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## PERSIAN DRAWING, CA. 1400–1450: MATERIALS AND CREATIVE PROCEDURES

Four drawings converge on an album page (figs. 1 and 2) to form a meeting point of slightly overlapping and staggered paper sheets. Their rulings are abraded, edges slightly scuffed, and paper surfaces faintly dabbed with ink and mottled with grease. It is a confusing juncture. The drawings are oriented away from the spiraling center that they form and toward the outer edges of the album page, so that each drawing can be viewed correctly from one of the album page's outer edges. The content is equally confusing. Although the drawings may have been arranged according to some notion of a homology,<sup>1</sup> even the single sheet, dominated by what we discern as a primary subject—such as the man holding a dish, or the scene of an outdoor enthronement—is in fact a mixture of subjects. Drawn in various colors of ink along axes that are different from their adjacent primary subjects, which promise our eye a rule with which to make sense of the entire page, are a running wolf and antelope in one drawing and a humped ox and head of a bearded man in another. In yet another drawing, mounted riders appear as if mirror reversed across an invisible center, though in only one does the lance meet a target in the form of a rearing lion. Frequent juxtapositions of scale and shifting levels of execution suggest a variety of purposes for these drawings and deepen our sense of uncertainty about a single function for them. The ostensible subject matter of the entire page is the process of design and its prototypes.

A surprisingly large number of Persian drawings exist today simply because, beginning in the fifteenth century, they were bound into albums.<sup>2</sup> I say “surprisingly” because most of the sheets of paper, cut to various dimensions and shapes on which they were drawn, functioned as intermediaries in a design process that led from sketches and exploratory designs to meticulously inked line drawings. After the design had been transferred onto the surface of an object—whether wood or metal, paper or textile—the drawing could be discarded, its purpose served. Despite evidence that

these drawings were regarded as a fragile and dispensable detritus, as a processual compost, the mountain of evidence preserved in albums is powerful proof that drawings had a creative currency and at some point came to be valued for their own sake.

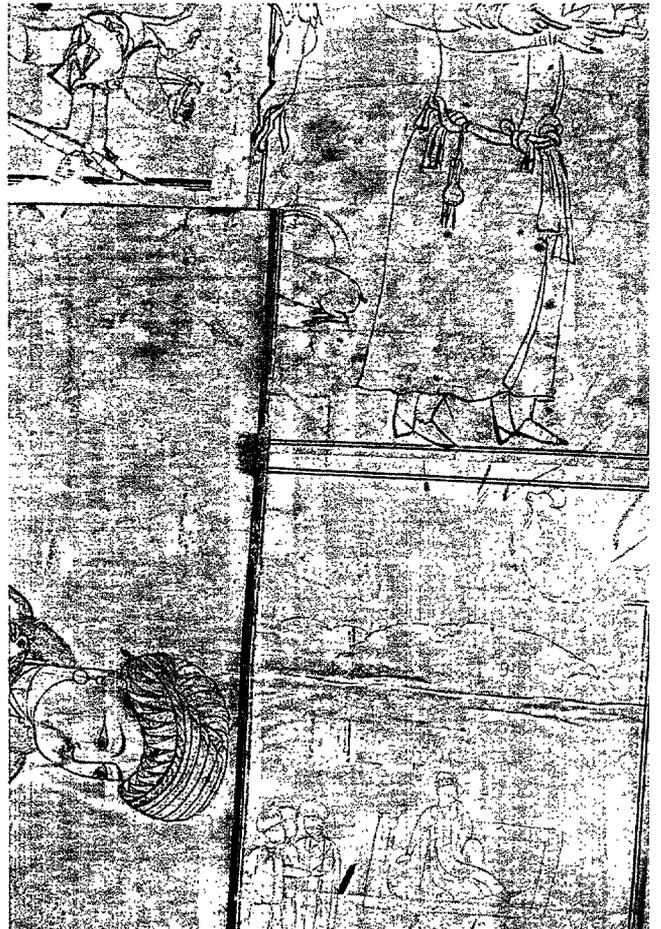


Fig. 1. Page of drawings. Detail. Iran or Central Asia, ca. 1400–50. Various inks on paper. Topkapi Palace Library, H. 2152, fol. 49a, detail of page. (Photo: Topkapi Palace Museum, Istanbul)



Fig. 2. Page of drawings. Iran or Central Asia, ca. 1400–50. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 49a. (Photo: Topkapi Palace Museum, Istanbul)

Collectively, albums functioned as storehouses of models and visual ideas. The drawings in them represented various stages of conception and rephrasing and resulted from processes that involved the repeated reworking of a compositional unit. Wherever the drawing stood in the process of designing, all drawings potentially had a post-production use often in contexts that were never anticipated for them. As one looks through these stores of drawings, it becomes clear that their contents were used more than once—many are torn, folded and creased, paper fibers lifted and loosened through handling, the ink virtually erased from numerous passages. Various steps were taken to ensure the preservation of these valued drawings, including the patching of holes, the addition of backing



Fig. 3. Cloud collar showing ducks, bixies, cranes, and deer. Iran or Central Asia, ca. 1400–50. Black ink on ivory paper, 365 x 310 mm (maximum dimensions). Diez A, fol. 73, p. 67, no. 3. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

papers to support them, and the redrawing of lost or damaged passages of a design.

