Stories which were written had a higher status than those which continued to be transmitted orally. Remarkable stories deserved something better than oral transmission. That the story is so good that it must be written down is in fact a recurring topos in the *Arabian Nights*: "Your story must be written down in books, and read after you, age after age." Only writing guarantees survival, and writing makes the best claim on the attention of those who should marvel at or take warning from the stories. — ROBERT IRWIN, *The Arabian Nights*

Western historians have often argued that Islamic civilization made its greatest mistake in the fifteenth century when it refused to accept the printing press, for this failure supposedly condemned Islamic civilization to isolation from the mainstream of knowledge. Although Muslims did not use the printing press until the eighteenth century, and then only tentatively, they had other means of transmitting knowledge effectively and broadly, and for the preceding eight centuries the inhabitants of the Islamic lands—not only Muslims but Christians and Jews as well—controlled the sluicegates of the very same stream of knowledge at which thirsty Europeans repeatedly came to drink.

Bureaucratic necessity may have led Muslim officials to adopt paper, but the availability of paper in the Islamic lands also encouraged an efflorescence of books and written culture incomparably more brilliant than was known anywhere in Europe until the invention of printing with movable type in the fifteenth century. In spite of the absence of printing in the Islamic lands, the spread of written knowledge there was comparable to—and may have surpassed—the spread of written culture in China after large-scale printing developed there in the tenth century. Even with printing, Chinese books were published in relatively small editions of perhaps a hundred copies, a number easily attained by the unique system that Muslims developed for transmitting knowledge. The real distinction between all these cultures lay not in technology but in their attitude toward books and book learning, and ultimately in the different roles which they accorded writing and the written word.

The importance of writing in Islamic civilization is usually ascribed to the centrality of the Koran, revered as the revelation of God delivered in Arabic to the prophet Muhammad early in the seventh century of the Common Era. As Muslims brought Islam and the Koran to the lands they conquered, Arabic became the lingua franca from Spain to Central Asia, uniting vast populations in a single linguistic commonwealth. Even nonbelievers within the Muslim community used the Arabic language. The Jewish merchants of Egypt and North Africa spoke the same Arabic as their Muslim brethren, although they wrote it in Hebrew characters. The power of the Arabic script was so strong that
eventually even linguistically unrelated languages spoken by those living under the banner of Islam, such as Persian and Turkish, came to be written in modified Arabic scripts.

The extensive use of Arabic writing is surely one of the most distinctive features of Islamic visual culture. Writing was used not only to create documents and books but also to decorate virtually everything from the humblest everyday object to the most sophisticated edifice (figs. 37–38). Few other cultures have elevated the art of writing to the position it occupies in Islam, and the ubiquity of writing in Islamic civilization suggests that medieval Muslims were more likely to be literate—or at least familiar with writing—than members of contemporary societies elsewhere.

Under Islamic rule Arabic, like Greek and Latin before it, quickly became a language of imperial administration, and the administrative bureaucracy that Muslim rulers created came to require vast quantities of writing materials—at first papyrus or parchment and then paper—for keeping records. Apart from caches of paper documents discovered in the Egyptian desert, the Cairo Geniza, the Monastery of St. Catherine, and the crown archives of Aragon,
relatively few documents have survived from the period before about 1500, and the general picture of the history of writing in this era is normally sketched out from books rather than documents. Whether medieval Islamic civilization used more paper for documents or for books is impossible to say, but Islam certainly became a culture of books, particularly in comparison with Byzantium and western Europe at the time. One estimate, for example, is that 600,000 Arabic manuscript (hand-copied) books survive from the period before printing was introduced, and they must represent only a minute fraction of what was originally produced.

In Islamic societies the most important and venerable book was and remains the Koran, and consequently much of our knowledge of medieval Islamic writing and bookmaking is derived from manuscript copies of it. After the Koran was revealed orally to Muhammad, as tradition has it, the words were transcribed onto parchments and meticulously recopied to preserve the integrity of the initial revelation. Surviving Koran manuscripts, however, represent only one element in the entire range of medieval Islamic book production, for copies of the Koran were normally written with greater care and employed costlier materials than were used for most other books. Koran manuscripts were also more likely to have been treasured and preserved.

The extraordinary importance of writing in Islam combined with the primacy of the Koran as scripture has fostered an impression that Islam always was—and remains—a text-based culture. The importance of the written word in Islam is undeniable, but since the time of the revelation, Muslims have learned and experienced the Koran primarily as an oral text—not as a written one—and memory and gesture have persisted as equally important means for the transmission of Islamic culture, even if they have not always been recognized as such by Western scholars.

Current impressions of the past are also skewed by later reinterpretations. Early Muslims lived in an intellectually dynamic and fluid milieu, with many different communities of interpretation and schools of thought. The eventual success of the text-focused Sunni society that evolved under the patronage of the Abbasid caliphs of Baghdad in the ninth century has encouraged scholars to paint a monolithic picture of early Islam at variance with the evidence gleaned from other sources. Similarly, the text-focused, typographic nature of Middle Eastern culture today may lead us to overemphasize the textual aspects of Islamic culture over its oral and aural ones, particularly since most historical records—at least in the eyes of traditional historians—are written documents. Nevertheless, as documents, books, and other forms of graphic notation—all of which represented distinctly new ways of thinking—spread through Islamic society, the increased availability of paper encouraged the
transition in medieval Islamic times from a culture based on memory and gesture to one grounded in the written record.

THE KORAN AND ORAL CULTURE

Pre-Islamic culture in Arabia was largely oral and aural, and although writing was known, it played a relatively unimportant role. The highest form of art was poetry, and the poet was often likened to a prophet or king. Poetry was the summit of Arabic eloquence, and the *qasida*, or ode, was the supreme verse form. Pre-Islamic Arabs spoke many dialects of Arabic, but every tribe used and understood the same poetic language, which was characterized by an extremely refined grammar and vocabulary. The poems celebrated the gods, their own social affairs, their exploits, including raids and battles, and their genealogies. Poems were usually short, especially in comparison to those of Homer or Chaucer, and were composed to be recited in public, either by the poet or by a professional reciter, who would add details and background. The idea that there was a single authentic version of a particular work did not exist, because poems were constantly reworked and embellished by the transmitters. Professional reciters relied on their prodigious memory, and the great pre-Islamic poems were not written down until several centuries after their composition.

Yet Arabs had used writing for centuries before Islam. In Yemen, archaeologists have found inscriptions in South Arabian script dating from long before the Common Era, and in northwest Arabia and Syria they have found Arabic inscriptions in other alphabets. A funerary inscription dated 328 from al-Namara, in Syria, contains Arabic words written in the Nabatean alphabet of Petra (now in Jordan), but the oldest examples of Arabic texts written in Arabic script are three brief historical inscriptions, dating between 512 and 568, found near Damascus and a trilingual one in Greek, Syriac, and Arabic found near Aleppo. For the Meccans, who engaged in long-distance trade before the rise of Islam, writing would have been essential to record debts and credits, control inventories, and instruct agents. Merchants would have used materials such as palm fronds, wood, bone, pottery, and stone for personal notes and jottings, but they would have found papyrus, parchment, or leather more suitable and durable for business correspondence. As mentioned earlier, the Jews and Christians of pre-Islamic Arabia would have copied their scriptures on parchments. Nevertheless, writing did not play a very important role in pre-Islamic Arabia.

God's first revelation to Muhammad (Koran 96.1–2) opens with the phrase "Recite (iqra) in the name of thy Lord," and reciting the words of this revelation has been a central part of Muslim worship from the beginning. Given the oral nature of pre-Islamic literature in Arabia and the oral nature
of the revelation, the primary means of understanding, transmitting, and preserving the revelations was, naturally enough, aural and mnemonic. The very word al-quran, from which the English word Koran derives, is a verbal noun whose Arabic root basically means “to recite, read aloud.” Contemporaries therefore conceived the revelations to be oral texts intended to be rehearsed and recited, not read from a book.

