important and interesting role. Scholars were the notables who contributed to establishing a unified culture based on Islamic teachings and other branches of knowledge.

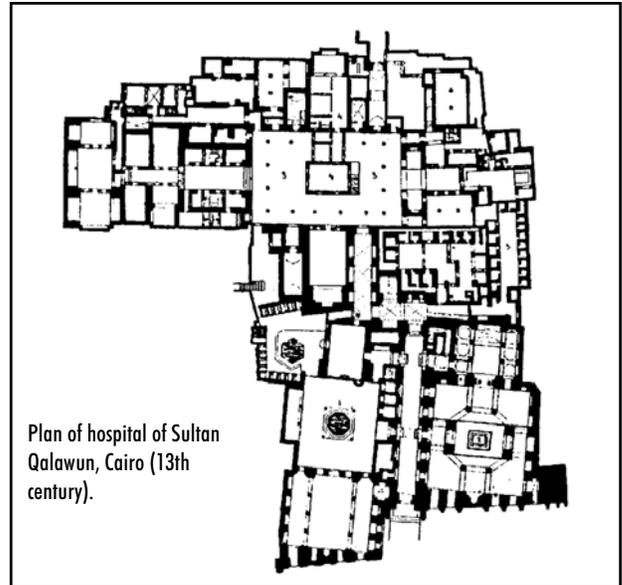
### ULAMA IN MUSLIM CULTURE

Scholars, or *ulama* in Arabic, were and are one of the most important groups of non-political leaders in Muslim civilization. Scholars are people who devote their lives to learning. The word *ulama* is the plural form of *alim*, meaning “one possessing knowledge”, or *ilm* in Arabic. “Knowledge” is of many kinds, and in Islam, the various branches of knowledge form a seamless web. But the most basic area of knowledge for the *ulama* was the *Qur’an*, the holy scripture of Islam and the *Sunnah*, the way or example from the authentic record of Prophet Muhammad’s own words and deeds. Other branches of knowledge are needed to help understand and interpret these two basic sources in Islam. A strong command of Arabic grammar, history, and rules of logic were needed to apply the *Qur’an* and the example of Prophet Muhammad to every aspect of individual and social life. Understanding and teaching the proper way to carry out the five pillars of worship, family law, business contracts and labor laws, sharing water among farmers—all of these and more became part of a comprehensive legal system. This system was developed over time and administered by *ulama* through official and informal channels, acting as jurists, judges, writers and leaders of religious institutions.

The position of *ulama* in Islamic society contrasts with that in Christian Europe, where clergy attached to a centralized Church interpreted and mediated religious matters for all of society. In Islam, there is no Church, or authoritative religious body, and no ordained clergy, priests, or other leaders with institutional authority. Each believer has a direct relationship with God. Each believer is responsible to God, directly. If a Muslim—whether ruler of a huge state, humble peasant or shopkeeper—is uncertain what course of action to take, he or she may consult a Muslim who is more knowledgeable. The *ulama* were usually the persons consulted for advice on the proper decision to make from an Islamic viewpoint. It is important to remember, however, that an *alim*, or scholar, was independent, not part of a hierarchy of religious authority like a Church. The person who sought advice from an *alim* was free to accept or seek another opinion without fearing religious sanctions from an Islamic institution.

## FINANCIAL SUPPORT FOR *ULAMA*

The wealth of the state helped support the *ulama* in some cases, but a more important source of material support over time was donations from individual Muslims. In Islamic law, a person may establish a foundation, or *waqf*, to support a good cause. They may legally dedicate the income from a certain source, such as a field or orchard, or rents from a house or marketplace. They may also dedicate a sum in cash and the fruits of its investment for a limited period of time, or in perpetuity (forever). A reliable trustee is named to administer the funds, and the commitment is a very serious one for a believer. To use the money for something else is like breaking a promise made to God. Muslim donors established *masjids* (mosques), hospitals, schools and orphanages, fountains to beautify the city and refresh its citizens, and places for travelers to rest. Zubaydah, wife of *khalifah* (caliph) Harun al-Rashid, was known for funding a chain of wells and shelters for the caravans traveling to Makkah through the desert. *Masjids* (mosques) were often built as complexes rather than single buildings. Nearby, or attached to the *masjid* might be a market, a school or college, or a hospital for treating the poor. This important feature of Muslim society continues today, though colonial governments and their modern successors have taken control of *waqf* properties. By significantly reducing the financial base of the scholars, these governments have greatly weakened the independence and impact of the *ulama* and taken away an important buffer between the people and the state in modern Muslim countries.



Plan of hospital of Sultan Qalawun, Cairo (13th century).

## SCIENCE AND LEARNING ON A FOUNDATION OF ISLAMIC STUDY

The work of an *alim* was by no means confined to religious studies or Islamic law. During the most fertile period of intellectual activity in Muslim civilization, however, religious learning was the basis for any educated Muslim's studies. Children of the educated classes typically began by memorizing the whole *Qur'an*. Memorizing *hadith* (sayings and deeds of Prophet Muhammad), along with the names of people who passed it to later generations from the Prophet, was a sign of prestige. From this foundation of learning, however, disciplines like mathematics, philosophy, astronomy, and medicine were also important fields for aspiring scholars to study. Many of the most famous Arabic scholars were also accomplished poets. In this, Muslim scholars built upon the legacy of classical learning, adding to and synthesizing the sum of knowledge from numerous ancient civilizations. Knowledge of Arabic and its grammar was as common as learning English is for today's scholars. Arabic was as important a language in the Muslim world as Latin was to medieval and Renaissance students.<sup>1</sup>

Muslim scholars helped to spread the Arabic language. During the early centuries of Islam, they systematically developed Arabic grammar and script. Travel was often necessary for gathering knowledge in those days. In Muslim culture, the size of the lands where Muslims lived, and the vast network of trade routes, combined with the religious practice of the *Haji* (pilgrimage to Makkah), encouraged scholars to travel even more. They spread ideas, knowledge and important books. They also spread Islam, and established a basis of unity among believers far and wide, across cultural, ethnic and language borders.

1. **NOTE: Arab, Muslim or Arabic as a Label?** In discussing the contribution of scholars from Muslim civilization, it is important to define who they were. Many books refer to "Arab" scholars, which is usually understood as an ethnic description—one whose forefathers were Arab people. This is inaccurate, since many scholars who wrote in Arabic were of Persian, Indian or African origin. Calling the scholars who worked within Muslim civilization by the title "Muslim" scholars is also inaccurate, since some famous scholars who wrote in Arabic and lived in the Muslim world were Jewish or Christian. The most accurate way to describe the many scholars of different ethnic backgrounds and religions who worked within Muslim cultural traditions and wrote in Arabic language, is to simply label them Arabic scholars, meaning those who used Arabic as their literary language.

The most remarkable achievement of the *ulama* as an independent group is the degree of unity in their opinions on matters of faith and practice, and many other issues affecting the way of life in Muslim society. Their activity extends across the Muslim world, and throughout the entire fourteen centuries since the Prophet Muhammad’s death, until today. Building on a universally-agreed foundation of the *Qur’anic* text and a widely-agreed basis of *Sunnah*, the *ulama* developed and disseminated a body of knowledge and practice that allowed a Muslim to feel at home among Muslims from Africa to China, and today, all around the world. Indeed, many *ulama* did travel to gain knowledge. They also shared information through books and correspondence with other *ulama* near and far.

The most famous—but by no means unique—example of a traveling scholar is Ibn Battuta, who was received with hospitality and honors wherever he went. From his travel journal, we learn that he often stayed in the homes of *ulama* or other notables and rulers. He was also able to say his five daily prayers in *masjids* and homes at each stop. He was able to worship and communicate using the Arabic language—written and spoken—wherever Muslims were found. The universal use of Arabic is another factor that helped spread a unified body of Islamic knowledge over a wide area. Arabic is used by all Muslims for prayer, and among the educated classes for reading, correspondence and study. The growth of libraries, schools and colleges helped to spread the language, and the knowledge it carried. Arabic and the scholars who used it—like Latin among European scholars—helped to establish a shared body of scientific knowledge and ideas across regional lines and ethnic barriers. Both Arabic and Latin played important roles in sharing and spreading knowledge that led to the Scientific Revolution of the 16th and 17th centuries in Europe, as many Arabic works became known among highly educated Europeans.

## HISTORIANS’ VOICES

**Richard Bulliet**, *Conversion to Islam in the Medieval Period*: “political power did not produce intellectual and religious eminence, nor was it produced by it. Intellectual and religious vitality depended upon a third factor...a powerful and dynamic social and religious elite within the local Muslim community...this same Muslim establishment...contributed greatly to the power and survival of the existing state by ensuring a high degree of social order....

...the true central thread of Islamic history lies not in the political realm of the caliphs and sultans, but in the social realm where the *ulama* served as the functioning heart of the historic Muslim community.”<sup>2</sup>

**Albert Hourani**, in *The Islamic City*: “In the Islamic period [the relationship between government and urban society] was given distinctive shape by...the close connection between the commercial bourgeoisie [middle classes] and the *ulama*, those learned in the law and other religious sciences, belonging to or grouped around the mosques and schools. This connection had several aspects: members of bourgeois families took to learning, men of learning married into such families, the *ulama* possessed a certain economic and social power through their control of the *awqaf* [sing. *waqf*], and both groups shared an interest in a stable, prosperous and cultivated urban life. Members of the great bourgeois families and of the *ulama* together provided an urban leadership: their wealth, piety, culture, and ancient names gave them social prestige and the patronage of quarters, ethnic or religious groups, crafts, or the city as a whole.”<sup>3</sup>

2. Richard Bulliet, *Conversion to Islam in the Medieval Period*, (Cambridge: Harvard University Press, 1979), p. 138.

3. A.H. Hourani and S.M. Stern, eds. *The Islamic City: A Colloquium*, (Oxford: B. Cassierer and U. of Pennsylvania Press, 1970), pp. 17-18.



## STUDY QUESTIONS AND STUDENT ACTIVITIES

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1. Identify some types of people and vocations (jobs) that represent *notables* in our time. Using your knowledge of world history or American history, identify some specific groups who held power and authority in various cultures.
2. Are various types of scholars, or academic professionals, important authorities in today's world? Do they help provide stability and keep order? Who does so, and how? What attitudes toward such scholars or highly educated people exist in popular culture today? Are these attitudes mostly negative or positive? Why?
3. We have institutions very similar to the *waqf*, or charitable foundation, in modern societies. Name some important modern charitable foundations and find out what kinds of activity they support with money gifts. Compare these uses with the ones mentioned in this reading.
4. Research some charitable foundations that work in your community, using the Internet and local resources. How might some of these organizations help you, your school and your neighborhood or community? Is there a way you can help them?





## BAYT AL-HIKMAH: THE HOUSE OF WISDOM

There were many great centers of learning before the 7th-century emergence of Islam. China, India, Greece, Persia and Alexandria all had a long history of scholarship and philosophical and scientific study. Yet there were few times in history when people of intellectual skill received the support and encouragement that was offered at the *Bayt al-Hikmah*, or the “House of Wisdom” which arose in 9th-century Baghdad. It was at this time that a remarkable spirit of tolerance encouraged a gathering of scholars from many different religions and cultures, who gathered together almost the sum total of world knowledge up to that time.

The expansion of territory under Muslim rule, which took place during the 7th and 8th centuries, created a new political entity—a large, unified state. More important and more lasting, however, was the new civilization that developed within its territory over the next several centuries. This territory stretched from North Africa to Central Asia, incorporating parts of the Roman Empire, the Sassanian Persian Empire and lands that linked these areas with China, India, and Africa. Muslim culture in this vast region developed on the basis of Islamic beliefs and practices, unified by a legal and moral foundation that formed the backbone of Muslim scholarship. The ethic of expansion was making an effort “*fi sabil Allah*”, in the path of God. Islam foresaw a new social structure which replaced earlier tribal and racial identities with a social identity that stressed the commonality of all people, regardless of origin, in a community of Islamic faith and Muslim unity. Although development in this direction was not always even, it remains one of the reasons that Muslim culture was able to weave together many indigenous cultures into a civilization that even today—with its diversity of hundreds of cultures—is identified chiefly with Islam.

Arab settlement into the Mediterranean region often accompanied the expansion of the Islamic state. Settlers included military families and tribes, who established the garrison cities as magnets for development of the surrounding area, attracting new Muslim migrants, artisans, merchants and government officials. Scholars also moved into the region in an effort to seek knowledge associated with preserving the legacy of Prophet Muhammad and the early Muslim community. Through this work, they established centers of intellectual activity. Relying at first upon Christian, Jewish and other groups to administer the growing state bureaucracy, Muslim rulers were exposed to Greek, Syrian and Persian sources of learning. As the state began to establish Arabic as its official language, the work of translating from these sources into Arabic began. Indigenous scholars (meaning those native to the region), among whom were Persians, Jews, Syrians and others, introduced these works to their Arab patrons and undertook the work of translation. At that time, the Academy of Jundi-Shapur, the Sassanid Persian university, was the center of scholarship in philosophy, mathematics, astronomy and medicine. Scholars of many religions, both pagan and Christian, had gathered there, combining the knowledge of several classical civilizations. When the city surrendered to the Muslims in 636 CE, the university remained undisturbed, and the Academy of Jundi-Shapur continued to flourish, influencing Muslim scholarship profoundly during the following centuries.

The founding of the Abbasid state moved the center of the Muslim world farther toward the east and even more toward Persian influence. Cultural influences outside the Arab sphere expanded. The second Abbasid *khalifah*, al-Mansur, founded the city of Baghdad and ruled from 754-775 CE, building a capital that combined wealth, learning and refinements of all branches of culture. One of the most important developments at Baghdad for world history was the pursuit of knowledge at a new institution, the House of Wisdom, or *Bayt al-Hikmah*. There, the tradition of translation continued from its beginning at Damascus. Scholars and important works of scholarship from Jundi-Shapur played important roles, along with a growing roster of learned people from other Muslim lands. In time, Baghdad became the most important city in the region for scholarly work, sought out by those of many religions.



## THE HOUSE OF WISDOM

In the year 830 CE, the *Khalifah* (caliph) al-Ma'mun, founded the *Bayt al-Hikmah*, a center that grew out of the earlier officially sponsored libraries like Harun al-Rashid's *Khizanat al-Hikmah* (Library of Wisdom) and the earlier Umayyad and Abbasid libraries. Its multiple functions included a translation bureau, library, museum and training academy which held regular seminars. Two astronomical observatories—at Baghdad and Damascus, were attached to the *Bayt al-Hikmah*. Its staff included translators fluent in Greek, Sanskrit, Persian and other tongues, some of whom were scientists in their own right. Librarians, copyists, bookbinders, calligraphers and illustrators, as well as those who developed techniques for preserving the rare books that were collected from Egypt, Syria, Persia, and India, were employed by the Abbasid rulers. Translators were paid—often in gold—by the weight of their translation, which was stamped with the *khalifah's* own seal. The *Bayt al-Hikmah* attracted scholars from many regions like a magnet. Among them were the Nestorian Christian Hunayn ibn Ishaq (an all-around scholar best known for his study of the eye), the Sabean mathematician Thabit ibn Qurra, the Muslim Banu Musa brothers (best known as engineers and inventors), and the famous philosopher and translator of Aristotle, al-Kindi, who also wrote 282 books on medicine, philosophy, and music. Al-Khwarizmi, the mathematician whose work brought algebra and Arabic numerals to the West, was also an employee of the *Bayt al-Hikmah*. Some of these scholars traveled widely in search of books or to complete or correct fragmentary copies. Many centuries later, scholars in Renaissance Europe would play similar roles. They too would become unsatisfied with poor translations, inconsistent or incomplete texts, or works wrongly attributed to a famous author. These earlier Arabic scholars shared with later European scholars the need to critique the texts they received from ancient times. In trying to correct them, they brought the classics to new life.



Once their appetites were whetted, scholars of many different faiths and backgrounds within the *Dar al-Islam* (the lands under Muslim rule), worked together to translate the wisdom of the ancients into Arabic. This enabled Persian, Indian and Greek manuscripts to be analyzed, updated, expounded upon, and corrected. Abbasid Caliphs sent ambassadors to the Byzantine capital, and to centers of learning in Persia, Syria and other places to obtain copies of ancient texts and manuscripts. From Sanskrit, Persian, Aramaic, Hebrew and Greek, these works were translated into Arabic and stored in the library of *Bayt al-Hikmah*. Ibn Khaldun, a 14th-century historian often called the “Father of Sociology,” used the work of earlier Muslim historians and geographers to describe this process of gathering knowledge from many civilizations:

“When the Byzantine emperors conquered Syria, the scientific works of the Greeks were still in existence. Then God brought Islam, and the Muslims won their remarkable victories, conquering the Byzantines as well as all other nations. At first, the Muslims were simple, and did not cultivate learning, but as time went on, and the Muslim dynasty flourished, the Muslims developed an urban culture that surpassed that of any other nation. They began to wish to study the various branches of philosophy, of whose existence they knew through their contact with bishops and priests among their Christian subjects. In any case, man has always had a penchant for intellectual speculation. The Caliph al-Mansur therefore sent an embassy to the Byzantine emperor, asking him to send translations of books on mathematics. The emperor sent him Euclid's *Elements* and some works on physics.

*Muslim scholars studied these books, and their desire to obtain others was whetted. When al-Ma'mun, who had some scientific knowledge, assumed the caliphate, he wished to do something to further the progress of science. For that purpose, he sent ambassadors and translators to the Byzantine empire, in order to search out works on the Greek sciences and have them translated into Arabic. As a result of these efforts, a great deal of material was gathered and preserved.*<sup>4</sup> ❁

The *Bayt al-Hikmah* helped to spawn other libraries and centers of scholarship, both official and private. The translation center also included facilities for many copyists, who were supplied with ink, pens and paper—an invention from China that had reached Baghdad at about the same time. Rapidly replacing more expensive parchment made from skins, paper made it possible for many more people to possess collections of books. Copies were made and sent to other cities in Muslim lands. In Baghdad itself, the growth in literacy created a demand for books to stock private libraries, booksellers' stalls, and the thriving export market for these works. As Baghdad reached new peaks of literary and scholarly life, the ranks of copyists, booksellers and collectors grew tremendously.

## LIBRARIES SPROUT UP IN OTHER MUSLIM LANDS

Not wanting to be completely in the shade of Baghdad's literary life, Muslim rulers and officials in other cities became patrons of translators, and competed in establishing schools and great libraries. Nishapur, Shiraz, Basra, Cairo, Damascus, Cordoba, the Umayyad capital, and Toledo in al-Andalus (Muslim Spain), whose library was later discovered by European scholars, were just a few of the more important centers. Hundreds of private, semi-public, and public libraries grew up within a few centuries, each housing thousands of books, catalogued in many volumes. Some of these contained *many* copies of important works.

Muslim geographers wrote lengthy narrations which offered a portrait of the lands and cities they encountered. These included detailed descriptions of libraries. As Baghdad's star rose, the spread of learning also kept pace in other Muslim cities. Even with the breakup of the Abbasid state, other centers thrived and maintained contact with the Abbasid capital's scholars. Rulers, ministers and wealthy private citizens in Muslim lands patronized learning and science, and competed in amassing books and displaying them in fine buildings and institutions. The geographer Yaqut describes the library of the Buwayhid rulers at Shiraz (in Iran) in the 10th century:

“*The library consists of one long vaulted room, annexed to which are storerooms. The prince had made along the large room and the store chambers, scaffoldings about the height of a man, three yards wide, of decorated wood which have shelves from top to bottom. The books are arranged on the shelves and for every branch of learning there are separate scaffolds. There are also catalogues in which all the titles of the books are entered. I also saw the ventilation chamber to which the water was carried by pipes, surrounding it on every side in circulation.*”<sup>5</sup> ❁

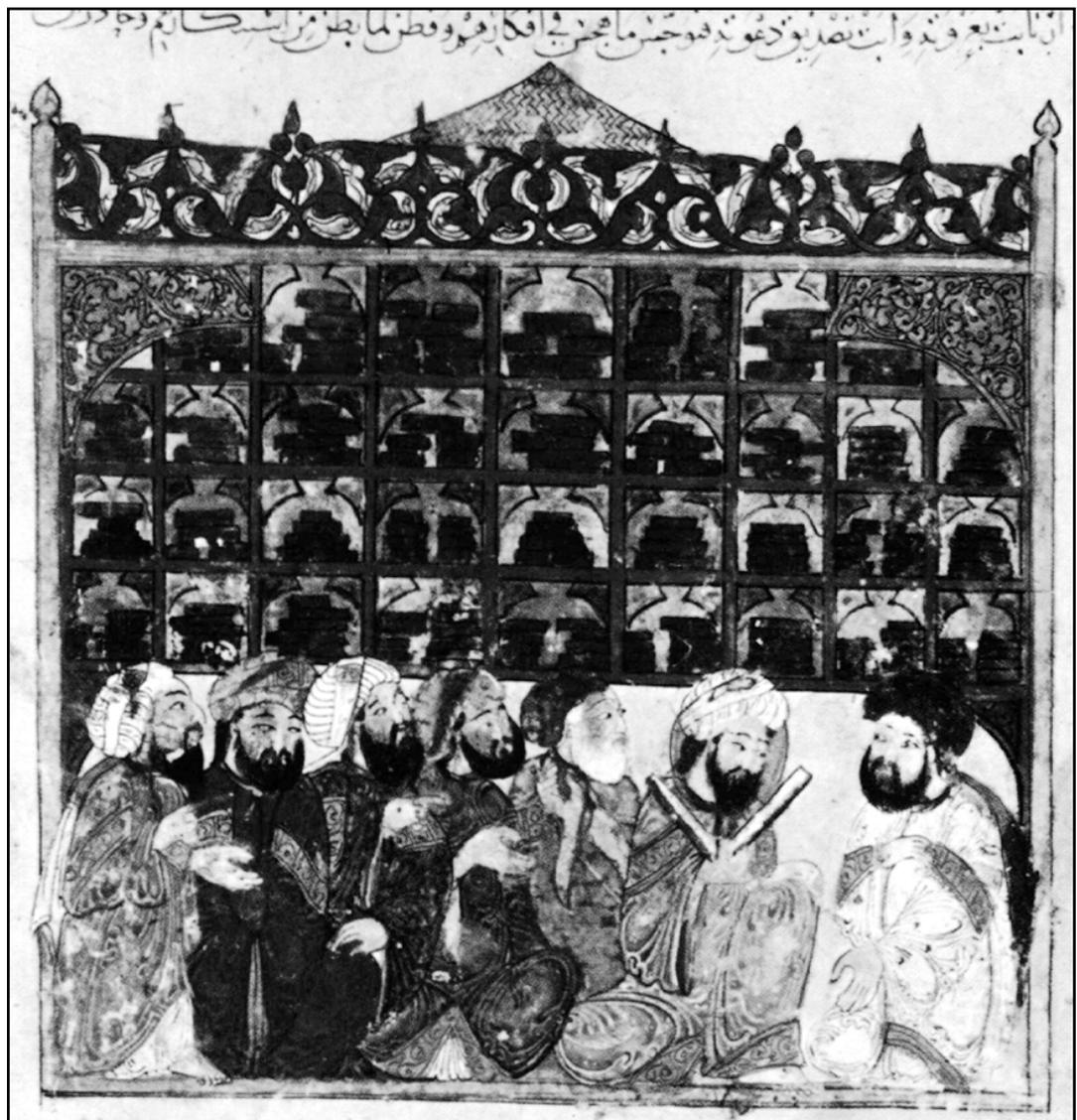
4. “Science: the Islamic Legacy,” *Aramco World Magazine*, (Special Issue reprint), p. 4.

5. Yaqut, Vol. 5, quoted in S.M. Imamuddin, *Arabic Writing and Arab Libraries* (London: TaHa Publ.,1983).

The libraries of many Muslim rulers contained tens of thousands of books. The Fatimids established a library during the 10th century at Cairo that a modern writer describes as having 40 rooms:

“There were 1,600,000 books and booklets....Of these, 6,000 were on mathematics and astronomy alone...and 2,000 copies of the Qur’an copied by famous calligraphers. There were two **kurrahs** [planispheres, or hemispheric views] of the earth, one made of silver...and another of brass made by Baltimus. The library was open to the teachers, scholars and students of Cairo. Its collection was transferred to the Public Library of Dar al-Ilm...in 1004.”

The first major library in Europe was the royal library of the Muslim Umayyads in Cordoba, Spain. By the 10th century, the chief librarian reported 400,000 books, with a catalogue of 44 volumes, 50 folios each (1 folio = 4 pages). In al-Andalus, books from eastern Muslim lands soon became an important item of trade for merchants. They were popular diplomatic gifts, and are frequently mentioned in treaties. Books and paper were major trade items for caravan merchants to West African cities like Djenne and Timbuktu. Like the geographer Yaqut, other traveling scholars took note of libraries. They sometimes measured the size of a collection by the number of camel-loads of books needed to transfer an important library. When the library at Cordoba was moved, it took a large staff of porters six months to do the job. With increasing prosperity in the cities of the Muslim world, private libraries developed and often became part of family or public collections. Every major Muslim ruling group in history—



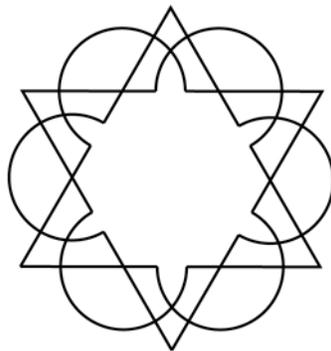
6. Imamuddin, p. 42.

Timurids, Mughals, Safavids, Ottomans, and others, is also associated with the development of libraries and institutions of learning. Some of their collections—and many large private collections—have survived to the present day.

## PRESERVING AND TRANSFERRING KNOWLEDGE FROM MUSLIM LANDS

It is estimated that in spite of many losses through worms, wars and wear, there are now at least 250,000 handwritten Arabic manuscripts in libraries around the world today. There are many more in unrecorded, private collections, some remaining to be discovered. During the last century especially, scholars have begun the job of editing, publishing and translating these works, to share this knowledge from Muslim culture. Scholars of the history of science are still investigating how this knowledge was applied, how it moved within the Muslim world and how it was transferred to other cultures.

It is fortunate that Baghdad’s spectacular center of learning did not remain the only place where excellent scholarship was preserved. In the year 1258 CE, a great calamity struck Baghdad and other Muslim cities in Central Asia. The Mongol invasion tore through Asia and the Middle East, destroying many libraries and laying waste whole cities in the warriors’ path. The destruction of Baghdad was so great, that except for those who managed to flee, few people survived the onslaught. Fortunately, many manuscripts were copied and distributed to libraries across the Old World, saving this heritage of learning from loss. The Mongol invasion followed on the heels of the Crusades, and the *Reconquista*—or conquest of Muslim Spain—was already underway. This caused the ruin of many more libraries. By this time, however, the knowledge of the ancients had been passed down from antiquity through the hands of many cultures, translated at the *Bayt al-Hikmah*, and built upon by five centuries of Muslim scholarship. From the 11th century on, many of the most important works would be translated into Hebrew and Latin, and make their way into the growing libraries of Europe. Though the losses from this time were devastating, some of these widely scattered treasures were preserved for our own time. This tremendous gathering of great minds built upon the foundations of ancient and contemporary wisdom, and created the foundation of the Renaissance.





## STUDY QUESTIONS AND STUDENT ACTIVITIES

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1. What purposes did the *Bayt al-Hikmah* (House of Wisdom) fulfill for its founders and the scholars who worked there?
2. How did the *Bayt al-Hikmah* contribute to making Baghdad the foremost center of learning and literature in the Muslim lands, and the whole region?
3. What were some of the most important branches of learning in ancient and medieval times? How are they related to important fields of study in our modern universities?
4. Compare the *Bayt al-Hikmah* with some modern centers for storing, developing and spreading ideas and knowledge.





## EDUCATION AND THE RISE OF UNIVERSITIES IN MUSLIM LANDS AND EUROPE

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Most high school students hope to finish college one day. Having an education system that offers us many choices of careers and training is something we take for granted. Throughout the modern world, universities—large and small, old and new—dot the landscape. This was not always the case. Centuries ago, education was limited to the privileged few, and even for them, the choices were limited to a few possibilities. During the so-called “medieval” period, the foundation of modern higher education was laid. As you will see, many traditions from that time are still part of the college scene. Caps and gowns for graduates, the doctoral thesis, the degrees of philosophy, medicine and law, the posts of rector and dean, and the professorial chair are only a few. The rise of universities in Europe was influenced by colleges and universities in Muslim culture, which developed several centuries before their counterparts in Europe. These traditions have spread to other parts of the world from European universities over the past 200 years, completing a circular track of cultural transmission—with many changes—back to Muslim lands.

### A MEDIEVAL SCHOLAR’S LIFE

During much of human history, a career of seeking knowledge required sacrifice, a lot of luck, and travel. In a time before computers, printing and rapid transport, an itinerant scholar might travel on foot to find suitable masters. Such necessities did much to exclude women outside the wealthiest circles, or outside religious institutions. In a time of few books, scholars traveled to private, royal and public libraries to read important works. A scholar might hope to read a book with its author, joining a gathering of fellow-travelers at the feet of the writer. Clutching a certificate of study, he could then move on to another master for further training. Following a syllabus of required reading might take years of wandering from city to city, and even from land to land. If a copy of the book was needed, the cheapest way was to make one, pen and ink in hand.

Many students and teachers lived lives of poverty, nourished mostly by the ideas they sought. A few were lucky to find favor at the court of a ruler, where they might tutor the king’s sons or daughters. They tried to find patronage for their research, and a successful scholar might be heaped with robes of honor and rewards of gold. For some, the chance to earn money for travel might mean tutoring the children of a merchant. At times, the only opportunity for a life of learning was within a religious institution—a monastery or papal office. Advancements led through narrow channels to higher religious posts. In other times and cultures, the doors to learning opened wider, allowing scholarship to expand, including more people and becoming more productive. One such time and place was the Muslim lands from the 7th to the 13th centuries, and another was the period in Europe from the 11th century to the Renaissance and the Scientific Revolution.

### EDUCATION AND SCHOOLS IN MUSLIM LANDS

One of the achievements of Muslim culture at its height was the spread of literacy. Elementary education was almost universal, especially in the cities. Emphasis on the value of reading and writing stems from the very first revelations of the *Qur’an*, which mention how God revealed to humankind knowledge and the use of the pen. Every man and woman has a duty to educate themselves and their children. The entire Muslim community has the collective responsibility to ensure that some members of society achieve the highest levels of learning, for everyone’s benefit. Muslim rulers and other wealthy individuals have generously undertaken this responsibility over time, and across a wide spectrum of Muslim cultures.