One drawing of a cloud collar (fig. 3), for example, has been attached to a sheet of paper to support it and later inscribed with a ruling to emphasize its polylobed geometry. In fact this drawing consists of two sheets, the seam visible down the center axis. The paper on the right is severely damaged in places, the drawing all but erased, unlike the comparatively pristine surface on the left. As minor differences in quality of line and execution tell us, the design on the left side was generated from the damaged right side and added to it to complete the model.

Other physical traces and phenomena such as the frequent repetition of designs in whole or in part make it possible to attempt reconstructing the visual economy of the early-fifteenth-century practitioner. The term “economy” as it is used here embraces everything from the practitioner’s materials and methods to the range of visual models available to him (e.g., drawings, paintings in books or single sheets, and portable objects). More importantly, the term is intended to evoke a

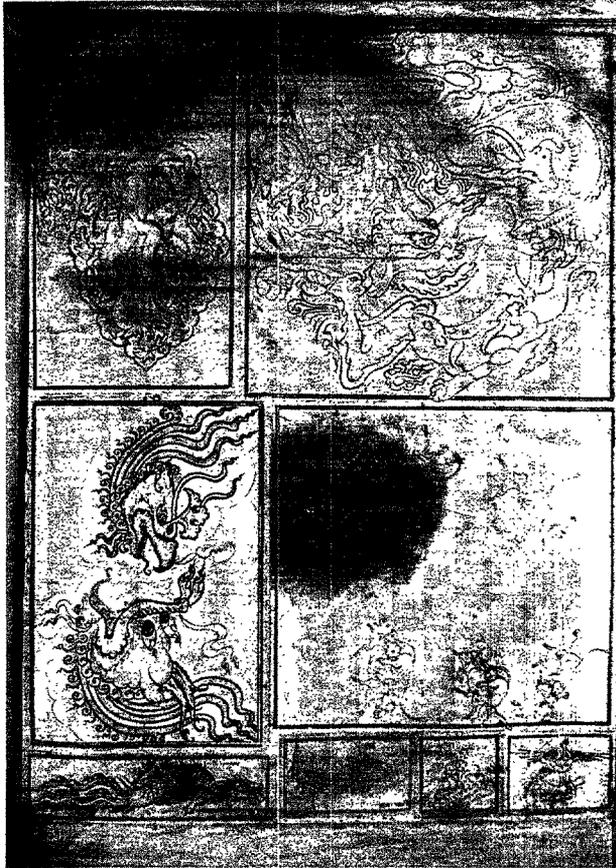


Fig. 4. Page of drawings. Iran or Central Asia, ca. 1400–50. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 62b. (Photo: Topkapi Palace Museum, Istanbul)

system of creative procedures in which aspects of artistic production interact. The secondary meaning of economy, the thrifty use of resources, is also pertinent: paper seems to have been so precious a resource that surfaces sufficiently large to draw on were made by pasting together scraps of different papers left over from larger sheets.<sup>3</sup> Economic measures verging on parsimony also included drawing on both sides of a sheet<sup>4</sup> and using every available space for rehearsing designs in a series of thumbnail sketches. One example is the seated ox (fig. 1), of which countless versions appear in the album (see, e.g., figs. 4 [lower right] and 5 [lower right]). The ox appears to be extraneous to this sheet, a pentimento of sorts, or a sketchy doodle like the man's head to its left. Although the sequence of execution of the subjects remains unclear, it is likely that the ox was a later addition to the sheet.

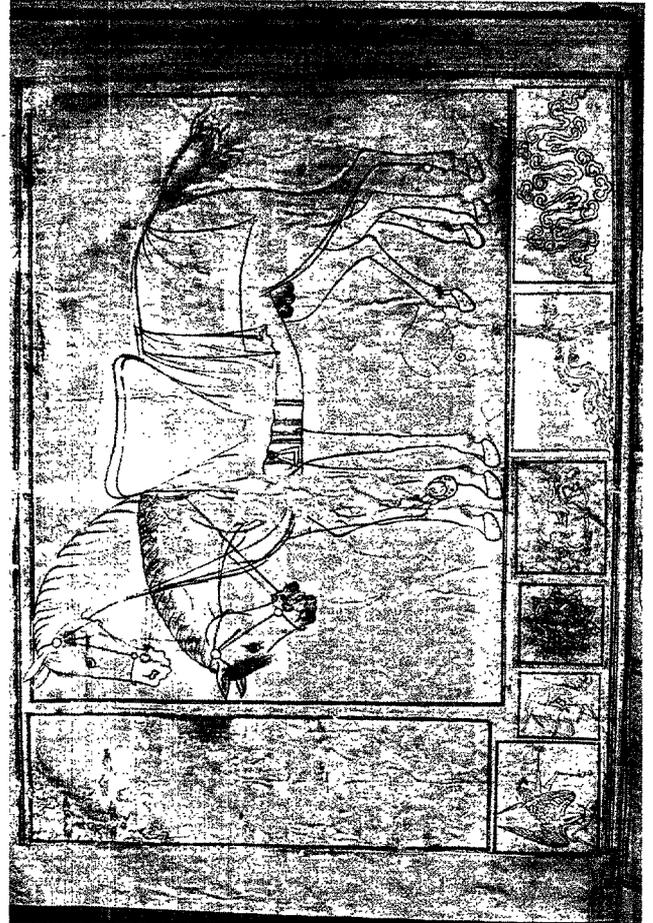


Fig. 5. Page of drawings. Iran or Central Asia, ca. 1400–50. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 89a. (Photo: Topkapi Palace Museum, Istanbul)

