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SHEILA S. BLAIR

COLOR AND GOLD: THE DECORATED PAPERS USED IN MANUSCRIPTS IN LATER ISLAMIC TIMES

Fine manuscripts made in later Islamic times are renowned for their glorious colors. Connoisseurs and scholars have long appreciated the exquisite miniatures and illumination which embellish these manuscripts. They have spent less time studying the papers used to support and surround the flowing calligraphy, though these too are often exquisitely tinted and decorated to contribute to this dazzling display.

This somewhat lopsided approach reflects the interests of earlier researchers, who preferred paintings to paper. Traditionally, published reproductions show just the miniature or a detail of the illumination and crop the surrounding margins which are often done on colored and decorated paper.¹ This was the case, for example, in virtually all the miniatures illustrated in the *Survey of Persian Art*.² Even such a groundbreaking work as Basil Gray's 1979 volume, *The Arts of the Book in Central Asia*, which included separate chapters on calligraphy, illumination, and binding, had no discussion of paper, and most of the illustrations in it are cropped to show only the miniatures and not the margins.³ More recent investigations, however, focus on the complete page, including calligraphy and margin, and one of the peripheral purposes of this paper is to encourage reproductions of full rather than cropped pages. Another is to encourage further study and publication of the basic physical aspects of manuscripts. A third is to investigate the connection between technological innovation and descriptions of it in medieval times.

My main subject is the origin and development of the colored and decorated papers used for fine manuscripts made in the eastern Islamic lands from the thirteenth to the seventeenth century. My research began not with information gathered from chronicles and treatises, though of course I have consulted and used them, but rather with extant examples, which sometimes confirm but can also contradict what the

later texts tell us. From this information, I have developed a hypothesis about how decorated papers came to be appreciated and made in the Islamic lands and the means by which such knowledge was transmitted. This hypothesis seeks to explain the specific route and method of artistic transmission, for I feel that too often scholars fall back on what I might call, in a more cynical mood, the miasma theory of art history in which "influences" whizz about from country to country like the winds whipping across the steppes of Central Asia.

Colorful supports have long been part of the tradition of Islamic manuscripts. Parchment, the support used for fine manuscripts from early Islamic times, was occasionally colored. One need only think of the famous Blue Koran, attributed to mid-tenth century Tunisia,⁴ or other, salmon-colored, pages.⁵ The Byzantines also used colored parchment, and the emperor Constantine VII Porphyrogenitus is said to have sent a letter on violet parchment to the Umayyad caliph of Cordoba, 'Abd al-Rahman III.⁶

Colored parchment was rare, however, for very practical reasons. When used as a support for writing or decoration, the skin has to be properly prepared. It is cured, scraped to remove any fat or flesh remaining on the inside, sanded, stretched taut, and then dried. Submerging the prepared skin in a vat of dye can cause it to crack or shrink. For use in fine manuscripts, the parchment has to be colored in a different way, usually by painting it with color, a time-consuming process.

Paper was easier to color. In the Islamic lands, this was usually done by immersing the prepared sheets of paper in a vat of dye. Most European colored papers, in contrast, were dyed by coloring the fibers in the vat before making the paper.⁷ Recipes and texts describing paper dyeing in Iran date from the fifteenth century. They have been collected and summarized by Yves Porter.⁸ The main vegetal dyes were

saffron, tumeric, safflower, lac, other red dyes, sapanwood, henna, pomegranate bark, indigo, and sunflower-croton. Minerals include verdigris, orpiment, ceruse, and blue vitriol. In addition, mordants were often used to fix the colors during dyeing.

Uğur Derman explained the steps and materials used in Ottoman times.⁹ The dye was boiled in water which was then poured into a trough. The paper was soaked in the dye until it reached the desired color and then set aside to dry. Most dyes were made of vegetable materials. Tea gave a cream or tan color, the most popular.¹⁰ The skins of pomegranates and walnuts gave brown; the seeds of dyer's buckthorn gave yellow; logwood gave red or purple; soot produced during the preparation of caramel gave yellowish white; and onion skins gave red.

Although paper was commonly used for Islamic manuscripts beginning in the late tenth century, the first surviving examples of dyed Islamic paper that I have been able to identify date from several centuries later. They mark not the beginning of the tradition, but rather the time when colored paper was readily available. Colored paper was used for individual documents and calligraphic specimens. One copied on gray paper and dated Muharram 727 (December 1326) is preserved in an album in Istanbul (Topkapi Palace Library, H. 2153, fol. 31a).¹¹ A similar page in another album in Istanbul (Topkapi Palace Library, B. 411, fol. 68a), signed by 'Abd Allah al-Sayrafi, is undated, but may be slightly earlier as the album contains signed specimens by the same calligrapher dated 710 (1311) and 714 (1314).¹²

Manuscripts on colored paper also became common in Iran in the Mongol period. A unique copy of a treatise on rhetoric dated 1 Rabi' I 677 (23 July 1278) in the Chester Beatty Library is copied on folios of a pale olive color.¹³ This olive paper is rare, if not unique. Much more common was orange or red paper, used in many manuscripts produced in the second half of the fourteenth century. The Chester Beatty Library, for example, owns a treatise on traditions dated Wednesday 12 Jumada II 754 (15 July 1352) that includes ten folios (fol. 17, 19, 22, 24, 26–31) of rusty orange paper interspersed among 145 cream-colored folios.¹⁴ The same combination of rusty-orange and cream-colored folios is found in another manuscript dated 785 (1384) in the same collection.¹⁵ A Persian copy of the Gospels in the Bibliothèque Nationale (ms. pers. 3) completed in Jumada II 776 (November-December 1374) at Shahr-i Crim (the town

of Solghat in the Crimea) has pages dyed salmon and ochre.¹⁶ As Francis Richard points out, until 1318 the seat of the Nestorian Catholicos was at Maragha, near the Ilkhanid court in northwestern Iran, and Christian bookmakers may have learned the technique from the Ilkhanids.¹⁷ An anthology of Persian and Arabic verses copied at Baghdad in 793 (1391) (Bibliothèque Nationale, ms. arabe 3365) is copied on white and rose-colored paper.¹⁸ Such colored papers abound in manuscripts from fifteenth-century Iran when all aspects of the arts of the book were refined.

Colored papers were also used for manuscripts made in the Maghrib, or western Islamic lands. The Bibliothèque Nationale has a five-volume manuscript of the Koran on brownish-purple paper (ms. arabe 389-92) that was endowed to the Almohad mosque in Tunis in 1405.¹⁹ The library is said to contain other Nasrid manuscripts on colored paper made in the thirteenth century.²⁰ Such an early date suggests that papermakers in the Maghrib may have developed a separate tradition for coloring paper, but further research is needed to determine the techniques used there for it. Here I will concentrate on how and why colored paper became popular in Iran and adjacent lands.

I believe that Iranians developed their taste for colored paper, like so many other artistic ideas, from the Chinese. The Chinese, who had invented paper just before the advent of the Christian era, had been making colored papers since pre-Islamic times.²¹ At first artists in the Islamic lands may have used colored papers that were imported from China, but the expense and desirability of these imported colored papers must have induced local artists to develop their own methods and materials. Just as the Muslims apparently developed new kinds of hydraulic mills to make paper, so they adapted dyeing techniques used for textiles and cloth to color paper.²²

The taste for and availability of colored paper clearly grew in the thirteenth century, when trade contacts between China and Iran intensified. Like many of the other visual arts produced in the period after 1250, this taste may have spread from Iran to other Islamic lands, both east and west.²³ The same chain of transmission can be traced for the four-iwan plan, the adoption of stucco decoration, and the dissemination of chinoiserie motifs such as the peony and lotus.