The desire to preserve the Koranic text intact eventually developed into a discipline known in Arabic as ilm al-qiraat, usually rendered as “science of readings.” A more accurate rendering would be “science of recitations,” for the discipline has remained fundamentally oral and mnemonic to the present day. Even when the Egyptian “standard edition” of the Koran was prepared in the 1920s, it was the oral tradition—supported by the literature on the science of recitation—that served as the authority for determining the written text. In this respect, Koran studies differ from Bible studies, which rely on compilation and comparison of manuscript evidence.

For modern literates, reading is a silent, wholly mental process, but until quite recently reading in all cultures was a vocal and physical activity. Reading aloud also gave nonliterate access to writing, and most literates preferred listening to a statement rather than perusing it in script. Medieval Arabic documents confirm the persistence of orality in medieval Islamic society. Four Egyptian documents dating from the tenth century—more than three centuries after the Koran was revealed—concern the sale of residential property from several villages in the Fayyum. The documents expressly state that the contract in question had been “read to the seller in Arabic and explained to him in the ‘foreign language,’” meaning Coptic, the language of the Egyptian peasantry. The legal document was written, but the power of writing was activated only by reading it aloud.

In medieval Islamic society the written text, therefore, was not an end in itself but served primarily as an adjunct to memory. A modern Western scholar confronted with a page from a medieval copy of the Koran written in the angular “Kufic” script might puzzle out the individual letters and words to decipher the text (fig. 39). In contrast, a traditionally educated Muslim who had since childhood committed large blocks of the Koran to memory might be unfamiliar with the stylized script but would need to recognize only one group of letters to recognize the entire text. Indeed, the Koran is not normally read like normal prose, but is chanted or recited in techniques known in Arabic as tilawat and tajwid, which move between stylized speech and artistic singing. Koranic cantillation has always been transmitted orally from master to pupil, which has led to the evolution of innumerable personal and regional variations. Even in the twentieth century the clergy of the Azhar mosque in Cairo, the preeminent cen-
ter of Sunni religious opinion, remained opposed to transcribing cantillation into notation.

Recitation of the Koran is the backbone of Muslim education, and innumerable anecdotes recount how Muslims at all times and at all levels of society learned the Koran through oral transmission. The Abbasid caliph Harun al-Rashid made his son al-Mamun recite the Koran for the scholar al-Kisai. While al-Mamun recited, al-Kisai sat with his head bowed until al-Mamun made a mistake, whereupon the scholar raised his head and the young man corrected himself. Eleven centuries later, during the 1940s, the Moroccan sociologist Fatima Mernissi learned the Koran from her lalla (aunt) in much the same way. "For you see, most of the time, Lalla Tam did not bother to explain what the verses of the Koran meant. Instead, we copied them down into our luhah, or tablet, on Thursdays, and learned them by heart on Saturdays, Sundays, Mondays, and Tuesdays. Each one of us would sit on our cushion, hold our luhah on our lap, and read out loud, chanting back and forth until the words sank into our heads. Then on Wednesdays Lalla Tam would make us recite what we had learned. You had to put your luhah on your lap, face down, and recite the verses from memory. If you did not make any mistakes, Lalla Tam would smile. But she rarely smiled when it was my turn."

As a book, the Koran runs about the length of the New Testament, and memorization of the text has always been an accomplishment of pride and sta-
The hafiz (one who "knows by heart") might be young or old, male or female, a layperson or a scholar. The fourteenth-century Persian poet Shams al-Din Muhammad Shirazi, who is loved as perhaps the greatest lyric poet of all time, received a thorough classical education and by an early age had memorized the Koran. This feat earned him the nickname Hafez (hafiz), by which he is universally known. In all Islamic societies memorization of the Koran was assumed to be a prerequisite for higher learning. Consequently the training of memory was a constant feature of medieval Islamic education, in particular, which was based not only on knowledge of the Koran but also on reports of Muhammad’s words and deeds (the hadith), as well as on the sharia—scholars’ interpretations of the Koran and the hadith.

The typical hadith takes the form "I heard from so-and-so, who heard from so-and-so, who heard from so-and-so, that the Prophet did (or said) such-and-such," and consists of two parts, the chain of transmission (isnad) and the text itself (matn). At first, as the chain of transmission indicates, hadith were transmitted only orally, perhaps out of fear that written hadith might be confused with the Koran. From an early date, however, some scholars were driven to prepare critical written editions of the hadith because the texts (and the chains of transmission) were subject to pious falsification. Nevertheless, students had to memorize the hadith (and the accompanying chains of transmission), and repetition was the best way to commit texts to memory. Scholars regularly repeated memorized texts fifty, seventy, or one hundred times. The famous preacher and encyclopedist al-Khatib al-Baghdadi advised students to repeat to each other what they had learned in class and quiz each other on it. Once learned by heart, the lesson should be written down from memory, he said, the written record only serving as a reference when the student’s memory failed.

People with prodigious memories were often the subject of popular anecdotes. The young poet al-Mutanabbi won a thirty-folio book written by al-Asmai by memorizing its contents after a single reading. The theologian al-Ghazali is reported to have been robbed of his books while traveling. When he cried out to the robber to take everything but leave him his books, the robber retorted, “How can you claim to know these books when by taking them, I deprive you of their contents?” Al-Ghazali took the theft as a warning from God and spent the next three years memorizing his notes. Such masters of the hadith as Ahmad ibn Hanbal, Bukhari, and Muslim were said to have memorized hundreds of thousands of traditions along with their accompanying chains of transmission. Abu Hanifa the Younger was able to quote hadith in support of any aspect of the law without reference to a book. Jurisconsults referred to him and based their opinions on what he said; in his day hadith were transmitted on his authority alone.
Even though Muslim scholars emphasized stocking and maintaining one's memory, from early times they also believed that writing had an important role to play in transmitting and preserving knowledge. Some scholars did, however, prefer oral transmission to written texts and produced prophetic traditions to support their views. Muhammad is reported to have said, for example, "Do not write anything about me except the Koran, and if anybody has written anything, he is to erase it." Mentions in early Arabic literature to *kutub*, which is the modern word for "books," certainly do not refer to books in a literary sense, but to "writings," notes or collections of sayings written down for the sake of accuracy. In later times books were deemed indispensable for refreshing one's memory, but learning a hadith from a book was still less authoritative than hearing it directly, even if it was read aloud from a book. One unusual account concerns the early philologist and lexicographer Ibn Durayd, who neither dictated hadith from a book nor recited them from memory. Instead, he would write them down from memory in his own hand and give his notes to his students for them to copy. When they had done so, he would tear up his copy and throw it away.

In his *Introduction to the Study of History*, the great fourteenth-century philosopher-historian Ibn Khaldununderscored the value of writing in Islamic society. He wrote that scholars and bureaucrats concentrated on accuracy in writing by establishing a chain of transmitters leading back to their writers and authors, because

that is the most important element in establishing a correct and accurate text. Statements are thus led back to those who made them, and decisions are led back to the persons who decided in accordance with them and were able to pronounce them by means of independent judgment. Wherever the correctness of a text is not established by a chain of transmitters going back to the person who wrote that particular text, the statement or decision in question cannot properly be ascribed to its (alleged author). This has been the procedure of scholars and experts in (all matters of religious knowledge) in all times, races, and regions, so much so that the usefulness of the craft connected with the transmission of traditions came to be restricted to this aspect (of the process of transmission). The main fruit of (the craft concerned with the transmission of traditions) is the knowledge of which traditions are "sound," which are "good" . . . etc.

Despite such concentration on accuracy and the obvious value of written documents, Islamic law developed an ambivalent attitude toward them. Two passages in the Koran (2:282 and 24:33) prescribe written documents for
certain cases, but legal scholars usually interpreted these verses as only recommendations. In general, legal theorists ignored written documents and considered them merely aids to memory or evidence, but only insofar as they were confirmed by the verbal testimony of witnesses. Muslim jurists tended to view written documents with a generous measure of suspicion, primarily because the written word could be manipulated in a manner impossible with the oral testimony of trustworthy people; for instance, important clauses in a document could “accidentally” be torn away. Thus, in law the effective legal instrument remained the verbal agreement made in the presence of witnesses, who, when necessary, could reiterate and verify what they had seen. Still, the qadi, or judge, kept written records, and customary commercial law relied on written documents. They proved indispensable, theory aside, and remained in constant use, becoming a normal accompaniment of every important transaction and engendering a highly developed branch of practical law.