Although many drawings survive in albums, neither the album nor its constitution as collection is the subject of this essay.<sup>5</sup> The emphasis here is rather on the lacunae in scholarly writing about drawing in the late fourteenth through the early fifteenth century<sup>6</sup> and on processes of design as we can reconstruct them from drawings.<sup>7</sup> Some work has already pointed in this direction, most notably Thomas Lentz and Glenn Lowry's study of the workshop in Timurid-period Iran and Central Asia.<sup>8</sup> Lentz and Lowry deduced the processes of design current in the workshop (*kitābkhāna*) from a mass of drawings bound into an album assembled in Herat in the years following the Timurid prince Baysunghur's death and from drawings in the Diez albums. They looked at these materials in conjunction

with the *‘arzadāsh*t, a progress report in which various practitioners are named and projects described running the gamut from illustrated manuscripts to tent poles and tent fabrics. Further analysis of images in books in particular suggested to Lentz and Lowry a formation of visual idioms developed for and applied to genres of text.<sup>9</sup> Their major interest was the way the Timurid workshop functioned as a generative mechanism and how in the abstract, its practitioners crafted a visual idiom for the Timurid house and made objects that were disseminated to various social groups, presumably at the behest of patrons who had commissioned the objects in the first place.<sup>10</sup> The most public forum for this Timurid idiom was architectural decoration and the epigraphic programs with which buildings were inscribed.

Lentz and Lowry’s analysis of the design process is surely the most developed to date, and it adequately accounts for the formation of a unified aesthetic that was perhaps intended to denote, en bloc, the house of Timur.<sup>11</sup> Viewed retrospectively and as an accumulated cultural legacy, the aesthetic certainly acquired that resonance for dynastic groups who grew to ascendancy in the Timurid wake. What Lentz and Lowry’s study could not do, on account of various constraints, was pursue a micrology of process, but that was neither their stated brief nor their aim. One of the general observations that they do offer about the features of drawings is that in the hundreds of drawings contained in the Baysunghur album in particular, we see the progression toward a visual typology,<sup>12</sup> that is, a universe of visual types was cast and used over and over again.

The material upon which this study is based was made ca. 1400, at a critical historical juncture when the structures and processes of artistic production, first manifested in the early years of the fourteenth century under Ilkhanid suzerainty, coalesced into a still firmer form. A new political order established by Timur and fostered by his successors marshaled the skills of practitioners from Iran and Central Asia and other areas, some by forced relocation, bringing specialists of formerly independent regional traditions into closer contact. This process of discrete regional traditions interacting to produce a hybridized metropolitan tradition that was then disseminated from a center is most clearly articulated in Timurid architecture.<sup>13</sup> Whatever factor or combination of factors—for example, the *kitābkhāna* as a relatively centralized institution, overlapping competencies, unprecedented groupings of

practitioners, the coordination between specialist makers and the directives of programmers—caused this still expanded “intermediation” of the arts, or put another way, the still greater commonality of forms of expression and subject matter across media,<sup>14</sup> it is clear that paper played a key role. Even if the *kitābkhāna*’s absolute centrality continues to be questioned, the material evidence does suggest a linked and interactive artistic production system. Works on paper permitted the easy movement of ideas between contemporary court workshops, a process driven by the peripatetic practitioner. Physical evidence, such as creases and folds in drawing sheets and signs of wear and tear in general, shows that the drawings were stored loose before they found shelter in albums. The drawings preserved in albums and regarded as cultural capital to such a degree that even the tiniest fragment was carefully trimmed and ruled were no less valued when they lay under the hands of the artist.<sup>15</sup>

This essay’s findings are based on a visual analysis of hundreds of drawings and what can be deduced from it. References to technical procedures are extremely rare in written sources, and where they exist they usually occur in recipe books.<sup>16</sup> The observations about design processes made here are also not supported by the arsenal of tools used in the technical and scientific analysis of works of art, or by an ever expanding array of imaging techniques developed over the last decades. At this time, non-destructive testing methods—especially for paper—are so rudimentary as to have limited value, and non-invasive methods of physical analysis are not readily available in those collections where the drawings are located. That said, much can be accomplished outside the laboratory using the eye alone, but there is also no question that some of the observations advanced here will be put to the test in a not too distant future when technical analysis of works of the Islamic art traditions becomes more common.<sup>17</sup>

The principal concerns here are the materials and methods used by artists in the process of design, especially in the transfer of designs, the draftsman’s repertoire of mark making, and the methods employed by artists in the production of compositions for manuscript paintings. At the end, the implications that design systems may have had for cementing compositional paradigms, especially in manuscript painting, already attested in the late fourteenth century in manuscripts made for Jalayirid patrons, will be raised. This essay can best be regarded as a set of preliminary observa-

tions about largely neglected artistic practices—and, I might add, practices about which we are undeservedly certain—as a contribution to the growing interest in the study of workshop practices and production regimes during the pre-modern period.<sup>18</sup>