## THE LEARNING CIRCLE—HALAQA

The circle is the oldest form of Islamic teaching, going back to the time of Prophet Muhammad, who held sessions for his male and female followers. In the traditional *halaqa*, the teacher sat on a raised cushion against a wall or pillar. The students sat in a semicircle around the teacher, according to rank in knowledge. In early Islam, the teachers in the *halaqa* included both men and women. The first sites for learning circles were in the *masjids* (mosques). Famous teachers became associated with a certain city and *masjid*, and it was customary to name pillars after famous scholars who sat there. Learning circles were also held in other institutions and homes. Students journeyed to sit in the circle of a famous scholar. The tradition of recording the scholar's talk developed into more systematic teaching and note-taking. Teachers methodically dealt with subjects, allowed their students to ask questions and tested their knowledge. Success was rewarded with a letter, or certificate of study. The formal and informal tradition of the *halaqa* continues today in Muslim culture.

## MASJID (MOSQUE) SCHOOLS

Closely related to the *halaqa*, organized schools in the *masjid* have lasted from the first century of Islam to the present. Young and old alike could benefit from the instruction given in the *masjid* at various times of day. The *masjid* might be a simple or elaborate affair, and patrons from the modest family endowment to the *khalifah* himself built and improved *masjids* as learning centers. Some contained libraries and other facilities. Travelers like Ibn Jubayr and Ibn Battuta counted thousands of *masjids*, all of which taught. *Masjids*, which were endowed by the *waqf*, or foundation, were the first colleges in Muslim lands, as early as the 8th and 9th centuries. Students did not have to pay tuition, since the teachers were paid by the *waqf*, but they had to pay for their room and board in the town. In time, donors built *khans* (hostels) near the *masjid* to house traveling scholars, and private donors gave charity—like scholarships—to visiting students. The *masjid-khan* complex spread and became more formal and complete as the *madrasah* (boarding school supported through charitable endowments). The wide variety of curriculum in the religious and other sciences continued in both types of college.

## MAKTAB OR KUTTAB SCHOOLS

Using the Arabic root K-T-B, for “writing” in their names, the *maktab* or *kuttab* schools taught reading and writing. There was a *kuttab* school in almost every town and village. Cities had hundreds of such schools. The teachers were called *mu'allim*, or tutors. Some *kuttab* had hundreds, or thousands of students. Beginning with teaching the *Qur'an* and the basics of Islam, the *kuttab* was the main source of elementary education. They also taught grammar and penmanship, arithmetic, poetry, manners and moral teachings. Other subjects, like horse riding, archery, swimming and sports, depended upon the school's location. *Kuttab* schools became widespread in Southwest Asia, Africa, Sicily and Spain. Even today, many Muslim children begin with recitation, memorization, reading and writing the *Qur'an* in *kuttab* schools.



A boy fans the class in a masjid school.

## PALACE SCHOOLS

Muslim rulers, beginning with the Umayyads, but especially in Abbasid times and beyond, held instruction for their children and the children of courtiers. The curriculum was similar to the *kuttab* schools, but it also included instruction to prepare for polite society and government service. Palace schools also prepared children for higher education. Like the later town and palace schools in Renaissance Europe, they also taught students the arts of formal speaking and conversation, history, tradition, and ethics. The teacher was called a *mu'addib*, or one who refines manners.

## BOOKSHOP SCHOOLS AND LITERARY SALONS

Other less formal learning centers existed in Muslim society. The *Suq al-Warraqin*, or “Market of the Papersellers,” was more than its name implies. It was a gathering place for booksellers, calligraphers, scholars, literary figures, notaries and bookbinders. Bookshops were similar to libraries, where browsers might find a fine book or meet an author or fellow scholar. There were many trades, crafts and arts to be learned there.

Like the informal *suq*, scholars’ homes were also places for learning, where the generous master received visitors from near and far. Private homes were used for regular literary salons, or gatherings with invited guests. In addition to learning, guests picked up the latest fashions in literature, manners, dress, food and furnishings.

Beginning with the *Khalifah’s* salons, Muslim rulers held formal debates, discussions and exhibitions of scholarly talent regularly at their courts. The fasting month of Ramadan became a traditional time for holding scholarly gatherings at the courts of rulers and in private homes. This tradition continues to the present day.

## MUSLIM LIBRARIES AS RESEARCH AND TEACHING CENTERS

Public and private libraries—in homes, palaces, and specially constructed centers, were among the most important centers for education. Scholars traveled to research the latest in available knowledge. The wealthiest patrons of libraries made available to visitors anything they needed, like copyists, writing supplies, servants, food, lodging and even money. Ibn Sina remarked that one royal library where he did medical studies allowed him to take out over 200 books, and hosted him like royalty. Upon request, patrons would have copies of rare manuscripts made and would send them to other cities. They installed elaborate systems for cooling the rooms, and had carved book-presses built around the walls. Gardens, tiles and fountains completed the suggestion of a scholar’s paradise.

## THE MADRASAH (COLLEGE)

The formal and informal schools described above grew up in a very open and adventurous spirit. Full of individualism and creativity, it matched the spirit of the first centuries of Islam. In time, the various branches of knowledge required more systematic schooling. The number of traveling scholars in the major centers of learning increased, and required formal institutions to meet their needs. In addition, the growing class of scholars needed to make a secure, decent living, and teaching was one means of earning an income.

The *madrasah* (literally, “place for giving lessons”) developed and spread as a specialized institution, beginning around the 10th century CE. One of the first *madrasahs* was founded at Baghdad by the Saljuq advisor Nizam al-Mulk, himself a scholar. Other great patrons opened many *madrasahs* in Damascus, Aleppo, and other Syrian cities. Ayyubid rulers (descendants of Saladin) and members of their families were patrons of schools in Egypt, Jerusalem and Damascus. *Madrasahs* spread to other cities in the Muslim lands, sometimes absorbing earlier education centers and libraries. The *madrasah* was most like a college, offering advanced studies in specific disciplines. *Madrasahs* taught religious disciplines such as law, *Qur’an* and *hadith*, as well as advanced studies in the sciences, including medicine, mathematics, astronomy, physics, philosophy, literature and history. In later centuries, many became specialized in religious disciplines and schools of law alone. The *madrasah* continues as an institution to the present day. *Madrasah* is a general term for “school” in modern Arabic.

*Madrasahs*, or colleges, varied in size and architecture. Basically, however, they consisted of one or more buildings with lecture halls and rooms for teachers, a library, a *masjid* for students and faculty, and lodgings, or dormitories. In addition, they had dining halls, kitchens, baths and latrines, storage buildings or rooms, and housing for servants and caretakers. Gardens and fountains, and sometimes a clinic, completed the “campus.” Some *madrasahs*, like a famous one in Samarkand, were part of a complex of beautiful buildings covered with colorful tiles. Apart from the *madrasahs* that still exist, or whose ruins are visible, these descriptions have come down to us in the works of Muslim scholars, travelers and geographers, and some European travelers.

## UNIVERSITIES IN MUSLIM LANDS

Under the patronage of wealthy rulers, universities—large colleges for teaching and research—developed in major Muslim cities. This development began in about the 10th century—at least a century before colleges and universities began to appear in Europe. They were similar to the *madrasah*, but they were larger complexes which taught many subjects. Founded directly by order of major Muslim rulers, they were very prestigious reflections of the rulers’ generosity, often including large libraries and elaborately designed buildings. The



Mustansiriyyah, for example, was built near the *khalifah*’s palace. An apartment with gardens overlooking the college was prepared, so that its founder, *Khalifah* al-Mustansir, could watch the students and even hear the lectures. In many cases these large centers of learning developed around earlier centers of learning. At Baghdad, for example, the great Mustansiriyyah, which was not completed until the 13th century, overtook the earlier Nizamiyyah. Its ruins still stand, and we have descriptions of it from many travelers, including Ibn Battuta. In Spain, higher education was highly developed under the Umayyads at Cordoba, which had a large university, and important institutions were found at Toledo, Sevilla, Valencia, Cadiz, Granada and other cities. Al-Azhar, the famous medieval university in Cairo, has been teaching continuously for a thousand years.

Students from many lands flocked to study at Muslim colleges and universities. The reputation of Muslim colleges and other centers of learning in Spain and Italy extended to Christians in Spain and across the Pyrenees to scholars in France, England and Italy. One Spanish clergyman of the 9th century, San Alvaro of Cordova, wrote about the access of his contemporaries to Muslim education: “*Many of my co-religionists read the poems and stories of the Arabs, and studied the writings of Muhammadans, theologians and philosophers, not in order to refute them, but to learn to express themselves most elegantly and correctly in the Arabic tongue. Alas! All the young Christians who became notable for their talents know only the language and literature of the Arabs, read and study Arabic books with zeal and at enormous cost from great libraries, and everywhere proclaim aloud that their literature is worthy of admiration.*”<sup>7</sup> Muslim education in Spain helped to spread knowledge of the language among Jewish and Christian scholars, without which the translation effort would have been much more difficult. Foreign and other non-Muslim students brought to their native countries a knowledge of Arabic, along with new works and new ideas. They also introduced Muslim methods of teaching and of organizing the colleges. The scholastic method and oral disputation were two of these transfers to Europe.

7. Mehdi Nakosteen, *History of Islamic Origins of Western Education, AD 800-1350*, (Boulder: University of Colorado Press, 1964), p. 68.

From its beginnings as the *Bayt al-Hikmah*, which was similar to the Persian Academy at Jundi-Shapur and to the Chinese Academy of Han-Lin-Yuan during the T'ang Dynasty, Muslim higher education developed and took its place among the first ranks in world history. In cities and palaces from Spain to Central Asia, from Timbuktu to Southeast Asia, patronage of learning through the establishment of libraries, colleges and academies survives to the present day.

## THE RISE OF COLLEGES AND UNIVERSITIES IN EUROPE

The earliest forms of higher education in Europe, as in the Muslim world, were related to religious instruction. Monks and other churchmen were among the few groups who received any education at all. Apart from these groups, only a few nobles were privileged to achieve basic skills—usually from a tutor—in reading, writing, poetry and music. You have probably read about a knight's education, which included the arts of war, and sports. Ladies would have learned embroidery and a few other skills. Others relied on generation-to-generation teaching of crafts and skills needed for their station in life, in a rigid social order. As education began to change during the late middle ages, schools were still closely tied to the church.

### CATHEDRAL SCHOOLS

As in Muslim lands, where the first schools were attached to the *masjid* (mosque), the first schools organized for those outside the clergy were the cathedral schools, beginning in the 10th century. France and England were among the first in Northern Europe, with cathedral schools in Paris, Chartres, Rheims, Orleans, Canterbury, and other towns. In Sicily and a few locations in Spain, there were also advanced schools, often following Muslim models. Italy was also somewhat more advanced in education, because of its cosmopolitan background in eastern Mediterranean trade. In general, the rise of these schools is linked with the growth of urban wealth, and the increasing need for urban families to educate their children for trade, law and government.

The curriculum in the cathedral schools varied, but it was based upon the Seven Liberal Arts inherited from late Roman thinking. These were the *trivium*: grammar, rhetoric and logic; and the *quadrivium*: arithmetic, geometry, astronomy and religious music. While not every student would study all of these, the cathedral schools also included studies in fine arts and handicrafts, some literature, and history. Mathematics and astronomy, along with geography, were very limited until learning from Arabic, Greek and other sources was introduced. The classics were limited to just a few works. The entire curriculum was narrow, relying upon works that were centuries old.

Nevertheless, fathers began to send their sons to cathedral schools, and a new class of educated people whose careers were not related to the Church arose in the towns. Literacy improved as clerks appeared to keep town records and copy documents. Literacy moved out of the monastery's scriptorium and into society. While many teachers in the cathedral schools were churchmen, some were not. Many men who attended the cathedral schools took jobs in secular (non-Church) professions, although the Church still remained an important avenue for careers. Educated members of the clergy rubbed elbows with educated men outside the Church, and this also helped to advance Europe's budding scholarship. Several historians have remarked that the spread of education from the 10th to the 12th centuries produced Europe's first true intellectuals—people whose profession it was to read, to write and to think for a living. Among these scholars and members of the clergy, some began to search beyond Europe's horizons for new knowledge.

## FOUNDING COLLEGES AND UNIVERSITIES IN EUROPE

Historians Frances and Joseph Gies record that “*One of the Middle Ages’ most important creations, the medical school, was founded at Salerno [Italy] in the eleventh century, when by no coincidence the earliest cultural contacts with Islam occurred.*”<sup>8</sup> Many other historians link the founding of European colleges and universities with the influx of Muslim scholarship through translations. In the 11th century, Archbishop Raymond and Alfonso the Wise established colleges specifically for the purpose of making Arabic learning available to Europe. Alfonso’s college, staffed by Jewish, Christian and Muslim scholars, must have had an atmosphere something like the *Bayt al-Hikmah* centuries earlier.

Knowledge about the beginnings of Europe’s colleges is limited. Some individuals specialized in law or medicine, the first non-Church professions in which students could take a doctoral degree. Others lived up to the name “university,” offering many subjects, or *studium generale*. As today, subjects were grouped into colleges. Gradually, the seven liberal arts made way for other methods and content, though the term is still with us today. The university curriculum expanded as libraries were enriched with new knowledge in works translated from Arabic and Hebrew, at first from Spain and Italy. During the Renaissance, Greek teachers began coming from Constantinople. Growth in curriculum included astronomy, philosophy, mathematics, physics, chemistry, literature, and some fields of technology. As the curriculum grew, classes with certain teachers might be held in apartments in the town. In Padua, for example, a teacher discussed Ibn Haytham’s work in optics in such a room. Sometimes these extra-curricular classes were held off-campus because the official university was too slow to accept new knowledge. Ideas can’t wait, and extra-curricular classes continued under the humanists.

By the end of the 12th century, there were five universities in Europe, including Bologna, a law school, and the University of Paris. Two branched off from Paris, becoming Oxford and Cambridge Universities in England. Soon after, the universities of Padua (1222), Naples (1224), Orleans, Angier and Salamanca were founded. Within the next century, over twenty European universities appeared in other important towns. Some of these grew out of earlier cathedral schools, and a few were specifically founded as centers for Arabic learning, like Sevilla and Murcia.

These colleges were very similar to the early *masjid* schools and *madrasah*. They had one or more buildings for lectures, were attached to a library in some way, and included student lodgings. In some cases students lodged in apartments in the town. In northern Europe, colleges were founded by charitable foundations, as in Islam. In Spain and Italy, a number of universities were founded with the patronage of kings or the Church. Other similarities with Muslim universities include a long list of similar terms for ranks and positions in the college—like the term “readers” or *lectio* in European colleges—and other traditions, which are related to Arabic terms. Methods of teaching and testing students’ knowledge, such as the oral defense of a thesis, and the moot court in legal schools go back to Muslim law studies.<sup>9</sup>

Muslim works on medicine, mathematics, astronomy and other fields remained standard texts in European universities for centuries. Renaissance scholars challenged the medieval curriculum and favored literature and a new interest in Roman and Greek classics. Scientific revolution brought more change and expansion, but even today, many medieval traditions still show the influences of close contact between the cultures of Islam and Europe.

8. Francis and Joseph Gies, *Cathedral, Forge and Waterwheel*, (New York: Harper Collins, 1994), p. 159.

9. George Makdisi, *The Rise of Colleges: Institutions of Learning in Islam and the West*, (Edinburgh: Edinburgh University Press, 1981), pp. 105-152.



## STUDY QUESTIONS AND STUDENT ACTIVITIES

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1. How did children and adults get basic literacy skills in Muslim culture before modern times?
2. List the parallels between Muslim and Christian education during the middle ages, using this reading and references in your textbook or other sources. You may also refer to the reading “Going To School in the Middle Ages and Renaissance Italy,” in this unit, especially the first half.
3. There are many references in Chaucer’s *Canterbury Tales* about scholars, and about Muslim learning in medicine and astronomy. Locate some of these for descriptions of medieval life.
4. Why do you think that the entry of new knowledge from foreign sources stimulated the rise of universities? How is this process similar to the development of colleges and universities in Muslim lands a few centuries earlier?





## THE WISDOM OF THE ANCIENTS

### INTRODUCTORY READING

For people living near the beginning of the second millennium of the Common Era, it is difficult to imagine that dynamic development in a society could be based on ideas that were already many centuries old. Nevertheless, that was the case at the beginning of the European Renaissance. In fact, the movement to revive ancient learning in Europe had begun centuries earlier, during the Middle Ages. Charlemagne had to improve literacy and handwriting to ensure authority and control of his domain. A few historians have applied the term rebirth, or *renaissance*, to Charlemagne's time. Most historians, however, agree that the roots of the 14th-century Renaissance can be found two centuries earlier, in the 1100s and 1200s. It was during this time that medieval scholars began to question traditional ways of viewing knowledge.

The late Middle Ages, as the period from the 11th through 14th centuries is sometimes called, was also a time when scholars went in search of new sources of knowledge. These sources were in Muslim Spain and Sicily, and in what came to be called “the East”—meaning Byzantine and Muslim civilization. These “new” sources of knowledge were at first lumped together, however, as “the wisdom of the ancients.” This meant the knowledge of *all* civilizations that had existed before the rise of Europe—not just Greece and Rome. In time, these courageous and curious scholars began to form a better idea of the origin of these ideas, of the people who produced these works, and of their languages and cultures. In absorbing this knowledge, they acquired the skills and developed the educational system that eventually led European scientists far beyond the point where they had begun.

To understand the worldview and intellectual pursuits—including literature and the arts, science and technology—during the Renaissance, it is necessary to understand the enthusiasm for rediscovering the classics. In the book *Gargantua and Pantagruel*, the 16th-century French author Rabelais imagined a fantastic voyage. The characters experienced a wonder that is a symbol for the recovery of the classics after the loss of Roman civilization to the barbarians:

“Pantagruel suddenly jumped to his feet, and took a look about him. ‘Can you hear something, comrades?’ he asked, ‘I seem to hear people talking in the air. But I can’t see anything. Listen’...‘So as to miss nothing, some of us cupped the palms of our hands to the backs of our ears...the more keenly we listened, the more clearly we made out the voices, till in the end we could hear whole words.’ Greatly alarmed, Pantagruel’s party was told by the ship’s captain that what they were beginning to hear were the sounds of a great battle which had been frozen by winter and [the soldiers] were now beginning to thaw. Some, indeed, fell on deck, where they ‘looked like crystallized sweets of different colors...when we warmed them a little between our hands, they melted like snow, and we actually heard them.’<sup>10</sup>”



10. John Hale, *The Civilization of Europe in the Renaissance*, (New York: Atheneum/Macmillan, 1993), p. 189.

How did these voices become frozen, or lost, and how were they recovered to Europeans after the “winter” of the Middle Ages? Whose voices did Renaissance people begin to hear, now that they made an effort to listen?

Before printing, photography and electronic information storage, accurate preservation of writing and ideas was a major challenge. Copying by hand was the only way to reproduce a book. As books were passed down, copies were made from copies, and errors crept in and multiplied. Copyists did not always write authors’ names or titles. Books might contain the works of several authors, with only the first one cited. Writers lifted long passages from others’ works, sometimes naming the author, but sometimes omitting the name, when they did not know it, or assumed that the reader would know the source. This has caused confusion, with books falsely ascribed to famous authors. On the other hand, some writers’ work has only escaped total loss because others quoted from their work. Losses due to war, fire, flood, rot and bookworms make it remarkable that knowledge from ancient times has come down to us at all.

Languages also have undergone change. Words change their meaning or are forgotten, and grammar changes slowly. Conquest or migration may cause one language to replace or mix with another. Movement of ideas from one culture to another requires skilled translators, but some have been better than others. Scholars sometimes migrate to a place where important ideas are shared, and stay to study the language. Along with books and ideas, they often picked up inventions, styles, foods and music from the surrounding culture.

Books, inscriptions and scrolls are silent witnesses of times gone by. Scholars must work patiently to unlock their treasures, double-locked in a strange script and a strange language. Parts may even be missing. But when a lifetime of work—or several—unlocks their meaning, its literature opens up a direct conversation with a person from long ago. No other creature on earth shares with humankind this ability to talk to the past.

## 1. WHAT HAPPENED TO CLASSICAL AND ANCIENT LEARNING AFTER ROME?

Any description of the Renaissance mentions that it was a rebirth of classical art, architecture and learning. Historians talk about Renaissance scholars rediscovering classic works that had been lost. We seldom hear, however, how the classical learning was “lost,” and how it could have been “found” again. If it was lost, a logical person might ask, why didn’t it stay lost forever? Someone must have held onto it, somewhere. In this section, you can learn what classical knowledge was, where it was preserved, and how it “was found” when European scholars wanted it again.

For the history of Western civilization, the fall of Rome was a turning point. Having reached a high level of classical culture and learning, the fall of Rome was seen as a great decline. In Europe, the time of tumult and so-called barbarian invasions turned a sparkling civilization into forgotten ruins. Learning and culture retreated into fortress-like monasteries, where it moldered for centuries with little improvement. Libraries suffered the same fate. Scrolls and books were lost, or those that were saved from ruin ended up jumbled together in dank rooms of monasteries, uncataloged, unsorted—as good as lost.

Christianity was beginning to take hold in England as Islam began to spread in Arabia. St. Augustine’s famous mission to Canterbury and meeting with Pope Gregory the Great took place during the Prophet Muhammad’s lifetime. The spread of Christianity into Europe after Rome’s decline



Books in a monastery library.

provided a lifeline that preserved writing, books and learning. Christian writings and some works from Greece and Rome were preserved in monasteries and churches throughout Europe. Copying by monks extended the life of these works, and some new works were produced during the Early Middle Ages. Language skills also suffered. As you may recall, the medieval emperor Charlemagne—who never learned to read—worked to revive penmanship and other clerical skills to run a more efficient government. Even after Charlemagne, literacy was confined to the clergy and the palace clerks, and a few noblemen. While the time before the year 1000 CE in Europe was not altogether dark, it certainly was a quiet period for the growth of ideas. The spread of Islam over the next several centuries would have an important impact on classical learning.

### **Learning Under the Byzantines**

The classical tradition of learning from Greece and Rome moved eastward. Constantinople, the great capital city of the Eastern Roman Empire, later called the Byzantine, remained in contact with trade and learning centers in the Mediterranean and farther east. Just as the Roman Empire had split, with Constantine declaring Christianity the state religion in 325 CE, Greek Christendom gradually separated from Latin Christendom, and developed its own traditions. The Latin west slipped into the chaos of the “barbarian” invasions.

In the Byzantine Empire, classical learning was probably eclipsed by the effort to retain the Empire and to establish a unified form of Christianity. As a sign of this effort, in 529 CE, the Emperor Justinian closed all of the secular (non-religious) academies, including the famous School of Athens, with its legacy of Aristotle, Plato and Socrates, its mathematics and philosophy. By the time it was closed, however, the School of Athens was barely a shadow of what it had been. The fate of another famous center of scholarship, the great library at Alexandria, Egypt, is disputed. For a long time, historians blamed Muslims for its destruction when they took Alexandria. Strong evidence against this, however, is the fact that Muslim leaders left many other libraries and learning centers intact. It is now known that it was destroyed in the 3rd century CE, long before the rise of Islam. By the fourth and fifth centuries, Alexandria had become a center of Christian learning, where schoolmen wrote commentaries on Greek thinkers like Aristotle, Ptolemy and others. As a creative center of learning, however, it had faded, and its most promising scholars moved eastward to Syria and beyond.

### **Classical Learning Moves East to Syria and Persia**

The greatest enemy of classical learning was probably intolerance. During the early Christian era, Christian groups varied in their beliefs about the nature of God and Jesus. Byzantine attempts to enforce official doctrines resulted in the excommunication—or forcing outside the Church—of groups with differing beliefs. Nestorian and Monophysite, or Jacobite Christian sects were among them. Fearing for their lives and property, and seeking tolerance, many of them migrated into Syria, Asia Minor (today’s Turkey) and Persia. Some Nestorians are thought to have migrated as far as India, Central Asia, and even China. This gave rise to the medieval legend of Prester John, ruler of a Christian kingdom in Asia. Marco Polo later “confirmed” this legend, which appeared on many medieval maps.

Persian rulers, always eager to benefit from the Byzantines’ troubles, welcomed the refugees—especially those with learning and scholarship to share. Along with Christian writings, these scholars brought the Greek and Hellenistic tradition of learning in medicine, astronomy, technology and philosophy to Persia. Jewish scholars from Alexandria and other centers also fled east. In their new homes, ancient and newer learning was translated into Syriac, Hebrew and Persian. There, these traditions were preserved for several centuries, combined with other traditions, and passed on.

Greek ideas had already reached as far as Persia and India centuries before, with the help of Alexander the Great and his conquests. In Persia, Hellenistic ideas combined with the sciences of Babylonia and India, and possibly some influences from farther East—perhaps even China—during the heyday of the ancient Silk Road. During the time of the Sassanians, Persia was a place where learning was highly respected. In Zoroastrian temples, books of science, medicine, mathematics, astronomy and moral teachings were gathered and translated into Persian. Works in Sanskrit, the language of India, were also found there. The Christian groups who

migrated from Byzantine lands now added works in Greek and Syriac. The most important Persian centers of learning were found in Salonika, Ctesiphon (on the Tigris River, a little south of the future site of Baghdad), at Nishapur, and at Jundi-Shapur.

### The Academy of Jundi-Shapur

According to tradition, the Academy of Jundi-Shapur in Persia (modern-day Iran) began with the founding of the city by King Shapur in the 3rd century CE. He is said to have ordered the collection of Greek works on philosophy and medicine, and had them translated into Pahlavi language for the library. King Shapur married a Christian princess, the daughter of the Roman Emperor. She arrived with artisans to build and decorate in the style of Constantinople, and with physicians from her home city, to assist her in case of illness. This cosmopolitan city continued to develop as a center of learning and culture for several centuries. In the 6th century, shortly before the rise of Islam, the Academy of Jundi-Shapur reached its peak.

In many ways, the center at Jundi-Shapur combined the sum of ancient wisdom at the time, bringing together knowledge from Greek, Roman, Jewish, Syrian, Christian, Persian and Hindu sources. Even Chinese thought, through the Silk Road connection, may have reached there. Among the refugee scholars there were teachers from the closed School of Athens. They brought Euclid's work in mathematics, philosophy of Aristotle and Plato, works by Ptolemy and others. Along with Nestorian scholar-refugees, they held discussions with the king, wrote, taught and helped to translate. Indian scholars discussed moral and ethical teachings. Many stories from the Indian traditions came into Persia at this time, like the animal fables of Bed Pai (later translated into Arabic as *Kalila and Dimna*), and some tales that found their way into the *Thousand and One Nights*. Indian mathematics, with its Hindi numerals, came to the Academy, on its way to Muslim lands, and later to Renaissance Europe. Jundi-Shapur was also a medical center, with a teaching hospital that became a model for later Muslim hospitals, which were in turn passed on to Europe. The medical school lasted until the 10th century, long after the coming of Islam to the region. One of the most famous products of Jundi-Shapur was the family of the Christian-Persian Bakhtishu physicians, who produced seven generations of brilliant doctors—spanning more than two centuries—and helped found medical centers for the *khalifahs* in Muslim Baghdad.

When the city of Jundi-Shapur surrendered to Muslim military leaders in 636, the Academy was left undisturbed. It continued as the scientific center of the Muslim lands during Umayyad rule. Scholars, educators and doctors from the Academy journeyed to the Umayyad capital of Damascus, beginning the earliest translation work. Its influence continued until the 11th century, even during the height of Baghdad's reign as an intellectual center.

### Classical and Ancient Learning Entered Muslim Culture

In the same way that monasteries became book-making centers of the Christian world, the *masjid* (mosque) was a natural place to begin libraries, since the *Qur'an* is the root of Islamic learning. The first sciences to be stimulated by Islam were developed in the service of its preservation and interpretation. Documentation of the Prophet's words and deeds, his biography and the history of the Muslim community, grammar and philology (word meanings), *tafsir* (exegesis, or explanation and interpretation) were only a few disciplines that led to the collection of existing "ancient" knowledge and the development of Muslim sciences. Muslim scholars also wrote history studies in which they recorded the momentous events of the Arab expansion. They expanded history studies to include some of the many other cultures embraced by the spread of Islam. Schools of Islamic law emerged as a complex system based on rules of logic, grammar and other branches of knowledge. Another leap of growth took place as the knowledge of Persian, Greek, Roman and Indian sources became available through contact with their scholars and translation of their works into Arabic.

Private and official libraries developed early in Muslim culture with the growing interest of the scholars and the needs of the government. Libraries and centers of learning encountered in the course of Arab expansion were consciously spared from destruction, including what remained of the famous classical library at Alexandria, Egypt. Christian centers in Syria, many damaged by the long period of war between Persia and Byzantium,

came under the protection of the Muslim state. There are numerous reports of prisoners of war being ransomed for books, building on the tradition of learning valued in Islamic teachings. According to tradition, in the time of Muhammad, a group of prisoners was freed on the condition that they teach 10 Muslims each the art of reading and writing. As Islam spread among the population, and especially as scholars and upper class people began to accept Islam, the traditions of ancient and classical learning began to fuse with Islamic learning.

From the earliest Muslim *khalifabs* to the Umayyad rulers and their successors, the Abbasids and others, preservation and collection of documents and books led to the development of libraries. The Academy of Jundi-Shapur became one of the richest sources for books and learning. Copyists and translators skilled in various languages were set to work. The *Bayt al-Hikmah*, founded at Baghdad in 830 CE, carried this work to the highest level.

The spread of learning through books got a huge boost with the entry of paper into Muslim lands from China. In the 700s, Samarkand began exporting paper to the Muslim lands. Within a few years, production of paper at Baghdad began and spread quickly to other places. While books still remained valuable treasures, the new, less expensive paper made it possible to make many copies of books. Libraries grew, book shops and paper markets appeared in the hundreds across the Muslim lands, and the export of books became a thriving business. As paper became cheaper and more plentiful, literacy rose, and thousands of books came onto the market.