**WRITTEN ARABIC**

Writing played a central role in all the religions of West Asia from ancient times. For the Jews, the Torah, or written law, was imbued with God’s sanctity to such an extent that even the slightest scrap of sacred text or text bearing a sacred name was treated with reverence. This attitude to the written word lies behind the preservation of the Dead Sea Scrolls and the Geniza documents. The Koran, despite the oral nature of its revelation, also asserts the authoritative nature of written documents. God’s revelations to Moses are said to have been copied on sheets (qirtas; Koran 6:91); elsewhere (6:7) God says to Muhammad that even if he sent down sheets of writing for Muhammad’s adversaries to hold and feel, they would still reject the revelation.

In several places the Koran refers to itself as kitab, “writing” or “book” (from the Arabic verb “to write”), and Muslims believe that the earthly Koran is a manifestation of God’s heavenly scripture preserved for eternity. Just as God’s first revelation to Muhammad emphasizes the importance of recitation, it also makes explicit the central role of writing, for the text continues:

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Recite in the name of thy Lord,
Who taught by the pen,
Taught man what he knew not. (Koran 96:3–5)
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The pen, which is mentioned several times in the Koran, was, according to later commentators, either an actual reed or a metaphoric shaft of light. They reasoned that it had to be the first thing God created so that he could record events to come.
Muslims began to transcribe the revelations in order to forestall the corrup­tion of the sacred text, a perpetual danger with oral transmission. The written text of the Koran may have initially served as a memory aid, but in all cultures documents tend rapidly to replace rather than to support memory, and a culture of writing emerged in the years immediately following Muhammad’s death in 632.

It is said that only seventeen Meccans knew how to write in the time of the Prophet. Muslim tradition holds that Muhammad himself was illiterate, for Muslims understand the Koranic phrase al-nabi al-ummi to refer to the “unlettered Prophet.” Following this interpretation, Muhammad would have repeated the revelations to his equally unlettered followers, who would have memorized the texts. Later secretaries would have transcribed the texts on materials ranging from palm fronds to potsherds and thin stones. Western Orientalists, however, usually interpret the same Koranic phrase somewhat differently and take it to mean the “Prophet of the common folk.” They see no reason why Muhammad, who spent his early life as a merchant, should not have known how to write.

For fourteen centuries scholars have studied the text of the Koran, but they have found no great variety in the wording of the texts as preserved by one transmitter or another, although the early transmitters did not fix the order in which they arranged the revelations. Slight variations in readings and interpretations did result, however, from the ambiguities of the early Arabic script in which the text was transcribed. Arabic script, which is derived from either Nabatean or Syriac writing, uses only a cursive form—many of the letters are connected by ligatures—for all types of writing. Unlike many other scripts, Arabic cannot be written with the letters always separated from each other, as they are in “monumental” or “printed” Greek, Latin, Hebrew, Russian, or English. Because of the ligatures that allow some letters to be connected, the letters themselves may change their shape depending on their position in a word. Thus, the same letter can have one form when it stands alone, another at the beginning of a word, another in the middle of a word, and yet another at the end of a word. Because not all letters can connect, breaks in the ductus, or line of writing, can occur just as easily within a word as between words. Early writers did not differentiate the space between nonconnecting letters from that between words, and in texts spread over several lines, breaks occur as often between the letters of a word as between the words themselves. All of these peculiarities, which make reading extremely difficult and slow, indicate that all early Arabic texts were meant to be read aloud by readers who already had some expectation of their contents.

A further difficulty with the Arabic script is that it imperfectly represents
the sounds in the Arabic language. The language has twenty-eight phonemes, or distinct sounds, but the script uses only eighteen characters to represent them. From an early date, however, extra strokes or marks were sometimes used to differentiate phonemes sharing the same letter shapes. The letters ba, ta, tha, nun, and ya, for example, share the generic letter shape, a single "tooth" in the ductus, but can be differentiated from each other by one, two, or three strokes or dots above or below the line. Like Hebrew, Arabic script records only the three long vowels; the three short vowels, silences, and case endings are normally interpolated by the reader from the context and form of the word. Nor did writers use punctuation marks until modern times. All of these characteristics made it extremely difficult to reconstruct a verbal utterance from a written text without knowing beforehand what the text says. Thus, transcriptions of the Koran could have served as memory aids only to those who had already memorized it.

The first complete transcriptions of the text may have been made in the time of Muhammad himself, but the third caliph Uthman (r. 644–56) ordered Muhammad’s revelations collected and collated in order to produce a uniform written text. The revelations were transcribed onto sheets (suhufs) of equal size, presumably made of parchment, which were then gathered in codices (mushafs). Copies of this authoritative text were distributed to the congregational mosques in the major cities of the realm, where they were preserved as references. Since medieval times people have claimed that a few tattered parchment folios in one mosque or another are fragments of one of Uthman’s codices, but none has been authenticated, and the dating of early manuscripts of the Koran remains a matter of lively scholarly debate. Putting aside these purportedly Uthmanic codices, the earliest date proposed for surviving fragments is the late seventh or early eighth century. Certainly, Koran manuscripts existed then, but the oldest securely dated or datable manuscripts were not produced until the ninth century.

The importance of Uthman’s collation of the text should not be overestimated, because knowledge of the Koran still remained more a matter of memory than of reading. Even at best, a text written in the often ambiguous and "defective" Arabic script could have served as little more than a mnemonic device for people who had already committed it to memory. No seventh- or eighth-century manuscripts of the Koran are known to have survived, but somewhat later sources indicate that within decades of Muhammad’s death scribes and calligraphers had regularized and modified the styles of handwriting current in Arabia for transcribing the Koranic text. In addition, the Umayyad caliph Abd al-Malik made Arabic the official language of the realm, and inscriptions and coins were produced in the new regularized script.
By the late seventh century the city of Medina was home to a group of professional calligraphers who produced fine copies of the Koran, although descriptions of their styles of writing are too vague to allow a reconstruction. Al-Nadim, who wrote his Fihrist in the late tenth century, records that a certain Khalid ibn Abu'l-Hayyaj was a calligrapher and epigrapher (a designer of inscriptions) for the Umayyad caliph al-Walid, who reigned in the early eighth century. Khalid was the first to calligraph the Koran, and he also designed the inscription with a Koranic text that once decorated the mihrab (the niche in the Mecca-facing wall) at the mosque of Medina.

Even if the exact nature of Khalid’s calligraphy remains a mystery, some early Arabic inscriptions, such as those on coins and particularly the one encircling the interior of the Dome of the Rock in Jerusalem (692) show the impact of scribal techniques. As with later calligraphy, the text is written in groups of connected letters separated by spaces; isolated letters are treated as groups, being preceded and followed by spaces of the same width. Close examination of the mosaic inscription band shows the varying width of the calligrapher’s ductus reflected in the varying width of the individual letters, which take from three to five or even six mosaic tesserae (cubes). Furthermore, some letters are stretched horizontally to fill the available space, showing an early use of mashq, the aesthetic principle of elongation (fig. 40). A calligrapher must have painted the inscription on the underlying plaster using a brush (a pen

**Fig. 40.** Detail of the glass mosaic inscription band in the interior of the Dome of the Rock, Jerusalem, begun in 692.
would not have been wide enough). The mosaicists, who were not necessarily literate and may very well have been Greek-speaking Christians used to decorating churches, would then have outlined the calligraphed letters in gold glass tesserae, filled in the outlines with more gold glass tesserae, and finally filled in the background with blue glass tesserae.

Early Arabic handwriting was quite different in style from the well-formed artistic writing used on buildings and coins (and presumably on Koran manuscripts as well), as we can tell from eighth-century papyrus documents found in Egypt (fig. 41). More spontaneous, the writing used on these documents reflects the specific situations in which the documents were produced. Most are private and commercial letters and accounts; only a few are literary or legal works. The few papyrus fragments bearing Koranic verses were personal anthologies of verses rather than copies of the complete text, which was always transcribed on parchment, at least until the tenth century. Nevertheless, whether documents or literary texts, the handwriting on Arabic papyri was a utilitarian cursive script markedly different from the artistic script used for Koran manuscripts and state documents.