#### THE MATERIALS AND IMPLEMENTS OF DRAWING

*Papers:*<sup>19</sup> The corpus of late-fourteenth-century and fifteenth-century drawings uses a broad range of papers (of linen rags, hemp rope, and possibly cotton) that run the gamut from relatively light, almost translucent, ivory-colored papers of uneven surface—and lacking extensive burnishing and sizing—to thick white papers with sized and polished surfaces. Neither subject matter nor type of mark making directly correlates with the particular fabric of the support, and it would seem that paper of virtually any sort was deemed appropriate for the purposes of design so long as it possessed a surface sufficiently integrated<sup>20</sup> to allow the brush or pen to leave a perceptibly continuous line on the support. Processes of sizing—sizing consisted of starch, or compounds of starch with glue or chalk—and burnishing enhanced the smoothness of the paper surface by filling pores or holes between fibers and compacting the surface overall.<sup>21</sup> Other properties, e.g., translucency, made some papers the best choice for specific functions such as image transfer. But in general, paper could be used for numerous purposes and was a guarded commodity.<sup>22</sup>

Evidence of the frugal attitude toward paper such as the pasting together of fragments to produce larger surfaces on which to design and the habit of using both sides of a paper sheet as viable working surfaces have been mentioned. Although most drawings are attached to album pages, drawings on the reverse side of some sheets can still be seen when the page is held against a gentle natural light or in the case of semi-translucent paper even when the page is viewed flat.

In addition to evidence of economical use, one can also expand upon the temporal nature of the paper sheet. Although no true palimpsests are known,<sup>23</sup> the designs on some sheets are built up over time from successive acts of drawing. Presumably these represent the work of either an individual artist or artists who searched around for a sheet of paper with sufficient space left over to draw a thumbnail sketch (see fig. 6). Sheets of paper that had been used in the day-to-day workings of the *kitābkhāna* could later be brought

into service for drawing. Such operations involved using the sheet of paper as a protective underlayer, placed beneath an image that was to be pricked for pouncing (the hard point or stylus went through the “original” and into the sheet below leaving a trail of holes). An example is offered by one of the so-called cloud collars, attributable on stylistic grounds to a western Iranian milieu in the second half of the fifteenth century.<sup>24</sup> It represents a scene of Chinese immortals in battle and is done in colored inks with wash. Close inspection of the upper-left passage, approximately the area covered by a fluttering cloth banner, shows the pinholes outlining three figural compositions drawn at a much reduced scale to the sheet’s drawing in ink, in opposite orientation, and clearly of an entirely different subject. The figural groups show two men on horseback turning back to shoot an arrow; a figure mounted on a horse spearing a dragon; and a man riding a galloping horse. With minor changes in pose, the first two groupings reappear in two paintings attributed in a caption to “the servant Sultan ‘Ali.”<sup>25</sup>

Numerous drawings bear phantom pinholes that were not inked. Some of these examples may have been intended for inking and were thus intentional pouncings, but if this was the case any trace of pounce powder has disappeared over time.<sup>26</sup>

*Inks:* Matching the variety of paper types is a broad palette of colored inks used for drawing. Although black is by far the most popular, common inks include browns, reds, and blues. These inks could also be watered down to produce lighter tonalities in line or areas of wash, a practice that is suggested not only by the presence of wash but also by the numerous brushstrokes on paper sheets where the pigment-loaded brush was tested (see figs. 1, 4 and 7). Other drawing media such as charcoal are rare; powdered charcoal and chalk appear to have been used more for transfer processes like pouncing than for drawing proper, even though they could be erased from paper more readily than ink, a feature that made them ideally suited for preliminary groundwork.<sup>27</sup> Red ink was favored for executing an initial outline on paper, though it was not always used for preparatory work.<sup>28</sup> It was also used, though more rarely to be sure, without other colors for developed drawings (see fig. 8).

No specific analyses of the media of drawing have as yet been undertaken, and so it is not possible to know if the inks used for drawing were the same as those used for calligraphy.<sup>29</sup> They may have included



Fig. 6. Study sheet comprising three waterfowl, tree, and bixie. Iran or Central Asia, ca. 1400–50. Black and red inks on ivory paper, 260 x 371 mm. Topkapi Palace Library, H. 2152, no. 1, fol. 63b. (Photo: Topkapi Palace Museum, Istanbul)

watered-down pigments of the kind used for manuscript painting. At any rate, recipes produced various kinds of ink: inks of different suspended particles (culminating in lampblack, which consists of small, round particles of soot gathered from burned oil), viscosities, and binding agents, elements that had an impact on its density, coverage, and drying power. Surely most of these recipes made ink suitable for drawing, and the media used for drawing probably did use the same materials and technical base as calligraphy. If they did, it goes a long way toward accounting for the absence of an exclusively artist-directed practical literature until as late as ca. 1596.<sup>30</sup> One of the earliest texts on materials preparation, *Jawhar-i Simi* ("Simi's Jewel," not before 1435), written by Simi Nishapuri, combines instructions for selecting paper and for making various colors, gilts and suspensions

with ink recipes and advice on selecting reeds for pens.<sup>31</sup> Texts like Simi's treatise served the artist as well as the calligrapher.