The greater availability of dyed paper in the fourteenth century and the increased specialization of

book-making ateliers in the fifteenth led to the writing down of several recipes for dyeing paper. The earliest that has survived seems to be the one completed by Simi Nishapuri in 1433.²⁴ Ilkhanid authors may have written similar treatises, for such technical innovations sometimes spurred treatises about them. The first dated example of luster ceramics made in Iran is a jar in the British Museum (1920-2-26) dated Muharram 575 (June 1179),²⁵ and our first surviving treatise about the technique is the *Jawharnāma-yi Nizāmī* written in 1196 by Muhammad al-Jawhar al-Nishapuri for Nizam al-Mulk, vizier of the Khwarazmshah ruler Tekesh.²⁶ It, in turn, was the source for the better-known treatise *‘Arāyis al-jawāhīr wa nafāyis al-aṭāyib*, written by Abu’l-Qasim Kashani a century later.²⁷

At the turn of the fourteenth to fifteenth century, papermakers and artists in Iran and adjacent areas of the eastern Islamic lands also used fancier types of decorated papers. One type is paper decorated with gold, a technique known in Persian as *zarafshānī* (literally, “gold sprinkling”). This type of specialty paper was also a Chinese innovation, for paper decorated with gold and silver had been used in China at least since the Tang period (618–907). Several different methods were used there, including splashing or sprinkling with gold and using gold paint, gilding, or gold leaf.²⁸

Chinese papers painted in gold with birds, flowers, and landscape scenes and splashed with large flecks of gold were imported into Iran and used for several manuscripts made for the Timurids in the fifteenth century. The earliest examples to survive are two companion volumes of Farid al-Din ‘Attar’s poetry made at Herat for the Timurid ruler Shahrukh around 1438. One with six Sufi poems (Istanbul, Topkapi Palace Library, ms. A. III 3059) copied by ‘Abd al-Malik is dated 27 Shawwal 841 (23 April 1438); the other with five poems (*Türk ve İslam Eserleri Müzesi*, no. 1992) is undated but equally sumptuous.²⁹ These manuscripts are copied on unusually heavy paper that has been tinted, highly polished, and painted with gold designs and speckles. Such heavy paper makes certain formats impractical, if not prohibitively expensive.

In addition to individual specimens of calligraphy and drawing,³⁰ Chinese tinted and gold-decorated paper was used for manuscripts made throughout the fifteenth century. The best studied³¹ is a small copy of Mir-Haydar Khwarazmi’s *Makhzan al-asrār* in the

New York Public Library (Spencer Collection, Persian ms. 41).³² Transcribed by Sultan-‘Ali al-Ya‘qubi for the Aqqoyunlu ruler Ya‘qub ibn Uzun Hasan, the manuscript was finished on 25 Jumada I 883 (24 August 1478). The script on its thirty-five folios, each measuring 18 × 10.5 cm, is copied on paper that has been dyed light blue, sprinkled with gold, and painted in gold with birds, flowers, and landscape scenes.

Soucek’s detailed study and photographs of the *Makhzan al-asrār* manuscript allow us to reconstruct how the manuscript was put together. The Aqqoyunlu bookmakers had access to two rolls of Chinese gold-decorated paper. One roll, measuring 44 × 280 cms and painted on one side only, was used for the first half of the manuscript (folios 1–19). The other roll, measuring at least 44 × 144 cms and painted on both sides, was used for the second half of the manuscript (folios 20–35).

These rolls themselves were probably made of smaller sheets pasted together. Although it is possible to make a single sheet measuring some three meters long, it would have been extremely difficult to lift such a long sheet from the mold. Furthermore, the paintings in Soucek’s reconstruction do not quite line up. In some cases there is a small gap between sheets with contiguous paintings. The missing areas probably contained the small overlaps created when Chinese papermakers pasted the original sheets together to form the long roll. In cutting their sheets from the rolls, Aqqoyunlu bookmakers probably trimmed the bumpy overlap.

These rolls of gold-decorated paper were probably brought from China by one of many embassies sent by the Ming to the court of the Timurids and other rulers of Iran. According to Chinese sources, the first envoy from Samarqand arrived in Peking during the fourth month of 1387, and many embassies were exchanged in the following years.³³ The Timurids were not the only rulers to exchange embassies with the Chinese. Chinese sources also report that they exchanged an embassy with Tabriz in 1431–32.³⁴ Nevertheless, the Timurid-Ming embassies were the most common and the largest.

The Ming emperors Hung-wu (r. 1368–98) and Yung-lo (r. 1403–24) sent embassies to Timur in 1395, 1402, and 1403, and each time Timur detained and executed the ambassadors. Sino-Iranian relations reached their nadir in 1405, but were resumed under Timur’s son and successor Shahrukh (r. 1409–47), when several more embassies were exchanged.³⁵

The first Chinese embassy, bringing condolences on Timur's death, was graciously received in Herat, but a second sent the following year included an extraordinarily condescending letter in which Emperor Yung-lo claimed to be lord of the world. Understandably irritated by the tone, Shahrukh fired back an equally arrogant reply telling the emperor, among other things, that he should mind his own business and convert to Islam.

Though momentarily stalled, Sino-Iranian diplomatic relations soon picked up. In 1413 a caravan of merchants from the Timurid lands of Uyghuristan and Moghulistan arrived in Nanking with presents for Yung-lo, including horses, leopards, and lions. These gifts inspired Yung-lo to order a return mission, which, according to Chinese sources, reached Herat on 28 October 1414. It carried "thank-you" gifts of plain and patterned silk and was led by the diplomat Ch'en Ch'eng, who left an account of his journey and his impressions (not very favorable) of Herat. Persian sources mention another embassy arriving in Rabi' I 820 (April 1417) with three hundred horsemen and gifts from the Chinese emperor including falcons, brocades, porcelains, and Chinese paper.³⁶ The Ming emperor also included a picture of a white horse that Sayyid-Ahmad Tarkhan had sent with an earlier embassy to China, and such a picture is preserved in one of the albums in Istanbul (Topkapi Palace Library, H. 2154, fol. 33b).³⁷ Shahrukh dispatched a return embassy the following month, and another exchange took place several years later.

Many of these Timurid missions included scribes and artists. The last mission sent by Shahrukh was led by the artist Ghiyath al-Din, who left a well-known account of the journey he took between 1419 and 1422.³⁸ The scribe Hari-Malik Bakhshi was co-director of the embassy that Prince Ulugh-Beg and other rulers sent alongside that of his father Shahrukh.³⁹ A scribe in Ulugh-Beg's chancery, Hari-Malik Bakhshi is best known as the person who penned the fabulous double manuscript in Uyghur script in the Bibliothèque Nationale (ms. suppl. turc 190). The first volume (fols. 1b-68a) is a translation of the *Mi'rajnāma* by the poet Mir-Haydar.⁴⁰ The second volume (fols. 69b-264b), penned in a similar hand, is a copy of the *Tadhkirat al-awliya'* finished by Hari-Malik Bakhshi on 10 Jumada II 840 (21 December 1436). Artists such as Ghiyath al-Din Naqqash and Hari-Malik Bakhshi, who worked in the Timurid chanceries and bookmaking ateliers, could not have failed to notice, and

probably brought home, examples of the fine gold-decorated papers used at the Ming court in China.

This Chinese gold-decorated paper may have been stockpiled in the royal Timurid bookmaking atelier in Herat and thus became available when other dynasts sacked the Timurid capital. Barbara Schmitz suggested that such unused gold-decorated paper may have been taken from Herat when the Aqqoyunlu under Uzun Hasan seized the city in 1468, thus providing one possible explanation for how the Chinese gold-decorated paper used in the *Makhzan al-asrār* manuscript was available to bookmakers in Tabriz a decade later.⁴¹

Although the first surviving examples of Islamic manuscripts transcribed on Chinese gold-decorated paper date to the 1430's, there is corroborating but indirect evidence making it possible to trace the knowledge of such paper back to western Iran at the beginning of the fifteenth century under the Jalayirids. A copy of the poems of Sultan Ahmad Jalayir probably made at Baghdad around 1403 and now in the Freer Gallery of Art (32.30-37) has eight pages with marginal drawings executed in black ink with touches of blue and gold.⁴² Marginal drawings like these are rare in Islamic manuscripts, and earlier scholars sometimes thought that the drawings had been added to the manuscript in the seventeenth century. More recent scholarship, however, has adduced stylistic parallels for the drawings to show that they were contemporary with the transcription. Deborah Klimburg-Salter interpreted the scenes as representing the seven stages along the mystical journey of the birds, a story recounted by Farid al-Din 'Attar in his masterful *Mantiq al-tayr*.⁴³ Her explanation is not without problems (the scenes, for example, do not occur in the text in the same order that she discusses them), but beside the mystical interpretation for the subject of the drawings, I can propose a practical interpretation for their unusual technique: an Islamic rendering in black ink and gold of Chinese paintings in gold. These ink drawings suggest that Chinese gold-decorated paper might have been known at the court of the last great ruler of the Jalayirid dynasty in the opening years of the fifteenth century.