The first manuscripts of the Koran that can be dated with some certainty
were copied on horizontal-format ("landscape") parchments in one of several angular scripts, commonly called Kufic—a convenient, if modern, misnomer—during the mid-ninth century. These early scripts are characterized by relatively simple geometrical shapes, harmonious proportions, and wide spacing between groups of connected letters. Most early manuscripts of the Koran have a horizontal format, where the page is broader than it is tall, although a few are in vertical format. No contemporary source explains the scribal preference for the horizontal format, although modern scholars have often noted that the distinctive shape served visually to differentiate the scriptures of the Muslims from those of the Christians (who used vertical-format codices) and the Jews (who used horizontal rolls).

The remarkable conservatism of Koranic calligraphy in the first three centuries of Islam is shown by the copy of the text made for Amajur, governor of Damascus for the Abbasid caliphs between 870 and 878; this text provides one of the few fixed points for dating early Koran manuscripts (fig. 42). Originally comprising thirty volumes of perhaps two hundred parchment leaves each (a total requiring the skins of around three hundred sheep), the manuscript was endowed to a mosque in Tyre, Lebanon, in 875–76. The script shares many calligraphic features with the inscription on the Dome of the Rock done over 150 years earlier, such as the constant spacing between letter groups rather than words.

At the time this manuscript was produced, copyists were developing new scripts for different purposes. The earliest of these—known quite confusingly by such names as Qarmatian (or Karmathian) Kufic, broken Kufic, eastern Kufic, Kufic–naskhi, New Style, warraq (stationer’s) script, or broken cursive—has an accentuated angular character and a deliberate contrast between thick and thin strokes; in some samples the script is quite vertical and elongated. Spaces between the nonconnecting letters of a word are differentiated from those between words, and the different letters sharing the same shape are distinguished from one another by diacritical points. In contrast to Kufic, which was used only for Koran manuscripts, this new script was used for a wide variety of texts, both secular and religious, Muslim and Christian, over an enormous geographical area, from the ninth century, as demonstrated by the Leiden Gharaib al-hadith (see fig. 27) to the early thirteenth.

Most scholars have attempted to explain the appearance of the new script as a logical outgrowth of earlier Kufic scripts used for copying the Koran. It seems much more likely, however, that it was developed by professional scribes and copyists who regularized the cursive styles of handwriting they used for copying documents onto paper into a new and more legible script appropriate for copying books, now made of paper as well. The emergence of this
Fig. 43. Page from a dispersed manuscript of the Koran copied on paper by Ali ibn Sodan al-Razi, 971-72. Black ink on paper, 10 1/4 x 7 in. (26 x 17.8 cm). Reproduced by kind permission of the Trustees of the Chester Beatty Library, Dublin [CBL Is. 1434, fol. 4b]

Fig. 42. Page from a manuscript of the Koran copied for Amajur, Abbasid governor of Damascus, 870-78. Brown ink on parchment, 5 1/2 x 7 in. (13.7 x 19.3 cm). Türk ve İslam Eserleri Müzesi, Istanbul [inv. SE 5643]
new script can be linked, therefore, to the secretaries’ familiarity with paper as the principal material for writing.

As the Abbasid empire had grown in the ninth century, the bureaucracy had burgeoned, and secretaries, known in Arabic as kuttab ("writers"), became important and powerful. Some, as officials and linguists, merely gave written documents the appropriate form, but others served as their masters’ advisers and confidants and rose to positions of influence. In this bureaucratic world, official documents were increasingly judged not only by their contents but also by the elegance of the wording and the cleverness of hidden allusions in the text. Successful government secretaries had to be thoroughly grounded in Arabic grammar and vocabulary, familiar with proverbs and tales, widely read in all branches of prose and poetry, soundly informed about the theory of state and administration, impeccably versed in the Koran and the traditions of the Prophet, and knowledgeable of prosody and poetics. All of this knowledge had to be conveyed in an elegant hand, so the art of fine writing moved from the exclusive domain of Koran copyists and became a necessary part of state correspondence and documentation and the growing world of books.

This would explain why the broken cursive script was used for many other texts well before it was adopted for copying manuscripts of the Koran. Broken cursive, for example, is the script used for one of the earliest surviving books copied on paper in Arabic script, the fragment, dated 866, of Abu Ubayd’s work on unusual terms in the traditions of the Prophet (see fig. 27). The script, with its system of spacing designed for easy reading and its pointed letters, was far more legible than Kufic. Legibility was of primary concern when copying literary texts, as opposed to the Koran, because the writer could not assume that the reader would already know their contents.

When calligraphers eventually used the new script to copy the Koran, they did so when they began to use paper instead of parchment for manuscripts of the holy text. The oldest dated Koran manuscript in broken cursive script is also the oldest dated copy on paper. Copied in 971–72 by the Persian calligrapher Ali ibn Shadan al-Razi, the four-volume manuscript is divided between Istanbul University Library, the shrine at Ardabil, Iran, and the Chester Beatty Library, Dublin (fig. 43). Fifteen years later, the same scribe copied a tenth-century secular text, Kitab akhbar al-nasiriyin al-bahriyin by Abu’l-Said al-Hasan al-Sirafi, in a combination of the broken cursive and other more rounded scripts. Another paper manuscript of the Koran (see fig. 28) was copied in an elegant broken cursive script at Isfahan, Iran, in 993. The horizontal format of this manuscript, its large size (9 ¼ by 13 ½ inches, or 23.9 by 33.8 centimeters—twice that of the previous manuscript), and the large size of the script—each page has only four lines 1½ inches (4 centimeters) high—are all more
commonly associated with parchment codices and show that by the end of the
tenth century the new breed of calligraphers were learning some lessons from
the conservative Koran copyists.

The advantages of this new script, which was legible and easy to write, made
it widely popular among Christians as well as Muslims. They used it to copy the
Gospels almost a century before the first extant paper Koran was copied at all—
the evidence, a manuscript dated 897 preserved in the library of the Monastery
of St. Catherine, Mount Sinai. Fragments from a horizontal-format parch­
ment manuscript of the Koran copied at Palermo, Sicily, in 982–83 show how
quickly the broken cursive script had reached the Mediterranean lands even in
areas where parchment still held sway. The transitional character of this man­
uscript, however, is evident in the black carbon-based ink with which it was
copied (fig. 44).

Black ink, prepared from lampblack bound with plant gum and known in
Arabic as midad, was appropriate for use on papyrus, but it had notoriously
poor adhesion to parchment and tended to flake off. Kufic manuscripts of the
Koran were normally copied on parchment in the brownish ink known in Ara­
bic as hibr, which was made from metal tannates prepared with gallnuts. The
metal tannate ink actually penetrated the surface of the parchment like dye.
When used on paper, however, the mixture of metal salts and tannins in tan­
nate ink produced acids that eventually destroyed the paper. Carbon ink, by
contrast, had no chemical effect on the surface to which it was applied; it was
the type of ink secretary-copyists normally used on papyrus and paper. The
Palermo manuscript, like most manuscripts in broken cursive script, was
copied in carbon ink.

Secretary-copyists preparing Koran manuscripts in broken cursive script
had no reason not to emulate and adapt certain attractive features of Korans
written in archaic Kufic, such as material or format. The conservative Koran
calligraphers never emulated the work of the copyists in turn, and there are no Kufic manuscripts of the Koran copied on paper, nor was carbon black ink normally used on parchment. As the brown tannin ink faded on some parchment Koran manuscripts, however, later calligraphers sometimes retouched the writing with carbon-black ink.

In sum, the development of the new broken cursive script went hand in hand with the adoption of paper and carbon-black ink. These three features encouraged the proliferation of books from the ninth century. Paper would have been cheaper and more widely available than parchment or papyrus. The carbon-based ink was easier to prepare and did not eat away at the underlying surface. Compared to the earlier Kufic scripts, the broken cursive script—apart from stylized variants used for the fanciest copies of the Koran and literary works—was relatively fluent and thus easier and faster to write.