Books were even written about books. Encyclopedists like Ibn Nadim wrote volumes listing famous works and their location. Biographical dictionaries of local celebrities, or important people in a certain field of work (poets, musicians, doctors, jurists, *hadith* experts) were compiled. Some authors employed correspondents in other cities, much like modern journalists. These huge biographical dictionaries, containing thousands of names, dates and entries on the lives and works of VIPs are an important source of information for historians today. Books were written about cities, and professions, and rulers, medicines, plants, crops, and many other subjects. It is interesting that the burst of learning in the Muslim world—during and after the Abbasid period—and the burst of learning called the European Renaissance, both produced a form of works that store and organize large amounts of knowledge. These works are dictionaries and encyclopedias. The beginnings of indexing, cross referencing, classifying and cataloging of knowledge belong to both periods and both cultures.

The art and craft of bookbinding was highly respected in the Muslim world, and indeed it was practiced by a number of scholars themselves. The 10th-century Muslim geographer al-Maqdisi even bound books during his travels. Several early Arabic manuals on bookbinding describe all the processes, tools and materials for stitching and finishing the pages, making the covers and adding expensive decorative touches. A famous technique is *gilding*, or adding gold. A solution of powdered gold was made, mixed with glue, and used for writing and edging pages. Many fine leather-bound books are decorated with gold stamping, a technique learned by Europeans through Muslim Spain and Venice's eastern trade. In gold stamping, a fancy iron was heated and used to press designs onto dyed leather with gold leaf. Gold stamping is used for many leather goods, and it is still associated with fine books today. Apart from gilding and stamping, bindings using silver, gold and jewels are examples of Islamic arts found in many museums.

The importance of ancient learning in Muslim culture was acknowledged from the beginning. The famous 9th-century African Muslim scholar and teacher of Baghdad, al-Jahiz, wrote this about the legacy of learning from many cultures:

“ Did we not possess the books of the Ancients in which their wonderful wisdom is immortalized and in which the manifold lessons of history are dealt with, so that the past lives before our eyes—did we not have access to the riches of their experience which would otherwise have been barred to us, our share in wisdom would be immeasurably smaller, and our means of attaining a true perspective most meager.”<sup>11</sup>

11. Quoted in Mehdi Nakosteen, *History of Islamic Origins of Western Education: AD 800-1350*, (Boulder: University of Colorado Press, 1978), p. 13.

In al-Jahiz’s time and far beyond, this legacy of ancient wisdom continued to develop and gather new fruits in Muslim lands. The combination between the rise of Islam, the growth of Muslim culture and the spread of paper and bookmaking crafts, ensured the future of the ancient treasures of knowledge. Not only did the wisdom of the ancients survive, but the burst of translation, book production and development of science and literature helped to spread knowledge and education across the Old World, and assured that it would continue its long journey across cultural and religious boundaries.

Hearing about the Muslim libraries and universities in cities of Spain and Sicily through Italy’s eastern Mediterranean trade, and rummaging in libraries and monastery attics, Western scholars mounted pack animals, rode on ships, and took up their pens. They too went in search of the Wisdom of the Ancients. Knowledge from Muslim culture would become part of that ancient wisdom in their eyes. As the Middle Ages flowered into the Renaissance, the attitude of Europe’s scholars toward books, language and wisdom would change. Their skills and methods for understanding, translating and analyzing would develop. They would also change the way they passed on this knowledge through teaching in schools and in the growing universities of Europe. Finally, the technology of printing would give wings to these ideas, standardizing their presentation in identical copies for a mass audience. The first books printed and circulated in Europe, apart from the Bible, were the “Wisdom of the Ancients,” from Greek, Latin and Arabic language.

## 2. ANALYZING SACRED TEXTS AND ANCIENT WISDOM IN ISLAM

A book—a sacred scripture, or holy text called the *Qur’an*—is at the center of every Muslim’s faith. Muslims believe that it is the revealed word of God, dictated by the Angel Gabriel to Muhammad (d. 632 CE) over the 23 years of his prophethood. During the time of Prophet Muhammad, the *Qur’an* was received and preserved through recitation and memorization. The final order of the verses and chapters was determined by the end of Muhammad’s mission, when a number of his companions had learned to recite the whole *Qur’an* by heart. The *Qur’an* is most authentic as a recitation when it is artfully reproduced by the human voice. It is recited according to an unbroken tradition reaching back to the revelation to the Prophet. Even with the completion of the *Qur’an* in written form as a book, the tradition of recitation has not diminished at all. Even though beautiful script and decoration of the *Qur’an* is a unique Islamic art form, perfecting the art of recitation is the most esteemed achievement.

The written record was begun during the Prophet’s lifetime, and completed while the first generation of reciters was still alive. The collection of the *Qur’an* into an authoritative book form was completed in 651 CE (30 AH\*) under the direction of Zaid Ibn Thabit during the caliphate of Uthman. Several copies were made and sent to the provincial capitals. The contemporary *Qur’an* is a virtually exact copy of those manuscripts. A well-known French scholar on Islam, Jacques Berque, has written:

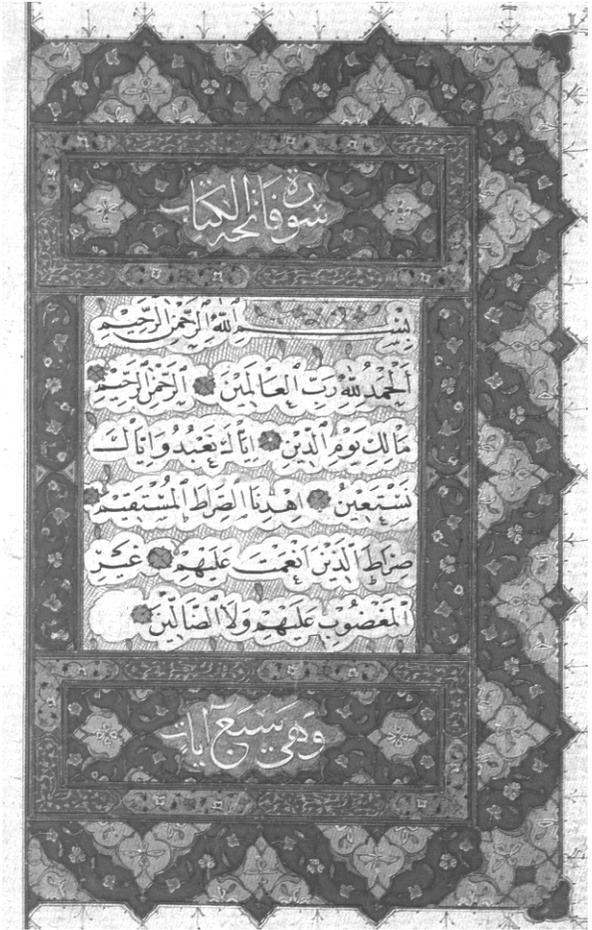
“One should take special note...that the tradition has kept no record of any substantial disagreements over the text [of the *Qur’an*]....In a community so prone to argument of a subject held close to heart by all, one wonders whether or not to attribute the silence of the sources...to the unanimous consensus of the multiple witnesses...we have no grounds to doubt that.”<sup>12</sup>

\* AH [*anno hijra*], Latin for “year of the hijrah,” the Islamic dating system that begins with the year 622 CE, the date of Prophet Muhammad’s migration to the city of Madinah, in Arabia.

12. Jacques Berque, “The Koranic Text: From Revelation to Compilation,” George N. Atiyeh, ed, *The Book in the Islamic World*, (Albany, NY: SUNY/Library of Congress, 1995), p. 20.

As Berque notes, it is very significant that the *Qur'an* used today is recognized as identical to the one compiled over fourteen centuries ago. This is even more remarkable when we consider that the first printed edition of the *Qur'an* was not produced until the 18th century. Until that time, hand copying was the sole method of written transmission. Of course, the oral form of transmission—recitation—served in Islam to guarantee the correctness of the written copy. The value of nothing less than total accuracy in copying the sacred book gave an important push to the habit and skills needed to edit and check other texts as well.

The basis for action, thought and science in Muslim culture is the *Qur'an*. As a guide for personal and community life, the *Qur'an* applies to every situation the believer confronts. Muslims view the Prophet Muhammad as a messenger who received revelation from God, and also as a model for mankind in the way he lived out the revelation. The *hadith*, or sayings and deeds of Muhammad, were collected during Muhammad's lifetime and transmitted orally or recorded in writing. Certain companions of Muhammad became very famous as transmitters of many *ahadith* (pl.), like Aisha, his wife, and Abu Hurayrah, a man who had served the Prophet for many years. As *ahadith* were transmitted to later generations, a discipline of oral collection and verification developed. This culminated in the authoritative written collections of several scholars during the 9th century, which are widely accepted among Muslims around the world today. Al-Bukhari and Muslim compiled two of the most famous collections.



The need to understand the meaning, or **interpret**, the *Qur'an* involves many techniques and disciplines. Analysis and comparison of two sources—the *Qur'an* and the body of *Hadith*—requires careful analysis. Other disciplines, like history and biography also played a part. The most important tool of this analysis is command of the Arabic language. Careful analysis of Arabic produced works on Arabic grammar. Study of word origins and meanings led early Muslim scholars to travel, visiting various Arab tribes in search of accurate meanings in local dialects. It also led to books that would help to standardize Arabic among new Muslims, and to make it the universal language of literate Muslims. These skills were combined with use of reason and rules of logic to make up the study of Islamic law, or *shar'iah*.

### Textual Criticism in Muslim Culture

The extremely well-developed discipline of accurately transmitting, copying and interpreting the *Qur'an* helped develop among Muslim scholars a tradition of analyzing texts. The disciplines developed for sorting through the body of *hadith* to find the most authentic, or truthful ones also gave Muslim scholars a sound foundation for analyzing texts and knowledge it received from other cultures. History writing, an important field of scholarship that developed early in Muslim culture, helped develop standards of evidence and proof. The widespread use of Arabic stimulated an intensive exchange among scholars in many places. When the works of the Greek philosophers and scientists, the manuscripts and teachers from Persia and India began appearing, and knowledge from Byzantine and Hebrew sources poured in, Muslim scholars had a ready supply of critical and analytical skills.

Over a period of a few centuries, scholars of many faith groups worked under the umbrella of tolerance provided by Islamic law. They were also aided by the generous patronage of wealthy Muslim rulers. These men and women collected, stored, translated, and edited the most important books. They compared manuscripts, sometimes traveling or trading to acquire them. They did detective work to discover the real authors, by comparing words, styles and ideas. They often tried to organize all the works of an author. As they translated, they often wrote commentaries on the sides of pages, sifting the ideas through their own religious beliefs and scientific understanding. They agreed or disagreed, discussed and argued, tested and calculated. This work is called **textual criticism**—sifting and editing texts from long ago. The methods and ideas these scholars developed spread through schools and universities that grew up in the major cities, and through correspondence.

As Islamic scholarly work grew into an education system, both the written and spoken word continued to play important roles. Works of well-known experts were studied in book form, but as a modern Muslim scholar, Seyyed Hossein Nasr notes,

“...the good student must learn not only to read the black lines of the text in Arabic...but...he must also be able to read what they would call ‘the white parts’ of the page, or what in English would be called reading between the lines.<sup>13</sup>”

This is the foundation of textual criticism. Words, after all, capture only a small part of the meaning. Looking at all the possibilities and then deciding on meaning is a stimulating challenge, but necessary to make a text come alive. In the Islamic education system, the oral tradition, passed down through a teacher, complemented the reliance on texts. Muslim scholars sat at the feet of famous lecturers, received certificates and gained the right to teach their lecturer’s books to others. A formal system and method of education developed from an intellectual tradition based upon the principles of interpreting Islamic sources, and under the influence of scholarship derived from ancient wisdom.

### Islamic Law and the Scholastic Method

In addition to knowledge of grammar and vocabulary, an essential discipline for interpreting and analyzing texts is **logic**. Muslim jurists, or scholars of Islamic law, developed a very detailed method of applying rules for analyzing the *Qur’an* and *Hadith*. Their goal was to arrive at a well-grounded judgment, based on these two sources of Islamic knowledge, about the best course of action for an individual Muslim or the whole community. This became crucial as the advancing size and complexity of Muslim society brought them face-to-face with new situations. Logic—both derived from Arabic/Islamic sources and influenced by Greek thinking—was applied to finding the closest parallel to such situation in the *Qur’an* and *hadith*, remaining true to the spirit and letter of Islamic law.

Over time, these disciplines developed into the *Shari’ah*, or body of Islamic law. This did not result in one law book that you could hold in your hand, but in a process and a tradition that continues to apply Islamic guidelines to new and changing situations to the present day. This process is called *ijtihad*, or independent judgment. This process, undertaken by qualified Muslim scholars of law, resulted in a body of legal/religious precedent, or practice and experience. Since there is no central religious authority in Islam, a unique institution developed, based on a saying of Prophet Muhammad, that the Muslim community will not be united in agreement upon error. The consensus of independent Muslim scholars became the basis for authority in the community.

What does consensus, or agreement of all qualified Muslim scholars mean? In a sense, it has a negative meaning, and is based upon the responsibility of the scholar to be knowledgeable about the body of Muslim practice and law, and to speak up against a legal opinion with which the scholar disagrees. This led to the

13. Seyyed H. Nasr, “Oral Transmission and the Book in Islamic Education,” in George N. Atiyeh, ed, p. 58.

practice of carefully recording those matters on which there was disagreement. It also led to development of the method of disputation, or systematic disagreement over matters of the law, called *khilaf*.

As the schools of law crystallized around the shared views of recognized scholars and their students, formal institutions developed for educating legal scholars. The method of disputation and consensus, and the process of becoming proficient in it, became part of the education system. Based on reason as a method for interpreting authoritative texts, it employed the system of formal logic. In this, it had been influenced by Greek thinkers like Aristotle, whose work had been thoroughly studied and commented upon by Muslim thinkers.

George Makdisi, an historian of European and Muslim thought, described the influence of the Islamic legal tradition of disputation upon European education. He argues that Muslim legal scholars developed the detailed method of *khilaf*, the scholastic method called in the West *sic et non*. It passed directly to Europe from Muslim colleges of law. Makdisi argues that this influence entered in two ways. Scholars themselves, he says, spread the system from Baghdad, where it originated, to other centers. For example, “*Abu Abd Allah al-Azdi (d. 969 CE) of Cordoba is cited as the grammarian who brought the scholastic method of disputation from the Muslim East to Andalusia [Spain] where this sophisticated method was unknown. His biographer Zubaidi said of him that he laid out the method for his Andalusian colleagues.*”<sup>14</sup> There was more than one path of transmission, as scholars learned the method and spread it east and west across Muslim lands. Another historian cited by Makdisi “*traced the sic et non back to...around 1100, with Bernold of Constance as its first known representative in the West, and he cited Photius, Byzantine ambassador to the caliphal court in Baghdad, as the first to use the sic et non in the East.*”<sup>15</sup> When European scholars studied in Muslim colleges and universities, and when they read works in Arabic on the subject of Islamic law, they learned this method. Through the widespread education system in Muslim lands, this system became institutionalized and was passed on to Europe, where it became the basis of organization of law study—along with medicine, the first kinds of doctoral degrees granted by European universities. Outside of law, the scholastic method was turned to study of philosophy, logic and religion that helped give birth to humanism in Europe. Another historian, Christopher Dawson, tells that the scholastic method gave to Europe, the Renaissance and the Scientific Revolution “*that confidence in the power of reason and that faith in the rationality of the universe without which science would be impossible. It destroyed the old magic view of nature which our ancestors shared with every primitive people.*”<sup>16</sup>

Muslim scholars translated, discussed, picked apart for errors and thought out the wisdom of the ancients. It was weighed carefully in the balance of Islamic laws and principles. Ultimately, Muslim thinkers prepared commentaries and original works of philosophy, mathematics and science. A number of these important works would come to Europe, as a recent historian stated, to “*irrigate the dry pastures of European intellectual life.*”<sup>17</sup> Not only did the content of ancient and Islamic knowledge reach western Europe, but also the METHOD of Islamic scholarship influenced European thinkers in developing the scholastic method that they applied to understanding and analyzing. The impact of this scholarship on Europe—in spite of enormous religious and political barriers between Europeans and Muslims—would be stunning, and the legacy far-reaching.

14. George Makdisi, *The Rise of Colleges*, (Edinburgh: Edinburgh University Press, 1981), p. 131.

15. *Ibid.*, p. 288.

16. *Ibid.*, p. 289.

17. Richard Fletcher, *Moorish Spain*, (New York: Henry Holt and Co., 1992), p. 8.

### 3. MEDIEVAL LEARNING, ARABIC KNOWLEDGE AND THE “MEDIEVAL RENAISSANCE” IN EUROPE

In the Gothic cathedral at Chartres, near Paris, a stained-glass window faces south. It shows a man in medieval robes sitting on the shoulders of another. The scholar Bernard of Chartres explains:

“We are dwarfs mounted on the shoulders of giants, so that we can see more and further than they; yet not by virtue of the keenness of our eyesight, nor through the tallness of our stature, but because we are raised and borne aloft upon that giant mass.<sup>18</sup>”

The giants in this quotation are the ancients, the classical writers of Greece, Rome and other earlier cultures. The materials of the medieval scholar were the texts of the ancients, and their tools were logic and imitation. Many churchmen felt that with the victory of the Church in Europe, history was no longer important, and progress was limited to being a symbol for the afterlife, the fate of the world. *Veritas, filia temporis*, said Bernard of Chartres: “*Truth is the daughter of Time.*” In one sense, it was a passive statement, reflecting little confidence by scholars in their own time and capacities.

#### Books as Silent Treasures, Copying as Prayer

During the 7th to 10th centuries, the period when Muslim civilization and learning were thriving, learning in Western Europe was limited to quite a small circle of people. The Church possessed books that held the Latin heritage, both writings of churchmen (mostly theology), and the classical writings of Romans and Greeks. There was not much concern with science and reason, but with the preservation of the books—the inscribed words. Books were luxuries, treasures to be hoarded, not circulated.

Monks copied books in a special room, called a *scriptorium*. The copyists and the Church viewed this work as a kind of worship, a holy act. The monk bent his back, suffered eyestrain and in winter, cold fingers, in order to seek forgiveness for sins. The holy act of copying religious texts was often more important than the effort to know and understand the book. Church leaders wrote little on worldly topics, but concentrated on theology. Outside the Church,



18. Joan Evans, ed., *The Flowering of the Middle Ages*, (New York: Bonanza Books, 1985), p. 148.

the few literate noblemen and women often wrote poetry or prose in the chivalric tradition. Romances were popular. This tradition had roots both in the feudal military culture and in oral folk traditions of storytelling and songs.

### The Rise of Scholarship Outside of the Church

An important change in these static ideas came through the transfer of ancient—and not so ancient—learning to Europe through the efforts of the 12th- and 13th-century medieval intellectuals. They would work as translators and detectives, hunting down classical manuscripts and making them available to other European scholars by translating them into Latin. Ironically, in their effort to recover ancient wisdom, they would help to usher in modern thinking and science. A modern French historian says of the beginning of this work:

“The daughter of time, truth is also the daughter of geographic space. Cities are the centers of the traffic of men, full of ideas as well as merchandise, places of exchange, the marketplaces and crossroads of intellectual commerce. In the twelfth century, when Western Europe was still doing scarcely more than exporting raw materials—although textile development was on the rise—rare products, costly objects came from the Orient, from Byzantium, Damascus, Baghdad and Cordoba. Along with the spices and silk, manuscripts brought Greco-Arab culture to the Christian West.... Two principal zones of contact accepted Oriental manuscripts: Italy and primarily Spain.<sup>19</sup>”



Monks who copied manuscripts in the monastery scriptorium thought of the work, the time consumed, and the fatigue endured as a way to get into heaven. “Scribes measured the years of purgatory that could be subtracted by the number of pages, lines and letters written...”

As this statement makes clear, the rise of towns brought more than just trade and money. It brought ideas and even more important, it broadened the horizons of Europeans who lived there. An important group in the changing vistas of European life were the new class of educated people. As in Muslim civilization, the rise of scholarship is associated with the growth of trade and cities.

The rise of scholarship outside of the Church in Western Europe began during the 12th and 13th centuries, often called the High Middle Ages. In Europe, the rise of large cities would not come until much later, but towns already dotted the map of Europe at this time, and had existed in Italy much earlier. The word “scholar,” of course, comes from the same root as “school.” Schools developed in the 12th-century towns to serve the growing need for literacy that came with the growth of trade and administration. *Clerks* or *notaries*—like scribes, or people who keep records and write documents for a living—were in greater demand. Notaries and clerks were artisans, and some learned the writing and copying trade as apprentices. The cathedral and town schools brought to prominence another group—the school masters—teachers of Latin grammar and traditional books. They often used their trade of teaching youngsters to support their scholarly work. Some became professors and carriers of knowledge—thinkers and teachers by trade. Unlike the early medieval copyist, who may have concentrated more on the letters than the ideas they carried, this group was interested in discussion,

19. Jacques LeGoff, *Intellectuals in the Middle Ages*, (Cambridge, MA: Blackwell, 1993), p. 14.

exchange and debate. They became *intellectuals*, people interested in acquiring knowledge, teaching it and improving it. From this growing European tradition toward the end of the Middle Ages, the Renaissance humanists would emerge in the following centuries. They would build upon, but also criticize the ideas and methods of the medieval scholars, and they would work to change the education system they developed. But before this happened a major influx of new ideas and knowledge came into Europe.

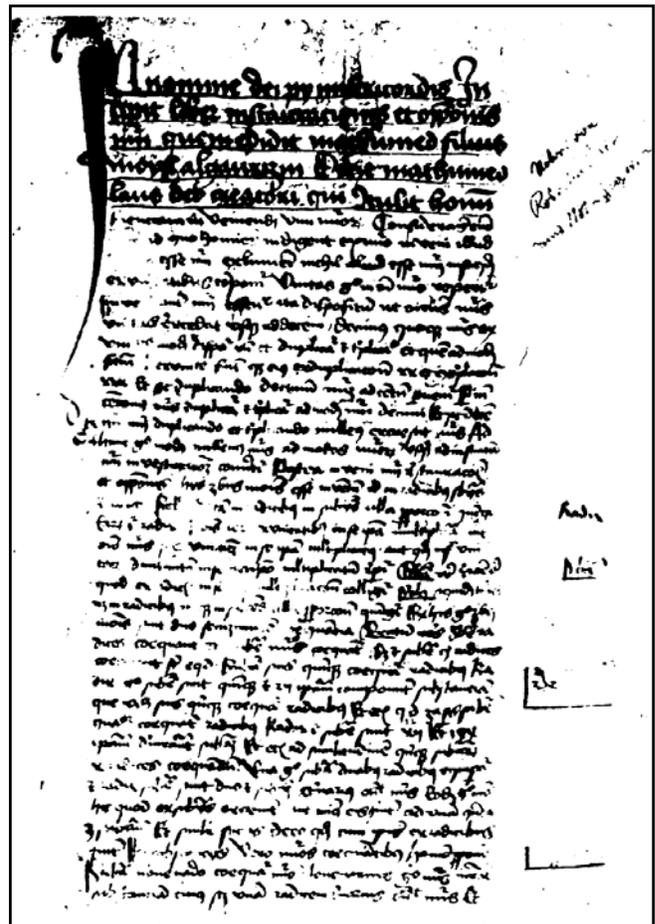
### The Entry of Arabic and Classical Manuscripts into Europe

Beginning in the 12th century, this new source of knowledge came in the form of manuscripts from the East. The quotation above says that “Oriental” manuscripts came into Europe with silk and spices. In fact, European scholars, once they learned about them, actively traveled in search of manuscripts—at first, seeking those written in Arabic. Arabic manuscripts were found in Sicily, and in Spanish cities like Toledo and Cordoba. Royal courts and even some Church officials became patrons of this new learning. They preserved and made them available in libraries, some captured from Muslim rulers during the Reconquista in Spain. The Normans had taken over Muslim libraries in Italy, and continued contacts with Arabic culture. Technical help came from specialists—courtiers, refugees, slaves, and scribes who knew more than one language. At the royal court on the island of Sicily, Greek, Latin and Arabic were spoken. Jewish scholars, officials and diplomats at the Muslim courts often knew Arabic, Hebrew and Latin. Just as in the *Bayt al-Hikmah*, translators often worked in teams, using more than one language as a go-between.

Some of the Latin translations were themselves taken from Arabic translations of the works of Greek philosophers, mathematicians and scientists. A good example of these were works by Euclid, Plato and Ptolemy.

Ptolemy’s *Almagest* was a major source on astronomy, mathematics and geography. Greek medical works included Galen and Dioscorides and some Hippocratic works. Euclid was among the most important Greek mathematicians whose works were translated. Among the most important Greek philosophers and natural scientists was Aristotle. Ibn Rushd’s (Latin: Averroes) comments on Aristotle became almost as important to European thinkers as Aristotle’s own ideas. An important work that Europeans and others believed to be Aristotle’s advice to Alexander the Great—called *Secreta Secretorum* (*Secret of Secrets*)—is a truly multicultural book. It was translated from Syriac to Arabic, but is originally based on Greek and Persian sources. It was based on pagan ideas, was modified by Christians, and then by Muslims. From Arabic, it was translated into Latin, and so returned to Christian thought. It was edited and translated several times, the last by the English scientific thinker, Roger Bacon, who made much use of Arabic scientific writing in his work. *Secreta Secretorum* might be the most international piece of writing in the world!

Some of the books translated were original Arabic manuscripts, such as the arithmetic and algebra of al-Khwarizmi, or the astronomy of al-Biruni and Ibn Shatir. There were many others, in a wide variety of



Page from a Latin translation of al-Khwarizmi’s book of Algebra.

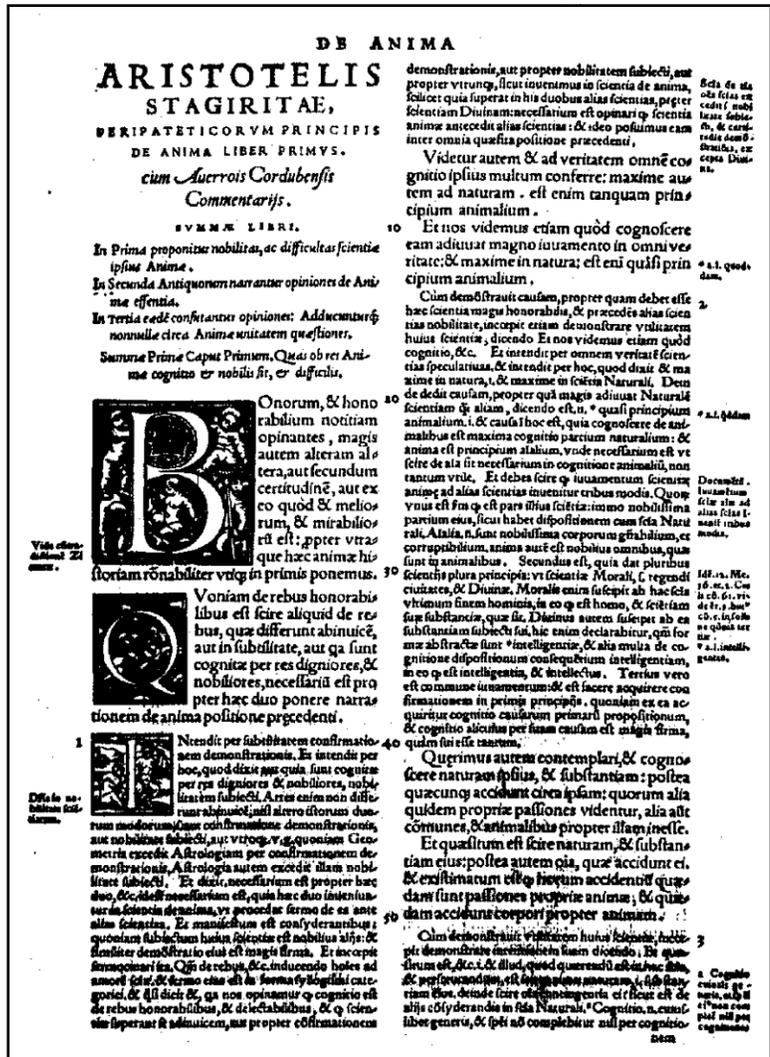


fields. Ideas from Greek, Persian and Indian sources came to Europe via original Arabic works. Al-Khwarizmi is among the most famous mathematicians of all time. His arithmetic books advanced mathematics and introduced algebra, the decimal system and Arabic numerals. One European scholar who helped make Arabic mathematics popular was Leonardo of Pisa, better known as Fibonacci. Son of a Pisan trader, he was sent as a boy to learn math with the Arabs in North Africa; he turned out to be a mathematical genius, and introduced Arabic numerals to the West. "Fibonacci" was the name he used, which means "son of" Bonacci, which might even be an Italian version of the Arabic name Hassan, or Salih. He is best known for explaining the curious qualities of the "Fibonacci sequence" of numbers.

Among the most famous Arabic works were the medical texts of Ibn Sina and al-Razi (Avicenna and Rhazes in Latin). Medical works by these two figures, along with Ali ibn Abbas and al-Hunayn, and works on surgery by al-Zahrawi, became basic texts in European medical schools for centuries. Astronomical works and tables from al-Khwarizmi, al-Biruni, al-Battani, and al-Faraghani laid the foundation for European astronomy that led to works by Copernicus, Galileo and Tycho Brahe. Astrology—the study of predicting the future by the stars—was considered an important science in medieval times, and many translations were made from Arabic. Alchemy was another mysterious study that failed to produce gold, but led to modern chemistry. Jabir ibn Hayyan (Latin: Geber) is known as the first true chemist. Almanacs (from an Arabic word meaning "climate") and calendars came into Europe through translations. Works on botany, pharmacy, agriculture, physics and metallurgy were among the other subjects of translations. Al-Kindi, al-Ghazzali, al-Farabi and Ibn Sina were Arab philosophers who became famous in the West through Latin translations.

### Was the 12th-century Translation Effort Different from the Renaissance "rediscovery" of the Classics?

It was two or three centuries later, during the Renaissance—after ideas of the "medieval renaissance" had been thoroughly absorbed by European thinkers—that the "rediscovery" of original Greek manuscripts occurred, beginning in the 14th century. After the excitement created by the early translations of Greek and Arabic works, the thirst for more knowledge snowballed over the next centuries. If there were some lost manuscripts and important works, there must be more, scholars reasoned. Interest in scholarship and education increased and improved.



Page from a Latin edition of Ibn Rushd's Arabic commentary on Aristotle.