Such marginal drawings were part of the developing interest bookmakers in the Islamic lands took in exploiting the decorative and aesthetic possibilities of the margin. Illustrated manuscripts made in the twelfth and early thirteenth centuries often do not have rulings setting off the text or paintings from

the margin. In Ilkhanid times, when the illustrated book became a major focus of artistic activity, book-makers paid more attention to the margin and to the relationship of margin to text block. Fine manuscripts made for the Ilkhanid court at the beginning of the fourteenth century typically have a double red line enclosing the rectangular text block, which incorporates square or rectangular paintings, themselves often ruled with blue or gold lines. Illuminated headings done in gold set off against pale blue, green, and red are usually enclosed in rosettes or cartouches that extend only as far as the borders of the text block. Many of these features can be found, for example, in the Arabic copy of Rashid al-Din's *Jāmi' al-tawārikh* made at Tabriz ca. 1315.⁴⁴

In manuscripts from the early fourteenth century, the text is thus distinctly separated from the margin. Such a distinction between text block and margin makes it unlikely to my mind that decorated papers were used in Ilkhanid times, although historical circumstances make it possible that Chinese papers were imported to Iran at that time. Sino-Iranian relations were close in the early fourteenth century, as branches of Mongols ruled both areas. Many Chinese goods and artistic ideas, from Yuan silks and chinoiserie motifs such as peonies and chrysanthemums, were imported to Iran. The relative youth of the book-making tradition in Iran and the prevailing taste for blank margins, however, make it unlikely that Chinese gold-decorated papers, even if available, were used in Iran in the early fourteenth century.

Over the course of the fourteenth century, several changes occurred in luxury book production in Iran. Two, the expansion of the palette used for illumination and the extension of the composition into the margin, are significant for us here. By mid century the preferred color scheme for rosettes and borders had evolved to a marked predominance of dark blue and then dark blue and gold. The dark blue from lapis is particularly effective when set off against a gold ground, and this striking combination of dark blue against gold continued to predominate throughout the fifteenth century.⁴⁵ Manuscripts of the Koran from fourteenth-century Iran are typically written in gold with blue vocalization, and many of the multi-volume manuscripts are decorated with magnificent frontispieces done in the same combination of colors. The development of illumination went hand in hand with increased specialization in book production, and many Koran manuscripts from this pe-

riod were made by a team comprising a named calligrapher and a named illuminator.⁴⁶

At the same time that they refined the palette of book illumination, artists in Iran extended various elements that had traditionally been contained in the text block into the margin. In manuscripts from the early fourteenth century, the occasional spear or flag projects from the miniature painting within the text block into the margin, but basically the margin is totally distinct from the text block and forms a plain frame around the ruled text. Over the course of the fourteenth century, artists developed at least three devices to integrate text block and margin. First, they extended various elements of the illumination. In addition to marginal palmettes and roundels, frontispieces sometimes have a line of blue finials that project into the margin. Such marginal decoration is found, for example, in the title page to a manuscript of Muhammad Qazvini's *Jāvidān khirad*, dated 759 (1360) (St Petersburg, Institute for Oriental Studies, C650, fol. 1a).⁴⁷ The same type of blue finial can also be found in contemporary manuscripts of the Koran, such as a thirty-part copy made in 1334, probably at Tabriz; a single-volume copy made in 1340–41, probably at Baghdad; and a thirty-part copy made at Shiraz in 1344–46.⁴⁸

Along with illuminators, fourteenth-century painters also extended their compositions into the margin. Some of the earliest examples are found in a copy of Asadi's *Garshāspnāma* completed in Rajab 755 (June 1354) and now in the Topkapi Palace Library (H. 674).⁴⁹ In this manuscript, as in a copy of the *Shāhnāma* in the same library (H. 1511) completed in 1371 probably at Shiraz,⁵⁰ only a relatively small part of the paintings, such as a bird or the limb of an animal, projects into the margin. These projections resemble the flag or spear found in earlier manuscripts. In a few cases, however, artists developed the idea. In the illustration of Garshasp defeating the Bahu's son at sea (fol. 23a), for example, a large section of the painting falls in the left and upper margins, giving the impression that the seascape continues up and under the text block.

The tendency to expand the composition is even more pronounced in a spectacular copy of the animal fables of *Kalila and Dimna* that has been cut from its original volume and remounted in an album in Istanbul University Library (F. 1422).⁵¹ Although undated, the manuscript should be attributed to northwestern Iran in the mid to late fourteenth cen-

tury and is thus contemporary with several other paintings from the *Shāhnāma* mounted in other albums in Istanbul.⁵² In these pages, painters have expanded the marginal section of the painting so that it can comprise as much as a quarter of the composition and sometimes extends around and above the written text.

By the end of the fourteenth century the process of marginal expansion was complete, and the miniature had become so big that it almost engulfed the text block, which in turn had shrunk to one or two couplets. The key manuscript in marking this milestone, like so many others, is the splendid copy with three epic poems by Khwaju Kirmani completed in Jumada I 798 (March 1396) (British Library, ms. Add. 18113).⁵³ The manuscript was clearly a royal production made according to the highest standards of the day and reflects the finest work of the Jalayirid court atelier. The text was transcribed in elegant *nasta'liq* script by the renowned scribe Mir-'Ali ibn Ilyas al-Tabrizi for Sultan Ahmad Jalayir. One of the paintings is signed by Junayd; it is the first surviving example of a signed miniature painting. In many of the illustrated pages, the text is reduced to a couplet or two that is almost lost in the intricate full-page composition executed in brilliant colors. The expansion of the composition into the margin was only one of many new features that became standard at this time. The Jalayirid court atelier was particularly inventive, and other innovations, such as rock faces, have been traced to the same milieu.⁵⁴

Artists working in Shiraz and southwestern Iran developed a third method of extending the composition into the margin by adding a second text, usually written diagonally in the margin around the first. Such an arrangement can be seen in manuscripts produced for Iskandar-Sultan, the Timurid ruler of several cities in southwestern Iran from 1403 to 1413. Particularly important in this respect is a pair of anthologies, one in London (British Library, ms. Add. 27261), the other in Lisbon (Gulbenkian Foundation, L.A. 161).⁵⁵ The arrangement of a second text written obliquely to the main text became a hallmark of manuscripts produced in southwestern Iran in the fifteenth century.

It is no surprise that manuscripts produced in Shiraz in the fourteenth and fifteenth centuries gave precedence to the written word, for after the Mongol invasions the city became the center of lyric poetry in Iran. It was home to the witty Sa'di (d. 1292) and

the masterful Hafiz (d. 1390). These two stars, particularly the latter, attracted a constellation of other lesser-known poets such as the lyrical Khwaju Kirmani (d. 1352) and the scabrous 'Ubayd Zakani (d. 1371). Writing was obviously an important art in Shiraz, and Elaine Wright has recently established that scribes working there in the second half of the fourteenth century developed the new hanging script known as *nasta'liq*.⁵⁶

These three practices—blue finials, expanded miniatures, and diagonal texts—are all different ways to achieve a similar goal of smoothing the sharp division between margin and text block and integrating frame and framed. All three have the effect of reducing the visual distinction between busy text block and blank margin and uniting the page into a single, densely colored composition. All three, firmly established in the Jalayirid court atelier at the end of the fourteenth century, became standard elements of Persian painting of the classical period seen in manuscripts produced for the Timurids in the fifteenth century, and Jalayirid artists, I believe, also experimented with other techniques of achieving the same goal, including the use of Chinese gold-decorated papers. These papers were expensive and hard to acquire, so it is no surprise that Iranian artists began to make their own. It is not as fine quality as the Chinese original, and the gold specks are generally smaller and often sprayed.⁵⁷ Like the Chinese prototype, this gold paper was expensive, and so it was used often, if not exclusively, for borders.⁵⁸ Like the Chinese import, the local Islamic imitation was probably first used at the Jalayirid court in northwestern Iran at the very end of the fourteenth or very beginning of the fifteenth century.