Manuals on calligraphy sometimes offer tips for removing errors. Calligraphers viewed such mistakes with disdain and often cautioned the would-be calligrapher against them, and in fact were even reluctant to provide instructions for error removal. The majority of surviving drawings are remarkably free from errors. In those examples where alternative lines appear, they are not removed or concealed by body color.<sup>32</sup> And in some drawings the presence of multiple contours in fact shows slightly different poses for the specific subject (fig. 5). While these multiple armatures may have resulted from a process of design in which the ideal composition was discovered, the end result presented compositional alternatives, offering



Fig. 7. Page of drawings. Iran or Central Asia, ca. 1400–50. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 62a. (Photo: Topkapi Palace Museum, Istanbul)

still more visual permutations to the beholder.

*Instruments:* Visual analysis confirms what one suspected all along: the Persian artist used both hair brush (*qalam-i mū*)<sup>33</sup> and reed pen (*qalam, kilk, khāma*) in the practice of drawing and, indeed, may have used both instruments in the same drawing.<sup>34</sup> Although the skilled virtuoso practitioner could conceivably produce similar types of marks regardless of the instrument in hand, particular line qualities were easier to make with one tool than the other. For example, in making an extended line it is easier to maintain both line width and ink density with a pen than it is with a brush; for shorter lines the brush offers extraordinary flexibility and fluency, permitting variations in line weight (a fluctuation between thinning and thickening line) as the pen

does, but also variations in tonal range over a single line which the pen does not. Depending on the size of the desired mark, brushes could also be used to mimic the visual qualities of lines produced by reed pens, notably those thickening lines that culminated with fat heads, and thus resembled nails.<sup>35</sup> The brush offered a more expansive array of line shapes than the pen did since it was not limited by the static and fixed nature of its point.

Another type of instrument used in the design process was a hard point, presumably a stylus made of metal or bone. Numerous drawings possess blind ridges scored into the paper, which are visible only in a raking light.<sup>36</sup> These lines may either have served as a compositional framework for the drawing, and hence are functionally akin to an underdrawing, or resulted from a transfer-related process. Lines indented into other drawings indicate that a compass was used to lay out drawings based on geometric figures, principally the circle. The practice of inscribing construction lines onto paper is also attested in the illuminated headpieces and rosette or almond-shaped medallions of fifteenth-century manuscripts. Such lines had the advantage of easy coverage with gold and opaque pigments which made them virtually invisible:<sup>37</sup> the extremely fine work of an illuminated figure demanded minimal interference from the preparatory design and made detailed underdrawing undesirable.

#### GRAPHIC REPERTOIRE

The impact of Chinese visual traditions on the arts of Iran has often been noted—indeed, most scholars have attributed the major changes of pictorial conception in Persianate paintings just before the fourteenth century to contact with China.<sup>38</sup> Yet another formal influence attributed to Chinese art is an adjusted appreciation of drawing as a medium,<sup>39</sup> whether inspired by exposure to pen and ink drawings (*bai miao*) or woodblock prints.<sup>40</sup> It is difficult to test the cause-and-effect relationship of exposure to Chinese images where drawing is concerned because extant Persianate examples date to the period following Mongol rule in Iran: drawing was surely practiced before this time but it is not possible to know what it looked like or what formal values were stressed across its expressive range.<sup>41</sup> Most of the examples used to highlight the east-west Asian visual interaction are manuscript illustrations, principally those narrative images occurring in the manuscripts of Rashid al-Din's *Jāmi' al-tawārīkh*