During the Renaissance, scholars like Petrarch and Erasmus worked to improve knowledge and use of the Latin and Greek languages. They relied mostly on Byzantine Greek scholars, many of whom migrated to Italy after Constantinople came under Ottoman Turkish rule in 1453. They were also inspired by the rediscovery of Roman works uncovered in European libraries, where they had been “lost” or neglected. The Renaissance humanist scholars wanted to restore the spirit and style of the original, living languages as they were expressed in Greek and Roman literature. They worked to understand them in new ways, based on a better understanding of grammar, word meanings and history. They rejected the static style and patched-together snippets of medieval Latin writing. Greek, on the other hand, had largely been forgotten in Europe before the Renaissance, even though parts of the Bible were originally written in Greek. Renaissance scholars eagerly worked to include courses in Greek language and literature in the universities, and to hire skilled professors. The early print shops gave Greek scholars and their students work as they brought Greek works into print from old manuscripts. Greek and Latin literature multiplied and filled the shelves of Europe’s scholars as never before.

From the Middle Ages until well into the Renaissance, European scholars were motivated by the idea that they were recovering knowledge that had been lost to the Middle Ages. The Renaissance scholar felt it had been lost by poor language skills, bad teaching and wrong attitudes. In restoring it, they were able to recover a whole new spirit of inquiry and discovery that took them far beyond the wisdom of the ancients, leading eventually to the Scientific Revolution of the 16th to 18th centuries.

#### 4. HOW DID EUROPEAN SCHOLARS VIEW ARABIC AND ANCIENT LEARNING?

European thinkers at first viewed Arabic knowledge in a general way, as part of the wisdom of the ancients. Encountering something they thought worthy of respect, and finding it in old books, they viewed these works as authorities. In fact, it may not have been very clear to them just who the Arabic authors were. They probably did not know when they had lived, or how their work fit into Muslim scholarship as a whole. The medieval concept of history was based on the Bible and on memories of Roman greatness. It seems that some of the translators confused the Indians, the Persians, the Assyrians, the Arabs and the ancient Egyptians! Would you be surprised to know that even the Crusaders who fought the Turkish Muslims for the Holy Land knew almost nothing about when and how Islam had arisen? To the scholars, these great Arabic authors were one of the group of learned Gentile (not Christian or Hebrew) nations. The fact that so many Muslim authors mentioned the Greek and Persian works, and even Biblical figures, made this even more confusing to them. They did not have a clear conception of history. Understanding of “historical periods” was a Renaissance innovation.

The attitude toward ancient wisdom, for a Christian of the Middle Ages, is shown in a quote by a translator named only “Stephen”: “[Aristotle] *took many things from his predecessors, but all from God, except those which were obscured by error or untruth.*”<sup>20</sup> This attitude was important because, while it leaves a small window open for criticism, it assumes that Aristotle’s knowledge had been inspired by God. Since Aristotle was considered a great authority, containing the sum total of human wisdom, it seemed more acceptable to a Christian scholar if this knowledge was related to a godly source. Stephen’s statement illustrates the attempt of European scholars to reconcile the exciting new learning of the ancients—whose religion they rejected as pagan—with Church teachings.

Inevitably, as much as they resisted, some ideas from Islam crept into European minds along with the load of scientific knowledge. The Crusades, after all, were still ongoing, and their spirit remained alive. The Christian scholars’ discovery of the learning available in Toledo had been made possible by the Christian Reconquista. Nevertheless, the religious formulas that every Arabic writer used were translated somehow into Latin. *Bismillah al-Rahman al-Rahim* became in Latin *in nomine dei pii et misericordis* “in the name of God the tender and compassionate.” Even works about Islam were translated, like the philosophy of al-Ghazzali. These

20. Norman Daniels, *The Arabs and Medieval Europe*, (London: Longman, Librairie du Liban, 1979), p. 273.

and other examples of Muslim piety found their way into the Latin, sometimes altered to be in line with Christian thinking, like this introduction to a book on astrology:

“*Ali the son of Abu Rijal, giving thanks at the beginning of his books to the Lord Jesus Christ for all the benefits received or to be received, always said: Praised be God who is Lord of subtleties, of excellences, of rewards, of mercies; Creator of all creatures, Knower of hidden things, Understander of reasons...*”<sup>21</sup>

In spite of the differences between Islam and Christianity, and even in spite of the Muslims’ status as enemies of the Church and the Spanish Christian kings, this knowledge crossed over to Europe. It was received as part of the wisdom of the ancients, and it created an intimate link between the Muslim world and Europe. There were three reasons why this link was so important.

- ✨ **First**, the scientific and philosophical information and ideas were seen as highly valuable in themselves, and the Latin scholars saw themselves as behind in the race with other people. Stephen expressed this fear: “*Europe, which could have had nearly the fullness of the arts, is lower than the other nations.*”<sup>22</sup>
- ✨ **Second**, the Arabic scholars’ attitude of investigation, travel, experimentation and observation of the natural world passed to Europe with these works, becoming the basis of the scientific method. Although Arabic scientific knowledge was given authority as “wisdom of the ancients,” the works themselves discussed the fruits of observing and experimenting. They were proof of man’s ability to understand God’s creation through use of reason. These were to become important foundations of European scientific method.
- ✨ **Third**, the famous Muslim scholars had already worked over and adapted the wisdom of earlier, non-Muslim and pagan civilizations—that of the Babylonians, the Greeks, Persians and the Indians—for use in a monotheistic religious society. The new thinking that Muslim scholars added was based on religious beliefs and values akin to Christian ones. In spite of the fact that some Christian churchmen taught that Muslims were pagan idol-worshippers, Muslim works translated easily into language that was not offensive to Christians. The large area of shared religious values made possible the digestion of these important ideas at a time when scholars could be punished as heretics by the Church.

Arabic knowledge achieved wide respect in Europe from the time it crossed the Pyrenees on the backs of donkeys, or sailed across the Mediterranean and up the Atlantic coast in canvas-sailed galleys and wooden cogs. Gradually, this knowledge worked its way to England, France, Italy, and other countries, where it made a strong impression. The impact of Arabic learning on medieval scholarship compares with the respect Western scholarship today holds in the developing nations. Adelard of Bath describes the poor situation of his scholarly colleagues in Europe. He tells us about the benefit of his Arabic learning:

“*Indeed, I have learned from my Arab masters to follow reason as a guide, whereas you are content to follow like a captive animal the chain of a moralizing authority. What else is authority but a chain? Just as stupid animals are led by a chain, and know neither where nor why they are being led, and are content to follow the rope that holds them, thus the majority of you are prisoners of an animal credulity and allow yourselves to be led chained toward dangerous beliefs by the authority of what is written.*”<sup>23</sup>

21. Daniels, pp. 300-301.

22. *Ibid.*, p. 273.

23. Jacques LeGoff, *Intellectuals in the Middle Ages*, (Cambridge, MA: Blackwell, 1993), p. 53.

Adelard—like Daniel of Morley—found it difficult to cut through the heavy fog of medieval thinking, even after the new ideas from Arab sources began to enter. Just as the earlier knowledge had been seen as “true authority,” so were the new translations from Arabic. Adelard made his own ideas appear to be someone else’s in order to be believed:

“Our generation has this deep-rooted defect: it refuses to accept anything that seems to come from the moderns. Thus when I have a new idea,...I declare ‘It is so-and-so who said it, not I.’ And so that I will be completely believed, I say of all my opinions: ‘It is so-and-so who invented it, not I.’ To avoid the disadvantage of people thinking that I, myself, a poor, ignorant man, derived my ideas from out of my own depths, I make sure they are believed to have come from my Arab studies. If what I have said displeases backward minds I don’t want it to be me who has displeased them. I know what the fate of original thinkers is among the vulgar; thus it is not my case I am presenting but that of the Arabs.”<sup>24</sup>

As the Arabic contribution to science and philosophy entered Europe, scholars integrated these ideas into their work. Just as the Arabs had gone beyond Greek, Persian and Indian thinking, Western thinkers built upon and adapted Greek and Arabic ideas for their own purposes. Thomas Aquinas, the famous English scholar and author of *Summa Theologica* (a summary of Christian beliefs), quoted Ibn Rushd over 200 times. Siger of Brabant wrote on metaphysics and quoted Ibn Rushd 99 times, Ibn Sina 39 times. Albertus Magnus was another philosopher who depended on Ibn Sina’s ideas 138 times in one book, and quoted al-Ghazzali—an eminent 12th-century Islamic thinker—often. Roger Bacon, one of the forerunners of scientific thinking in Europe, worked with the writings of al-Farabi, Ibn Sina, al-Ghazzali, Ibn Rushd and al-Kindi. In purely scientific works, he read widely among Arabic scholars. These authors found agreement with ideas that were Christian as well as Islamic, and so did not conflict in any fundamental way with European thinking. The translation movement does not seem to have encountered much resistance from the Church.

The Islamic scientific tradition provided the West with the raw material for scientific advancement. Some historians think that Europe would have re-discovered the Greek and Roman classics on their own. The fact is, however, that the transfer took place through Muslim Spain and Italian contact with the East. They got the Greek manuscripts, and they got a whole lot more. Along with this wisdom of the ancients, they saw an example of the techniques practiced by the best of Arabic scholars and philosophers—the use of reason, analysis, observation of nature and carefully recorded experiment.

An important contribution of the Arabic philosophers was to encourage experimentation, observation and testing of theories. Al-Kindi warned against simply reading and copying texts, and said that scientists “*must follow along the paths of nature.*”<sup>25</sup> Ibn Sina, Ibn Rushd and other Arabic scholars wrote comments in the margins of Aristotle’s works, criticizing and measuring his logic according to their own ideas. Greek ideas about the heavenly bodies, for example, were tested in Arabic science by devising new ways to measure distances using mathematics. Instead of empty speculation about isolated “true” statements, they looked at the whole system of thought. That is why the European translators, who instinctively knew that the scholastics’ methods were flawed, were so frustrated with the state of learning in Paris and other European centers of learning.

Some history textbooks state that the transfer of Arabic knowledge to Europe was completed during the 12th century, within a generation of translators. Historical evidence, however, shows that translations were made in the 16th and even 17th centuries. Still more evidence shows that the translations made from Arabic during the 11th century actually spread widely among European scientists only after the invention of printing. This development occurred especially after the advent of printing and the growth of libraries made this knowledge available to many thinkers all over Europe—not just a few academics. We have lists of the books that were printed in Europe during the first century of printing, and they still—four centuries after translators like Gerard

24. LeGoff, p. 55.

25. Ahmad Y. al-Hassan and Donald Hill, *Islamic Technology: An Illustrated History*, (Cambridge: Cambridge University Press/Unesco, 1986), p. 23

of Cremona and Adelard of Bath—include many Arabic names. The digestion and development of science on the basis of Arabic and European learning, to which was added in time the fruits of exploration overseas, came during the Scientific Revolution of the 16th century.

## HISTORIANS' VOICES

### ISLAMIC LEARNING AND EUROPE

**Ahmad Y. Hassan and Donald Hill:** *“The [Abbasid Muslim] State enabled scientists and engineers to spend all their time on research, inventions and writing. In addition, the Caliphs used to form scientific missions to make observations, carry out measurements or report on natural phenomena...One can detect a real spirit of research and invention prevalent among scientists and engineers...What we can say with certainty is that the most distinctive feature of Islamic science is its insistence on subjecting theories to every form of test—observational, mathematical and experimental.”*<sup>26</sup>

**Abu al-Faraj Abd Allah al-Tayyib** (d. 1043 CE) described how Muslim scientists began by studying the works of earlier [Greek, Persian, Roman and Indian] scientists: *“In our studies we have followed in the footsteps of our predecessors and taken pains to understand their works well. We have also discovered, in connection with obscure statements and explanations of them, a number of ideas going beyond what they had said.”*<sup>27</sup>

**Jacques Le Goff:** *“Chartres [France] was the great center of learning in the 12th century. The arts of the trivium—grammar, rhetoric and logic—found their place there...But beyond the study of voces, words, Chartrian scholars preferred the study of res, things,...arithmetic, geometry, music and astronomy. This orientation determined the ‘Chartrian spirit,’ a spirit of curiosity, observation, and investigation, which, fed on Greco-Arab knowledge, was to flourish and expand.”*<sup>28</sup>

**Norman Daniels:** *“What the 12th century translators had set out to do was achieved with complete success. Europe recovered all that it had lost in the philosophical and scientific fields at the end of the classical age; and it received this body of knowledge in a form which had been improved by centuries of Arab work on it...Although we have seen that Europe would have recovered its lost store of learning directly from the Greek, if it had not done so first from the Arabic, it is still true that it came through Arabic...The real importance of the restoration of learning was that Europe once again shared with its co-heirs of antiquity this whole vast area of knowledge and skills. In other ways Europe and the Arabs would begin to diverge...when that happened they remained linked in learning longer than in any other way.”*<sup>29</sup>

26. Hassan and Hill, pp. 12-13; 21.

27. Ibid.

28. Le Goff, p. 48.

29. Daniels, p. 301-302.



## STUDY QUESTIONS

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1. How does Abu al-Faraj describe the attitude of Muslim scholars toward ancient learning from other cultures, all of which had religions that worshipped many gods, unlike Islam and Christianity?
2. What does Le Goff mean by “Greco-Arab knowledge”?
3. Give examples of modern government sponsorship of science similar to what Hassan and Hill find in the Abbasid Muslim state in the 8th through 10th centuries.
4. Who are Europe’s “co-heirs of antiquity”? Why does Daniels think it important that Europe and Islam had this body of knowledge in common?





## WHAT WERE THE VALUES OF RENAISSANCE HUMANISM?

What was “humanism”? Was it a philosophy of life? Did it *cause* change, or was it an *expression* of change? Why was the Renaissance such an important period of history? Why does it fascinate people even today? We often read that “Man is the measure” is an expression that describes humanism. A good question to ask might be, “Man instead of *what*?” Did a new sense of the importance of *man* push out religion and the consciousness of *God*? Was “humanism” *secular*, meaning apart from religion? Was the Renaissance a decisive movement away from religion, toward a modern concern with human affairs only? Looking for answers to these questions can tell us much about the values of people who lived during the Renaissance. Changing views of the Renaissance also tell us about the values of people who have studied that period of history, and about our own time.



### CHANGING VIEWS OF HISTORY

Although, as we have seen, the word “humanIST” was used by people of the Renaissance, the word “humanISM” was invented by a 19th-century historian looking back at the Renaissance from another exciting time in history—the early Industrial Revolution. To people of the 19th century, looking for the roots of the enormous changes that were swirling around them, it seemed that the Renaissance was a turning point. The Renaissance humanists also viewed their own time as a turning point. The writings of Renaissance humanists are full of the feeling of an opening to a new point of view, of progress (a word also well-liked by 19th-century people). They called themselves “modern” in contrast to being mired in static, unchanging, backward-looking ways of life and thought.

Today, people have a sense of history, a sense of stages of human development, and even a sense of natural history and geologic time. Medieval thinkers in Europe were not anchored to a clear idea of history. They did not have a clear view of time, of other cultures or of human history as a series of unique historical events or periods. They seem to have viewed the ancient wisdom they respected as floating in a misty, past time and space. This lack of knowledge led them into many errors, and made it difficult for the medieval scholastics to build, with solid understanding, on the foundation of ancient wisdom.

The humanists helped develop a new sense of history. By discovering and criticizing classical texts, they noticed that changes had taken place. For example, the early humanist poet and thinker Petrarch (d. 1374 CE) found the letters of a popular Roman author, Cicero. This helped him to become acquainted with Cicero the individual, and with the problems of the time in which Cicero lived. Instead of thinking of his writings as just a part of Roman antiquity, Petrarch now viewed his writings as the expression of a particular time in Roman history. Petrarch and other humanist pioneers discovered changes in the Latin language over time. They began

to classify the texts into periods, authors and styles. They began, in a sense, to decode the silent texts of the classical age, to make them speak more fully. The humanists began to correct the errors that medieval carelessness about history and change had allowed to creep in. Petrarch contributed to developing a sense of unique events and historical periods, and of Europe's relationship to the great civilizations of antiquity. This world-view is still an important part of Western civilization's understanding of history and Europe's place in it.

The early humanists saw their own time in negative terms. They thought it was almost worthless compared to the glories of antiquity. They used images of light and dark to describe the change in human fortunes that they clearly saw. The ancient age was one of light and wisdom. The glory of Rome, Greece and the ancient civilizations surrounding them had died, and Europe had sunken into ignorance and barbarism, into darkness. The humanists glimpsed the ancient light through their study of the classics. Through their literary work, the humanists wanted to usher in a revival of the glories of the classical past and the genuine knowledge they contained. Their scholarship and struggle would bring to an end the Dark Age. Charles Nauert, a modern historian, described Petrarch's idea of history in this way:

“In addition to the ancient age of light, of high civilization, and the modern age of darkness and barbarism, there is a third age, a new age of light, and it begins with me!”<sup>30</sup>

So remarkable were the achievements of the humanists in stimulating science and learning, that it seems the pace of change and history did speed up with the Renaissance. Along with the growing reach of European explorers, traders and thinkers, interest in the study of the past increased. The field of European history grew, based on critical humanist methods. Historical study also helped develop a greater sense of Europe as a place among the world's cultures.

Today, historians look back at the time that Petrarch labeled as his own, still darkened age, and see it as the end of the Middle Ages. Historians use another word—*medieval*—to label the time before the Renaissance. “Medieval” means an “interim,” a time “between” the ancient past and the beginnings of a new, “modern” period. Many historians have described the Renaissance as the beginning of a golden age of Western civilization. Of course, during the time called “medieval” in Europe, civilizations in other parts of the world—in Africa, in Asia and in the Americas—enjoyed periods of advancement and high cultural achievement. Unfortunately, the term “medieval” has often been incorrectly applied to the entire globe. It was originally a term used by Europeans to describe their view of Europe's development.

30. Charles G. Nauert, Jr., *Humanism and the Culture of Renaissance Europe*, (Cambridge: Cambridge University Press, 1995), p. 21.

## CHANGING LITERATURE AND LEARNING

One of the hallmarks of Renaissance humanist scholars was their new way of working with ancient texts. Whereas the scholastics took these texts at face value, this was not good enough for the humanists. The humanist was a critic of texts, of translations, and of old methods. He was also a critic of his times, and of the traditional way of viewing knowledge. The medieval, scholastic reader had seen the text, the book, the ink on paper as an authority. Scholastics had no clear sense of the personality of the writer, the time in which he had lived, or of changes in languages over time. For this reason, they saw nothing wrong with learning from books in bits and pieces. Any one piece might be understood by itself, and would not lose value by taking it out of the whole. A work could be quoted, rearranged, sorted with other pearls of wisdom and moral teaching, and memorized by generations of students. It could be understood by applying logic to the words the text contained.

As new knowledge flowed into European universities, this rigid way of viewing texts began to loosen. The feast of new learning created an appetite for more, and the search for manuscripts turned up more books. Roman works, Greek works, and translated Arabic works stimulated an interest in learning languages. Puzzling new words that had been Latinized—like *astrolabe*, *algebra*, *algorithm*, *zenith*, and others—became part of the vocabulary of scholars. Words used by the Greek philosophers, recovered Latin phrases, and many latinized names of Arab scholars could be heard from the tongues of educated people, too.

This new and old literature found an audience among scholars. Probably by accident at first, a few talented scholars began to detect errors, or missing pages, or differences in language from one work to another. Discovering errors in the texts, humanist scholars stopped viewing the books themselves as unquestioned authorities. Humanists still valued the wisdom of the ancients, and respected the classical thinkers as superior to scholars of their own time. Now, however, they looked THROUGH the pages of the text, peering into a lost world beyond the ink on paper. They saw the chance to restore the real spirit of the books that had become just a shadow of the great minds that wrote them. Humanists wrote that they felt a great sense of urgency, a desire to regain the wisdom and glory of the ancients in order to improve their society.

A great movement of literary work resulted from the humanists' efforts. They re-discovered the Roman and Greek heritage of Europe's past, and in learning the language and translating skills, they awoke to a strong sense of the beauty of classical culture. The pace of activity increased as scholars traveled and taught in universities and in growing commercial towns. The biggest boost to humanist studies, however, was given by the invention of printing. Now, scholars all over Europe could share the same book, refer to its page numbers, and discuss it word by word, phrase by phrase. New editions of classics were printed and spread quickly through the trade networks. Reading became more popular, and easier. Books became cheaper, smaller and more varied in content. Libraries grew, and ideas multiplied with communication.



Paduan scholars.

This literary activity and excitement would not have been possible without changes in education. Creating a humanist curriculum in schools and universities—*studias humanitatis*—was a major goal of Renaissance scholars. These subjects included grammar, rhetoric, poetry, history and moral philosophy. They preferred these subjects over logic and the natural sciences (then called “natural philosophy”). More than just *subjects in the curriculum*, however, the humanists wanted *new methods, new books and new content in education*, especially in the classical languages. Instead of the dry, old way of teaching Latin, for example, humanists wanted students to learn by reading great literature selections. They wanted people to learn writing in an elegant, flowing style instead of a patch-work of phrases. They wanted to recover the role of poetry as a common art among literate people. They wanted more students to appreciate and master the classical languages—Greek and Latin—fluently, so they could re-live the excitement of their ideas.



Traveling scholars.

There was another, perhaps more important side to humanist education. “Natural philosophy” (speculating on “truths” about nature in an abstract way) and knowledge of mathematics and astronomy seemed out of fashion for many humanists. We know that knowledge and study of mathematics and science continued to flourish during and after the Renaissance, but most humanists preferred:

- ✨ *moral philosophy and history* (for wise decision-making),
- ✨ *rhetoric* (the art of speaking to persuade people) and
- ✨ *grammar* (for elegant writing).

The fashion for humanist studies reflects a change in values by an important group of people during the 14th to 15th centuries. Who were they?

They were, in brief, the *elites, nobles* or upper classes of the growing commercial towns and cities. The fact that the humanist movement began in Italy is no accident. Italians had retained trade contacts with Muslim and Byzantine cultures throughout the Middle Ages. Italians, along with their northern commercial neighbors in Flanders and Germany, had led the growth of trade and towns in Europe. With growing wealth, they needed new skills. It was no longer enough to have an educated clergy. The city-states of Italy were closer in their attitudes to the free citizens of Rome than to the feudal lords and ladies of medieval times. The wealthy, urban citizens wanted to educate their sons (and even a few daughters) to make wise, moral decisions on the issues of a fast-moving commercial and political life, not to nail down “eternal truths” based on abstract logic. They must be able to speak and write in order to convince others of their opinions, and they wanted to be elegant, stylish and skilled in the arts of civilization.

The most obvious model and the source for this knowledge was ancient Rome and Greece, whose ruins and faded volumes they discovered within their midst. Humanist studies would offer the princes and business families of prosperous towns the keys to a civilized life in tune with their growing wealth. It would educate them for government service—for power. They hoped to recover the glories of classical days.



A European walled town.

In time, they aspired to do even better than the ancients. It is no wonder, then, that this sense of excitement spread with the growth of towns, trade and cities into Northern Europe.

The staid, traditional universities resisted and changed only slowly. New courses, new textbooks and humanist doctors and teachers gained a foothold only gradually. By the 1500s, though, their methods had caught on in most parts of Europe, especially with increased travel by students and scholars, and through the spread of printed books.

Another development that belongs to the Renaissance affected education and the arts, and helped spread learning in ever wider circles. The *vernacular*, or everyday, popular languages like Italian, French and English took their places beside Latin and Greek as languages of scholarship and literature. Dante, Boccaccio, Chaucer and others contributed to raising the level of expression by creating great works of literature. No longer would important literature be confined to a Latin-educated few. During the Renaissance, fine poetry, songs and stories, religious writings, political, commercial and diplomatic ideas found their way into European languages. With improved travel, communications and literacy, people wrote letters, exchanging ideas across borders. There are thousands of letters preserved from the Renaissance period. Dictionaries for travelers among Europe’s many countries appeared in print. The importance of vernacular languages would eventually mean the end of Latin as a universal language of scholarship in Europe, but this did not yet happen during the Renaissance.

Ironically, although the humanists themselves did not favor the natural sciences, their work gave the development of science an important boost. By helping to break the stranglehold of ancient texts as authorities, humanist education helped revive the spirit of inquiry and experimentation that had begun with the influx of knowledge from Arabs, Greeks and Romans and indirectly, from some Persian, Indian and East Asian sources. The vibrant economic life of the cities would also encourage the flow of skilled minds into practical sciences and other fields. The Scientific Revolution came, after all, on the heels of the Renaissance.

## CHANGING RELIGIOUS LIFE

Many generations of students have been taught that the Renaissance was a time when religion began to separate from life in Western civilization. The word “humanism” was often paired with the word “secular” to form a new idea: “secular humanism.” Renaissance people were said to have begun to abandon religion and faith in God as the measure of all things, and taken up a view that “man is the measure.” Instead of viewing the person as a sinful, insignificant human presence, the Renaissance was said to have celebrated individualism and secular life. What role did humanism play in changes to religious life, according to recent historians? Was humanism secular? Was humanism religious?

The medieval view of history was partly a result of its other-worldliness, the separation between this world and the next. A sacred view of history did not view events on earth as being very important. The real event would be the Day of Reckoning, the end of history when mankind would be judged. This is historical truth shared by all faiths that believe in One God—Judaism, Christianity and Islam. The medieval attitude, however, was extremely other-worldly. There was neither much use for, nor interest in detailed research into history. Perhaps this is because knowledge of history did not seem very accessible. Remember, even the Crusades were fought by Christians without much knowledge about Muslims or about the time or circumstances in which Islam arose!



Portrait of the scholar Lefevre.

Humanist discoveries and criticism of historical works from classical times began to produce a clearer picture of history. This in turn affected the way educated people viewed the claims of the Church authorities. After all, it was a humanist working for a prince who argued that the *Donation of Constantine*, which granted the Pope power over princes, was a forgery. By the beginning of the 16th century, humanist studies of Latin, Greek and Hebrew began to affect the way educated people viewed the Bible.

The scholars Lefevre of France and Erasmus of Rotterdam, deeply spiritual men and devout Catholics, were among the first scholars to apply humanist text-critical skills to study of the Bible. They worked to recover original texts of biblical chapters

for comparison. They wrote commentaries based on ancient writings of the Church fathers, ignoring the works of medieval scholastic theologians. They worked on new translations from the original biblical languages. Martin Luther is known to have studied Lefevre's books. Erasmus' new edition of the New Testament became famous. As they had done with the classical, *pagan* authors (meaning those who worshipped many gods), the humanists looked THROUGH the text of the scriptures to rediscover the original meaning. The movement that these and other late-Renaissance scholars developed is called Christian humanism. It consciously strove for a reform of the Church, and its scholars were found mostly in northern Europe.

Erasmus' journey of the mind and the spirit offers a good example of how humanism changed religious experience in Europe. It also reflects the influence of changing European ways of life on religious expression. In 1501, Erasmus wrote a small work called *Handbook of a Christian Knight*. He wrote it in Latin, but it became very popular as it was translated into many vernacular (common, everyday) languages. Erasmus defined religion as an inner spiritual experience which must be expressed in a life of constant struggle against worldliness. The believer is sustained by God's gifts of prayer and knowledge.<sup>31</sup> Erasmus pointed toward study of scripture as a way to deepen the personal experience of religion.

During the medieval period, knowledge of scripture was guided by theology, the work of specialists. The ability to read, or for many people, even to see a Bible was limited to the clergy. Common people were guided toward some understanding of the Bible stories by the decorations in churches and cathedrals. They did not understand the Latin service, and had no access to its teachings except through the priest who administered the sacraments.

Erasmus was armed with a humanist's confidence that his knowledge of grammar and vocabulary in Latin and Greek was superior to the knowledge of scholastic theologians. He set about to restore, edit, interpret and publish a new edition of the Bible, a *polyglot* (multiple language) edition, in Greek, Latin and Hebrew.



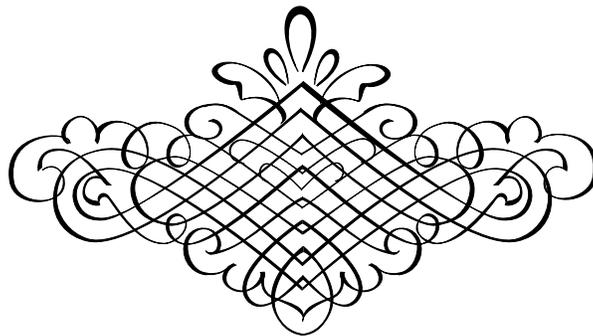
Woodcut showing Erasmus and his secretary.

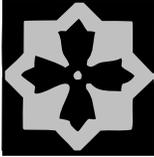
31. Nauer, p. 151.

The work of Erasmus and the other Christian humanists eventually set off the Reformation. Luther, Calvin and Zwingli were three reformers who challenged the Roman Church's authority in spiritual affairs. Erasmus remained a Catholic, but he sparked great controversy. From the new Latin and Greek editions, to new Latin translations, the next step was translating the Bible for study in vernacular languages. Gutenberg himself printed the first German Bible. Upon hearing of Church resistance to his efforts of scholarship, Erasmus is said to have protested that, surely, the strength of the faith cannot be ignorance of it. The effort of the humanists did help to bring on the Reformation. Another, less obvious change, however, is noted by a recent historian, Charles Nauert, speaking of Erasmus' *Handbook of a Christian Knight*:

“Here Erasmus' concept of religion as a personal, spiritual experience first found expression. The [*Handbook for a Christian Knight*] is really a guide for the practice of Christian living by a layman.”

Education had been the specialty of the clergy during the Middle Ages, and humanist education reform worked to bring schools in line with the needs of bustling, wealthy city life and its powerful leaders. Religious knowledge in medieval times had been the exclusive sphere of monks and Churchmen. Like the new, humanist learning, religious experience was enlivened and redefined for the new educated classes of people. Their lives were centered on the busy towns and active life, not isolated and otherworldly monasteries. Erasmus and the Christian humanists had retooled religious life for educated people outside of the clergy. They encouraged believers to strengthen their faith through knowledge. The humanists found it to be a spiritual experience as well. The Reformation proved to have deep effects on European history in many other areas as well.





## SUMMARIZING IDEAS

### SEGMENT 2: EDUCATION AND SCHOLARSHIP

Only the high value placed on knowledge has assured that each generation has built on the foundation of the last. People of all cultures have needed and respected learning, and passed it on to others. The process of sharing and refining knowledge, however, has not been simple or linear. It has waxed and waned. It has followed accidental paths and suffered huge losses and gains. The collection and development of knowledge has been marked by enormous effort from people of all the world's cultures.