The earliest example I know of an Islamic manuscript with borders of locally made gold-sprinkled paper is a fragmentary copy of Nizami's poem *Khusraw and Shirin* in the Freer Gallery of Art (31.32/7).⁵⁹ The bottom half of the colophon with the date has been removed, but the remainder says that the manuscript was copied at Tabriz by Mir-'Ali ibn Hasan al-Sultani. Soucek has identified this Mir-'Ali as the famous calligrapher who is often, though erroneously, credited with the invention of *nasta'liq* script.⁶⁰ On stylistic grounds, the paintings suggest that the fragmentary manuscript should be attributed to the early fifteenth century.⁶¹

The evidence from the *Khusraw and Shirin* manuscript is not conclusive, however, for its gold mar-

gins, as in most manuscripts, are not done on the same paper as the rest of the text, and might have been added when the manuscript was reworked in the Safavid period. At this time, one of the six paintings was completely repainted.⁶² The original painting, visible under ultraviolet light, shows an enthroned figure surrounded by angels, while the incomplete Safavid painting, datable on stylistic grounds to ca. 1530, shows the Prophet, 'Ali, and some of the companions. The lacquer binding may also have been made at this time, and the gold-flecked margins added to fit the new binding.

As was the case with the Chinese-imported gold paper, there is corroborating evidence to show that bookmaking ateliers in Tabriz at the beginning of the fifteenth century had also developed the technique of gold sprinkling. Gold-decorated papers were particularly useful in albums, known in Arabic as *muraqqa'* (lit. "patchwork") and in Persian as *jung* (lit. "ship"), in which decorated borders unite pages containing various specimens of calligraphy and painting.⁶³ The earliest album to survive is one in Istanbul (Topkapi Palace Library, H. 2310) containing specimens by fourteenth-century master calligraphers which were collected around 1430 for the Timurid prince and bibliophile Baysunghur. Though the earliest to survive, the Baysunghur album may not have been the first to have been made—textual evidence suggests that albums were already being made by the turn of the fourteenth-fifteenth century for the Jalayirid sultan Ahmad.

The sixteenth-century historian of painting and calligraphy, Dust Muhammad refers to such an album (*jung*) in the preface he wrote for the album he compiled in 1544 for Bahram Mirza (1517–49), brother of Shah Tahmasp (Topkapi Palace Library, H. 2154).⁶⁴ According to the Safavid librarian's florid account of the history of calligraphy and painting, the Timurid prince Baysunghur ordered three artists—the painter Ustad Sayyid Ahmad, the portraitist Khwaja 'Ali, and the bookbinder Ustad Qiwam al-Din—brought from Tabriz to Herat where they were to make a copy of Sultan Ahmad's *jung* of exactly the same format and size (*qat' u mastar*) and with the same scenes. Ja'far, the master calligrapher in Baysunghur's scriptorium, was put in charge of transcription, Qiwam al-Din in charge of blinding, and Mir Khalil in charge of decoration and depiction. The Safavid chronicler goes on to say that Baysunghur died before the copy could be finished, so his

oldest son 'Ala' al-Dawla (d. 1460) continued the work of his father, using the same artists plus another artist, Khwaja Ghiyath al-Din Pir-Ahmad Zarkub, brought from Tabriz, who "ennobled the leaves of painting in Herat with the subtlety of his brush and touched up (*qalamgiri*)" some scenes in the *jung*. Ghiyath al-Din Pir-Ahmad's epithet *zarkub* (literally, "the gold-beater") suggests that gold decoration was already a specialty at Tabriz.

The technique of gold sprinkling soon became popular in the Timurid atelier at Herat. According to Dawlatshah (d. 1494 or 1507), amir and courtier at the court of the Timurid ruler Sultan-Husayn at the end of the fifteenth century, gold sprinkling (*zaraf-shāni*) was already practiced by Simi Nishapuri, working in Khurasan at the court of Baysunghur's son 'Ala' al-Dawla.⁶⁵ Timurid artists may well have learned the technique from their Tabrizi colleague Ghiyath al-Din Pir-Ahmad Zarkub. Such gold-sprinkled margins were then used for the finest poetic manuscripts prepared from the late fifteenth century onwards. They are found, for example, in the superb copy of Sa'di's *Būstān* copied by the scribe Sultan-'Ali for the Timurid ruler Sultan-Husayn in 1488 and illustrated by Bihzad (Cairo, National Book Organization, Adab Farsi 908).⁶⁶

Under the Timurids and their successors, bookmakers soon elaborated the techniques of gold sprinkling and gold painting. Writing in 1596, the late-Safavid chronicler Qadi Ahmad mentions, for example, that Mawlana Muhammad Amin, a ruler (*jadval-kash*) and gilder (*mudhahhib*) from Mashhad, knew about four types of gold-sprinkling. The techniques differed depending on the size of the particles and on whether the gold was applied in sheets or in solution.⁶⁷

At the same time that techniques of gold decoration became more elaborate, so did albums. Some albums, such as the well-known examples in Istanbul (Topkapi Palace Library, H. 2152, H. 2153, and H. 2160) and Berlin (Staatsbibliothek, Diez fols. A.70–73), resemble scrapbooks, with various pieces of calligraphy, painting, pounces, and designs. Some of these albums (e.g., H. 2152) were probably assembled at Herat; others (e.g., H. 2153 and H. 2160, and the Diez albums in Berlin⁶⁸) at Tabriz in the early sixteenth century. Still others, such as the ones assembled for the Safavid amirs Husayn Beg and Ghayb Beg in 1560–61 and 1564–65 (Topkapi Palace Library, H. 2151 and H. 2161), are more formally organized,

with pages of large exhibition calligraphy facing paintings on two-page spreads. Gold-sprinkled margins were a good way of uniting the disparate elements in these albums into a single whole. Gold-flecked margins were added, for example, around all the pages in the album compiled by Dust Muhammad with his preface about calligraphers and painters (Topkapi Palace Library, H. 2154), including the illustrated page showing an angel seen in a dream that had been removed from the Jalayirid copy of Khawju Kirmani's poems (British Library, ms. Add. 18113).⁶⁹

Gold margins became more complex in the sixteenth century. Many designs incorporate an arabesque, and some examples, such as the gold-painted margins in the splendid copy of Nizami's *Khamsa* made for the Safavid Shah Tahmasp at Tabriz in 1539–43 (British Library, ms. Or. 2265), have birds and animals cavorting among flowers and trees.⁷⁰ The finest of these decorated borders were produced in Mughal India where leading artists were often responsible for the marginal scenes. The recto of a detached page from an album (Freer Gallery of Art 54.116) made for the Mughal emperor Jahangir in the opening decade of the seventeenth century is a good example.⁷¹ The gold-painted border shows six vignettes of bookmaking done in the style of the court artists Aqa-Riza and Govardhan. The borders surround a calligraphic specimen (*qit'a*, literally "piece") by the Timurid calligrapher Mir-ʿAli, whose signature is visible in small letters written vertically along the left side in two cloud panels. The standard use of paper painted in gold at this time is perhaps why later sources such as Sam Mirza and Qadi Ahmad attribute the invention of the technique of gold sprinkling (*zaraf-shānī*) to sixteenth-century artists such as Ghiyath al-Din Muhammad Mudhahhib ("the gilder") of Mashhad (d. 1537), or ʿAbdallah Murvarid (d. 1517).⁷² Perhaps these later sources were referring not simply to gold sprinkling, but to gold painting.

In sum, then, we can trace the use of gold-decorated paper back to Chinese originals. This paper was imported into the Islamic lands when embassies were exchanged at the end of the fourteenth century. By the fifteenth century local artists had begun to produce their own imitations, which became increasingly elaborate in the sixteenth and seventeenth centuries.