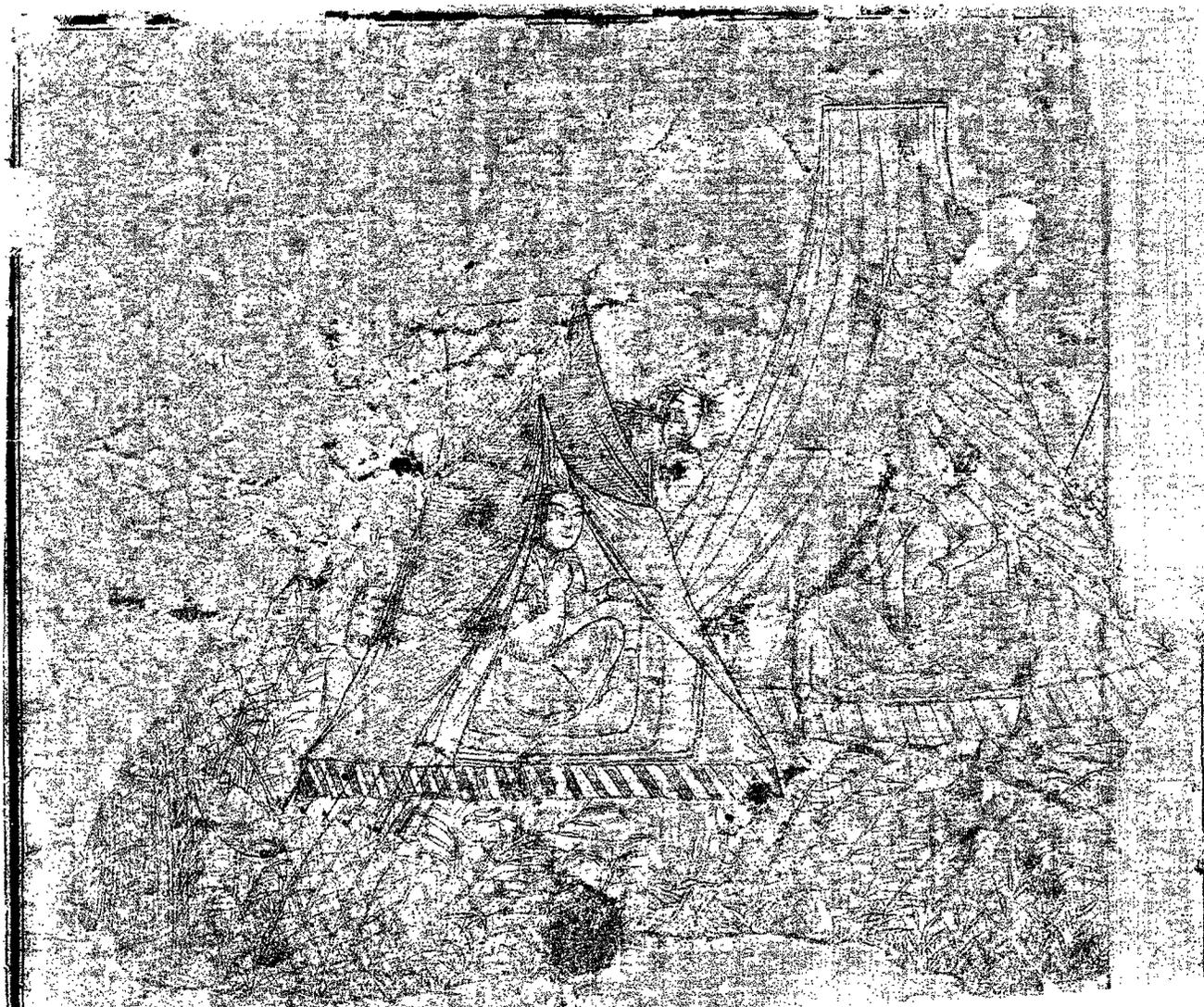


Fig. 8. Royal figures seated in guyed tents. Iran, before ca. 1413. Red ink on ivory paper, 83 x 98 mm. Diez A, fol. 73, p. 40, no. 5. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

("Gatherer of Chronicles").<sup>42</sup> The strongest argument in favor of visual affinity has to do with a powerful calligraphic emphasis in manuscript illustrations, a reduced and virtually monochromatic palette, and the silhouetting of figures on blank paper, features generally consonant with drawing, if we accept comparatively modern definitions of the medium.<sup>43</sup> (For the Persian context we must perforce make our own definition, because no distinction is made between drawing and painting in contemporary Persian art historiography, a fact that should make us wary.)

Even if Chinese art was responsible for the accep-

tance of the autonomy of drawing, Persian artists and beholders were already primed for and receptive to the change because of their longstanding and highly developed appreciation of calligraphy. The conceptual and practical links between writing and drawing must have been palpable even if a written statement to that effect would not be expressed until the early years of the sixteenth century. As in drawing, writing depended on gauging intervals of space between a series of marks that held an arbitrary and abstract relationship to what they represented. Even if the impact of Chinese art on Iran was in part inspired by



Fig. 9. Two Buddhist lohans. Iran or Central Asia, ca. 1400–30. Black ink on ivory paper, 472 x 345 mm. Diez A, fol. 73, p. 55. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

the new emphasis on drawing, some of its visual effects from the repertoire of brushstrokes were ultimately abandoned in favor of a more sober weighted line, more often than not by a wiry line that challenged the beholder's perception of the instrument. If the draftsman were to use a brush, the line that he would draw would resemble that of the pen more than it would the brushmark of Chinese ink and brush painting in a game of instrumental ambiguity.

Two unusual Persian drawings from the early fifteenth century help to illustrate the point that borrowing from and adaptation of Chinese drawing were selective. The two drawings in question (figs. 9–11) represent Buddhist lohans or canonical saints. In these drawings the expressive potential of the ink-loaded brush found so commonly in Chinese painting is used to great effect. A heavily weighted, sinuous line drawn

over the page sometimes loses its covering power, the ink appearing to straddle the paper fibers upon which it sits as a loose mesh. A dry brush has been scumbled over the surface to produce passages of a middle gray tone. The apparent speed of the weighted line and its execution are contrasted in both examples with a thin black line used to draw the features of the faces, hands, and feet. The formal vocabulary and attributes we assign to these diverse line types operate in dialectic. Much like the strange hesitancy of the heavily inked lines (see fig. 9 especially), however, the scumbled areas are not always compelling because they sometimes appear in passages that deprive the drawing of consistent formal logic as defined by a single light source. Like so many other Persian drawings these were made after Chinese models but are rare in their attempt to mimic fully the parent formal vocabulary, an operation in emulation that only further extends the drawings' expressive fallacy.<sup>44</sup> The dialectic established between line type connotes such paired attributes as speed and slowness, spontaneous and measured; while this "fact" of execution may in reality obtain for the Chinese work, the Persian draftsman treats the lines as formal vocabulary freed from the strictures of drawing as performance. In his reperformance of form, the Persian artist elides the performative distinction between qualities of the lines—they are probably equally measured in care of execution—but he retains their impression of expressive difference.