From ancient times to the Renaissance, ideas were set down in permanent form, and these writings were preserved. In many cases, the preservation of important scientific, spiritual and moral teachings fell to the care of civilizations very different from the ones that produced it. Thus, pagan Greek writings on mathematics, philosophy and politics were preserved first by another pagan culture—Rome—then by its heirs, the Christian Byzantines, then by the Persians, along with other knowledge, and then by Muslims. This knowledge was transferred, along with science and other fields of knowledge from cultures as far afield as Africa, China, India and Persia, and transformed by Muslim thinkers. By the late Middle Ages, Western European culture was ready to receive this treasure, initially through Italy and Spain, where it was translated and brought to the growing universities. Perhaps the most interesting fact about these cross-cultural transfers is that the cultures they brought together were often unfamiliar to each other, and were sometimes even seen as outright enemies.

Changes in language have sometimes hindered, but often helped the process of transfer among cultures. The spread of Greek among educated people during the Hellenistic period helped preserve its legacy of learning. The spread of Latin through Roman conquests, and the spread of Christianity near the end of the Roman empire helped lend a permanent and widespread importance to the languages of Empire, Bible and Church. Jews migrated to many parts of the known world, and while preserving their own scriptural language of Hebrew, they became proficient in other languages. They often served as go-betweens in government service and scholarly translation. Jewish scholars, along with their Christian counterparts, were prominent during the 8th- and 9th-century translation effort at the *Bayt al-Hikmah*, and again during the 12th-century translation effort in Spain. Arabic, the language of Islamic scripture, took its place with the rapid spread of Muslim culture as the common tongue of people across the Middle East, and as the language of prayer and scholarship all over the Muslim world. Had that not happened, the classical legacy would probably not have remained such a strong influence in world culture. The development of knowledge in Muslim culture might not have been so rich or widespread, and it would not have been available to Europe when it was. Use of Latin was given a boost during the Renaissance. Latin continued as a scholarly language in Europe, but vernacular languages of Europe also became important literary languages during the Renaissance. Italian, French, German and English would later take their places as languages of learning, as they remain today.

Advances in the technology of books and their preservation—binding, paper, calligraphy, copying, libraries, cataloging and the technology of printing and moveable type—made possible these transfers of ideas from culture to culture, and from ancient times to our own. Muslim culture produced an enormous outpouring of books, literature, science and ideas that came to rest in libraries housing tens of thousands of volumes. Today, 250,000 manuscripts are known to exist, and more are being discovered. Based on an earlier Chinese invention, the printing press using moveable type was a signal achievement of the European Renaissance. The rapid and inexpensive dissemination of learning that it made possible stimulated every branch of scholarly and scientific

work. Now, for the first time, scholars living far apart could refer to the same page of a book; thousands of copies of a scientific or artistic drawing would be identical in every detail; common people everywhere could be sparked to action or to change their thinking by a published sheet of paper given out in the marketplaces. Most of all, the large number of printed copies made preservation over time much less of a worry than in the days of manuscripts.

The most important change attributed to the Renaissance is a change in attitude toward learning and toward life itself. The rigid, narrow attitude toward knowledge began to loosen in the monasteries as schools and universities developed in Europe. The rise of towns and trade gave a boost to the professions of scholars and teachers who educated the sons of wealthy businessmen and nobles. Many historians locate the roots of humanism in the 12th-century efforts of scholars and translators to recover and digest the philosophical and scientific legacy of Greek and Arabic thinkers. A spirit of investigation, observation and inquiry gradually broke through the medieval fog of logic and authority as methods for teaching texts. As new manuscripts were discovered and compared, the humanists challenged old readings and brought to light new, critical editions of treasured ancient works. Many of the 14th-century Renaissance humanists were less interested in natural science than in literature, history and moral philosophy. Their efforts concentrated on recovering the classical past of Greece and Rome through study of its history, literature and language. Even today, we owe much to their critical methods in reading and analyzing ideas.

Education reform began with the rise of cathedral schools and then universities. The scholastic method played an important role in absorbing the new knowledge. In time, it gave way to more flexible ways of thinking, experimenting and examining ideas. The humanist program of education reform worked toward expanding the curriculum further, beginning in Italy. Their complaints against the system passed down to them from a “dark” age reflected changes in the need for an educated *lay* (not clerical, or belonging to the Church) population—still targeting mostly men and boys—in the growing commercial towns. The courses in **humanistic studies** were those that free Roman citizens had found useful in carrying out their civic responsibilities:

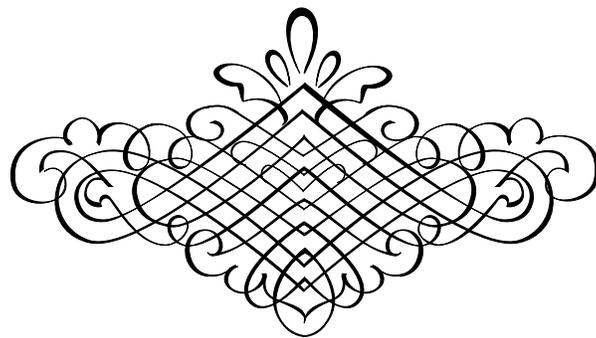
1. moral philosophy and history for decision-making
2. rhetoric for effective speaking
3. grammar for effective writing in Latin
4. poetry for beautiful expression.

They managed to get rid of some bad and boring textbooks in favor of learning through literature. Along with humanist writings, their program gradually spread northward to cities and universities in the rest of Europe.

Religious attitudes also changed with the rise of scholarship outside of the Church, and with the gradual breakdown of feudal society in favor of urban society. When humanists like Erasmus turned their attention and applied their skills to editing and interpreting the Bible, reaction from the Church and from other scholars was dramatic. When the German scholar Martin Luther found ways to publish his ideas in print and in German, the Reformation changed the religious life of Europe forever. Seeing these innovations from another perspective, however, the change in attitude brought about by widespread study of the scriptures can be seen as putting religious practice and spirituality on a new, more personal and less institution-bound footing.

While historians note that Islamic ideas crossed into Europe with the translations of philosophy and science, it is difficult to precisely trace their influence. In understanding the tension between knowledge and faith, however, it is important that a monotheistic culture—Islam—filtered the philosophical ideas and scientific knowledge of pagan Greeks through a religious world view. Muslims had analyzed the pagan works, and added their own deeply spiritual content, before passing it on to Europe. As the humanists' efforts at recovering the classics found Renaissance expression in art, architecture and literature, the tension between classical, pagan content and Christian standards would intensify. In any case, it is clear that the Renaissance was not simply a secular movement.

These dramatic changes in European culture that are associated with the Renaissance were not completed at a certain cut-off date. Each of them—the spread of knowledge and education, developments in literature and the arts, changes in religious expression and institutions, and advances in technology and science would continue for centuries after the Renaissance of the 14th to 16th centuries. The journey to rediscover a glorious, classical past would lead educated Europeans to understand that they had surpassed what had gone before. During the course of the Renaissance, the cultural possibilities generated by the combination of values and abilities would be expressed in many fields of human activity. One of the most important expressions of the Renaissance was exploration of the lands and cultures south and east of the European peninsula. Contact and trade with the people who had passed on their own legacy to Europe brought the exchange of ideas, goods and technology full circle.



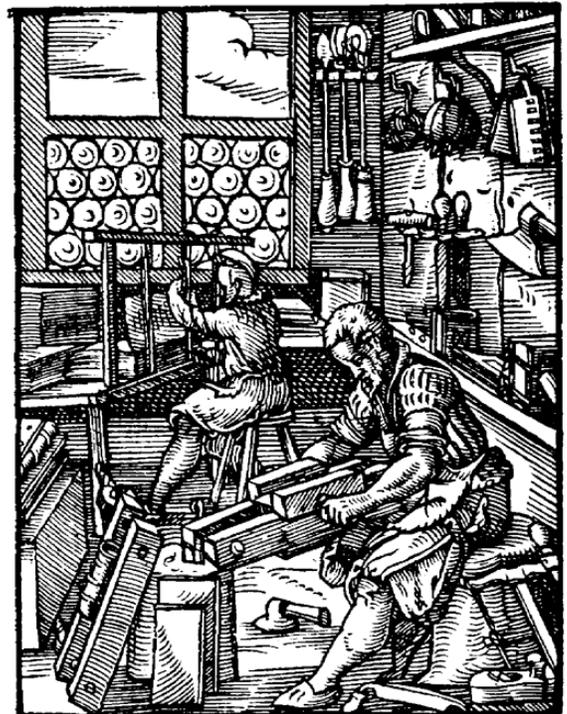
# Education and Scholarship



## THE WISDOM OF MANY CULTURES: FROM THE MIDDLE AGES TO THE RENAISSANCE

What if each new generation of humans had to learn all about the world without knowledge from those who lived before? What if your parents didn't try to teach you from their experience, but left you to figure everything out by trial and error? Think for a moment about how human knowledge of nature, of science, and of ways to make things, is passed on. Generation by generation, each new group of people has learned from its parents, taught its children, and built up more and more knowledge. That is why humans make progress in technology and science. How does each generation pass on the sum total of human learning to those that follow? How are ideas and culture stored, and how do they change over time?

These are certainly "Big Questions." The human being is unique in placing a high value on knowledge and working to preserve it. Over thousands of years, however, we have lost and gained many skills and types of information as our needs change, as human understanding has grown. Some ideas are lost through human folly or natural disasters. Like the shape of the moon, the transfer of knowledge between generations and cultures has waxed and waned with individuals' and societies' effort. Sometimes, ideas have taken accidental paths. An idea might be preserved in a culture very different from the one that produced it in the first place. Usually, valuable ideas have been kept and passed on by the effort of many cultures.



A bookbinder.

### THE INVENTION OF BOOKS AND PAPER

Books have been one of the most important tools for storing ideas over the past 2000 years. The book may have begun as a stack of waxed tablets for Roman soldiers. Later, parchment sheets were folded and stitched into a book with a leather

cover, called a *codex*. Parchment is made by scraping and stretching animal skins. Parchment books were rare and expensive. When the Chinese invention of paper came to the Muslim countries of Southwest Asia in the 700s, making books became much cheaper. Paper can be made from cotton, linen or even old rags. In cities like Baghdad, Damascus and Cairo, more and more people bought books, wrote books, and collected books than ever before. Books and paper-making spread across Africa and Europe to the West. Libraries grew to thousands of volumes, even in a time when books were copied by hand.

## **PRESERVING THE WISDOM OF ANCIENT CULTURES**

You have read about science in ancient cultures. People observed the night skies and wrote about astronomy. They studied the human body and discovered medicines to cure illnesses. Simple counting developed into the science of mathematics. Chinese, Indian, Babylonian and Egyptian cultures are a few of the many societies that made important discoveries and wrote them down. In the Mediterranean area, several cultures contributed to collecting what historians call “classical” learning. Many people think that it reached its height with the Greeks, who wrote about mathematics, astronomy and philosophy—the study of wisdom. A Greek academy called the School of Athens became a famous center of learning. In Egypt, Ptolemy wrote an important work about geography and the solar system. The Romans, while they were not outstanding scientists, wrote many books of literature, politics and history. Books from Greek and Roman sources, along with other ancient wisdom, helped form the foundation for later cultures. Adding to this treasure, modern science was gradually built.

## **WHAT HAPPENED TO ANCIENT WISDOM AFTER ROME?**

The fall of the Roman Empire was an important event in Europe that signaled a time of decline and loss in culture that lasted for centuries. As Christianity spread in Roman territory, the Empire split into eastern and western parts. The Latin, or western part, suffered invasions and unrest. It was a time when groups of people built castles, defended by knights, to protect themselves. What little learning and books there were left from Roman times were kept mostly by monks in monasteries or other Church centers.

Byzantine culture remained stronger, and continued trade with other eastern lands and seas. The Byzantines preserved Greek learning, especially, but the growing power of the Church over learning and ideas caused many scholars to flee eastward to Persia. These Christian scholars were especially welcomed at the royal Academy of Jundi-Shapur, where learning from India, Babylonia, the Hebrews, Greece and even distant China came together. With the help of Persian kings, many books were translated, copied and discussed by the people who gathered and taught at Jundi-Shapur.

The Byzantines also fell into wars with Persia during the 600s, and eventually both empires lost much or all of their territory to a new ruling group—the Muslims, who stepped onto the stage of history suddenly, bringing the message of Islam. Rapidly expanding their territory from humble beginnings in the Arabian peninsula, Muslims, by the 700s, ruled lands from Spain to the borders of China. Muslims—both rulers and others—placed a high value on learning. For example, they left the Academy of Jundi-Shapur undisturbed, and soon unlocked its treasures of ancient wisdom. Muslim rulers began to order translations to be made of the scientific and other works at the Academy. With the help of Christian, Jewish and Muslim scholars working together, these books were translated into Arabic. Indian knowledge—like the use of Hindi numerals, that we call Arabic numerals today—were also introduced to Muslims. Some fantastic fables and stories also came to Jundi-Shapur from India, and even some knowledge from as far away as China.



## LEARNING AND SCIENCE DEVELOP IN MUSLIM LANDS

The House of Wisdom began the sparkling career of Baghdad's writers, thinkers and scientists when the *khalifah*, or ruler of all the Muslim lands, founded it in the year 830 CE. It was a translation office, library, museum and education center. Scholars pored excitedly over the newly translated books. They studied and discussed them from every angle, examining how these ancient ideas fit in with the message of the *Qur'an* and Prophet Muhammad's life example, which stressed that faith and reason go together. In the courts and palaces, in the streets, homes and book shops, Baghdad's scholars also worked with the scientific ideas, and tested them by measuring, experimenting and traveling. In time, they developed a large body of new knowledge, in addition to the wisdom of ancient times.

Centers of learning, such as schools, universities and huge libraries spread across the network of Muslim cities. Free classes were often held in the *masjid* (mosque) after the daily prayers, or at a tutor's home, in the palace, or in a great college, or *madrasah*. By the 11th century, there were many types of schools, and a number of important universities began teaching and doing research in Muslim lands. Spain had one at Cordoba, Baghdad had a very large college called the Mustansiriyyah, and Cairo's famous al-Azhar university had been founded. For the past 1000 years, its doors have been open to students. Many traveling students came to Muslim schools and colleges, where they stayed in specially-built student

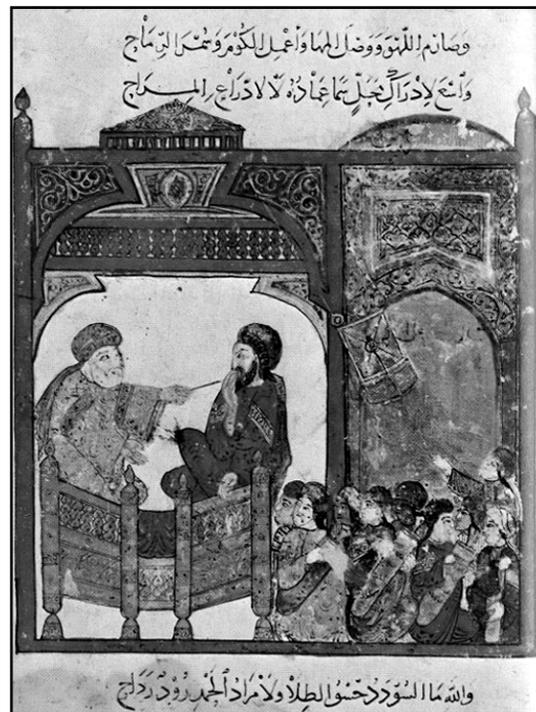
apartments. Among the students who flocked to the Muslim colleges, some were young European scholars. They came, they learned Arabic, and they took back important news when they returned to their homes and took up careers.

## NEW AND ANCIENT LEARNING ENTERS EUROPE

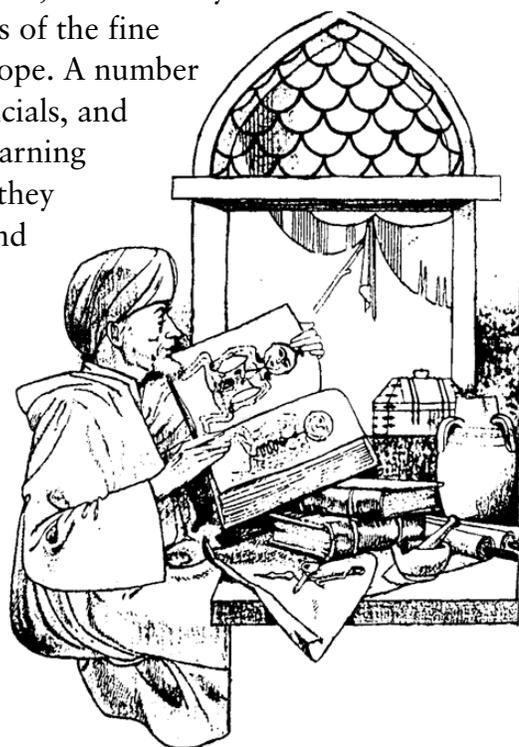
By the 1100s, Europeans had developed an appetite for learning. After the long period of instability, life had settled down, farming was improving, and trade began to grow. Towns began to develop along trade routes. In addition to builders and merchants, growing towns needed skilled artisans and people who could keep accurate records. Governments needed experts in the law, and medical doctors. Scholars educated in the Church could not fulfill the need for so many trained individuals. Cathedral schools grew up in towns, and educated the sons of wealthy merchants, and other lucky students. At first, they taught subjects based on the old, Roman educational system. Soon, however, they found new sources of learning.

Spain and Italy both hosted brilliant centers of Muslim learning and culture. Spain and Italy are Mediterranean lands in southern Europe, near to northern Europe and linked to the East. Much of Spain, called *al-Andalus*, was ruled by Muslims. Other parts were in Christian control. News of the fine goods and new ideas in Spain spread to northern Europe. A number of educated, curious men—some of them Church officials, and some not—trekked to Spain and Italy to gather the learning available there. They were astonished at the libraries they found, and the many books in Arabic on important and useful subjects. With the help of some Spanish and Italian Christian rulers, they began to translate into Latin the Arabic books they found there. They returned, often, on donkeys, laden heavily with leather-bound books, “a precious treasure,” said one European translator.

During the 1100s and 1200s, Latin translations of Arabic books caused many changes in Europe’s schools and growing cities. Among the books brought over the mountains were works about mathematics, including algebra, geometry



A boy fans the class in a masjid school.



and advanced arithmetic. These works introduced Arabic numerals, but it took another 200 years before they replaced Roman numerals in everyday life. Other books brought knowledge about astronomy—contributions from Greek, Persian, Arab and ancient sources. Geography and maps, as well as careful measurements of latitude and longitude was about to help Europeans to see the world in a new way. Medical books, especially works by Ibn Sina, al-Razi and al-Zahrawi, and some classical Greek works, lifted the cloud of superstition over illness. Descriptions of diseases and cures, surgery, and pharmacy—the art of preparing medicines, helped develop a medical profession in Europe.



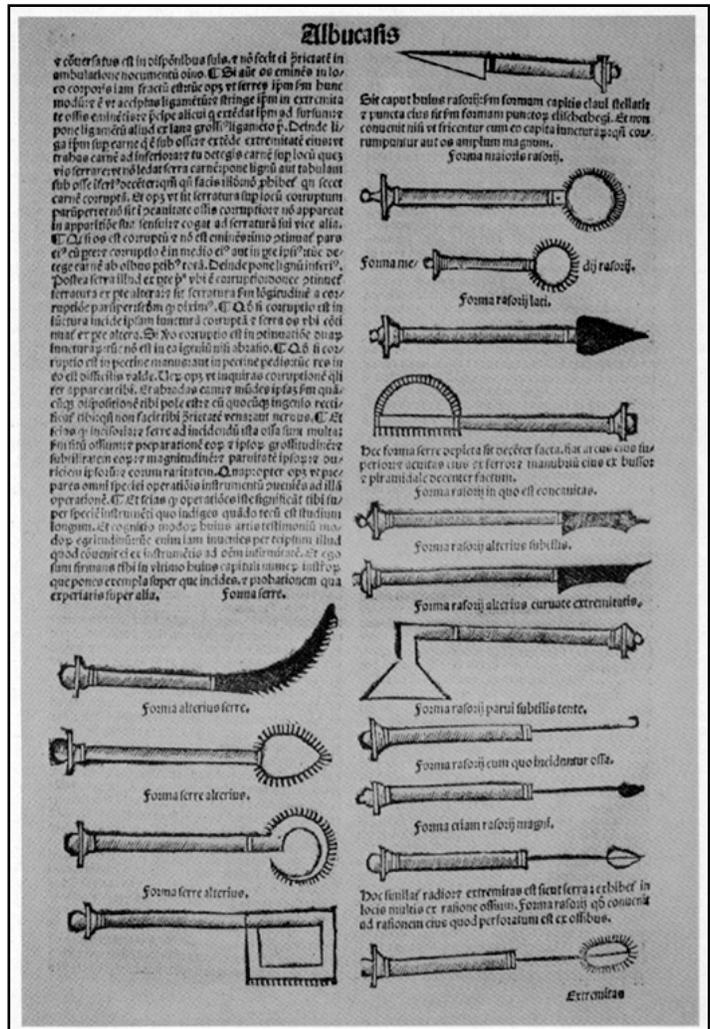
### PHILOSOPHY—LINKING FAITH AND REASON IN THREE RELIGIONS

Philosophy was another type of learning that was very important. The word actually means “love of wisdom” in Greek. Aristotle, Plato and others at Athens had studied the process of thinking and reasoning, and about formal logic. They wrote about using effective speaking to convince others and about the best ways to teach, and to organize society. Their books discussed moral teachings and behavior. The famous Greek philosophers shared these pursuits with various other cultures, but scholars of many cultural traditions have greatly admired their works. They have been translated into many languages. In Roman times, Christians discussed how Greek ideas could be melded with the teachings of Christ and the Bible. At Jundi-Shapur, for example, these works were treasured, and later passed to the Muslims. In turn, Muslim writers sifted and debated how philosophy could serve the interests of building an Islamic society. Many religious traditions have pondered the links between humankind’s God-given reason and God-given revelation and faith. How can thinkers balance the urge to question with the necessity to believe? Can the knowledge coming through the senses equal the knowledge revealed in holy scriptures as the basis for truth? People have spent whole lifetimes thinking, writing and teaching about such questions.

Among the great classical works and ancient wisdom that passed to medieval Europe from Arabic language were the works of Aristotle and others. One famous writer on Aristotle was the Spanish Muslim Ibn Rushd. He wrote comments on Aristotle that were also translated into Latin. Other Muslim philosophers like al-Kindi, al-Razi and al-Ghazzali, had debated over the issue of faith and reason. Medieval Christians in Europe pored over these books, asking some of the same questions as the Muslim, Jewish and early Christian scholars had asked, about faith and reason, about knowledge, about laws and society.

Thomas Aquinas was perhaps the most famous of the many writers of the 12th century who labored over these difficult problems. He wrote a work that summarized his understanding of truth and nature, faith and reason, called the *Summa Theologica*. It is difficult to understand in modern times, perhaps, but as people long ago thought about human ability to understand nature and the cosmos (universe), they were very attracted to Aristotle's system. It provided a complete system of thought, or explanation of the natural world. It seemed to have the ring of truth.

The Greeks, however, had been “pagans,” or believers in many gods. To believers in One God, this tarnished the glow of Aristotle's “truth,” causing generations of writers to try and meld the logic and reason of the Greek philosopher with the teachings of Christian, Jewish and Muslim holy scriptures, the Bible and the *Qur'an*. Though they took on this task during different times in history, their thoughts had much in common, and during the shared effort, they exchanged many ideas. For the Muslims, the earlier Christian and Hebrew writers smoothed the path. For medieval Christians, classical knowledge and the wisdom from other cultures had been filtered through the minds of Muslim believers in One God, through Islamic teachings. The opposition of Christians to Islamic ideas challenged them to seek a solution for the problem of truth that would be suitable to Church teachings. Aquinas' *Summa Theologica*, and the writings of other Christians, offered solutions to these mental dilemmas. Aquinas, Dunns Scotus, Roger Bacon and others quoted Muslim writers and scientists many times in their work.



Page from a 1531 Latin translation of al-Zahrawi's treatise on surgical instruments.

## UNIVERSITIES AND THE NEW LEARNING IN EUROPE

The entry of classical and ancient wisdom into Europe stimulated yet more change in education. Most important, the curriculum, or subjects taught in higher education, expanded beyond the old Roman base. New courses teaching the important new works were in demand among wealthy city folk anxious for education. Teachers with training in these topics were sought after. As in Muslim lands centuries earlier, colleges and universities developed in Europe as centers for teaching and research in medicine, law, mathematics, astronomy, and physics. Universities in Paris, France, Oxford and Cambridge in England were founded. A college at Bologna specialized in law, and another at Salerno taught mostly Arabic medical knowledge.



Traveling scholars.

Among the skills demanded by the wealthy trading and ruling classes in the growing cities were language skills. Lawyers and clerks needed to know how to write formal Latin documents and letters. Noble families wanted to get their way in politics, so speaking skills were an important way to persuade others. Just as important as getting your way, however, is getting it with style. Elegant Latin writing and speaking were highly prized. These demands also helped change the education system. As more people became educated, they realized that the old ways of teaching Latin were anything but elegant. People who learned in this way had memorized grammar, and patched together snippets of medieval Latin writing.

## A TIME OF EXCITEMENT AND REDISCOVERY— THE RENAISSANCE

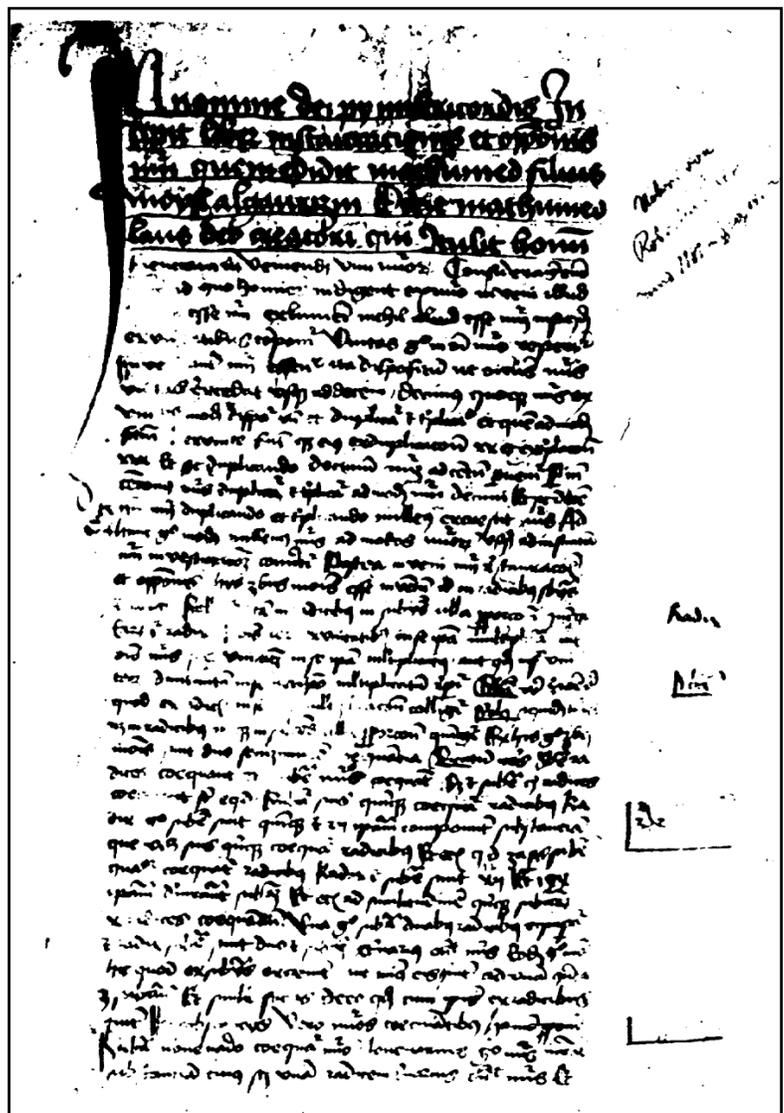
Changes in knowledge opened up new ways of thinking among educated Europeans. The growth of cities and trade had brought new products, new inventions, and a great deal of wealth to Europe. Money paid for beautiful buildings like churches and palaces, as well as for art to fill them. Libraries filled with volumes of ancient wisdom, new learning and literature. People living in this time of exciting change and discovery came to think of their time in history as the end of a Dark Age. They felt that they were part of an effort to recover a lost time of greatness. We now call this period in history the Renaissance, or rebirth. The model for their rebirth was the lost glory of classical Greece and Rome.



The discovery of Greek and Arabic learning had set off the search for other works that had been “lost” after the fall of Rome. Roman writings in law, history and poetry had lain forgotten in monastic libraries, often jumbled together in chests and closets. Some had suffered rot, bookworms and fire. During the 1300s and 1400s, European scholars like Petrarch, Erasmus and others began to take a new look at these works. Their work with Roman literature and history helped them to a better understanding of their past. They came to believe that knowledge of the past could help them to build a better life using the new wealth around them. They realized that many Latin translations had been faulty and inaccurate, and they scoffed at the rigid, narrow thinking of the Middle Ages. These scholars called themselves humanists.

The humanists’ work to rediscover Greek and Roman writings led them to travel widely, to discuss, debate and write. The humanists worked to change education, introducing new ways to teach Latin, Greek and Hebrew. Arabic studies also continued in some universities. If the universities refused to offer new courses and hire humanist professors, humanists held classes in rented rooms near the college. These “extra-curricular” courses were so popular that some universities finally did accept them.

A new invention in the mid-1400s gave a great boost to the humanists, and to science as well. That was Gutenberg’s invention of the printing press in 1450. This simple, but brilliant combination of earlier inventions from China combined moveable type set in frames with a screw-press used for making apple cider, wine or oil from fruits. Adding the technology for paper-making invented in China and brought to Europe from Muslim Spain, the invention of the printing press made it easier and cheaper to produce books of all kinds. The result was an explosion of literature and learning. Publishing books became a new business during the next century, with shops filled with printing presses that began to look like factories. Booksellers sold the new works all over Europe.