We can suggest the same scenario from Chinese import to local Iranian imitation to explain how other

types of specialty papers developed. One of these is marbled paper (Persian, *kāghaz-i abrū*; Turkish, *ebru*). Scholars have debated where and when marbled paper was first made in the Islamic lands. Some have argued for India, others for Iran or Turkey; some for the fifteenth century, others for the sixteenth. In fact, marbled paper seems to have been another import from China. Literary references show that it was known there several hundred years before its appearance in the West. Tsien Tseun-Hsuen gathered descriptions of several techniques.⁷³ Drifting-sand note-paper, for example, was prepared by holding sheets of paper over a flour paste sprinkled with various colors, staining them in a free, irregular design. In another variant, the paste was prepared from honey locust pods mixed with croton oil and water, with black and colored inks on its surface. When ginger was added, the colors would scatter; when dandruff was applied with a hair brush, the colors would coagulate. The various designs, which resembled human figures, clouds, or flying birds, were then transferred from the surface of the liquid to the paper, and in this way a marbled paper was made.

Marbled papers may well have been imported to the Islamic lands where artisans developed their own techniques to achieve the same results. Some of the earliest examples of Timurid attempts at marbling are found in small, oblong anthologies (called *safīna*, "ship") of Persian poetry made in the mid-fifteenth century. One in the Bibliothèque Nationale (suppl. pers. 1798) includes some sheets of extremely fine paper as well as other sheets dyed ochre, violet, or salmon.⁷⁴ On one side of some of them, the papermaker used colorant to produce an effect of a red or brown slur (*coulé*). Further color was added with stencils of figures or geometrical compositions, a technique known in Persian as *ʿaks*.⁷⁵ As in the planned albums, these colored pages were decorated on one side only and arranged so that when the volume was open, facing pages would have the same decoration. Richard has suggested that these pages represent the first steps toward marbling.⁷⁶

Grid paper is another type that may have come to the Islamic lands from China. The use of a grid for mapping is generally attributed to Pei-Xiu (223–71), one of the earliest names associated with Chinese cartography. The earliest surviving example of a Chinese map on a square grid dates from nearly a millennium later (a map engraved on a stone in 1136 and again in 1142), but grids were clearly used in

China for both maps and plans for a long time and were made on silk, paper, and other more permanent materials.⁷⁷

Grid paper may already have come to Iran with the Mongols in the thirteenth century, for the earliest evidence for the use of a grid plan in the Islamic lands is a 50-centimeter stucco plaque incised with squares, rhomboids, and triangles and representing a ground projection of one-quarter of a muqarnas vault. The plaque, discovered walled into a farmhouse near Takht-i Sulayman, site of a large summer palace begun by the Ilkhanid ruler Abaqa about 1275, must have been used by local Ilkhanid builders to assemble muqarnas vaults there.⁷⁸ Textual evidence from fourteenth-century Iran confirms the use of plans on paper. According to the fifteenth-century historian Jafar b. Muhammad al-Ja'fari, for example, the plans for Shams al-Din's funerary complex in Yazd were sent from Tabriz.⁷⁹

These specialty papers are examples of cultural borrowing from China. In many ways, they represent the flip side of the question of acculturation recently investigated by Thomas Allsen—the Mongols' adoption of gold cloth and other forms and institutions from Islamic West Asia.⁸⁰ His particular focus was drawloom silks woven with gold—known in Arabic as *nasīj*, in Persian as *nakh*, and in the West as *panni tartarici*—but he showed that the Mongols also adopted many other textile materials (such as cloth and dyes) and forms (such as tents and ceremonial robes) as well as the institutions of investiture and the *tırāz*, the practice of court-sponsored production of inscribed textiles in state workshops and their distribution to the court. The gold cloth that he studied was somewhat different from other examples of cultural exchange in that this exchange entailed a transfer of artisans—namely, three colonies taken during the Mongol campaigns of 1219–22 in Turkestan and Khorasan and resettled in Mongolia—and not just of the products of their looms. In this sense, specialty papers resemble other examples of luxury goods exchanged along the same route, such as Chinese bronze mirrors, which in turn stimulated local production. These luxury goods, Allsen suggested, were a form of political currency; far from being superfluous, they were an essential element in the formulation and maintenance of the pre-modern state. Specialty papers were also luxury goods, and so it was no wonder that artists in Iran developed local methods to produce their own varieties of these expensive and prized wares.

Just how expensive was paper? The sources provide the occasional anecdote that tells us incidentally that its price was high. Qadi Ahmad, for example, includes such an incident in his biography of Mawlana Ma'rif Khattat-i Baghdadi (“the master calligrapher of Baghdad”). Described as the coryphaeus of calligraphers in his time and a rarity of the ages (*sar āmad-i jahān u nādīra-yi dōwṛān*), the scribe had left the patronage of Sultan Ahmad Jalayir in Baghdad and gone to Isfahan where he worked for the Timurid prince Iskandar Sultan, transcribing some fifteen hundred verses per day. When Shahrukh conquered Iraq, the Timurid ruler took the scribe back to Herat and installed him in the royal scriptorium (*kitāb-khāna*). While there, Shahrukh's son, the bibliophile Baysunghur sent the scribe paper to transcribe a copy of Nizami's *Khamsa*. Mawlana Ma'rif kept the paper for a year and a half before sending it back to Baysunghur, who was understandably furious that he did not get the volume he wanted.⁸¹

Anecdotes such as this one show that paper, especially the fine paper for luxury manuscripts, was expensive, but the sources rarely tell us what it actually cost. One of the few documents that does is a decree (*firmān*) issued in the name of the Timurid Sultan-Husayn and preserved in a multi-work volume in Istanbul (Topkapi Palace Library, H. 1510, fol. 498a).⁸² The large (760-folio) manuscript mainly comprises copies of Firdawsī's *Shāhnāma* (fols. 2b–484b) and Nizami's *Khamsa* (fols. 499a–775b). The styles of calligraphy and illumination as well as the scribes' names show that both poems were copied in Muzaffarid Shiraz, but their illustrations were added in the early sixteenth century and their colophons altered to make them date to the last years of the reign of the Timurid Sultan-Husayn.

The *firmān* (fol. 498a) is issued in the name of the same ruler. It requests that accountants in the royal chancery compensate the individuals listed in the accompanying estimate of costs (*bar-āvard*) for their expenses and labor involved in producing a *Shāhnāma* manuscript. According to the account, the book had six hundred pages, making up sixty quires (*juz'*),⁸³ including four pages of illumination and twenty-one illustrations. The total cost of 42,450 dinars was split between five sets of people: the paper supplier, the copyist, two illuminators, two marginators, and the painter. The calligrapher Mawlana Warqa ibn 'Umar Samarqandi was owed the most money: 15,750 dinars (37%) for copying 63,000 verses (*bayt*) at 250 dinars

per thousand verses. The second major expense was the paper: Khwaja Murshid-i Kashgari received 12,000 dinars (28%) for supplying 600 pages (*awraq*) of "Chinese paper" (*kāghaz-i khitā'i*) at twenty dinars per page. Together, paper and calligraphy represent some two-thirds of the total cost of the manuscript.

By contrast, the other expenses were relatively minor. The craftsmen Sharaf al-Din and Jalal al-Din Kirmani were to receive 6,000 dinars (14%) for executing four illuminated pages. Ustad Ahmad and Mawlana Muhammad Haravi were to receive 2,400 dinars (5%) for margining 60 quires, at a cost of forty dinars per quire. The painter 'Abd al-Wahhab Musavvir-i Mashhadi was to receive 6,300 dinars (15%) for executing twenty-one scenes at 300 dinars per painting.

The paper, listed as the first expense, is identified as *kāghaz-i khitā'i*. The term literally means Chinese paper, but what it actually designates is unclear. It could be paper from China or paper like that made in China; it might refer to a color or a quality. The term was already used in the fourteenth-century, for Muhammad ibn Hindushah Nakhchivani, a littérateur and chancery scribe under the Ilkhanids, mentions sixty sheets of *kāghaz-i khitā'i* in a list of gifts included in the collection of private and official model letters that he compiled for the Jalayirid ruler Shaykh 'Uways (r. 1356-75).⁸⁴ In the case of the *firmān*, the term seems to suggest a foreign connection, for the paper was supplied by a merchant (*khwāja*) whose *nisba* Kashgari suggests that he came from, or was connected with, Chinese Turkestan.