A third drawing of Buddhist lohans following Chinese iconography shows another facet of cross-cultural translation (fig. 12), but unlike the two previous examples it represents something closer to what can be called normative Persian graphic expression. It is a drawing done in a very finely weighted line and is representative of the vast majority of Persian drawings, of which extant examples begin in the late fourteenth century and explode between 1400 and 1450. Unlike the majority of extant drawings it was probably executed with a pen, as Basil Gray first suggested.<sup>45</sup> The sinuous lines of the drapery are so sharp that they appear incised into the paper. Layers of colored wash add substance to the angular drapery, and deftly placed strokes of ink build up the texture of the lion's tail and mane. Similar strokes provide the lohan with a hairy chest and wispy eyebrows, and stippling creates a light growth of stubble on chin and pate. The lines of darker tone, faint stippling, and graded wash used for the depiction of the wooden staff enrich the draw-



Fig. 10. Two Buddhist lohans. Fragment showing upper torsos and heads. Iran or Central Asia, ca. 1400–30. Black ink on ivory paper, 300 x 361 mm (one of four pieces). Diez A, fol. 73, p. 53. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

ing with other forms of graphic expression.

The principal element of Persian drawing was the weighted line. It was a line that firmly established the outline and inner contours of a figure against its ground. It served to diagram or map out the form, and the line's quality left little or no room for ambiguity. Although this line did not invoke the expressive attributes of the heavier Chinese ink and brush mark, it did have a performative dimension, but one that resided in perfected execution: the line was placed here and not there, with little or no sense that it could have been drawn in any other way or that it had been

made with any hesitation. Different materials, whether it be cloth, feathers, water, or fur, were suggested by a conventional code based on a pattern-based abstraction of the thing itself. Such details resulted from an inherently descriptive attitude, mediated through the accumulated tradition of drawing and not derived from direct observation or drawing from life.

It is only in a few drawings that additional formal possibilities of drawing are encountered. One study, depicting two tents in a landscape, each one occupied by a royal figure (fig. 8),<sup>46</sup> is executed in ink of crimson. Here the ubiquitous weighted line is augmented



Fig. 11. Two Buddhist lohans. Fragment showing legs and feet. Iran or Central Asia, ca. 1400–30. Black ink on ivory paper, 163 x 160 mm. Diez A, fol. 73, p. 53. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)



Fig. 12. Two Buddhist lohans. Iran or Central Asia, ca. 1400–30. Black ink and colored washes on ivory paper, 342 x 239 mm. New York, Metropolitan Museum of Art, Rogers Fund, 1968,68.48. (Photo: The Metropolitan Museum of Art, Rogers Fund, 1968,68.48)

by a series of hatched lines drawn across one of the guyed tents. Small diagonal bands of hatching are used to create a striped trim for the tent. The foreground shows numerous overlapping leafy plants and grasses with strokes of ink built up to such a degree that tonal density is created. A stylistically related drawing shows a woman in a garden, a line of trees to her right, a rivulet issuing from the rocky baseline formed by the trees.<sup>47</sup> Two inks were used for the drawing—magenta for the seated woman and blue for the elements of the garden. This is an equally minute study that employs a broad lexicon of mark making, but no hatching, to create the impression of various tonalities. It is also a dramatic experiment with inks of contrasting color and hue.

Both of these delicate drawings are stylistically related to a group of dated manuscripts which represent the output of workshops in Shiraz, Yazd, and Isfahan from the later years of the fourteenth century until 1413, when the Timurid governor Iskandar Sultan was removed from office by his uncle Shahrukh (r. 1409–47). Characteristic of this corpus of manuscripts, many of which are anthologies, is a tendency

to combine fully painted images with studies done entirely in monochrome or a limited number of colored inks.<sup>48</sup> For whatever reason, the constellation of practitioners based in the ambit of central and southern Iran extended the potential of the drawing-based medium for a period of some twenty years in formal directions that would only rarely be pursued. The techniques and aesthetic results of drawing acquired a rare autonomy in the context of these illustrated manuscripts at a time when the manuscript was most likely regarded as predominantly a vehicle for polychrome images and illumination—at least these are the dominant modes current in manuscripts.<sup>49</sup> In other regional drawing traditions—principally Herat and Tabriz—modulations of tone tended to be achieved through tonal wash, or less commonly, by stippling.

Some years earlier, ca. 1400, artists had used ink and wash alone for the marginal schemes of eight folios in a *Divān* of Sultan Ahmad (r. 1382–1410)<sup>50</sup>—Sultan Ahmad, last of the great Jalayirid rulers, appears to have been the author of the poetry collection and the patron of its manuscript. The drawings in the *Divān* depict various scenes of outdoor activity: village folk walking through and working in a landscape; princely figures in a garden; scholars in a garden with a low balconied platform; angels amid a swirling, meandering cloud; figures hunting in a landscape; a camp scene; and a landscape structured around a gushing stream with numerous flying and swimming birds. Throughout, the full potentiality of ink is used. Variations of pressure not only result in the effect of line weight, but thin, thick, or scumbled lines applied to single compositional elements also create another kind of differentiation by varying tonality and graphic effect. While line weight gives the impression of volume, broad tonal variation between single compositional elements opens the way to a sense of spatial recession (though again it is not used in a formally consistent manner and instead works at a local level). Tonal variation combined with type of graphic mark also encodes difference between textures. In addition to all of these effects of the ink mark—added wet or dry—one can mention the use of ink in skeins of wash and the use of two colors of ink, black and blue. The cumulative result of these graphic techniques in the *Divān* is impressive, and represents additional evidence for Chinese inspiration.