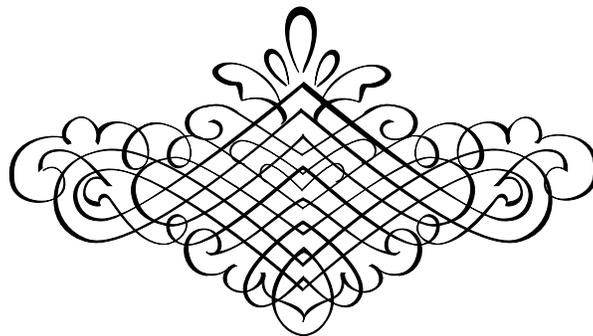
Page from a Latin translation of al-Khwarizmi's book of Algebra.

## RENAISSANCE IDEAS AND NEW DIRECTIONS

The Renaissance was a time of new attitudes, new influences and new possibilities. Art and literature flourished, trade brought consumer goods and wealth to more people than ever before, and elegant fashions in clothing and furniture spread throughout Europe's cities. Civic life and politics took on a new tone. Ordinary persons, or laymen, learned more about the scriptures and other religious writings, and how they might use this knowledge in their lives. Centuries earlier, only the clergy, or Church, possessed this knowledge. The changes in religious life soon brought on the Reformation, a time of great religious growth and conflict. Military changes like gunpowder and cannon made knights obsolete, and wars were fought over wealth, trade and territory, as well as religion.

Science promised the biggest changes as printing made books available all over Europe. Many of the works that 11th- and 12th-century scholars had translated from Arabic now came into print. Everyone from inventors to doctors to farmers to craftspersons took advantage of the new knowledge—some of it already centuries old—in metals and minerals, in agriculture, mathematics and many other fields. Over the next centuries, they absorbed this knowledge and improved upon it, taking up the tools of experiment and observation described in these works. Their work would spawn rapid advances in many fields. The Scientific Revolution of the 16th and 17th centuries has roots in the transfer of knowledge five centuries before, and in the developments of scholarship and education that led to the Renaissance.

Today, many people look back at this time and see in it the beginnings of modern life. These changes, as you have seen, were the product of exchanges among many cultures, over a very long period of time. They are also, in a basic way, an expression of the special desire and ability of human beings to preserve and pass on knowledge from one generation to the next.





## STUDY QUESTIONS AND STUDENT ACTIVITIES

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1. List various methods people have invented for storing and communicating knowledge and ideas.
2. Summarize the story of classical and ancient learning after the Roman Empire. How did the heritage of ancient learning come back to Europe?
3. What changes in Europe brought about the demand for more and better education? Before that time, what group of people had the most education?
4. Why was philosophy important to thinkers in Christian, Jewish and Muslim culture? What conflicts did Greek thinking cause in the minds of scholars?
5. List two changes each that were caused by the humanists and the invention of printing.
6. In your opinion, did the changes in society during the Renaissance bring benefit or harm to the world? Write a paragraph in which you bring several points that defend your view.





# PAPER TRAIL

## The Geography of Paper-Making Technology

### BACKGROUND INFORMATION

#### The Chronology and Geography of Paper-making Technology<sup>32</sup>

Technology travels. A good idea seldom stays in one place. From town to town, from inventor to royal court, new technology spreads by slow steps or giant leaps. Trade, travel and war bring people of various cultures together to gawk at each other's latest inventions. Historians can sometimes trace the movement, or **dissemination**, of technology by noting where and when it appears in use or manufacture, or is mentioned in literature or artwork. The map in this section traces the dissemination of paper use and manufacture from East to West, showing the place, the date and evidence of its spread.

Writing technology is as important as the technique of writing itself. The stylus (used to make an impression in clay), the calligrapher's brush, the reed or quill pen, and the printing press all made a difference in ease of transmitting thoughts from one person to another. Heavy clay tablets, stone or wood slabs, palm leaves, bamboo, bark, leather, bone, and stone are natural materials that have been widely used. Early and effective manufactured writing surfaces included copper sheets, parchment (stretched and beaten sheepskin), treated silk fabric, and papyrus (beaten plant fibers pressed together crosswise to make a sheet). The best writing surface proved to be PAPER, invented by the Chinese sometime between the 3rd century BCE and 105 CE, and used by mankind ever since. Paper has many advantages over other methods:

- ❖ paper is cheap and simple to manufacture.
- ❖ paper can be made from many varieties of plant fibers suited to various climates, some of which are cheaper grades of textile fibers, like cotton, linen and silk. It can also be made with recycled fiber from textile rags, and paper itself can be recycled.
- ❖ paper can be manufactured in large quantities.
- ❖ paper is light and durable; can be made in many weights, strengths and colors.

#### ■ THOUGHT QUESTION

How do these qualities of paper give it advantages as a carrier and permanent record of thoughts, words and ideas?

#### ■ LEARN WITH LITERATURE

1. Read the essay by Al-Jahiz on the "Disadvantages of Parchment." (See p. 131.)
2. Since the time this activity was written, a similarly-titled feature appeared in *Aramco World* magazine, and includes additional information on papermaking. See the feature "Revolution by the Ream," *Aramco World*, vol. 50, no. 3, (May/June, 1999), by Jonathan A. Bloom.

32. Sources for map information: *Encarta Timeline* (Microsoft, 1996); *Islamic Technology: an Illustrated History* (A.Y Hassan and D.R. Hill, Cambridge University Press, 1986); *The Discoverers* (Daniel Boorstin, Random House, 1983); *Arabic Writing and Arab Libraries* (S.M. Imamuddin, TaHa Publishers, 1983).

## PAPER TRAIL MAP DIRECTIONS

1. Cut out the text balloons below.
2. Use an atlas to match the black squares on the map to the places cited in each balloon.
3. Carefully paste each text balloon to the map with the pointer touching the square to which it belongs.
4. Draw arrows between the squares on the map, starting with the earliest and ending with the latest dated evidence of paper use or manufacture.
5. Answer questions below on a separate paper.

✂

China, 300 BCE to 105 CE.  
First recorded manufacture of paper. Chinese courtier Ts'ai Lun made first paper from bark of mulberry tree. Chinese keep process secret.

Makkah, 706 CE. Yusuf Amr gives Muslim leaders first look at cotton paper.

Talas River, Central Asia, 751 CE. Arabs defeat General Kao-Sin, take Chinese prisoners, who teach Muslims how to make paper.

Samarkand, 760 CE. Paper factory set up; high-quality paper becomes export product.

Baghdad, 795 CE. Paper factory opens. By 900 CE, paper mills on Tigris feature water-powered trip-hammers.

Cairo, Egypt, 878-9 CE. Earliest manuscript written on paper appears.

Constantinople, 947 CE. Byzantine ambassador visits Muslims at Cordoba, with letter on sky-blue paper.

Muslim Spain, 985 CE. Geographer al-Maqdisi says Berber merchants shouldn't write on leather while Andalusians are paper-making experts.

Castile, 1284 CE. Christian King Alfonso X starts paper manufacture.

France, 1270 CE. Paper-making technology crosses Pyrenees Mountains.

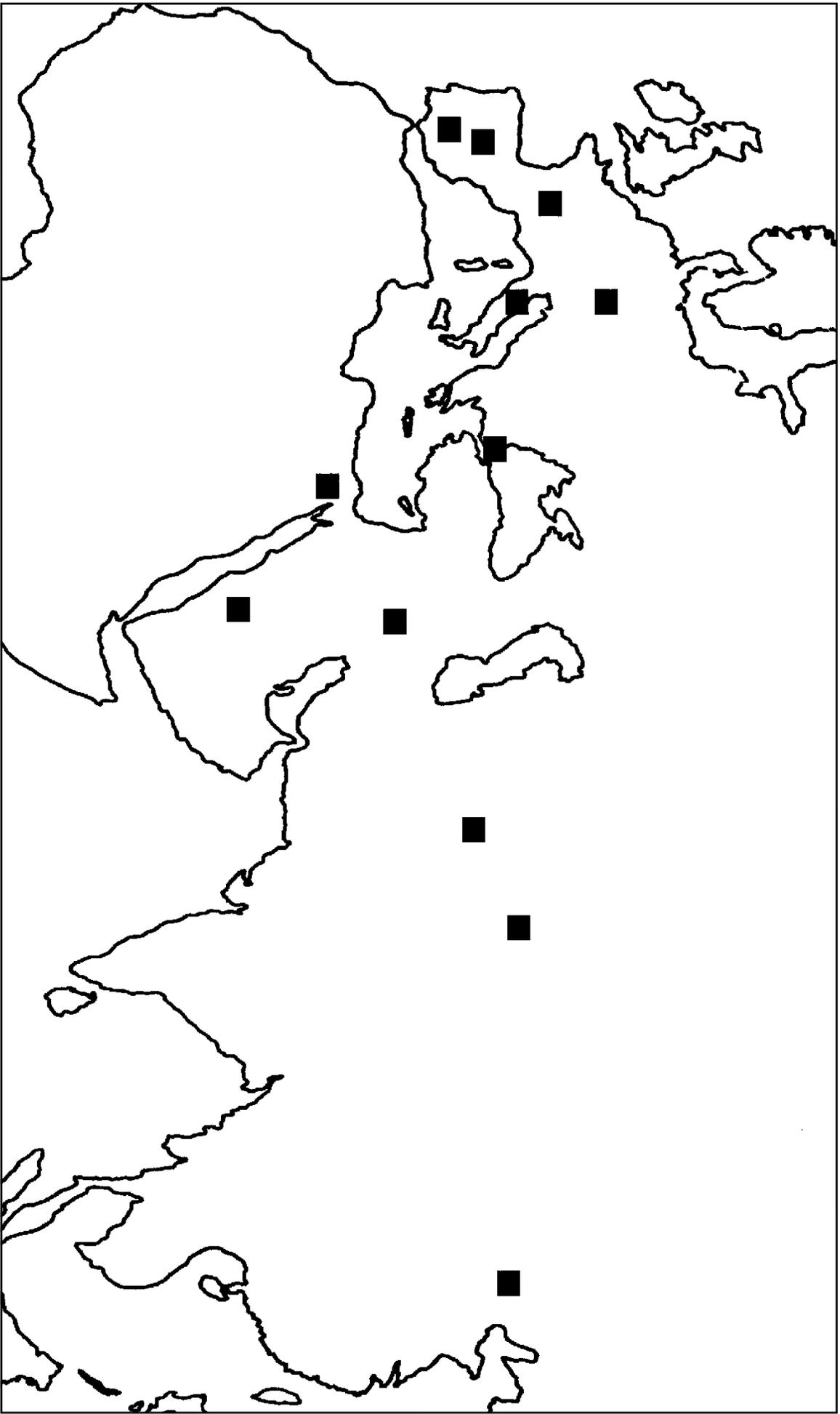
Fabriano, 1276 CE. First paper mill in Italy established.

Nuremberg, Germany 1390 CE. First paper mill in Germany set up; 1453 CE: paper technology wedded to moveable type by Gutenberg.

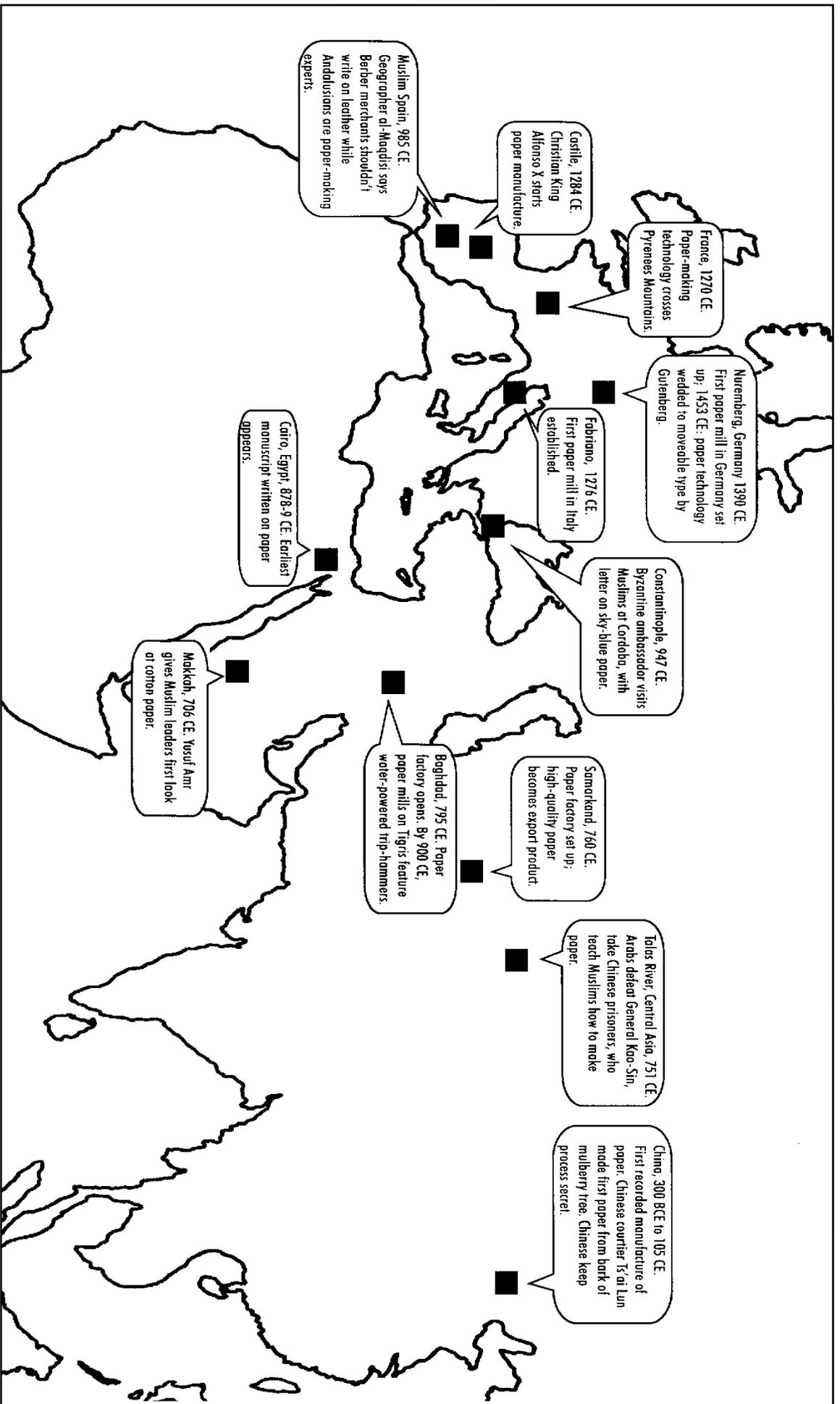
✂

## ADDITIONAL MAP QUESTIONS

1. How many years did it take for the secret of paper technology to leave China?
2. How many years did it take for the technology to move from the River Talas to Baghdad? To Cairo? To Spain?
3. How many years did it take for paper-making technology to pass from Muslim to Christian Spain?
4. How many years passed between the development of paper-making technology in the Muslim world and its acceptance in Christian Europe? Using an atlas, determine the distance between the Talas River and Castile, Spain. How many miles per year was the average speed of transmission?
5. Explain the reasons for the lag in spreading this technology to the West, after it was known in the Muslim world for several centuries. Why do you think it became established in Europe during the 13th century?
6. Compare the spread of paper technology with your knowledge about the spread of computer use around the world.



**PAPER TRAIL: TRANSFER OF PAPER-MAKING TECHNOLOGY**



## PAPER TRAIL MAP KEY



# HOW TO MAKE YOUR OWN PAPER

## PREPARATION<sup>33</sup>

- A. Collect scrap paper from the art room or school recycling program, or collect it at home. Any white paper, colored paper or brown paper is suitable. Don't use cellophane or plastic fiber paper. If you wish to use newsprint, do not mix it with other types of paper. Your paper will turn out very gray.
- B. Build a mold, or frame for dipping the paper sheets. Get a plain wooden picture frame, about 9"x12" or 8"x10" (measurements need not be exact). Avoid very wide frames. Cut a piece of fine nylon screen about 1" to 2" larger than the frame on all sides. Center the piece over the frame, flat edges up. Using a staple gun, staple the screen onto the frame, starting with the centers on opposite sides, and working toward the corners. Trim the excess screening from the outside of the frame.

■ <b>STEP 1</b>	Instead of throwing away your scrap paper, recycle it into new paper!
■ <b>STEP 2</b>	Cut or tear paper into small scraps. Be sure to cut plenty!
■ <b>STEP 3</b>	Fill a food blender 1/3 full with paper scraps. Add water to the 2/3 mark.
■ <b>STEP 4</b>	Mix, using the low setting until the paper has turned to pulp. Add more water if necessary.
■ <b>STEP 5</b>	Mix for 30 seconds on high setting.
■ <b>STEP 6</b>	Pour the pulp into a large tub that is 6" to 7" deep. Add water to the tub to a depth of 4" to 5".
■ <b>STEP 7</b>	If you wish, you may add food coloring, vegetable dye, confetti, flower petals, glitter or colored bits of thread to give your paper texture and color. Use your imagination.
■ <b>STEP 8</b>	Stir the pulp mixture.
■ <b>STEP 9</b>	Dip the screen mold (see "Preparation" above), with the screen side up, into the pulp mixture. Move it back and forth in the mixture to make sure the whole screen is covered.
■ <b>STEP 10</b>	Check to make sure there is a thin, even layer of pulp on the screen. There should be no holes. If needed, dip and swish the screen again.
■ <b>STEP 11</b>	Drain over the tub, and wipe the pulp off the frame edges, leaving the mixture only on the screen.
■ <b>STEP 12</b>	Place in a safe, dry spot and let the pulp dry completely.
■ <b>STEP 13</b>	When the paper is dry, carefully remove the paper from the screen with a blunt blade, such as a spatula or purchased paper-lifting blade. Your paper is ready!
■ <b>STEP 14 (OPTIONAL)</b>	Ink or paint may run on new paper. To prevent this, you may brush the paper with a thin coat of sealer. To make sealer, dissolve one teaspoon of unflavored gelatin in hot water. Mix in 3 cups of cold water. Allow the sealer to dry thoroughly before using the paper. Store sealer in refrigerator.

33. Adapted from *Muslim Kaleidoscope Magazine*, Vol. 1, Issue 1, pp. 18-19.



# TWO ESSAYS BY AL-JAHIZ ON PAPER AND BOOKS

**A**l-Jahiz, the African/Arabic writer of 9th-century Iraq, was born in the city of Basra in about 776 CE, and died in about 868 CE. He was a scholar at a time when Basra was at its height as a center of Arabic/Muslim culture and commercial importance. Al-Jahiz was from an east African family. He lived for many years in Baghdad shortly after its founding as the capital. His early education had been ordinary, but he had a very curious mind and keen powers of observation, and rose to a high position as writer, scholar and adviser at the court of the khalifahs. Al-Jahiz was involved in books at the time when paper had just been brought from China to the Muslim world. In his essay on "The Disadvantages of Parchment," it is easy to see why paper use and manufacture spread so quickly around the Muslim world. His essay "In Praise of Books," is evidence of the growing importance of libraries and the art of the book, as many scholars shared his love. Al-Jahiz was one of the prominent literary figures who were seen at the Abbasid court, in the palaces of the wealthy, and in Baghdad's famous Suq al-Warraiqin, where he would have found all sorts of paper, books and literary delights.

## The Disadvantages of Parchment

“What is it to you that all my books are written on China paper or Khurasan paper? Explain why you have pressed on me the advantages of using parchment and urged me to write on hide, when you know very well that parchment is heavy and cumbersome, is useless if it gets damp, and swells in wet weather—so much so that were its sole disadvantage to make its users hate rainy days, and its owners regard a shower as a nightmare, this alone would be reason enough for giving up the stuff. You know very well that on rainy days copyists do not write a single line or cut a single skin.

Parchment has only to get moist, let alone left out in the rain or dipped in water, for it to bulge and stretch; and then it does not return to its original state, but dries noticeably shrunk and badly wrinkled. What is more, it smells worse, is more expensive, and lends itself more readily to fraud: Wasit skins are passed off as Kufa ones, and Basra ones as Wasit ones.<sup>34</sup> You are obliged to leave it to age in order to get rid of the smell and for the hair to fall out; it is fuller of lumps and flaws, more is wasted in scraps and clipping it turns yellow sooner, and the writing very quickly disappears altogether. If a scholar wished to take with him enough parchment for his journey, a camel-load would not suffice, whereas the equivalent in *qutni* [cotton-fiber paper] could be carried with his provisions.

You said: ‘You should use parchment because it stands up better to scratching out and correction, and also to repeated borrowing and handling; then unwanted sheets are still worth something, palimpsests<sup>35</sup> can be re-used, and second-hand parchment does the same job as new. Writing-books of *qutni* are of little value on the market, even if they contain the most original texts, the choicest rarities and the most priceless learning. If you went to sell books of an equivalent number of parchment pages containing nothing but the feeble poetry and the idlest gossip, they would be in much greater demand. And you added: ‘Hide is entrusted with the accounts of the administrative system, with title-deeds, diplomas, contracts and surveys; sculptors’ sketches are made on it, postal pouches are made out of it, and it is used for making bags, lids for jars and stoppers for bottles’...You did me a grave disservice when you made me take to using parchment instead of paper, and were the cause of my misfortune when you made me exchange light writing-books for volumes too heavy to hold, that crush people’s chests, bow their backs and make them blind...<sup>36</sup>”

34. Kufa and Basra are Muslim cities in southern Iraq, and Wasit is in Iran.

35. A manuscript that has been written on more than once, often not completely erased.

36. Charles Pellat (trans. from French by D. M. Hawke), *The Life and Works of Jahiz*, (Berkeley, CA: University of California Press, 1969), pp. 149.

## In Praise of Books

“A book is a receptacle filled with knowledge, a container crammed with good sense, a vessel full of jesting and earnestness. It can if you wish...amuse you with anecdotes, inform you on all manner of astonishing marvels, entertain you with jokes or move you with homilies, just as you please. You are free to find in it an entertaining adviser, an encouraging critic, a villainous ascetic, a silent talker or hot coldness.

...Moreover, have you ever seen a garden that will go into a man's sleeve, an orchard you can take on your lap, a speaker who can speak of the dead, and yet be the interpreter of the living? Where else will you find a companion who sleeps only when you are asleep, and speaks only when you wish him to?...You denigrate books, whereas to my mind there is no pleasanter neighbor, no more fair-minded friend, no more amenable companion, no more dutiful teacher, no comrade more perfect and less prone to error, less annoying or importunate, of a sweeter disposition, less inclined to contradiction or accusation, less disposed to slander or backbiting, more marvelous, cleverer, less given to flattery or affectation, less demanding or quarrelsome, less prone to argument or more opposed to strife, than a book.

I know no companion more prompt to hand, more rewarding, more helpful or less burdensome, and no tree that lives longer, bears [fruit] more abundantly or yields more delicious fruit that is handier, easier to pick or more perfectly ripened at all times of the year, than a book.

I know no animal product that despite its youth, the short time since its birth, its modest price and its ready availability brings together so much excellent advice, so much rare knowledge, so many works by great minds and keen brains, so many lofty thoughts and sound doctrines, so much wise experience or so much information about bygone ages, distant lands, everyday sayings and demolished empires, as a book.

For its smallness and lightness, a book is the medium through which men receive the Scriptures, and also government accounts. Silent when silence is called for, it is eloquent when asked to speak. It is a bedside companion that does not interrupt when you are busy but welcomes you when you have a mind to it, and does not demand forced politeness or compel you to avoid its company. It is a visitor whose visits may be rare, or frequent, or so continual that it follows you like your shadow and becomes a part of you...

A book is a...friend that does not irritate you, a crony that does not weary you, a petitioner that does not wax importunate, a protégé that does not find you slow, and a friend that does not seek to exploit you by flattery, artfully wheedle you, cheat you with hypocrisy or deceive you with lies.

A book, if you consider, is something that prolongs your pleasure, sharpens your mind, loosens your tongue, lends agility to your fingers and emphasis to your words, gladdens your mind, fills your heart and enables you to win the respect of the lowly and the friendship of the mighty. You will get more knowledge out of one in a month than you could acquire from men's mouths in five years, and that at a saving in expense, in arduous research by qualified persons, in standing on the doorsteps of hack teachers, in resorting to individuals inferior to you in moral qualities and nobility of birth, and in associating with odious and stupid people.

A book obeys you by night and by day, abroad and at home; it has no need of sleep, and does not grow weary with sitting up. It is a master that does not fail you when you need him and does not stop teaching you when you stop paying him. If you fall from grace it continues to obey you, and if the wind sets fair for your enemies it does not turn against you. Form any kind of bond or attachment with it and you will be able to do without everything else; you will not be driven into bad company by boredom or loneliness...<sup>37</sup>”

37. Charles Pellat, trans., *The Life and Works of Al-Jahiz: Translations of Selected Texts*, (Berkeley: University of California Press, 1969), pp 130-132.

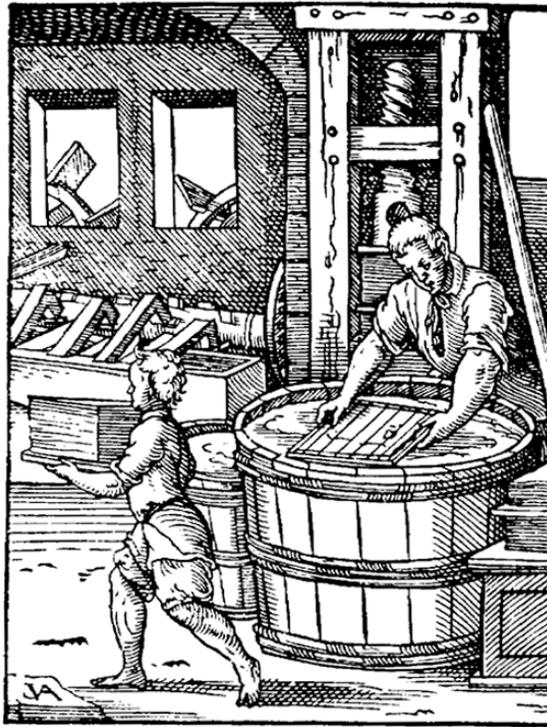
## STUDY QUESTIONS AND STUDENT ACTIVITIES

### Essay on Paper and Parchment:

1. Summarize the advantages of paper made from vegetable (cotton) fiber.
2. What did al-Jahiz's imaginary opponent bring as points in defense of parchment?
3. Why do you think al-Jahiz won the debate, and "china paper" replaced parchment around the world?

### Essay on Books:

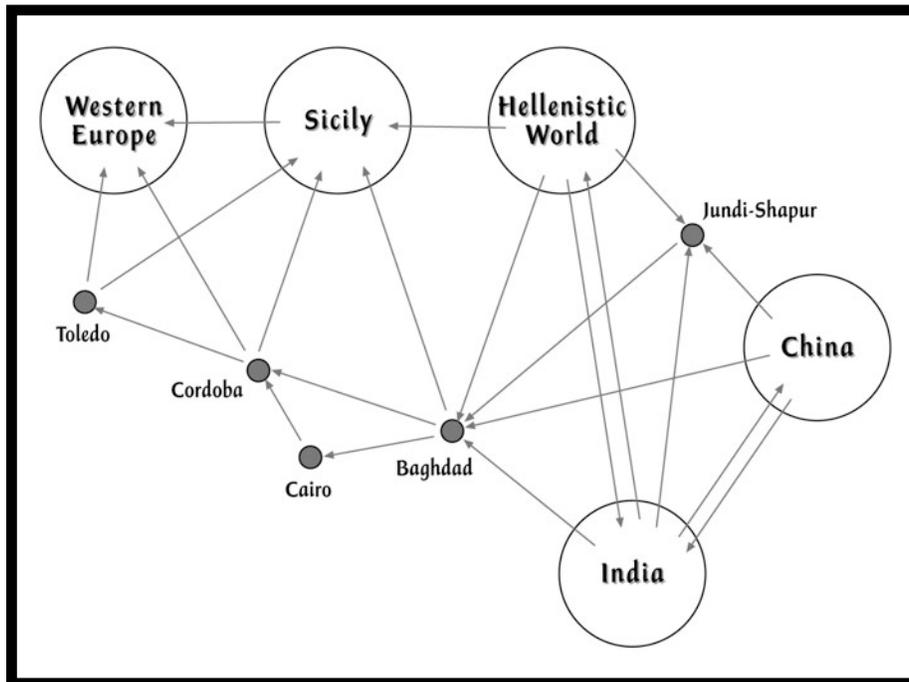
1. If you had never in your life seen a book, what would you know, and how would you describe it based on the characteristics listed in this essay?
2. What type of person is a "bookworm"? Does al-Jahiz fit the description, as he portrays himself in this essay?
3. Cite two references that demonstrate the author's love and respect for knowledge.
4. Cite three references that demonstrate a negative attitude about certain types of people, and cite three that are negative on people in general.
5. Write a short essay entitled "In Praise of Computers" that parallels al-Jahiz's style and content.



A papermaker, showing waterwheel, triphammers, and vat with screens.

# ILLUMINATING EUROPE'S DARK AGES

Scientific knowledge that originated in India, China and the Hellenistic world was sought out by Arab and other Muslim scholars wherever it could be found. Muslim scholars then translated, refined, synthesized and added to it at many centers of learning. Collection of knowledge started at Jundi-Shapur in Persia around the 6th century, even before the coming of Islam. Then the center of scholarship moved to Baghdad, Cairo, and finally Toledo and Cordoba. From Muslim Spain, the knowledge spread to Western Europe. Patronage of Muslim rulers and private individuals alike made the resources available for this work.



Source: The chart "Illuminating Europe's Dark Ages" in the feature "The Arab Roots of European Medicine." *Aramco World Magazine* (vol. 48, no. 3).



## DIRECTIONS

1. On the diagram, underline the places that were part of the Muslim lands. Add an underline in red to those places that were lost to the Muslims during the Middle Ages or the Renaissance.
2. Using the outline map and a world history atlas, locate the cities or territories shown on the diagram. Indicate these places with dots or shading, and label each place corresponding to the diagram.
3. On the back of this sheet, answer the following questions, using the reading on pages 89-93:
  - Why does the diagram show arrows going in two directions between some of the places? Which cultures show this kind of multiple influence?
  - Did India's and China's influence reach Western Europe directly? Why or why not?
  - At which location did the spread of knowledge begin in Muslim culture? Where did it go from there?



# ECHO FROM THE PAST

## WHO WERE THE EUROPEAN TRANSLATORS OF ARABIC WORKS?

**W**hat made European scholars of the 11th and 12th century leave the comfort of their homelands to endure the hardships of travel and learning a foreign language and customs? What drew them to Muslim Spain? Fortunately, we know many of their names, and can even hear their own voices telling us why they undertook the task.