As with all sources, we must be careful how we use the information supplied in this document. Certain internal discrepancies, such as the number of pages and verses mentioned in the document, as opposed to those in the actual copy of the *Shāhnāma* (600 folios and 63,000 verses compared with 484 folios and some 52,000 verses), suggest that the document does not refer to the manuscript into which it has been bound. Furthermore, the prices listed in the document do not agree with others given in contemporary sources.

By way of comparison, the price listed for the manuscript is almost half the annual income produced by the Ikhlasiyya, the large complex in Herat established by the Maecenus of his time, 'Ali-Shir Nava'i. Based on the endowment deed, Subtelny calculated that the annual revenue of the complex was at least 73,000 dinars. Salaries and prices ranged from 2,000 (*kopeki*) dinars a year for the supervisor (*mutavallī*)

to 144 for the lowest student. The endowment also stipulated that 400 dinars were to be spent on felt rugs, reed mats, and lighting.⁸⁵ The estates near Herat owned by the poet and courtier Jami had a comparable revenue of 100,000 dinars yearly, and the lands in Transoxiana held by the Sufi shaykh Khwaja Ahrar, one of the wealthiest men of his time, were valued at 5,000,000 dinars.⁸⁶

The *firmān*, then, is not a true Timurid document but a later one with fictitious figures made up by the forgers who changed the original Muzaffarid manuscripts into Timurid ones. They obviously hoped to increase the price of the volume by making the purchaser believe that he was getting a fine Timurid work. These forgers must have been working in a milieu where Timurid objects were highly valued, most likely either Ottoman Istanbul or Safavid Tabriz. Nevertheless, I think that we can accept the relative proportions of the figures given in the document, with "Chinese paper," given logically as the first expense, representing some one-quarter of the total cost of a fine illustrated manuscript. No wonder, then, that artists in Iran and its environs continued to develop their own methods to produce specialty papers of the kinds that had been created in and imported from China.

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NOTES

1. This paper was sometimes replaced when the manuscript was restored; in most cases, however, the marginal paper was part of the original design, chosen to enhance the composition.
2. Arthur Upham Pope and Phyllis Ackerman, eds., *A Survey of Persian Art from Prehistoric Times to the Present* (Oxford, 1938-39; rpt. Tehran, 1977).
3. Basil Gray, ed., *The Arts of the Book in Central Asia: 14th-16th Centuries* (Boulder, Colo., 1979).
4. Jonathan M. Bloom, "The Early Fatimid Blue Koran Manuscript," *Graeco-Arabica* 4 (1991): 171-78.
5. François Déroche, *The Abbasid Tradition: Qur'ans of the 8th to the 10th Centuries A.D.*, Nasser D. Khalili Collection of Islamic Art, vol. 1, ed. Julian Raby (London, 1992), no. 11. Another fragment from the same manuscript is in the Metropolitan Museum of Art, New York, ms. 40.164.100.
6. Yves Porter, *Painters, Paintings and Books: An Essay on Indo-Persian Technical Literature, 12th-19th Centuries*, trans. Mrs. S. Butani (rpt. New Delhi, 1994), p. 36.
7. The eleventh-century Zirid prince and calligrapher al-Mu'izz ibn Badis (1007-61) noted that color could also be added to the size during the process of smoothing the surface. See Martin Levey, "Medieval Arabic Bookmaking and Its Relation to Early Chemistry and Pharmacology," *Transactions of*

- the American Philosophical Society* 40 (1962): 29–32. Much of Ibn Badis's information, however, does not correspond to what actual manuscripts show, so this statement, too, may be erroneous.
8. Porter, *Painters, Paintings and Books*, pp. 36–45.
 9. M. U. Derman, *Letters in Gold: Ottoman Calligraphy from the Sakıp Sabancı Collection, Istanbul* (New York, 1998).
 10. Tea, however, did not become the drink of the masses in Turkey, as in Russia, England and Iran until the nineteenth century. See Rudi Matthee, "From Coffee to Tea Consumption in Qajar Iran," *Journal of World History* 7, 2 (Fall 1996): 199–230.
 11. Priscilla Soucek, "The New York Public Library *Makhzan al-Asrar* and Its Importance," *Ars Orientalis* 18 (1988): 14 and n. 118.
 12. David J. Roxburgh, "'Our Works Point to Us': Album Making, Collecting, and Art (1427–1565) under the Timurids and Safavids," Ph.D. diss., University of Pennsylvania, 1996. The Arabic text (120 × 195 mm) is written in *thuluth* and *nashk* in black ink on gray paper with blue, black and gold rulings and black and gold intercolumnar rulings. My thanks to Professor Roxburgh for supplying this information.
 13. A. J. Arberry, *A Handlist of the Arabic Manuscripts in the Chester Beatty Library* (Dublin, 1955), no. 3658. My thanks to Dr. Elaine Wright, Curator at the Chester Beatty Library, who provided further information about the colored papers used in the manuscripts in their collection. This olive paper, she notes, is unlike any other paper that she had seen. She also noted that an autograph copy of al-Niffari's mystical revelations, *al-Mawāqif*, dated 344 (955–56) (Ar. 4000) is copied on thick, very dark brown paper with obvious laid lines. It may be dyed or perhaps simply unbleached paper; a similar paper was used for a manuscript in the British Library copied by the renowned Timurid scribe Ja'far Baysunghuri. The Niffari manuscript is also notable for being one of the very earliest manuscripts in the distinctive script known as "bent cursive" or "broken Kufic."
 14. Arberry, *Handlist*, no. 3642: *Tajrid al-uṣūl* by Ibn al-Barizi (d. 1337). The text is an epitome of the *Jāmi' al-uṣūl*, the well-known treatise on traditions by Ibn al-Athir. The 155-folio manuscript (26 × 17.8 cm) was transcribed by Abu Bakr ibn Muhammad ibn Ahmad al-Qazvini.
 15. Arberry, *Handlist*, no. 4923: a compendium of medicine by Khidr b. 'Ali al-Aydini al-Khattab (d. ca. 1413) entitled *al-Sa'āda wa'l-īqbāl* copied by Muhsin b. Idris. The manuscript measures 18.8 × 13.7 cm and has 127 folios. Both this and the previous manuscript are penned in a clear scholar's *nashk*.
 16. Francis Richard, *Catalogue des manuscrits persans: I. Ancien fonds* (Paris, 1989), pp. 29–30.
 17. Francis Richard, *Splendeurs persanes: Manuscrits du XIIe au XVIIe siècle* (Paris, 1997), p. 72.
 18. *Ibid.*, no. 34.
 19. François Déroche, *Les Manuscrits du Coran, du Maghrib à l'Insulinde*, Bibliothèque Nationale, Département des manuscrits, Catalogue des manuscrits arabes (Paris, 1985), nos. 305–8.
 20. This information was given to Yves Porter (*Painters, Paint- ing, and Books*, p. 36) by the late Yvette Sauvan, but it needs to be confirmed.
 21. Tsien Tsuen-Hsuei, *Paper and Printing*, Science and Civilisation in China 5, ed. Joseph Needham (Cambridge, 1985), pp. 87–96.
 22. Porter (*Painters, Paintings and Books*, p. 36) already made this connection between dyeing textiles and paper, when he noted that the eighteenth- and nineteenth-century Persian treatises on the art of dyeing were all applied to cloth.
 23. Sheila S. Blair and Jonathan M. Bloom, *The Art and Architecture of Islam, 1250–1800*, The Pelican History of Art (London and New Haven, 1994), p. 1.
 24. Yves Porter, "Un traité de Simi Neysapuri (IX/XVe s.), artiste et polygraphe," *Studia Iranica* 14, 2 (1985): 179–98; Wheeler M. Thackston, "Treatise on Calligraphic Arts: A Disquisition on Paper, Colors, Inks and Pens by Simi of Nishapur," in *Intellectual Studies on Islam: Essays Written in Honor of Martin B. Dickson, Professor of Persian Studies, Princeton University*, ed. Michel M. Mazzaoui and Vera B. Moreen (Salt Lake City, 1990), pp. 219–28.
 25. Oliver Watson, *Persian Lustre Ware* (London, 1985), p. 197 and pl. 37.
 26. Yves Porter, "Textes persans sur la céramique," in *La science dans le monde iranien. Actes du colloque tenu à Strasbourg, 6–8 juin 1995*, ed. Z. Vesel (Tehran, 1998), pp. 165–89. My thanks to Yves Porter for supplying this information.
 27. Best known through its English translation and commentary by J. W. Allan, "Abu'l-Qasim's Treatise on Ceramics," *Iran* 11 (1973): 111–20.
 28. *Dictionary of Art* 7:114–17, s.v. China §XIII, 18.
 29. Thomas W. Lentz and Glenn D. Lowry, *Timur and the Princely Vision: Persian Art and Culture in the Fifteenth Century* (Los Angeles, 1989), nos. 40 and 39, respectively. The two manuscripts measure approximately 35 × 25 cms.
 30. Among the albums in Istanbul, Zeren Tanındı ("Some Problems of Two Istanbul Albums, H. 2153 and 2160," *Islamic Art* 1 [1981]: 37) counted seventy-four pages of calligraphy and one drawing, mainly from the Aqqoyunlu and Qaraqoyunlu periods, executed on sheets of highly polished paper, which could be green, violet, blue, pink or dark blue and sprinkled or painted with gold.
 31. Another manuscript on Chinese tinted and gold-decorated paper is an anthology in the British Library (ms. Add. 16561) copied by Sharif al-Din Husayn Sultani in Shamakha (Shirvan) in 1468 (Norah Titley, *Persian Miniature Painting* [Austin, Tex., 1984], p. 240 and pl. 6). The pages are tinted indigo, purple, bright mauve, lavender, apricot, sage green, light brown, and yellow ochre and decorated with large flecks of gold. An undated treatise on Sufism sold in London at auction in 1977, for which see Christie's *Sales Catalogue*, 5 May 1977, lot 56, also includes tinted gold-decorated pages. Several copies of the Koran were also transcribed on colored and gold-flecked paper. These included manuscripts in the Türk ve Islam Eserleri Müzesi (no. 564), the Detroit Institute of Arts (30.323), and Topkapı Palace Library (M. 100), for which see Lentz and Lowry, *Timur and the Princely Vision*, nos. 19, 20; and Tanındı, "Some Problems of Two Istanbul Albums," n. 3. Although undated, these manuscripts have