Although broken cursive continued to be used for several centuries in particular situations, its success paved the way for the development of rounded styles of Arabic handwriting in the tenth century. Normally known as naskh, this group of related scripts remains common to the present day, being the type of script most familiar and legible to ordinary readers. Naskh was taken as the exemplar for modern Arabic typography. As with the broken cursive script, the origins of the rounded style are obscure, but tradition reports that the Abbasid secretary (and later vizier) Ibn Muqla introduced a new method of writing known as "proportioned script" (al-khatt al-mansub). Ibn Muqla, originally a tax collector in the Iranian province of Fars, was made secretary in the central administration and put in charge of opening and dispatching official letters. From the early tenth century he served as vizier to three Abbasid caliphs. Although no genuine samples of his writing are known to survive, Ibn Muqla is famed for developing a system of calculating the size of letters based on the rhombic dot formed when the nib of a reed pen is applied to the surface of the paper. Ibn Muqla calculated the height of an alif, the first letter of the Arabic alphabet, in terms of these dots and then calculated the size of all other letters in relation to the alif. The first script he regularized was known as muhaqqiq ("accurate," "well-organized," or "ideal"); in it the alif was nine dots high.

Ibn Muqla's skill in writing passed on to the next generation in the person of Ali ibn Hilal, known as Ibn al-Bawwab, who began his career as a house-painter but soon turned to calligraphy, where he added elegance to the system developed by his predecessor. An intimate in court circles in Baghdad, Ibn al-Bawwab was appointed librarian to the Buyid ruler of Shiraz. He is said to have copied the Koran sixty-four times, but only one of his manuscripts is known to survive, a small volume (trim size 7 by 5 inches; 17.5 by 13.5 centimeters) of 286 folios, copied in Baghdad in 1000–1001 (see fig. 21). On each page of
this manuscript are fifteen lines of a rounded (naskh) hand of uniform thickness, except where titles and headings occupy more space. His script—an elegant distillation of everyday handwriting—is still perfectly legible to the modern reader a thousand years after it was done. In contrast, European readers usually find it challenging to read any handwritten text more than two or three centuries old.

The various styles of handwriting used during the lifetime of Ibn Muqla (885–940) were eventually codified into six round hands, consisting of three pairs of large and small scripts (thuluth-naskh, muhaqqaq-rayhan, and tawqi-riqa), known collectively as the Six Pens. Just as the first regularization of Arabic calligraphic norms since the late seventh century had occurred in conjunction with the increased use of paper in the tenth century, these six scripts were themselves regularized in thirteenth-century Iraq and Iran in conjunction with the extraordinary improvement in papermaking technology seen under the Mongols. The master calligrapher Yaqut al-Mustasimi had served the last Abbasid caliph al-Mustasim as secretary and reportedly survived the Mongols’ sacking of Baghdad in 1258 by seeking refuge in a minaret. He is famed for perfecting Ibn Muqla’s system of calligraphy by replacing the straight-cut nib of the calligrapher’s pen with an obliquely cut one, thereby creating a more elegant ductus and earning such epithets as “sultan,” “cynosure,” and “qibla” of calligraphers; the last—which indicates that he was like the direction of Mecca, to which all Muslims turn in prayer—is equivalent to calling him the polestar.

Yaqut’s Koran manuscripts, although small in size, are notable for the spaciousness of their layout, an effect that he achieved by using an extremely delicate script (see fig. 23). A script of such delicacy was possible only on the smoothest paper of the finest quality, and contemporary papermakers were able to meet the demand by producing extremely white strong paper that acquired a flawless, smooth surface when polished. Such calligraphy would simply not have been possible on the browner, coarser papers of the eleventh century. Yaqut himself had six famous pupils; the list varies in different sources, but the most famous include Yahya al-Sufi, Haydar, and Ahmad ibn al-Suhrawardi, calligrapher of the “Anonymous” Baghdad Koran (fig. 45).

Just as the widespread use of paper in the ninth century had encouraged such masters as Ibn Muqla and Ibn al-Bawwab to regularize handwriting in books in the tenth century, so the improved quality of paper in the thirteenth century, particularly in the lands under Mongol rule, encouraged such masters as Yaqut and his followers to take the art of Arabic calligraphy to new heights. But the steady refinement of calligraphy and the growth of a more popular style of writing are only part of the story. They accompany an exponential increase in the demand for books.
AN EXPLOSION OF BOOKS

Ibn al-Bawwab’s signature in the colophon of the Chester Beatty Library manuscript and the absence of a dedication, combined with the legibility of the manuscript and its small size and single-volume format, suggest that the calligrapher copied this volume not on commission for a mosque or other institution but on spec. That someone in early eleventh-century Baghdad might have wanted (and been able!) to buy a manuscript of the Koran copied by the most famous calligrapher of his day is eloquent testimony for the explosion of books and book learning brought about by the introduction of paper in the late eighth century, the concomitant development of new, quicker, and more legible scripts in the ninth century, and the increased conversion to Islam and
familiarity with the Arabic language in the lands where Islam held sway. Conversion to Islam resulted in larger numbers of people involved in or expecting to be involved in the dominant culture. It has been estimated, for example, that half the population of Iran had converted to Islam by the 820s-860s; of Iraq, Egypt, and Syria, by the 880s-960s; and of Spain, by the 960s-1100s. These dates correspond remarkably well with the florescence of medieval Islamic literary culture in these regions.

The Umayyad caliphs had encouraged some kinds of literature, notably hadith and poetry, but with the rise of the Abbasid caliphate in the middle of the eighth century, books and book knowledge became a general aim of Islamic society. New kinds of literature were encouraged. In addition to studying the Koran, religious scholars wrote about theology, hadith, and fiqh (religious law). Early Islamic law had been based on oral transmission, and it combined aspects of Koranic law with pre-Islamic practices. Ibn al-Muqaffa, vizier to the caliph al-Mansur, had unsuccessfully attempted to assert the power of the new Abbasid state by codifying and regularizing Islamic law as practiced by individual judges. Although Ibn al-Muqaffa himself was unable to put together a unified legal code before he was put to death in 756, the "literary period" of Islamic law began in the second half of the eighth century and flowered in the ninth when such scholars as Abu Hanifa, Malik ibn Anas, Shafii, and Ahmad ibn Hanbal compiled the legal collections that remain the basis of Islamic law to this day.

Doctrinal differences among Sunnis, Shiis, Ibadis, and other Muslim sects led to the writing of theological works, Koranic exegeses, and philosophical literature. A desire to understand the words and linguistic structure of the Koran motivated scholars to write on Arabic philology, lexicography, and grammar. The need to identify the individuals who had transmitted hadith and make sure they had been where they were reported to have been brought an upsurge in biographical writing. Even the conception of history expounded in the Koran, which traced history back to Creation, provided a justification for historians to write about history in a new way, and many now began their works with the Creation itself.

Not all learning was religious. Expansion of the government encouraged the production of legal and administrative texts, and general curiosity impelled authors to write works on poetry, philosophy, geography and navigation, mathematics and applied science, astronomy, astrology, medicine, and alchemy. At the same time there was a veritable explosion in the compiling of collections of stories and other works of fiction in Arabic. The earliest evidence that the stories of the Thousand Nights were written down, for example, is the early ninth-century paper fragment from Syria, now in Chicago (see fig. Continued...)
usual material on which the text was written, the second method prevailed: the pages were sewn together in gatherings, consisting of sets of folded sheets nested within one another: usually three sheets (trinions), four sheets (quaternions), or five (quinions).

Because larger sheets of paper were more difficult (and more expensive) to produce than smaller ones, it made little economic or practical sense to copy out books on large sheets of paper cut into halves or quarters. Thus, the sheet of paper on which a book was copied usually measured approximately twice the size of the individual page. The largest sheets of paper used in medieval Islamic manuscripts were sometimes known as “full Baghdadi” sheets. These expensive sheets—used, as far as we know, only for special manuscripts of the Koran—measure approximately 28 by 39 inches (70 by 100 centimeters) and produce a page size of about 20 by 28 inches (50 by 70 centimeters). The deckle (outer) edges of the sheet being constantly exposed to wear, they were often trimmed when a manuscript was bound or rebound. It is therefore difficult, if not impossible, to establish the original size of a trimmed sheet with certainty.

To protect the text, Islamic bindings often have a flap attached to the outer edge of the back cover; it has a fore-edge flap...