- **Stephen**, who worked at Antioch in 1127 on a translation of Ali Ibn Abbas's famous medical book *Liber Regalis*, preached the importance of transferring Arabic knowledge into Latin. He had learned Arabic in order to advance from "the naked beginnings of philosophy," and to study, "God willing,...things far higher, extending to the excellence of the soul." He was looking for "more famous things which the Arabic language contains, the hidden secrets of philosophy."<sup>38</sup>
- **Raymon of Toledo** (1125-1155) actively promoted translations of Muslim scientific books into Latin. In Toledo, he said there was "a wealth of Arabic books, and a number of masters of the two tongues, and with the help of the Mozarabes [Arabized Christians and resident Jews] there arose a regular school for the translation of Arabic-Latin books of science, which drew from all lands those who thirsted for knowledge."<sup>39</sup>
- One of the most famous translators, the Englishman **Adelard of Bath**, contrasted the knowledge he was receiving with what was available in Europe: "from the Arabic masters I have learned one thing, led by reason, while you are caught by the image of authority, and led by another halter."<sup>40</sup>
- Translators **Hermann of Carinthia** and **Robert of Ketton** wrote letters to each other about their work. Ketton mentions the lack of knowledge of astronomy among the Latins, as did **Plato of Tivoli** in 1145, saying, "The Latins...have not a single author in astronomy...only foolish dreams and old wives fables."<sup>41</sup> Robert and Hermann told us they worked to bring out "the innermost treasures of the Arabs."<sup>42</sup>
- After **Gerard of Cremona**, who made more than eighty translations from Arabic, died at the age of 73 in 1187, his students wrote about his life and work. He went to Toledo because of his passion for medicine, and to get the *Almagest* (al-Majisti, a work of geography and astronomy). "There he found a mass of books in Arabic, and he pitied the Latins to whom they were inaccessible because they simply could not read them. He learned Arabic thoroughly, and now joined a love of translation to his love of science."<sup>43</sup>

- Daniel of Morley, another Englishman, told the Bishop of Norwich why he went in search of Arabic knowledge: *“My passion for knowledge had chased me from England. I stayed for a while in Paris. There I saw only savages settled with grave authority on their scholarly seats, with two or three work stands in front of them loaded with enormous tomes [volumes of books]...writing plumes in their hands, with which they gravely painted asterisks and obleli [mistake markers] in their books. Their ignorance forced them to remain as still as statues, but they pretended to show their wisdom with such silence. As soon as they opened their mouths I heard only the babbling of babes. Having understood the situation, I sought the means of escaping...Therefore, since at present the instruction of the Arabs...is made available to all in Toledo, I hastened there to attend the lectures of the most learned philosophers in the world. As my friends summoned me back and invited me to return from Spain, I went to England with a precious collection of books.”*<sup>44</sup>
- Peter the Venerable was an abbot who went to Spain to inspect monasteries and stayed to translate the *Qur’an*, in 1142. He was moved by the spirit of the Crusades: *“Whether one gives the Muslim misconception the shameful name of heresy or the vile name of paganism, we must act against it, that is, we must write....I thus went in search of specialists in the Arabic language which has enabled this lethal poison to infest more than half the globe. Using pleas and money I persuaded them to translate the history and the doctrine of that unfortunate man [Muhammad] and his law which is called the Koran from Arabic into Latin. And to ensure that the translation would be entirely accurate and no errors would hinder our complete understanding I included a Saracen among the Christian translators.”*<sup>45</sup>

## STUDY QUESTIONS

1. What complaint does Daniel of Morley bring against the University of Paris? Did he find satisfaction in Toledo, Spain?
2. What do these translators seem to mean by “philosophy”?
3. Contrast the attitude toward Arab learning of Peter the Venerable and Daniel of Morley and Adelard of Bath.

38. Norman Daniels, *The Arabs and Medieval Europe*, (London: Longman, *Librairie du Liban*, 1979), p. 268.

39. Mehdi Nakosteen, *History of Islamic Origins of Western Education, AD 800-1350*, (Boulder: University of Colorado Press, 1964), p. 185.

40. Daniels, p. 270.

41. Nakosteen, p. 185.

42. Daniels, p. 275.

43. Daniels, p. 276.

44. Jacques LeGoff, *Intellectuals in the Middle Ages*, (Cambridge, MA: Blackwell, 1993), pp. 18-19.

45. *Ibid.*, p. 16.



# GOING TO SCHOOL IN THE MIDDLE AGES AND EARLY RENAISSANCE ITALY

If you were the son or daughter of an Italian merchant in the 14th century, you might attend elementary school. There, you would learn to read in Italian, but probably nothing else. If you were a girl, you may have a female teacher who teaches you to read and write. You would not study beyond elementary school, where you would learn a little arithmetic, sewing and religion. More education would be seen as useless for girls. Only the richest families allow their daughters to broaden their studies to include reading, poetry and the arts.

A boy might be lucky enough to go on and study arithmetic under a “master of the abacus,” and maybe a little geometry and bookkeeping. After all, you would soon follow your father into the trading business, and may even help out while you are still quite young.

If you show promise, you might start preparing for higher education at a university in the city. A few talented poor boys might also receive town scholarships to go to grammar school. Now, you would attend Latin grammar school. So far, your teachers would have been private tutors, self-employed or working at the town’s communal elementary school. Your father and those of other boys would pay tuition—a fee in money or in goods—to the school-master. He has a contract with the children’s fathers to teach you up to a certain level in certain subjects. The master pays assistant teachers out of his own pocket.

Your curriculum and textbooks would be the same used for the last two centuries or more. You would learn Latin from the ground up. Your first text is *Donatus*, a grammar book written after 300 CE. You would have to memorize it WORD-FOR-WORD. Your next book to memorize is the *Disticha Catonis*, a little book of moral maxims, in verse. It was written in Rome around 200 BCE.

If you succeed in all of this, you would move on to Advanced Latin from a “long, complex, and dull” textbook called the *Doctrinale*, written in 1199 CE, two hundred years before you were born. Rules of Latin grammar are given in sing-song verse that a historian has called “easy to memorize, but impossible to understand.” Instead of examples from literature to show how the rules worked, you get logic. To help you decipher the meaning, you need hundreds of pages of small-script *glosses*, or commentaries, and the help of your tutor. Your tutor—maybe with an occasional flogging to keep you awake—works you through it, line by tedious line. Your copy of the book is scribbled full of marks from generations of students who suffered through it before you. When you finish, you will probably be able to write Latin, but in a clunky, uneven style, that pastes phrases together and quotes famous chunks of verse.

Apart from Latin, you would sit with your tutor to read through other works, or selections of philosophers’ and poets’ works. You would learn some rhymes about moral behavior, taken from a combination of Church writings and late Roman authors.



You might go on to study at the university, where you would follow a medieval curriculum in theology, medicine or law. This, too, is not likely to offer much in the way of creative thought. You would read through works with professors and their assistants. You would hear lectures and debate logical points about individual statements. You are taught more to imitate the works of ancient writers than to think on your own. You learn to recite, think and write using others' ideas—ideas that are hundreds of years old.

### Education Changes Under the Humanists' Attacks

Your children and grandchildren, however, would attend schools and universities that have begun to change. Humanists have been attacking the *Doctrinale* and many of the old textbooks as outdated trash. They scoff at teaching grammar in memorized bits and morals by maxim. By 1500, the *Doctrinale* would be gone, along with the old simple-minded verses on morals. The humanists would have introduced a new method for learning Latin grammar and composition—by reading the prose and poetry of the best Latin writers. The grammar textbooks your grandchildren would use were written by humanist authors.

Why are these changes in education taking place? Your generation feels strongly that a new generation of Italian leaders needs practical knowledge to participate in city government. They want men of elegant speech and writing to convince people in the palaces and in the public of the best policies for the city leaders to follow. You want your sons and grandsons to hold their own with the citizens of other Italian city-states, and with the growing towns of northern Europe.

As the Renaissance dawns, advanced studies begin to include Greek and Hebrew, for reading the classical works in the original language. New translations of classical works by the humanists would be studied. Universities have added new professorships and colleges with new subjects to the old curriculum. Poetry, rhetoric, history and moral philosophy—*studias humanitatis*—have taken their places alongside the traditional “seven liberal arts”—**grammar, speech, logic, arithmetic, geometry, astronomy and music**. You, as an educated adult during the Renaissance, would want your children and grandchildren to be educated for civic life and service, or for the cultured life of a prosperous business family.

Universities have been slow to change. Traditional medieval faculties of theology, medicine and law continue to give out doctorates to robed scholars. They have resisted the new humanist studies. When they refuse to add new courses, students and scholars would set up courses on the outside, paying the humanist professors with fees. Foreign students have organized colleges within the universities. Eventually, these new courses would be accepted as official. Universities would never seem to abandon all of the old, boring teaching methods, or their rigid requirements. Deep respect for tradition would leave many of the titles and terms and much of the organization of medieval universities far into the 19th and even 20th centuries. However, thanks to the humanists, education during the Renaissance would broaden to include more people and more subjects. Education would stimulate a new way of thinking about the classics and their use for “modern” life—in the Renaissance.



Contrast the attitude toward school children shown in this Renaissance drawing with the medieval image on the first page of this handout (p.136).

As scholarship received a boost from the expansion of printing and publishing, new works in Italian, French and English would appear alongside Latin and Greek editions. As these books circulate, their authors have become famous figures across Europe. Education reform has begun to spread to Germany, France, and England, and elsewhere on the continent. All of these changes are helping to provide a new way of looking at knowledge, and to encourage original ways of thinking about ideas and texts. The next steps would be learning to apply critical methods to looking at the natural world and science.

## STUDY QUESTIONS

1. What subjects did late medieval schools consider most important?
2. What subjects did medieval schools share with schools today?
3. What courses were similar to your own “language arts” classes today?
4. Describe the goals of education in late medieval Italy.
5. Which children were most likely to get a good education?
6. What did the humanists want to change, and how did they hope to reform schools?
7. Do you think today’s schools are similar to medieval schools? If so, in what ways?
8. What do the two illustrations tell you about changing social attitudes toward children?



A woodcut depicting a medieval school.

## HISTORIANS' VOICES

As you have read in the selection “Going to School in Medieval and Early Renaissance Italy,” schooling was not available to everyone. If you were a girl, you would receive just a little education—not even what we would consider basic elementary education today. If you were a boy, the amount of education you receive would have depended upon your ability, but more on whether your father could pay for it. From the primary level to the university, methods were quite rigid and old-fashioned. Textbooks were still handwritten, and the content was centuries old. How did you learn? You memorized, and it was quite rigid in method.

As the Renaissance dawned, humanists wrote and spoke for change in education, from bottom to top. Many of them even wrote new textbooks, for teaching languages especially. Things changed very slowly. The most important changes, however, were the goals of education. Now, education should serve the needs of free, sophisticated citizens. The cities of Italy strove to recover the lost glory of Rome and Greece.

The most important change for later generations, however, was the change in attitude about knowledge. Read the ideas of a historian writing about the Renaissance in the 1990s:

From Charles G. Nauert, Jr., *Humanism and the Culture of Renaissance Europe*, (Cambridge University Press, 1995):

*On scholasticism: [The] intellectual mastery of absolute truth, the metaphysical certitude exalted by medieval Aristotelian philosophy, was probably beyond human ability and certainly was not necessary for everyday living. It implies that the ultimate goal is not knowledge of truth, as the tradition of Thomas Aquinas taught. Instead, those humanists...declared that the purpose of human life is to make sound moral decisions during the process of daily living, a process in which human beings make choices based on probability, not certainty.<sup>46</sup>*

*On humanist education: “What it is hard for modern people to grasp but seemed obvious to Italians of the Renaissance is that education in humanistic subjects appeared practical while education in logic and natural science, the dominant subjects in the medieval liberal-arts curriculum, seemed to breed idle debate about purely speculative issues that were totally useless for real life. What was useful was not primarily knowledge about facts about nature (even if the facts were true) but the making of wise moral choices. This moral goal and the related need for skill in persuading others through aptly shaped speech and writing already found clear expression in Petrarch. Rhetorical skill and character development became and remained the advantages claimed for humanistic education. Although this conception of education does not constitute ‘a philosophy’, it implies some important opinions about human nature.<sup>47</sup>*

## STUDY QUESTIONS

1. Do you see any similarities between Charles Nauert’s ideas about the goals of education in the Renaissance and in the 1990s in the United States or other countries?
2. What areas of the curriculum do the humanists emphasize? Are they the same as those we consider most important nowadays?

46. Charles G. Nauert, Jr., in *Humanism and the Culture of Renaissance Europe* (Cambridge University Press, 1995), pp. 15-16.

47. Nauert, pp. 14-15.

## STORY PAIR

## SUQ AL-WARRAQIN: MARKET OF THE PAPER SELLERS

**B**aghdad, 10th century. Abd al-Rahman went to the paper-sellers' market every afternoon when the heat of the day had passed and the afternoon prayers were called from the minaret. Today, he had promised to take his granddaughter with him after lessons with her tutor. Young Rabiah hurried to put on her cloak when she heard his footsteps in the courtyard, and was standing ready at the door before he finished greeting her mother and father. Now Rabiah walked beside her grandfather through the narrow, wall-shaded streets from their home toward the market district. She loved the way he cut such a dignified figure, in his dark velvet coat, with a brocade tunic under it, topped with a turban of thinnest muslin on his head. He looked to young Rabiah like a cloud-topped mountain.

After finishing their afternoon prayers in the *masjid* (mosque), they met again in the street and made their way toward the *Suq al-Warraqin*. As they walked along the Tigris River, she heard the rhythmic pounding of the paper factory's large water-driven trip hammers, mashing the fibers to pulp. *Schunk! Ka-schunk!* Turning along one of the market district's many canals, they passed by many animals loaded with reams (bundles) of new paper. She saw the large wood-framed entrance of the *suq*.

As Rabiah and her grandfather passed through the great doorway out of the bright sunlight, she couldn't see for a moment in the dimness of the *suq*. She sensed the coolness and the smells of the place first—the smell of lamp-black produced for ink, of leather-bound books and parchment, book-binder's glue, and the special smell of paper, new and old. Next she sensed the sounds of the place—the hushed, muffled tones of voices in conversation—so unlike the bustle and raucous noise of the vegetable and meat markets, with the merchants calling out their wares. It was different even from the cloth market, though she loved that huge place for its jewel-like colors, soft, shining fabrics to touch, and the excitement of getting new clothes.

As Rabiah's eyes adjusted to the light, she first saw the shafts of light from the regularly-spaced domes, and the weaker light coming from the side doors spaced

along the long arcade. Walking under the domes, they felt a slight breeze, as the air was pulled up through these openings in the domes into the sky outside. Under their feet were tiles, and the walls were brick. Small shops were housed in wood-framed cubicles—each seeming only a little larger than the *mihrab* (prayer niche in the *masjid*)—along the walls, with seats for the customers on the arcade side of the counter.

Some of the shops held a single writer or calligrapher, bent over his work. The busiest shops had a master calligrapher and several assistants. Some burnished the paper smooth by rubbing it with polished agate stone. Some mixed ink and trimmed reed pens. The master plotted out the work in fine lines, then applied the final inking with practiced strokes. No one else would be trusted with the main inscription, the name of Allah, the Prophet, or a verse from the *Qur'an*. Under the eye of the master, other artists carried out the elaborate border illumination in colored pigments or gold.

In a nearby stall, decorated with samples of swirling designs, an artisan making colored papers bent over a shallow pan of water. Rabiah loved to watch these artists, who make designs on water and bind them to the paper as if by magic. On the water's surface he measured out droplets of blue, white and red inks in a pattern. Scarcely breathing, he then took a slender reed and stroked or wiggled it gently across the inks to make flower, leaf or swirl designs. Then, almost without disturbing the water's surface, he slipped the paper into the water under the design, and "pulled" the design off the water and onto the paper.



Marbelized paper design.

In a nearby arcade, the bookbinders stood working with their tools, surrounded on both sides and behind with stacks of books, sometimes discussing with a customer the details of a fine book. They would let the customer choose from multi-colored endpapers, different colors of leather binding, and brass stamps for decoration. One corner of the *suq* was almost like a jeweler's market, with gold leaf in boxes, silver sheets and gems for the wealthiest customers to encase their finest books.

Beside some of the doorways, a little knot of people clustered around the *ard hal*, (literally: "the one who explains a case") or notary, whose job was to write letters and documents for people who could not do it themselves. As they gestured and whispered, he scribbled rapidly on the paper in front of him, pausing to ink the pen, or rest it while he listened. Everyone knew that if you needed a notary to write a contract, legal papers, or a letter, you should be careful not to tell him more than you had to. He could write in a fine hand, and add flourishes and fancy Arabic expressions, but he also knew plenty of gossip about the families in the quarter whom he helped with private affairs and business deals.

Near one of the doorways, a reed mat was spread out, half in the sunshine. On it, a small group of boys sat cross-legged in a circle with their tutor, wooden boards and charcoal on their laps. They were learning to read and write. They recited after the tutor, then fell to their work in a jumble of reciting, mumbling and scratching on their boards. As the tutor turned to drink water from a clay jug in the shade, two boys tugged at each other's shirts and made a joke. The older boys kept to their work at grammar, writing with reed pens on sheets of paper. As Rabiah and her grandfather turned into another lane of the *suq*, she thought how lucky she was to take her lessons with her father's sister Sakinah in the fragrant garden of their home. Sakinah was a calligrapher herself, and had written out the whole *Qur'an*. She also knew mathematics, and wrote beautiful poetry, like grandfather, who had insisted on educating his daughters.

Rabiah stayed close beside her grandfather as they passed a corner where a visiting poet was reciting to a

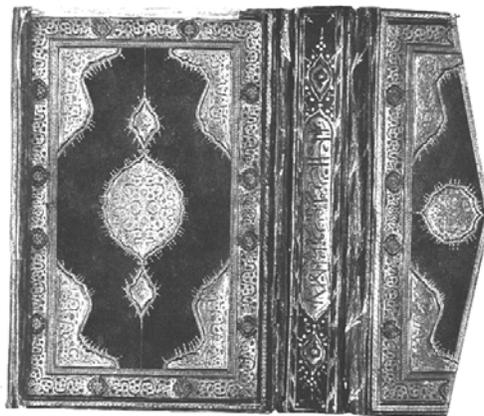
gathering of men. As the man's voice rose and fell with the rhythm of the famous old Arabic poem, grandfather's lips moved and his voice could be softly heard following along. Sometimes he might quietly utter a correction if the reciter slipped a word or grammatical inflection, and read Rabiah the correct verse. Grandfather was a fine poet himself, and had even recited one evening at the palace of a *wazir* (minister of affairs) on the east bank of the Tigris. Rabiah was proud to walk with him here, where he was in his element—a scholar and a writer respected among his kind. Almost everyone in the stalls looked up from their work, or stopped walking to say "*Assalaamu alaykum ya Aba Malik!*" calling him respectfully after the name of his eldest son, Rabiah's father. They called Rabiah *Bint Malik*, and greeted her quietly, too. She also liked to try her hand at poetry and decorate the words with a beautiful script.

The largest section of the *Suq al-Warraqin* housed shops selling all sorts of paper, thick and thin, creamy white and colored, cheap and so expensive that only the wealthiest officials even saw it. Rice paper and mulberry paper was very expensive, brought from China. *Qutni*, or cotton paper, was made in Baghdad, and sold in many varieties, from coarse and brownish to purest white and smooth. The finest *qutni* was brought from Samarkand. The smell of parchment made from sheepskin reminded Rabiah of the meat

market. Her grandfather told her that before *qutni* paper was made in Baghdad, parchment was most often used. He told how the Rightly-Guided *Khalifahs*—all companions of the Prophet, may God be pleased with them—used to write the *Qur'an* on leather. Grandfather picked out sheets of white *qutni* and discussed the price of a bundle with the *warraq* (paper-seller).

Rabiah asked to see a small box of tiny rolls on one corner of the counter. "What are those, sir?" she asked.

The *warraq* laughed and unrolled a long, thin, strip of white paper from a roll no "bigger than Rabiah's little finger. "That is "bird's paper"! When you wish to send a message by the wing of a carrier pigeon rather than by the plodding feet of a pack animal, wrap this around the pigeon's foot, cover it with a leather strap and launch him on his way from roof or hilltop."



Gold-stamped leather bookbinding.



Two warraqin.

“I wish I could write to my dear brother,” sighed Rabiah. “He has traveled on business far away past Basra to the sea, but a pigeon knows no better just where he is than we.”

“He will return soon, God willing, and bring you a beautiful trinket,” answered Grandfather. “Let us move along and see if the booksellers have something new.”

Rabiah and her grandfather made their way through the winding arcades toward Grandfather’s favorite part of the *suq*. Rabiah did not quite understand all that went on here, as she stood at his side while he met friends, talked to booksellers and engaged in long conversations over a book.

Grandfather stopped at a stall to ask this *warraq*—bookseller—about a book. The man was dressed in dignified clothes that had surely seen better days—a little frayed at the edges. His eyes were crinkled at the corners, and his face was about the color of his books. He had a well-trimmed, gray beard and a thoughtful, kindly look. He was shaking his head sadly at Grandfather’s question.

“Unfortunately, *ya Aba Malik*, I was unable to get the book you asked for on astronomy from the *suq* in Damascus. The author is of course quite famous, and this is his latest work. A wealthy buyer snatched it from under my nose. I was bidding with the seller, and intended to pay what I could, but this gentleman kept raising the price higher each time I bid. The other dealers soon dropped out, leaving him and me. I tried my best, but he won out. Afterwards, I went to him and asked what about the book made him want it enough to bid so high. He replied that he had just purchased a new house and had a large library room to fill. He wanted to ornament his collection with the very book you desire,” sighed the *warraq*.

“Ah, hazelnuts are not for those with no teeth!” said Grandfather wryly. “Too bad he probably knew nothing of the knowledge between its covers, being more interested in the covers themselves!” With that, he took leave of the seller, and he and Rabiah made their way slowly out of the *suq*, so as to be home by the call for the sunset prayer. ❖

This place was the heart of literary life in Baghdad. In the *Suq al-Warraqin*, authors and booksellers mingled as people who love words, ideas and gathering knowledge of all kinds from near and far. An Islamic expression says, “Wisdom is the lost property of the believer.” Wherever you find it, it is yours to keep. Scholars visiting from other cities of Syria or Khurasan were certain to come here. Scholars from al-Andalus (Muslim Spain) sent agents to this great bazaar to bring the latest knowledge back to their distant, western outpost. Books from other places found their way to the *Suq al-Warraqin*, too, especially since book-dealers sent agents to travel in search of manuscripts for special clients. In the *suq*, you could learn what books were found in other places, and keep up with the latest work by a well-known scholar, literary figure or poet. Many sorts of writers came here to pursue their profession every day. People came to have a poem composed for an occasion. Scholars working on a pet research project, as well as would-be writers—also called *warraq*—earned money copying out manuscripts by other writers. A *warraq* whose stall was empty may be working in the home of a scholar, helping the famous man to compose or illustrate a book on mathematics, philosophy or history. Biographers even came to the *suq* to collect information about the lives and works of well-known writers for their encyclopedias of prominent Arabic scholars. One such book, called the *Fihrist* of Ibn al-Nadim, contains information about the *Suq al-Warraqin*. The 8th, 9th and 10th centuries were exciting times to be a scholar or writer in Baghdad, when all fields of literature were booming. Other Muslim cities, of course, also had such *Suq al-Warraqin*. So much literary activity passed through the

*Suq al-Warraqin* that it became a place much greater than its work of selling paper, writing supplies and books. It was a place where ideas were brought to be shared with the world.



## STORY PAIR

## A DAY AT ALDUS MANUTIUS' PRINT SHOP

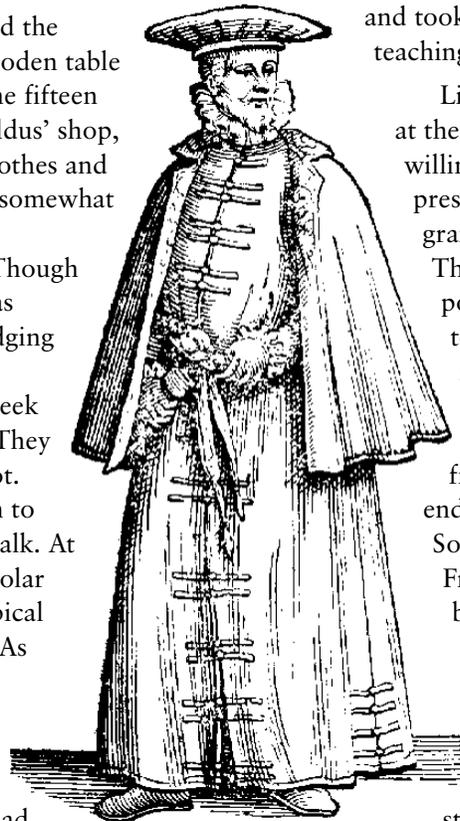


Venice, early 16th century. Francesco wiped the sticky black ink from his hands on a small, blackened rag. It was a vain exercise, since both the rag and his hands were about the same color by now. Francesco, a boy of thirteen years, had already been at work since sunrise. He and the other two workers at the printing press were just finishing a small stack of printed leaves—one of the odd jobs any printer had to take on—containing the speech of a French diplomat visiting the Venetian court. Printing the speech at Aldus Manutius' famous Venetian print shop would earn the ambassador points at home. With a final squeal of the press' wooden screw, the last leaf was pulled out of the frame and put aside to dry.

The two men and Francesco joined the others already eating at the simple wooden table at the back of the shop. There were the fifteen workers who ran the five presses in Aldus' shop, dressed in simple, ink-stained work clothes and aprons. The writers and editors wore somewhat finer attire, befitting their respectable professions as scholars and teachers. Though their clothing looked a bit worn, it was trimmed with velvet or a bit of lace edging here and there. The editors conversed energetically in a babble of Italian, Greek and Latin phrases, all flung together. They worked hard, but they were a jovial lot. Though the scholars paid no attention to Francesco, he loved to listen to their talk. At one end of the table sat the Dutch scholar Erasmus, wearing woolen clothing typical of his Northern European homeland. As he ate, he spoke about his work, and took in the comments of the other scholars seated at the table. The meal was not a leisurely affair for anyone in the shop. Aldus Manutius had long since finished, and was attending to one of the many daily visitors at the front. After a blessing, Francesco hastily wolfed down a breakfast of bread, fruit and cheese, washed down with watered wine.

Francesco was an apprentice, and proud to be there, though his work as “inker” was the lowliest job in the shop. He was there out of love for printing and learning, and in hopes of sharing someday in the work of a scholar, a humanist of Renaissance Venice. Though he was from the countryside near Padua, he had found his way to the city through a relative—a supplier of sheepskins for workshops on whose parchment (vellum) books were printed for the wealthiest customers. Through a combination of the boy's luck, keen listening, hard work and humble, intelligent questions, Aldus himself had taken an interest in Francesco. It was rare for a boy of poor family to get an education, but

Francesco drank in the air of learning around him, and took advantage of Aldus' love for teaching.



Costume of a Venetian shopkeeper.

Like the other workers, Francesco lived at the print shop. Discovering the boy's willingness to learn, Aldus had made him a present of a smudged copy of the Latin grammar book he himself had written. This gift was Francesco's proudest possession. Learning Latin was the key to an education in Renaissance Italy. A mere boy would not dare disturb the master on his own, but whenever Aldus discovered Francesco reading from it in a spare moment at day's end, he always cast him at least a smile. Sometimes he even stopped to offer Francesco a few minutes of help, or a brief lesson. Francesco was lucky to have the master teach him anything at all, since Aldus had counted princes among his pupils—even the Doge (ruler) of Venice's nephew! As a youth, Aldus had supported his own studies at the university by tutoring the sons of wealthy students. Francesco knew that Aldus had a soft spot for young, ambitious students; Aldus Manutius had written in the dedication page of his grammar book, *“I have decided to spend all my life in the service of my fellow-men. God is*

*my witness, I desire nothing more than to do something for them...*" The dedication warned teachers that they would "form the character of boys who would become lawyers and philosophers, rulers and princes, bishops and even popes." They must "not bore or brutalize their pupils, but lead them, through the study of the best authors, to knowledge of good literature and upright conduct." Perhaps Francesco could never hope to be a prince, but he might, with the right connections, become as respected and learned as the scholars who worked as editors and proof-readers in Aldus' shop.

In spite of his daydreams, the boy kept his mind on his work most of the time. The men who worked the five, noisy presses with him didn't talk much. The pace of work in the shop was mechanical, fast and constant. Printing a page required many steps. First, a writer brought in a *manuscript*, a document "written by hand." Aldus traveled often to find ancient books in Greek or Latin. He hired scholars to correct the old copies, and use their knowledge to fill in words where ink was faded and pages were torn. Sometimes they compared two or three handwritten books to print one edition.

When the master and the scholars were satisfied, a style of type was chosen. Aldus Manutius was famous for this. In the first century after Gutenberg's invention of moveable type, printers and type cutters experimented with new *founts*, or type styles (called "fonts" today). Aldus employed an excellent type-cutter, Francesco Griffo. Griffo used geometry to draw the exact shape of the letters, designing the whole alphabet. Then he filed the ends of hard steel punches in the shape of each letter, lower case and capital, plus accents and punctuation. The shop spent years and many *ducats* (Venetian gold coins) on this work. He copied beautiful and fashionable styles of handwriting for his founts. Even the noblemen of Venice who dropped in would give their opinions on the work. And of course, spies from other shops would do their best to find out what Aldus was up to. After shaping it perfectly, the finished punch was struck into a soft bar

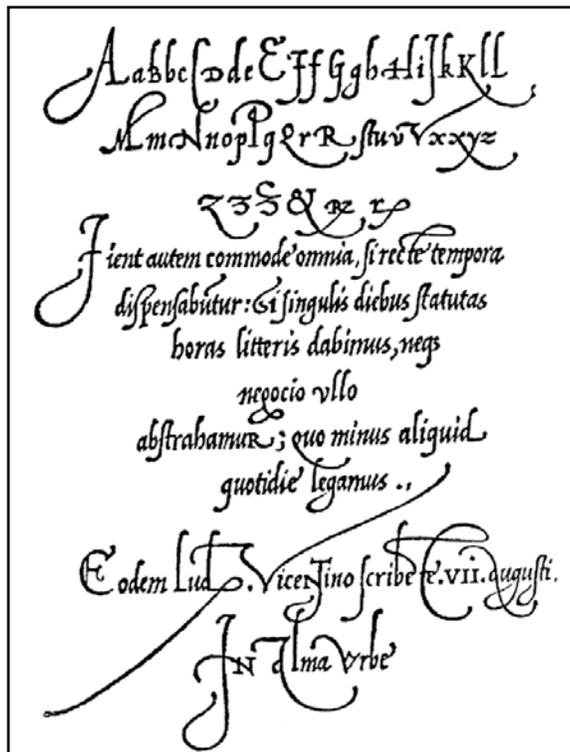
of copper to make a mold. The mold was filled with a melted alloy of other metals to make *sorts*, the many little pieces of type that were "sorted" into the compositor's wooden trays.