- been attributed to somewhere in the fifteenth century.
32. Soucek, "The New York Public Library *Makhzan al-Asrār*"; Lentz and Lowry, *Timur and the Princely Vision*, no. 138; Barbara Schmitz, *Islamic Manuscripts in The New York Public Library* (New York and Oxford, 1992), II.1.
 33. E. Bretschneider, *Mediaeval Researches from Eastern Asiatic Sources*, 2 vols (London, 1888, rpt. 1967), 2:256–71.
 34. *Ibid.*, 2:294.
 35. Details of these embassies are given in Felicia J. Hecker, "A Fifteenth-Century Chinese Diplomat in Herat," *Journal of the Royal Asiatic Society*, 3rd series, 3, 1 (April 1993): 85–98; and Wheeler M. Thackston, *A Century of Princes: Sources on Timurid History and Art* (Cambridge, Mass., 1989), pp. 279–97. The former uses evidence from Chinese sources and the latter evidence from Islamic sources. Both mention three embassies, but give different dates. It is possible that one or another of these embassies are the same, but more work needs to be done sorting out the individual accounts from both perspectives.
 36. Thackston, *Century of Princes*, p. 279, citing Khwafi, *Mujmal*, pp. 230f., and 'Abd al-Razzaq Samarqandi, *Majma'-'i sa'dayn*, 2:201–2.
 37. Reproduced in *Islamic Art* 1 (1981): fig. 83B.
 38. Translated in Thackston, *Century of Princes*, pp. 279–97.
 39. For the identification of Hari-Malik Bakhshi, see Blair (forthcoming).
 40. Marie-Rose Séguy, *The Miraculous Journey of Mahomet: Mirāj Nāmeh* (New York, 1977); Lentz and Lowry, *Timur and the Princely Vision*, no. 25. My thanks to Francis Richard, who supplied photocopies and information about the manuscripts in the Bibliothèque Nationale.
 41. *Islamic Manuscripts in the New York Public Library*, p. 68 and n. 14. It would be interesting to check whether the manuscript of Hafiz in the British Library (ms. Add. 7759) dated 855 (1451) was copied on the same Chinese paper as that used for the *Makhzan al-asrār* in the New York Public Library (Spencer Collection, Pers. ms. 41), dated 883 (1478). Both are tinted blue and painted with similar landscapes and birds.
 42. Esin Atıl, *The Brush of the Masters: Drawings from Iran and India* (Washington, D. C., 1978), nos 1–7. The manuscript contains 337 folios, each measuring 30 × 20 cm. The marginal drawings are found on fols. 17a, 18a, 19a, 21b, 22b, 23a, 24a and 25b.
 43. Deborah E. Klimburg-Salter, "A Sufi Theme in Persian Painting: The *Divan* of Sultan Ahmad Ğala'ir in the Freer Gallery of Art, Washington, D.C.," *Kunst des Orients* 11 (1976–77): 43–84. Curiously, it was also 'Attar whose works were transcribed on Chinese gold-decorated paper for Shahrukh. This may simply be coincidence or merely reflect the poet's popularity at this time. Richard, *Splendeurs persanes*, p. 60, has connected the appearance of *nasta'liq* script with the rise of the Hurufi movement, but the connection between Sufism and the arts remains to be established.
 44. Sheila S. Blair, *A Compendium of Chronicles: Rashid al-Din's Illustrated History of the World*, Nasser D. Khalili Collection of Islamic Art, vol. 27, ed. Julian Raby, (London, 1995).
 45. Oleg Akimushkin and I. I. Ivanov, "Illumination," in Gray, ed., *Arts of the Book in Central Asia*, p. 36.
 46. On Koran manuscripts of the period, see David James, *Qur'ans of the Mamluks* (London and New York, 1988), esp. chapters 5 and 7.
 47. Akimushkin and Ivanov, "Illumination," fig. 18.
 48. James, *Qur'ans of the Mamluks*, nos. 55, 65, and 69, respectively.
 49. First published by Richard Ettinghausen, "On Some Mongol Miniatures," *Kunst des Orients* 3 (1959): 44–65.
 50. Blair and Bloom, *Art and Architecture of Islam 1250–1800*, fig. 44.
 51. Jill S. Cowen, *Kalila wa Dimna: An Animal Allegory of the Mongol Court: The Istanbul University Album* (New York, 1989); Blair and Bloom, *Art and Architecture of Islam 1250–1800*, fig. 37.
 52. See Nurhan Atasoy, "Four Istanbul Albums and Some Fragments from Fourteenth-Century *Shah-namehs*," *Ars Orientalis* 8 (1970): 19–48.
 53. Lentz and Lowry, *Timur and the Princely Vision*, no. 13; Blair and Bloom, *Art and Architecture of Islam 1250–1800*, fig. 38.
 54. Bernard O'Kane, "Rock Faces and Rock Figures in Persian Painting," *Islamic Art* 4 (1990–91): 219–46.
 55. Priscilla P. Soucek, "The Manuscripts of Iskandar Sultan: Structure and Content," *Timurid Art and Culture: Iran and Central Asia in the Fifteenth Century*, ed. Lisa Golombek and Maria Subtelny, Supplement to *Muqarnas* 6 (Leiden, 1992), pp. 116–31.
 56. Elaine Wright, "The Look of the Book: Manuscript Production in the Southern Iranian City of Shiraz from the Early 14th Century to 1452," Ph.D. diss., Oxford University, 1997, esp. chapter 4.
 57. There is some disagreement among scholars about the provenance of the gold-painted and gold-sprinkled papers used in various manuscripts. Some scholars have suggested that the paper was imported from China and then gold painted in Iran; others that these papers were Iranian imitations. Given their polished finish, weight, and the fact that they were made into long rolls and painted with designs that are extremely close to Chinese paintings, I believe that they must be Chinese imports. Here I enter a plea for more technical work to distinguish the Chinese type from the Persian.
 58. This is also the conclusion of Akimushkin and Ivanov, "The Art of Illumination" in Gray, ed., *Arts of the Book in Central Asia*, p. 46 and n. 52. The oldest manuscript they knew on tinted paper with gold-sprayed borders was a copy of 'Arifi's *Hālnāma* transcribed by the scribe Zayn al-Din Mahmud at Herat in 1495–96 (St. Petersburg Public Library, Dorn 440). Lentz and Lowry's catalogue of an exhibition of many Timurid manuscripts from other collections (*Timur and the Princely Vision*), however, shows that the technique was known earlier.
 59. Mehmet Aga-Oğlu, "The *Khusrau wa Shirin* Manuscript in the Freer Gallery," *Ars Islamica* 4 (1937): 479–81; Ivan Schoukine, *Les Peintures des manuscrits Timourides* (Paris, 1954), p. 58; Gray, ed., *Arts of the Book in Central Asia*, pp. 18 and 117, pls. I, V, XXXIII and fig. 68.
 60. Soucek, "The Arts of Calligraphy," in Gray, ed., *Arts of the Book in Central Asia*, p. 18. Wright's work (see above, n. 56) has shown that the usual attribution of *nasta'liq* to Mir 'Ali is erroneous.
 61. In the colophon Mir-'Ali identifies himself as a royal scribe (*al-kātib al-sultāni*), but the identification of the exact sul-