26), and this fortuitously preserved single sheet must represent only a fraction of what was produced and lost.

Another unusual genre that enjoyed popularity was the cookbook. Although cookbooks existed in antiquity, they began to be produced in quantity in the ninth and tenth centuries. Al-Hamdani, who died in 945, alludes to a complex culinary literature in his aphorism “The food and drink of the Yemen are preferable to [all the] recipes from cookbooks,” and al-Nadim, the tenth-century author of the Fihrist, mentions the existence of several books about cooked food (as well as an equal number about concocting poisons and drugs, amulets and charms). None of these early texts has survived, but they are known to have been written not by cooks but by courtiers, musicians, poets, and librarians, which indicates the importance and literary nature of the genre.

The earliest Arabic cookbooks to survive date from the thirteenth century. One was written in 1226 by Muhammad ibn Hasan ibn Muhammad ibn al-Karim al-Katib al-Baghdadi. The author divides pleasure into six classes: food, drink, clothes, sex, scent, and sound. Of these, the noblest and most consequential is food, the discussion of which he divides into ten chapters, including sour dishes (six milk dishes among them); plain dishes; fried and dry dishes; harisa (porridge) and baked dishes; fried, pickled, and upside-down dishes; fish dishes; sauces, relishes, and savories; judhab and khabis (sweet dishes with almonds or sesame seeds); sweet desserts; and pastries. The author gives more than 150 recipes, and they are specific enough for a modern cook to follow. His recipe for apricot stew (mishmishiyya) reads:

Cut fatty meat into small pieces, put into a saucepan with a little salt, and cover with water. Boil, and remove the scum. Cut up onions, wash them, and throw them in on top of the meat. Season the mixture with ground coriander, cumin, mastic, cinnamon, pepper, and ginger. Take dry apricots, soak them in hot water, then wash them and put them in a separate saucepan and boil lightly. Take them out, wipe them dry with the hands, and strain them through a sieve. Take the puree and add it to the saucepan with the meat mixture to form a broth. Take sweet almonds, grind them fine, moisten them with a little apricot juice, and throw them in to thicken the broth. Some cooks add a pinch of saffron to color the stew. Spray the saucepan with a little rosewater, wipe its insides with a clean rag, and leave it to simmer over the fire.

Another cookbook from thirteenth-century Syria, Kitab al-wusa ila’l-habib fi wasfi’l-tayyibati wa’l-tib (Book of... Descriptions of Good Dishes and Perfumes),
exists in at least ten manuscript copies following several rescensions, showing its widespread popularity in the Middle Ages. The French scholar Maxime Rodinson, who studied and published this text, interpreted the existence of such books as a sign of conspicuous consumption in the late Abbasid period, as the products of an extraordinarily wealthy society where every activity was regulated by a complex system of rules. Although the cookbooks and other books certainly testify to the social and cultural complexity of medieval Arabic life, they should also be understood as the practical result of quite another mentality at work, prompted by the proliferation of paper in the medieval Islamic lands—namely, that writing something down ensures its survival.

Islamic society fostered such a respect for book learning and scholarship that rulers and the wealthy opened their doors to the learned and lavished large sums of money on them. Caliphs, governors, courtiers, gentlemen-scholars, and physicians sponsored new books as well as translations of Christian and Jewish works written in Syriac and Greek. The translators themselves sometimes took on disciples, scribes, and amanuenses.

People wrote books simply because they wanted to or because patrons or rulers suggested they do so. Writers expected to be paid with honors, presents, and often cash. Others, such as secretaries and judges in state chanceries and offices, wrote books in their spare time. Unlike modern authors, writers in the medieval Islamic lands seldom, if ever, chronicled their personal revelations; rather, they normally presented their own selection of a chain of opinions and traditions on a particular subject handed down from one source to another. When the selected pieces presented different points of view, an author might conclude with the phrase "Wa'llahu al-am" (And God knows [the truth]). Like the transcriptions of hadith, such books still represent the continuous and unbroken oral tradition of knowledge. Because oral transmission was deemed far superior to reading something in a book, people traveled widely to hear eminent scholars speak about or "read from" their own works. If being in an audience was not possible, however, reading a book could be an acceptable substitute. A writer of history, for example, might search out a copy of a work dealing with the period and subject that interested him.

The publication of books was itself an oral procedure, for a work was first recited and written down to dictation, usually in a mosque. The mosque remained the center of most literary activity, although the range of knowledge pursued in medieval Islamic society went far beyond the Koran and the religious sciences. From the early years of Islam, mosques had been used not only for strictly religious purposes, such as daily and Friday communal worship, but also for public announcements, judicial proceedings held, and classes, so the use of the mosque as a publishing center was appropriate.
Rashid al-Din, the fourteenth-century Ilkhanid vizier, stipulated in the endowment deed to his charitable foundation in Tabriz that his collected works were to be copied by scribes “who possess good, legible hands” and, when finished, “brought to the large suffa in the rawda,” a mosque in the complex, “and each shall be placed on a raised platform between the pulpit and the mihrab, and there the following prayer for the donor shall be recited.” The superintendent was to inscribe each book with an attestation and show the copies to the judges of Tabriz, who would record the physical condition of each manuscript.

Even poets published their works in mosques, and even privately commissioned works had to be published there. The author would sit crosslegged with his auditors seated in a circle before him. His most intimate associate or pupil might sit close by to act as intermediary with the audience. These activities are depicted in the frontispiece to the Rasail ihyā‘ al-safa (Epistles of the Sincere Brethren), copied in Baghdad in 1287 (fig. 46). Normally the author himself wrote out his work and followed the draft manuscript in dictating, which was often done from memory. Many anecdotes center on scholars’ phenomenal feats of memory. The tenth-century traditionalist Abu Bakr ibn al-Anbari is
said to have dictated forty-five thousand pages by heart; his contemporary the philologist al-Bawardi dictated thirty thousand pages on linguistics. Authors might stop dictation in the middle of a book for one reason or another, and auditors who were taking dictation had to be content with truncated works.

A copy of a book could not be considered genuine unless it had been authorized by the lecturer, and just as the authenticity of a hadith rested on the chain of its transmitters, the guarantee of the authenticity of a copy rested on a chain of authorizations going back to the author himself. An author might himself produce authorized copies, but normally he authorized transcripts of public readings by having copyists read the transcripts back to him for accuracy. Scholars’ biographies constantly state not only that “he heard [a particular book] from so-and-so” but also that “he read it to so-and-so.” The copyist had to read the copy aloud in order to obtain the authorization, and an author might save time by assembling an audience for check-reading in the same way he had assembled one for dictation. A famous double-page frontispiece to a thirteenth-century manuscript of the Arabic translation of Dioscorides’ *De materia medica* is usually interpreted as an Islamic rendering of the classic author portrait, but with the author and his inspiring muse replaced by the author instructing and certifying his students (fig. 47). The prevalence of check-reading may explain why medieval Western manuscripts, in contrast
to medieval Islamic ones, are so often a tissue of scribal errors by successive generations of copyists.

The origins of this publication procedure probably lie in the tradition of orally transmitting the Koran, although dictation to a group of scribes was quite common in the ancient world. In the medieval Islamic lands, once the necessary materials and scripts were available, the system resulted in an explosion of books. In contrast to the situation in medieval Christendom, where a single scribe made a single parchment copy of the single parchment manuscript on the desk before him, one author in the Muslim world could generate a dozen paper copies from a single reading, and each of these authorized copies could generate another dozen. Within two "generations" of readings, well over a hundred copies of a single work might be produced. This ingenious and efficient system was extraordinarily effective in increasing the circulation of books. It explains how, in a society without printing, medieval Islamic libraries could have had so many books.

Besides expanding interest in book learning, the explosion of books resulted in new professions; people earned their living copying books commercially in writing rooms, dealing in paper or books, or working as bookbinders. The multiplication of books also led to the creation of both public and private collections of books, for books were not confined to schools and learned institutions, but were widely disseminated. A modestly small, but lavishly gilded, thirty-part manuscript of the Koran was made specifically for the library (khizana) of Qutb al-Din Muhammad, Zangid ruler of the small city of Sinjar in northern Mesopotamia from 1198 to 1219, and several surviving illustrated manuscripts made at virtually the same time for the Artuqid court in the nearby city of Diyarbekir argue for the existence of a similar library there. Books and book learning permeated medieval Islamic society.