The **compositor's** job was to "compose," a page by setting the type sorts in a wooden frame to make the text. Francesco was always amazed how fast the compositor worked. Like lightning he reached for the letters that made each word. He clicked them into place in neat rows. He checked his work against the manuscript by reading the text backward, in mirror image to the printed page!

The **press operator** put the typeset page onto a frame on the press, then Francesco, the **inker**, applied printer's ink to the metal surface of the letters, using a fat, round leather pad with a wooden handle. He had learned to put on just enough to make the letters clear, but not enough to fill up the letter spaces or splatter on the page. If Francesco was not careful, he could ruin the page. Paper was very expensive, and couldn't be wasted. Finally, the operator inserted paper into another frame, and turned the press' handle, screwing down the plate to "press" the paper onto the type, leaving an impression of typed words on the paper. Sometimes illustrations were added using a woodcut. Aldus or the proofreaders checked the **proof** (first copy of each page) before the pressmen made hundreds of copies that

would be sorted, sewn and bound in leather covers by the bookbinder.

Thus, the print shop would be filled with a din and whirling with activity all day long, and sometimes by lamplight, far into the night. The shop worked on several books at once. During those days, Erasmus worked on a book of Latin sayings—*Adagia*—right in the shop. He sat in one corner of the print room, writing from memory or consulting with others, handing the new text page by page to the compositor. Erasmus was "too busy," as he said, "to scratch his ears." Aldus sat quietly in another corner, took no time during the day to grab a bite or even



The first italic typeface, made in Aldus' shop in 1501.



Early type-cutter pouring a fount.

to wipe his nose, checking the proofs yet again, writing corrections to new editions, and waving off protests with a stern, “I am studying.”

As if the printing of books was not enough, Aldus’ shop was a meeting place for writers, scholars and nobles who loved—and paid

handsomely for—the newly revived classical works that Aldus put out. Some of them fancied having their names on a book, too. Aldus complained about his own success and the pace of work that jangled his nerves:

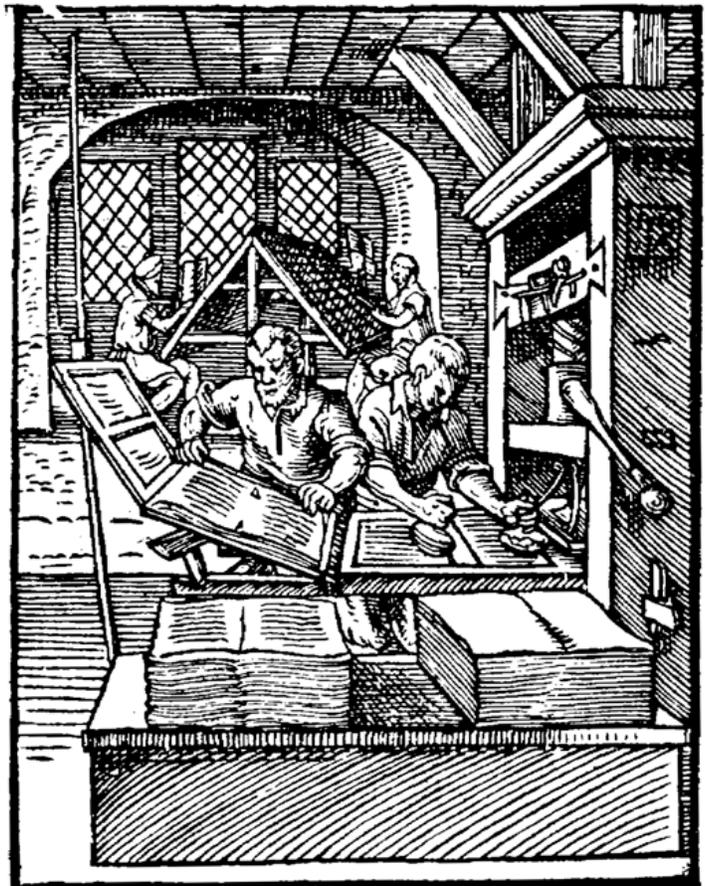
*“Apart from six hundred others, there are two things in particular which interrupt my work. First, the frequent letters of learned men which come to me from every part of the world and which would cost me whole days and nights if I were to reply. Then there are the visitors who come, partly to greet me, partly to see what work is in hand, but mostly because they have nothing better to do. “All right,” they say, “Let’s drop in on Aldus!”...I say nothing of those who come to recite a poem to me or a piece of prose, usually rough and unpolished, which they want me to publish for them.”*

He even hung a notice on the door of his private study in the shop:

*Whoever you are, Aldus asks you again and again: if there is anything you want from him, please state your business quickly and get on your way, unless you are going to take his work on your shoulders, as Hercules did for weary Atlas. There will always be something for you, or for anyone else who comes along, to do.*

Sometimes the master argued with the workers, whom he did not generally trust. Some had left to work in other shops, taking his trade secrets, or even books, with them. Printers all over Venice tried to imitate Aldus’ respected work, and make cheaper copies to undersell Aldus’ books in the market. Francesco, however, was loyal, studious and trustworthy. He had a firm place in the shop, though there were plenty of inkers wanting work. Francesco passed his days, absorbing what he could, earning a few coins—enough to take a present home to his family once a year on visits, and enough to save a little.

One day, Francesco’s press had to stop for a few hours while some of the compositor’s letters were recast in metal. A shipment of books was ready to be sent to the booksellers stalls in another part of Venice. Aldus winked to Francesco that he could accompany the agent. Francesco smiled, hiding some of his excitement. Going out of the shop, he slipped into the bakery next door, bought himself a small loaf, and greeted a tailor standing in his shop door. As he tucked the bread under his tunic, he looked up at the Pisani palace across from Aldus’ house and shop. The church of San Agostin was nearby. A minute’s walk away were other great houses of



Can you identify the occupations in this 15th-century woodcut of a print shop?

Venice's nobles, not far from the main business district, the Rialto. The boy helped load bundles onto the boat, and sat down. The boatman used a long pole to push the gondola along the canals leading toward San Paternian and San Zulian, where the Venice's book shops clustered. When they arrived, Francesco helped carry the books along the street called the Merceria toward the famous square, Piazza de San Marco.



Though he had no time to browse, he hastily surveyed the many bookstalls. There were stalls specializing in law, medicine, or religion. There were many stalls with cheap copies of romances, poems and religious writings in Italian for the growing class of popular readers. With print shops popping up all over, even a youth like Francesco could buy something to read with a few copper coins, and peddlers carried them into city and countryside in bags slung around their necks.

The shop where they were to deliver the books specialized in Greek and Latin literature. The boy knew that Aldus' books were not as cheap as some editions of the classics, costing a gold ducat or more, but he thought proudly how Venice's leading citizens carried them fashionably about. While Francesco admired the shelves of fine books, the bookseller and Aldus' agent looked over the new shipment and haggled over the price. The seller argued, "The market suffers too much competition. I am forced to cut prices." The agent argued, "What with Aldus' books in demand even far north of the Alps in cities all over Europe, you can afford to pay what the books are worth." The two men finally shook hands in agreement. They saluted each other as they left. Francesco and the agent headed back to the shop. "Better hurry now," he thought, "the press must be ready to begin printing again." ❖

48. The sources for authentic historical details in this fictionalized account were Martin Lowry, *The World of Aldus Manutius: Business and Scholarship in Renaissance Venice*, (Ithaca: Cornell University Press, 1979), as well as passages from John Hale, *The Civilization of Europe in the Renaissance*, (New York: Atheneum, Macmillan Publishing Co., 1993).

Aldus Manutius was perhaps the most famous printer of the 16th century. Along with many print shops working in the first century after Gutenberg's invention, Aldus helped to change the way people read, making more place for literature in their lives. For example, a university scholar of the classics had to rest his large, heavy books, called folios, on a wooden bookstand. Aldus produced popular editions of the classical works in small, octavo-sized editions, that courtiers, diplomats and businessmen could carry, reading in waiting rooms, in the gondolas, or slender taxi-boats that served in Venice's canals as carriages did in the streets of other cities.

As the story tells, the famous Dutch Renaissance scholar Erasmus worked directly in Aldus' print shop. The book he produced there was a collection of Greek and Latin maxims, or sayings, with Erasmus' witty and telling comments on each one. Working with one of the greatest teams of Greek and Latin scholars ever assembled, Erasmus' collection grew from 800 to over 3000 maxims, serving generations as a guide to the study of Latin and Greek language and literature, and as a ready reference. By quoting classical maxims, or sayings from *Adages*, a Renaissance person could appear learned and fashionable. The *Adages* helped spread Erasmus' literary reputation throughout Europe.

Venice was a busy commercial city, one of the first and most important centers of the Renaissance. During Aldus' life in the service of learning, he thrived and suffered with the fate of Venice, experiencing wealth and success, but also loss, plague and war.<sup>48</sup>



An Italian nobleman posing with a fashionable, small octavo edition of a classical book.

**STUDY QUESTIONS**

1. a) List the different professions that Rabiah and her grandfather witnessed in *Suq al-Warraqin* and tell what they produced. How did each contribute to the love of ideas and literature?  
b) List the various people who were employed in Aldus Manutius' print shop and describe their jobs. How did each contribute to making a high-quality book?
2. What role does travel play in each of the stories? For what purpose do the characters travel, and where do they go?
3. Compare the work of the Arabic calligrapher with the work of Francesco Griffo in Venice. What do they have in common, and how do they differ?
4. Compare the *warraq* in 10th-century Baghdad with the editors working in Aldus' shop. What did you learn about their values from their clothing, their occupation, and their interests?
5. How do Rabiah and Francesco get their education and learn about the ideas and literature of their time?
6. **Parallels to Our Time:** Think of a place that you have visited or learned about that plays a similar role in our modern world to Baghdad's market of the paper sellers, and Venice's print shops. Write a piece that describes the place and the people who work in and visit it. Tell how it helps to spread ideas, information or literature in modern or traditional ways.





# HISTORICAL SLEUTHING



## IS THIS DOCUMENT REAL OR FAKE?

### Directions for Activity

- Copy and assign the short reading on historical sleuthing and textual criticism. You may choose to discuss it before or following the analysis of the document excerpts, mentioning the importance of this skill for journalists who decide on the accuracy of their sources, or publishers of documents like *NY Times* decision to publish the “Pentagon Papers” or similar decisions to publish a story or throw it into the trash. Art historians help museums to avoid buying fakes, but not always with success (recall the recent Metropolitan Museum show on real and fake Rembrandt paintings).
- Cut the activity sheet in strips, with one document on each slip of paper. Divide the class into pairs or small groups and give each group one document to analyze. Allow between 7 and 15 minutes for completion of answers.
- Discuss the students’ answers and how they arrived at their results. Analysis of Documents #5 and #6 should emphasize possible ways of checking the chain of transmission, and the criteria these early recorders of Muslim history applied. Document #7 provides an opportunity for students to think about common mistakes that can creep into historical works, either because of faulty evidence or sources, or due to the historian’s prejudice or carelessness.
- As an extension activity, students can “doctor” historical documents and try to stump each other, or research the existence of forged and faked documents.



# HISTORICAL SLEUTHING



## IS THIS DOCUMENT REAL OR FAKE?

During the Renaissance, European scholars became exposed to a great deal of new and older knowledge found in translations, books from libraries outside of Europe, and manuscripts that had been “lost” in the storerooms of places like castles, churches and monasteries. An important aspect of humanism was the development of skills used to analyze these texts, examining them for accuracy and for other clues about their meaning, or the meanings “between the lines.” Humanist scholars realized the importance of knowing about the authors’ life and times. They developed a sense of history, of dating events and thinking about change within a culture like Rome or Greece, or within a language. One famous church document that was discovered to be a forgery during the early Renaissance cost the Church a lot of credibility. It was the Donation of Constantine. The scholar who discovered it used as evidence a single word—one that had not been known. The word was one used in medieval times, but unknown at the time the document was supposed to have been written, when Constantine ruled. It was a much later forgery. In addition, humanists turned their attention to the quality of translations. They looked at Latin translations that had been made centuries earlier from Arabic. Some of these had been based on original Arabic books, but others were translations of classical Greek works. Some of these had come to Arabic through Persian or Syriac. Of course, many errors had slipped in. Greek manuscripts and Greek scholars from Constantinople were sought after to find the way back to the original ideas of Plato, Aristotle and others.

We learn from reading the works of Muslim scholars that they also went through a similar process of scrutinizing the works that came into their hands. The tradition of textual criticism in Muslim culture received a great boost from the study of the *Qur’an* and its interpretation, and from the study of the *hadith*, or words and deeds of Prophet Muhammad. Muslim scholars developed a system for evaluating whether a *hadith* was genuine by looking at the chain of transmitters, or people who had passed it down orally. Were they trustworthy? Could they have met and spoken together? How does the content compare to other versions? In developing interpretations of the *Qur’an*, scholars studied the history of Muhammad’s community, and the circumstances in which each verse or chapter of the *Qur’an* had been revealed. They developed rules of logic for making judgments, like using standards for analogies to apply the meaning of a verse or a *hadith* to similar situations. They studied grammar and lexicography (study of words and word meaning) of the Arabic language. These skills became part of the tradition in which Muslim scholarship developed. The skills and standards used in safeguarding the accuracy of religious knowledge were later applied to writing history, translating and analyzing texts from other languages and comparing the efforts of various scholars. Experiments were conducted to test scientific ideas and, translations were compared. Travel to find out the truth first-hand was very common among Muslim scholars.

Textual criticism like that described in the examples above is still one of the most important tools that historians use. When they find a document or artifact from long ago, whether a piece of literature or artwork, a painting, an official document or letter, they go through a process to discover (a) whether the item itself could be from the time or from the culture or person in question, and (b) whether the information it contains is true or fake. The skill of “historical sleuthing” is very much like detective work done at the scene of a crime. Do the pieces of evidence fit together? Could the witnesses really have been present at the scene? Are there any small details that show how something said or written could not be true? Do dates and chronological order add up?



On the pages below, we have assembled some quotations from historical documents, some real and genuine, some real but containing statements that couldn't be true and some “doctored” to include evidence that would make you, as a historical sleuth, come to the conclusion that they are fakes. On the lines below each of the following quotations, write **“GENUINE”, “REAL BUT FLAWED”, OR “FAKE.”** Then write your reasons for reaching your conclusion.

**Document 1**

From *The Itinerary of Ludovico do Varthema* of Bologna  
[printed in 1510, a travel account]

**Chapter concerning the Temple of Mecca**

In another part of the temple is an enclosed place in which there are two unicorns, and these are shown as very remarkable objects, which they certainly are. I will tell you how they are made. The elder is formed like a colt of thirty months, and he has a horn in the forehead which is about three yards long. The other unicorn is like a colt of one year, and he has a horn about four palms long. The color of the animal resembles that of a dark bay horse, and his head resembles that of a stag. His neck is not very long, and he has some thin and short hair which hangs on one side. His legs are slender and lean like those of a goat. The foot is a little cloven in the fore part, long and goat-like, and there are some hairs on the hind part of the leg. Truly this monster must be a very fierce and solitary animal. These two animals were presented to the Sultan of Mecca as the finest things that could be found in the world at the present day, and as the richest treasure ever sent by a king of Ethiopia, that is, a Moorish king. He made this present in order to secure an alliance with the Sultan of Mecca.

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**Document 2**

Part of a letter from Marco Polo to Ibn Battuta, dated 1305

...Having returned to my home in Italy after a life of adventure, I heard of your famous journey in a similar part of the world, and as I have reached an old age like yourself, and think to write down my experiences so they can be made known to people down the ages, I thought to take up a correspondence with your respected self for the purpose of comparing our experiences in faraway lands. I pray that the difference in our ages and beliefs will not hinder a fruitful discourse between us...

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**Document 3**

Papal Bull of Pope Nicholas V, issued in 1454

Our joy is immense to know that our dear son, Henry, Prince of Portugal, has carried into the most distant and unknown countries the name of God...if by his effort the Ocean can be made navigable as far as India, which, it is said, is already subject to Christ, he will induce them to come to the help of the Christians of the West against the enemies of the faith. At the same time, he will bring under submission...the pagans of the countries not yet afflicted with the plague of Islam....he in his fast caravels, searched without repose the meridional regions to the Antarctic pole across the oceans, and after having traversed numerous seas reached at last the province of Guinea and from there pushed further to the mouth of the river known as the Nile....We, after careful deliberation, and having considered that we have by our apostolic letters conceded to King Affonso, the right, total and absolute, to invade, conquer, and subject all the countries which are under the rule of the enemies of Christ, Saracen or Pagan, by our apostolic letter we wish the same King Affonso, the Prince, and all their successors, occupy and possess in exclusive rights the said islands, ports and seas undermentioned, and all faithful Christians are prohibited without the permission of the said Affonso and his successors to encroach on their sovereignty...

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 **Document 4**      A story from Abraham Lincoln's life

Once, before Lincoln was president, he made a speech in New York City. It was an important speech, and Lincoln spent a long time writing it. And he got dressed up for it, wearing a brand-new suit. Before giving the speech, however, he forgot to remove his ball-point pen from behind his ear. The pen remained there all through his speech. When Lincoln became president, a friend reminded him about the speech and the pen behind his ear. "Yes, I was absent-minded," said President Lincoln. "And that reminds me of the story about an absent-minded Englishman: When he went to bed he put his clothes into bed and threw himself over the back of a chair."

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 **Document 5**      A passage from the *Sirat Rasul Allah* (Life of Muhammad),  
by Muhammad Ibn Ishaq (704-768 CE)

Muhammad ibn Jafar ibn al-Zubayr from Urwa ibn al-Zubayr from Abdul Rahman ibn Uwaymir ibn Saida told me, saying, "Men of my tribe who were the Prophet's companions told me, "When we heard that the Prophet had left Makkah and we were eagerly expecting his arrival we used to go out after morning prayers to our lava tract beyond our land [outside the city of Madinah] to await him. This we did until there was no more shade left and then we went indoors in the hot season. On the day that the Prophet arrived we had sat as we always had until there being no more shade we went indoors and then the Prophet arrived. The first to see him was a Jewish man. He had seen what we were in the habit of doing and that we were expecting his arrival and he called out at the top of his voice, "O tribe of Qayla, your luck has come!" So we went out to greet the Prophet, who was in the shadow of a palm tree with Abu Bakr who was of like age. Now most of us had never seen the Prophet and as the people crowded around him they did not know him from Abu Bakr until the shade left him and Abu Bakr got up with his mantle and shielded him from the sun, and then we knew."

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**Document 6** From Ibn Sa'd (734-775 CE), *Kitab al-Tabaqat al-Kabir*  
(The Great Book of the Generations)

Abu Bakr ibn Abdullah Ibn Abi Uways al-Madani informed us on the authority of Sulayman ibn Bilal, he on the authority of Safwan ibn Sulaym, he on the authority of Abdallah ibn 'Amr; he said" "I asked the permission of the Prophet, may Allah bless him, to note down what I heard from him. He [Abdallah] said: "He permitted me, and subsequently I began to write down [his utterances]. Abdallah named his note-book, al-Sadiqah (Trustworthy)."

Ma'n ibn 'Isa informed us; (he said): Ishaq ibn Yahya ibn Talha informed us on the authority of Mujahid; he said: "I saw a note-book with 'Abdallah ibn 'Amr ibn al-'As, and inquired about it. Thereupon he said: "It is al-Sadiqah which contains whatever I heard from the Prophet of Allah, may Allah bless him. And there was no intermediary between him and me."

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**Document 7** From Ibn Khaldun (1332-1406 CE), *Al-Muqqadimah* (An Introduction to History)

The writing of history requires numerous sources and much varied knowledge. It also requires a good speculative mind and thoroughness, which lead the historian to truth and keep him from slips and errors. If he trusts historical information in its plain transmitted form and has no clear knowledge of the principles resulting from custom, the fundamental facts of politics, the nature of civilization or the conditions governing human social organization, and if, furthermore, he does not evaluate remote or ancient material through comparison with near or contemporary material, he often cannot avoid slipping and deviating from the path of truth. Historians, Qur'an commentators and leading transmitters have committed frequent errors in the stories and events they reported. They accepted them in the plain transmitted form without regard for its value. They did not check them with the principles underlying such historical situations, nor did they compare them with similar material...Also they did not probe with the...help of knowledge of the nature of things, or with the help of speculation and historical insight....This is especially the case with figures, either sums of money or of soldiers, whenever they occur in stories...They must be controlled and checked with the help of known fundamental facts...For example, al-Masudi and many other historians...

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## ANSWER KEY

### HISTORICAL SLEUTHING: IS THIS DOCUMENT REAL OR FAKE?

**Document 1** From *The Itinerary of Ludovico do Varthema* of Bologna

**REAL BUT FLAWED.** This passage is quoted from *Travelers in Disguise: Narratives of Eastern Travel* (John W. Jones, transl., Harvard University Press, 1963). The document by Ludovico, addressed to an Italian noblewoman, was one of the most popular travel accounts of the 16th century. For historians, however, one of the main questions in reading a travel account is to look for evidence of whether the traveler actually went where he said he did. Here, the writer tells of a mythical animal kept in the Sacred Mosque at Makkah. Everything about the beast is fanciful, but what does this mean? Could Ludovico have been to Makkah, but romanticized his account to capture his readers' fancy? Might he have actually seen an Arabian oryx, which looks much like the beast he describes, except that it has two long, slender, twisted horns that grow close together on its head? Or, might Ludovico have traveled to Cairo or Alexandria, where he sat in the local *khan*, or inn, and listened to tales of travel from merchants and pilgrims? Finally, is it possible that he used the travel account of another, unknown writer to weave his own story? In general, historians have found a mixture of possible fact and fantasy in Ludovico's book. Similarly, historians even today read accounts like that of Marco Polo, using historical sleuthing to distinguish fact from fantasy.

**Document 2** Part of a letter from Marco Polo to Ibn Battuta, dated 1305

**FAKE.** Marco Polo and Ibn Battuta, both famous medieval world travelers, could not have corresponded at that time. Marco Polo (1254-1324) died one year before Ibn Battuta (1304-1354) set out on his journey.

**Document 3** Papal Bull of Pope Nicholas V, issued in 1454

**GENUINE.** This document is quoted in *Asia and Western Dominance* (K.M. Panikkar, Collier Books, 1959/1969, p. pp. 26-27). This is tricky detective work, because students might conclude that since the geographical information about the Nile and the Antarctic pole, as well as notions about Christian groups in the East that did not exist, might make it seem fake. In this case, however, the document granting to the Portuguese throne all of the lands and seas of the East that they might discover was quite genuine and authentic. Pope Nicholas, however, and the secretaries who drafted the document, had a very faulty understanding of geography.

**Document 4** A story from Abraham Lincoln's life

**FAKE or REAL BUT FLAWED.** The story is adapted from *The Abraham Lincoln Joke Book* (Beatrice S. de Regniers, Scholastic, Inc., 1965). The presence of a ball-point pen [our addition] in the story would mean that it must be fake, or the teller unknowingly put an item in the story that had not been invented in the time of Abraham Lincoln. In fact, many true, fake and flawed stories and jokes circulated about Abraham Lincoln because he was very popular.



- ☰ **Document 5** From the *Sirat Rasul Allah* (Life of Muhammad) of Muhammad Ibn Ishaq (704-768 CE)

**GENUINE.** The passage is quoted from the translation by A. Guillaume (London: Oxford University Press, 1955), p. 227. It is included to show how early Muslim historians had already established the tradition of verifying the sources and evidence about historical events of importance by means of the chain of transmitters, which developed as a means for verifying the *hadith*, or sayings and deeds of Prophet Muhammad. The event being described is the story of the Prophet's arrival in Madinah from Makkah, the famous Hijrah (migration), the event with which the Muslim calendar begins.

- ☰ **Document 6** From Ibn Sa'd (b. 734-775 CE), *Kitab al-Tabaqat al-Kabir* (The Great Book of the Generations)

**GENUINE.** The passage is quoted from S. M. Haq and H.K. Ghazanfar's translation of the famous book of biographical notices on the companions of the Prophet (Karachi: Pakistan Historical Society). It is included both to show the practice of verifying the authority of a statement in oral or written form by naming the chain (or *sanad* in Arabic) of people who transmitted it. In this case, the biographical notice concerns one of the respected companions, and how he received permission from the Prophet to write down what he said, later known as the *hadith* (as distinguished from the verses of the *Qur'an*, which Muslims believe is the literal word of God revealed to Prophet Muhammad and transmitted by him to others). There were numerous companions of whom it was documented that they wrote down the *Qur'an* and/or the sayings and deeds of the Prophet, in addition to those who memorized and transmitted them orally.

- ☰ **Document 7** From Ibn Khaldun (1332-1406 CE), *Al-Muqqadimah* (An Introduction to History)

**GENUINE.** The passage is quoted from Franz Rosenthal's translation of the work (Princeton University Press, 1967), p. 11. It is included to provide an example of a famous Muslim historian of the century before the European Renaissance, who called for and practiced textual criticism as a way of avoiding errors in historical writing.



## WHAT'S WRONG WITH THIS PICTURE?

Art sleuths use critical techniques to date works of art and to determine if they are forgeries. Art experts sometimes rely on knowledge of when certain technologies were invented and displaced older ways of doing things. Look at this "altered" version of a real Renaissance woodcut by Hans Sebald Beham, *The Children of the Planet Mercury*, made around 1531 CE. The picture was originally designed as a humorous look at the arts and crafts. Look for items added by a mischievous 20th-century person. Write the items on a piece of paper, and have fun.



# EXPLORING VALUES ACROSS CULTURES AND IN OUR TIME

## SEGMENT 2: EDUCATION AND SCHOLARSHIP

**W**hat are values? The dictionary defines *values* as principles, standards, or qualities considered worthwhile or desirable. Use the list below and fill in additional values discussed in Segment 1 of this unit. Investigate the cultural values discussed in this segment from the following points of view:

- ✿ How were these values expressed in European Renaissance society? What events, cultural products and personal stories (biographies) are related to these values? What is the relationship between these values and religious beliefs and ideas in Renaissance Europe?
- ✿ How were these values expressed in Muslim society? What events, cultural products and personal stories (biographies) are related to these values? What is the relationship between these values and religious beliefs and ideas in the Muslim world?
- ✿ Do these values find expression in 20th-century society? If so, what recent events, cultural products and personal stories (biographies) are related to these values? What is the relationship between these values and religious beliefs and ideas in modern life?

**List some of the cultural values discussed in Segment 2. Here's a list to help get you started:**

1. The relationship between scholarship and prosperous cities
2. The importance of trade in helping the spread of ideas
3. Respecting the learning of other, and of ancient cultures
4. Careful critique, observation and experiment in discovery of new knowledge
5. Preserving knowledge in material form
6. Education as part of religion, and religion as part of education
7. The value of individual spiritual experience, and belief that learning increases faith.

■ Identify other values discussed in the segment and write them in, below.

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9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
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15. \_\_\_\_\_



## ADDITIONAL SUGGESTIONS FOR STUDENT ACTIVITIES

1. Using the “Paper Trail” as a model, have students research and map the geographic/chronological spread of another product or technology around the world, such as gunpowder, the lateen (triangular) sail, or the similar spread of a food product like peanuts, maize, rice or potatoes. Discuss examples of the evidence listed in the research sources as proof that an item arrived somewhere at a certain time in history. (Examples: use of a new word in documents or literature, picturing the item in artwork, archaeological evidence in the ground, eye-witness accounts by travelers, etc.)
2. Bring to the class a quality, bound book and have the students explore its “anatomy.” What parts does it have, how is it put together, how is the cover made, and what is the order of steps in its manufacture? This analysis should be based solely on observation. After the students have had time to speculate, show them a book from the library that explains bookbinding. As an art/culture activity, the class may do some writing and bind it into a book. A good candidate for such publication, from this unit, would be stories about modern cultural places modeled on the *Suq al-Warraqin* and Aldus Manutius stories, pp. 142-148.
3. **Wisdom of the Ancients:** Do we in today’s advanced, information-packed society still have use for the wisdom and learning of ancient or more recent historical cultures? Discuss this point and have students think of examples from literature and learning that are still popular and respected today. [Holy scriptures from various religious groups, moral teachings and expressions, Aesop’s Fables, etc.] Do we still use some of the scientific developments and technologies of long ago? Which ones? [paper, the “simple machines,” calendars, bread-baking, glass-making, constellations in the sky, arithmetic and mathematics, “democratic” and other ideas about government, many laws like the 10 Commandments, etc.]
4. Using the feature “Going to School in the Middle Ages and Early Renaissance Italy,” have students describe the points in medieval schools that they find best and worst. Identify things that have changed, and tell what medieval and early Renaissance schools had in common with our own modern schools. How do the arrangement of the school, the teachers, schoolroom, the student population, subjects taught, and student tasks compare between the two eras? How do the reforms demanded by the humanists compare with reforms demanded of schools today? Why does education need to change with the times?
5. Explore readings from Ibn Rushd’s commentary on Aristotle’s *Rhetoric*, or selections from al-Farabi and al-Kindi in the primary source teaching resource collection *Beyond A Thousand and One Nights: A Sampler of Literature from Muslim Civilization* (Council on Islamic Education, 1999), to enable students to sample the content of philosophical writings like those that entered Europe during this time. Locate excerpts from the work of Thomas Aquinas, Roger Bacon and others in a university or large public library. Research “medieval philosophy” on the Internet.
6. Compare education as described in the reading on Muslim education and in the *Suq al-Warraqin* story with the schooling described in “Going to School in the Middle Ages.”
7. How does education for the upper classes in Renaissance times compare with education for citizens of modern countries? What are its goals and methods?
8. What features of printing made it easier for scholars to share, discuss and criticize the ideas in books? (Examples: identical, multiple copies with page numbers, wide circulation, illustrations by woodcut, less expensive, easier to collect in personal, public libraries, expanding literacy among more of society, easier and more frequent travel, trade and commerce among growing cities).