- tan who presumably ordered the manuscript is unclear and depends on the date established for the book. The history of Tabriz is extraordinarily complicated at this time, as the city was repeatedly occupied by various rulers. Ahmad Jalayir, for example, briefly occupied Tabriz ca. 1405, only to be driven out by the Timurid Abu Bakr who was in turn ousted by the Qaraqoyunlu. The patron of the manuscript might also have been Miran-Shah, Timur's son who also ruled in Tabriz.
62. My thanks to Dr. Massumeh Farhad, for providing information about the manuscripts in the Freer Gallery of Art.
 63. *Dictionary of Art*, 1:583-84, s.v. Album §3: Islamic World.
 64. Text translated in Thackston, *Century of Princes*, pp. 335-50. Thackston notes (*Dictionary of Art*, vol. 1, s.v. Album §3: Islamic World) that it is not clear that *jung* refers to what was later understood as an album and suggests that "miscellany" might be a better translation, and this is the word he uses in his translation of Dust Muhammad's account (*Century of Princes*, p. 346). There are several reasons why "album" is still a possible translation. Fourteenth-century calligraphers already produced calligraphic specimens suitable for grouping in albums, and miscellanies seem to have been a specialty of Shiraz, not Baghdad. Even miscellanies, however, might have had gold margins.
 65. Porter, *Painters, Paintings and Books*, p. 50 and n. 69, citing E. G. Browne's edition of Dawlatshah's *Tadhkirat al-shu'arā* (London, 1901), p. 412.
 66. Lentz and Lowry, *Timur and the Princely Vision*, no. 146; Blair and Bloom, *Art and Architecture of Islam 1250-1800*, fig. 85.
 67. Qadi Ahmad ibn Mir-Munshi, *Gulistan-i hunar*, ed. A. S. Khwansari (Tehran, 1352/1973), p. 148; cited in Porter, *Painters, Paintings and Books*, p. 50. Porter suggests that the four terms should be read and translated as *lata* (pieces), *miyāna* (medium), *ghubār* (dust) and *hāll kardā* (in solution).
 68. David Roxburgh, "Heinrich Friedrich von Diez and His Eponymous Albums: Mss. Diez A, Fols 70-74," *Muqarnas* 12 (1995): 112-36.
 69. Verna R. Prentice, "A Detached Miniature from the *Masnavi* of Khwaju Kermani," *Oriental Art* 27 (1981): 60-66. Color illustration in Blair and Bloom, *Art and Architecture of Islam 1250-1800*, fig. 39.
 70. Stuart Cary Welch, *Wonders of the Age: Masterpieces of Early Safavid Painting, 1501-1576* (Cambridge, Mass., 1979), nos. 48-65.
 71. Atul, *Brush of the Masters*, no. 63; Blair and Bloom, *Art and Architecture of Islam 1250-1800*, fig. 371.
 72. Porter, *Painters, Paintings and Books*, pp. 49-50.
 73. Tsien Tsuen-Hsuei, *Paper and Printing*, p. 94. Unfortunately, there are no dated extant samples to match with the textual descriptions.
 74. Richard, *Splendeurs persanes*, no. 49. Professor David Roxburgh kindly informed me that there are also examples in Dublin and Vienna with many dispersed sheets. See, for example, one in the Österreichischen Nationalbibliothek, Vienna (N.F. 143) that was made for Shaykh Mahmud Pir-Budaq in Shiraz in 1460 (Dorothea Duda, *Islamische Handschriften I: Persische Handschriften*, Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse Denkschriften, vol. 167 [Vienna, 1983], pp. 73-74).
 75. On this technique, see Porter, *Painters, Paintings and Books*, pp. 50-51.
 76. Richard, *Splendeurs persanes*, p. 64.
 77. Nancy Schatzman Steinhardt, "Chinese Cartography and Calligraphy," *Oriental Art* 43, 1 (1997): 10-20, esp. fig. 3.
 78. Ulrich Harb, *Ilkhanidische Stalaktitengewölbe: Beiträge zu Entwurf und Bautechnik* (Berlin., 1978), pl. 1.
 79. Cited in Sheila S. Blair, *The Ilkhanid Shrine Complex at Natanz, Iran* (Cambridge, 1986), p. 36 and n. 10. See also Jonathan Bloom, *Paper before Print* (New Haven, forthcoming).
 80. Thomas T. Allsen, *Commodity and Exchange in the Mongol Empire: A Cultural History of Islamic Textiles*, Cambridge Studies in Islamic Civilization (Cambridge, 1997).
 81. Qadi Ahmad Qummi, *Gulistan-i hunar*, ed. Khwansari, pp. 26-27; Minorsky trans. pp. 64-66. I owe this reference to Yves Porter.
 82. Priscilla P. Soucek and Filiz Çağman, "A Royal Manuscript and Its Transformation: The Life History of a Book," in *The Book in the Islamic World: The Written Word and Communication in the Middle East*, ed. George Atiyeh (Albany, 1995), pp. 179-208.
 83. This account confirms that in Timurid times the standard *juz'* contained five bifolios. Manuscripts made in the West usually contain an even number of bifolios, obtained by folding the parchment or paper once (*in folio*), twice (*in quarto*), three times (*in octavo*), or more. But the odd number of five bifolios had already been established in parchment manuscripts of the Koran made in early Islamic times; see Déroche, *Abbasid Tradition*, pp. 17-19.
 84. Muhammad b. Hindushah Nakhjavani, *Dastūr al-kātib fī ta'yīn al-marātīb*, ed. A. A. Alizada (Moscow, 1964), vol. 1, part 2, p. 133. I owe this reference to Yves Porter.
 85. See Maria Eva Subtelny, "A Timurid Educational and Charitable Foundation: The Ikhlasīyya Complex of 'Ali Shir Nava'i in 15th-Century Herat and Its Endowment," *Journal of the American Oriental Society* 111, 1 (1991): 38-61. I owe this reference to Bernard O'Kane. Subtelny equated the *altin* in the text with the *kopeki* dinar, but also pointed out that one *kopeki* dinar was equal to six copper or Herati dinars. Even assuming that the *fīrmān* numbers were given in these lesser-value dinars, the figures are not on the same order of magnitude as those given in the endowment and other similar sources.
 86. Bernard O'Kane, *Timurid Architecture in Khurasan* (Costa Mesa, Calif., 1987), p. 6.

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Notes

⁶⁸ **Heinrich Friedrich Von Diez and His Eponymous Albums: Mss. Diez a. Fols. 70-74**

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⁸⁵ **A Timurid Educational and Charitable Foundation: The Ikhla'iyah Complex of #Al# Sh#r Nav### in 15th-Century Herat and Its Endowment**

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