**Collections and Libraries**

Western sources generally dismiss the extraordinary numbers of books cited for medieval Islamic libraries as examples of "Oriental" exaggeration, although they accept that the ancient library of Alexandria contained somewhere between 100,000 and 700,000 volumes. All sources agree that the libraries of medieval Christendom were uniformly small. In 841 the monastery library at St. Gall, in Switzerland, held 400 volumes; in the early 1100s the monastery of Bobbio, in Italy, held 650 volumes; by the early 1110s the monastery of Cluny, in France, held 570 volumes in its main library. The inventory of the library of the Byzantine monastery of Michael Attaleiates, written in 1077, lists eight books on paper and six on parchment, for a total of 14 books. In the fourteenth century, the papal library at Avignon had barely
2,000 volumes. Even after the invention of printing, books remained scarce: an inventory made at the great monastery of Clairvaux in 1506 records 1,788 manuscripts and only three printed books. The richest library in Christendom was said to have been the library of the Sorbonne, in Paris; in 1338 it had only 338 books for consultation, chained to reading desks, and 1,728 works for loan in its registers, 300 of which were listed as lost. The collections of other European colleges of the period often included no more than 300 works, among them the basic religious and philosophical texts.

In contrast, there were private and public libraries all over the Islamic lands. Shops in the Suq al-Warraqin (Stationers’ Market), the street in Baghdad for paper sellers and booksellers, served somewhat like private research libraries; the polymath al-Jahiz used to rent shops by the day in order to read the books they kept in stock. Stationers like Ahmad ibn Abi Tahir, a teacher, writer, and paper dealer, were men of learning. Abu’l-Faraj Muhammad ibn Ishaq, known also as Ibn Abi Yaqub al-Nadim al-Warraq (“the Stationer”), used his extensive professional knowledge to compile the Fihrist, his encyclopedia of contemporary books and writers, which remains a mine of information about medieval books and writing. The lexicographer al-Azhari reports that a predecessor, the Andalusian lexicographer Abu Abd al-Rahman Abdallah ibn Muhammad ibn Hani al-Andalusi, owned an extensive private library that was housed in a structure built for the purpose, where he received all those who came to study with him. He lodged the students and gave them paper with which to copy from his great collection of books. When he died, the collection was sold for 400,000 dirhams, suggesting that he had somewhere between four hundred and four thousand books. At that time an ordinary book cost ten dirhams, and a fine one ten times as much.

The first public collections of books were assembled under the Abbasids, either during the reign of al-Mansur (754–75), the founder of Baghdad, or his successor Harun al-Rashid (786–809). Although the earlier, Umayyad caliphs had collected writings about principal branches of knowledge, such as hadith and poetry, these were hardly more than collections of notes and single sheets kept under covers or in chests. During the reigns of the early Abbasids and the ascendancy of the Barmakid viziers, translation of Greek, Persian, and Indian works into Arabic became a regular state activity, for the Barmakids, with their literary and administrative interests, had extensive knowledge of what other civilizations could offer. Rich manuscript collections were won as booty in the victories over the Byzantines at Ancyra (806) and at Amorium (838). Al-Mansur sent to the Byzantine emperor requesting copies of Euclid and Greek books on the physical sciences. The caliphal library at Baghdad became a reference center for physicians and astronomers; Harun appointed
al-Fadl ibn Nawbakht, the son of the Persian astrologer who had helped al-Mansur found Baghdad, as librarian and Persian translator.

The caliphal collection underwent its greatest development when Harun’s son, the caliph al-Mamun, created the House of Wisdom (Bayt al-hikma), which served as the official translating institution in Baghdad. It and the associated library, Storehouse of Wisdom (Khizanat al-hikma), were created in imitation of the pre-Islamic Iranian academy at Jundishapur, whose director, the Christian Jurjis ibn Bakhtishu (or Bukhtishu), and his descendants had served the caliphs as physicians. The caliph sent Salman of Harran, the Sabian curator of the House of Wisdom, a translator of Aristotle who was also conversant with Middle Persian, with a delegation of scholars to purchase philosophical and scientific manuscripts in Constantinople.

In an episode prefiguring the modern academic star system, al-Mamun repeatedly, but unsuccessfully, tried to hire the brilliant Byzantine polymath, Leo the Mathematician, after one of his former students, who had been captured by the Arabs and set to work in al-Mamun’s academy, apprised the caliph of his teacher’s knowledge. The caliph’s repeated requests only led the emperor Theophilos to offer his mathematician a position in Constantinople, and Leo was eventually named director of a philosophical school founded privately around 855. Under al-Mamun’s patronage, Greek scientific texts, including Ptolemy’s Syntaxis (Almagest), were translated into Arabic, and the earliest known Arabic treatise concerning astrolabes was written at his court. Astronomical observatories in Baghdad and near Palmyra were attached to the House of Wisdom; scholars were charged with devising new astronomical tables to correct those furnished by Ptolemy.

The House of Wisdom was apparently destroyed during the period of orthodox reaction under the caliph al-Mutawakkil (r. 847–61), but Ali b. Yahya al-Munajjim ("the Astronomer"), a man of letters and a friend of al-Mutawakkil and his successor al-Mutamid, built his own private library, which was open to scholars of all countries. Similar libraries were established at Mosul, Basra, Hormuz, and Rayy. In the tenth century, the Buyids, a Shii dynasty of condottieri from northern Iran, became “protectors” of the Abbasid caliphs, and several of the Buyid rulers built their own libraries. In Shiraz, the Buyid capital in Iran, the geographer al-Muqaddasi saw a huge library that had been built by the Buyid ruler Adud al-Dawla. It was a large free-standing building consisting of a long vaulted hall on three sides of which were series of rooms. According to the chief official, who took the geographer around, there were 360 rooms, "one for every day of the year." The main hall and the side rooms contained carved wooden bookcases with doors; the books lay on shelves, one atop the other. Yahya al-Wasiti’s illustration of a library
painted some two centuries later, in the copy of al-Hariri’s *Maqamat* (Assemblies) that he prepared in Baghdad in 1237, gives some idea of what a medieval Arab library might have looked like (fig. 48).

Libraries not only collected books; they also produced them. Baha al-Dawla, the Buyid ruler of Shiraz in the early eleventh century, appointed the calligrapher Ibn al-Bawwab to be superintendent of his library. The calligrapher found, scattered among the other manuscripts in the library, twenty-

![Fig. 48. A medieval Arabic library as depicted in a copy of al-Hariri’s Assemblies, transcribed and illustrated by Yahya al-Wasiti. Baghdad, 1237. Ink and opaque pigments on paper. 14 1/2 x 11 in. (37 x 28 cm). Bibliothèque Nationale de France, Paris (Ms. Arabe 5847).](image-url)
nine of the thirty volumes of a manuscript of the Koran penned by the great Ibn Muqla, but a prolonged and careful search failed to locate the thirtieth and last part of the set. The calligrapher reproached the ruler for treating the precious manuscript so carelessly, and the prince asked Ibn al-Bawwab to make a replacement for the lost volume in Ibn Muqla’s handwriting. The ruler said that if he failed to detect the forgery, he would give the calligrapher one hundred dinars and a robe of honor. So the calligrapher "went to the library and searched among the old paper for a paper resembling that of the Koran manuscript. There were several sorts of old Samarqand and China paper in the library—very fine and admirable papers. I took what suited me and wrote out the missing volume. Then I illuminated it and gave the gold an antique appearance. Then I removed the binding of one of the [genuine] parts and bound the part which I had written in it. Finally, I made a new binding for the genuine volume and made it appear old." It was nearly a year before the ruler remembered the incident. He inquired whether Ibn al-Bawwab had fulfilled his promise and was shown the complete Koran manuscript in thirty parts, but he was unable to distinguish the replacement from the original. Baha al-Dawla, however, showed no haste in fulfilling his part of the bargain, so the calligrapher finally asked the prince’s permission to help himself to sheets of "China" paper kept in the library. The request was granted, and the calligrapher was kept in paper for years.

Perhaps the most important Abbasid library was the one built in Baghdad in 991 by the Persian Sabur ibn Ardashir, Baha al-Dawla’s vizier. Known variously as the House of Knowledge (Dar al-ilm) or House of Books (Dar al-kutub), it contained over ten thousand volumes on a range of scientific subjects. Over the six decades of its existence, several notable scholars were appointed librarian, and many consulted its volumes and added to its collection. It was burned during the Saljuq invasion of Baghdad in 1055–56, and only a handful of its books were saved.

The Abbasid libraries were models for libraries in distant provinces, even when the rulers of these regions did not look to Baghdad for political leadership. The second Umayyad caliph in Spain, al-Hakam II (r. 961–76), whose ancestors had been massacred by the Abbasids, established an enormous library in Córdoba on the model of the great libraries of Baghdad. Al-Hakam’s main interest was books, and he seems to have been a greater scholar and bibliophile than he was a leader and ruler. The son of Abd al-Rahman III, whose long reign had been marked by the efflorescence of Córdoba as a cultural center, al-Hakam had been tutored by the best scholars of his time and began to study and collect books in his teens, long before his accession to the throne at the relatively advanced age of forty-six. Al-Hakam’s library served as the focus
of a whole set of cultural activities that helped to lay the foundations for the
burst in literary production in Islamic Spain during the century and a quarter
following his death.

Al-Hakam’s library is said to have contained 400,000 books. The catalogue
titles alone is said to have filled forty-four volumes, each with twenty folios.
This works out to an unlikely 227 items per page, so the actual numbers may be
somewhat inflated. Still, even at one-tenth the size, it would have been larger, by
a factor of fifty or more, than any contemporary library in Christendom. The
Córdoba library lent out books, and outsiders appear to have had some degree of
access to them. Librarians, different types of translators, and numerous copyists
were employed, as well as checkers to verify the accuracy of copies. After al-
Hakam’s death, his successor, the generalissimo al-Mansur, burned the philo-
sophical and theological works that he and his associates considered heretical.
and the rest of library was dispersed.

In Egypt, the Fatimids, who also disputed the Abbasids’ claim to the
caliphate, established several major institutions of learning in Cairo modeled
on those in Baghdad. Just as the number of books in al-Hakam’s library at
Córdoba seems exaggerated, the numbers of books in the Fatimid libraries
seem incredible. Nevertheless, even if these libraries only held a fraction of
the books they are reported to have contained, the collections would still have
been impressive.

Some of the numbers seem quite reasonable. For example, it is said that in
993–94, the caliph al-Aziz was able to produce from his library thirty copies
of al-Khalil ibn Ahmad’s lexicographical masterpiece Kitab al-qyn, including
one in the hand of the author, as well as twenty copies of al-Tabari’s multivol-
ume Tarikh al-rusul wa’l-muluk (History of Prophets and Kings), including an
autograph copy, plus one hundred copies of the Jamhara of Ibn Durayd. Given
how Arabic manuscripts were normally copied and transmitted, such numbers
are not as improbable as they might seem.

The Fatimid caliphs maintained their own House of Knowledge (Dar al-
ilm; sometimes also known as the House of Wisdom, Dar al-hikma) in their
palace in Cairo. It contained a library and reading room and served as a meet-
ing place for scholars of hadith, jurists, grammarians, doctors, astronomers,
logicians, and mathematicians. The historian al-Maqrizi has preserved the
annual budget for the library during the reign of al-Hakim (r. 996–1020). The
total was 207 dinars, of which the largest single expense, 90 dinars, was on
paper for the copyists. (A lower–middle–class family could survive on 24 dinars
a year.) The next largest expense, 48 dinars, was for the librarian’s salary, with
lesser amounts for the attendant’s wages (15 dinars), wages for the keeper of
paper, ink, and pens and wages for the person who repaired books (12 dinars
each); floor mats and drinking water (10 dinars each); felt carpets and blankets for winter (5 and 4 dinars, respectively); and repairing the curtains (1 dinar). When a new catalogue was prepared in 1045, the library was said to contain sixty-five hundred volumes on various subjects, an unexceptionable number.

Over the course of the year 1068–69 the Fatimid palace was looted by hungry troops, who took whatever they thought they could sell for cash or food. The accounts of the fabulous treasures the troops found are mind-boggling. One storeroom yielded eighteen thousand volumes on the "ancient sciences," and another contained twenty-four hundred boxed manuscripts of the Koran written in "proportioned scripts," that is, the kind developed by Ibn Muqla. An eyewitness saw twenty-five camels laden with books valued at 100,000 dinars headed to the house of the vizier Abu'l-Faraj Muhammad ibn Jafar ibn al-Muizz al-Maghribi, who had taken them in lieu of the 5,000 dinars in salary he was owed. A month later, the same books were looted from the vizier's house and dispersed.

At his death in 1121, the powerful Fatimid vizier al-Afdal left a library of half a million books; the caliph al-Amir moved them to the palace and then endowed many of them for public circulation. The late Fatimid historian Ibn al-Tuwayr reports that the library contained more than 200,000 bound volumes on such subjects as fiqh (jurisprudence), hadith, theology, grammar, lexicography, history, biography, astronomy, and chemistry. According to the historian Ibn Abi Tayyi, when the Fatimid dynasty fell to Saladin in 1171, the caliph's library contained 1,200 copies of al-Tabari's History, along with an estimated 1.6 million other books, many of which Saladin sold. In apparent confirmation of these incredible numbers, Ibn Abi Tayyi claims that at least 100,000 volumes were transferred to the new Sunni madrasa (theological college) established by al-Qadi al-Fadl, and the rest were sold over the next decade. Just as only one manuscript has survived from al-Hakam's library in Spain, only two manuscripts have survived from the incredible Fatimid royal libraries.

A CULTURE OF WRITING

The period between the emergence of Islam in the seventh century and the Mongol invasions of West Asia in the thirteenth was the golden age of Islamic civilization. During that time the culture evolved from largely oral to scribal—a momentous change. Writing came to play a crucial and pervasive role in virtually every aspect of life. Although all sorts of reasons have been adduced to explain the change, I believe that the increased availability and use of paper served as a catalyst.

In the greater history of world civilization, the shift from oral to scribal culture was as important to the flowering of medieval Islamic civilization as was
the later shift in Europe and elsewhere from a scribal culture to a typographic one. The shift from scribal to typographic culture in Europe, which was marked by the invention of printing with movable type, has received more attention from historians than the earlier shift from oral to scribal culture, but the earlier transformation, marked by the introduction of papermaking to the Islamic lands, may have been at least as important. The intellectual act of remembering is essentially different from the act of referring to a written record, whether copied by hand or printed. As writing penetrated society, mnemonic systems for preserving traditions gave way to physical texts that could be referred to independently of their human transmitters.

The changes in modes of thinking brought about by dealing with written texts are not the result of underlying differences between the mental capacities of oral and literate peoples; rather, they stem from a fundamental alteration in the tools available to each. The graphic representation of speech is a tool that encourages reflection on information and the organization of information; it also changes the nature of representations of the world, even for those in the culture who cannot write. Just as a text written in codex format was easier to access than the same text written on a roll, information is often far easier to access from writing than from memory, particularly when the sequence or accuracy of items, rather than their general content, is essential. To remember a passage of music or the sequence of some lines of poetry, one often has to "scroll down" from some beginning to the appropriate point. Leafing through a written text, no matter what its format, can be far faster and is usually more reliable.

In medieval Islamic civilization, however, the shift from reliance on memory to a comparable reliance on the written record was never completely accomplished. Indeed, in some regions and in some areas of knowledge, such as learning and reciting the Koran, mnemonic systems persist to this day. Nevertheless, a watershed seems to have been crossed by the twelfth century, when the general availability of paper allowed early patterns of oral transmission of authority and knowledge to be altered; what took their place was increased use of a corpus of Islamic texts, declared authoritative by professors teaching in new government-sponsored institutions. The fateful shift from memory to written word had other repercussions, because paper and ink could be used for more than the mere representation of speech; they had important contributions to make in other fields of human endeavor, such as mathematics, geography, commerce, and the arts.