Over the *longue durée* a broad lexicon of graphic marks never did take hold though circumscribed experiments did occur in regional pockets or for brief periods. Only minimal explorations in drawing into the effects of texture and color are evident. In contrast, ever present in drawing was the rigorously conceived line, a line analogous to writing in many ways. In a sense, the quality of line and the circumscribed repertoire of graphic expression that is characteristic of Persian drawings in the fourteenth and fifteenth centuries were maintained by the fact that designs on paper would become another medium, though it would be inaccurate to state that drawing was not valued as drawing.<sup>51</sup> This fact of production, translation into other media, was one force that limited the development of visual surplus in drawing: some types of graphic expression were simply redundant for the purposes of translation. The diversity of the effects of drawing promised in the early fifteenth century was postponed

until the middle years of the sixteenth century in the work of such artists as Muhammadi as well as his peers and successors, Riza 'Abbasi chief among them.<sup>52</sup>

### DESIGN PROCESSES

It seems a truism to say that the production of objects and buildings was the principal engine that powered the making of drawings. But recognition of this simple fact does not convey the impact that a high level of design and a profound concern for production values had on design processes. These concerns made designing an image-greedy process. To make an object required numerous preparatory drawings and access to existing models.

One of the problems that stands in the way of a study of design processes is the absence of a corpus of drawings that can be linked directly to a finished object, a fact that precludes case-specific analyses. But in some respects the inability to match designs to their resulting object is obviated by the fact that subject matter was organized along taxonomic lines. Although genera of subjects were not entirely bounded by specific media, certain types of objects shared common subjects, and these were arranged over an object's surface in related formal behavior. For example, a drawing of a *bixie* (cloud deer),<sup>53</sup> the fabulous Chinese apotropaic beast which had entered the Persian visual lexicon in the fourteenth century, might find its way onto a piece of metalwork, a ceramic dish, a tooled leather binding, or a woven textile, and arranged in space-making units such as medallions, roundels, or borders, or within a continuous field. Figural subjects were largely destined for other media—painting for the most part and in monoscenic compositions—and formats such as the illustrated book or wall painting.<sup>54</sup>

### THE STUDY SHEET AND THE SINGLE DRAWING

Most of the drawings that survive today are sheets portraying single figures or objects, or restricted groupings of them, or study sheets covered with the same or closely related elements. Other study sheets present an array of disparate subjects. Frequent duplications of the same subject suggest that one of the purposes of drawing was to refine the outline and the internal details of a subject, but other objectives were surely to practice the act of drawing and to rehearse the image so many times that it could be reproduced automatically. One of the examples illustrating the latter func-

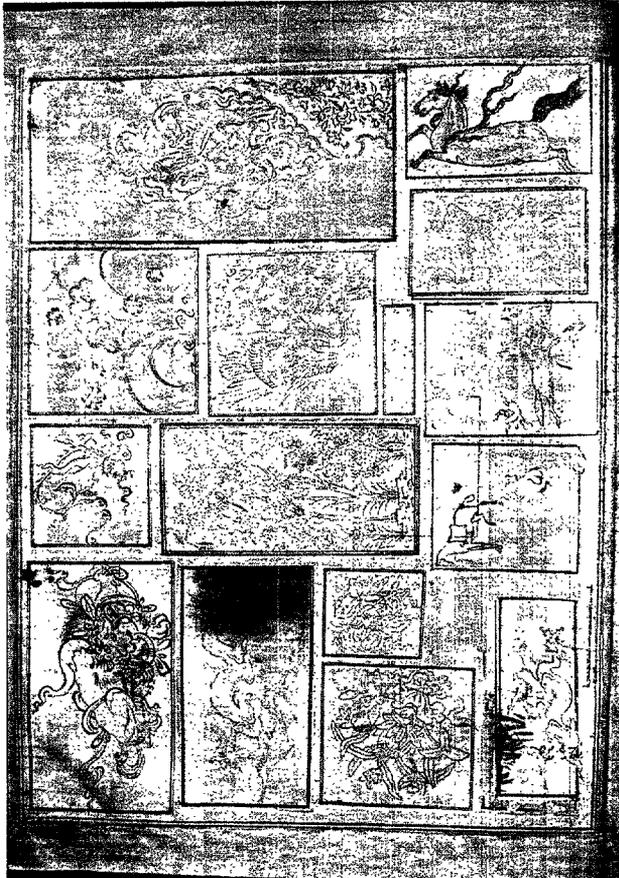


Fig. 13. Page of drawings. Iran or Central Asia, ca. 1400–50. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 86a. (Photo: Topkapi Palace Museum, Istanbul)

tion is the study of the ox and lion which crops up in countless drawings in the Baysunghur album (see fig. 4). Another commonly recurring subject of the drawings is a dragon walking across a rocky landscape (see fig. 13, second from lower left and lower right). It appears in many examples, but unlike the ox and lion it is drawn in various sizes.

Several study sheets give some idea of the preparatory stages in design. One is thematically organized around the subject matter of a bixie (fig. 14). The bixie appears in various states of completeness across the sheet, its full body shown twice in a kneeling pose that is commonly found on bookbindings; with the exception of the creature's head, both examples are done in a sketchy line. Arrayed between the two corporal bixies are three disembodied heads, looking left and



Fig. 14. Study sheet showing bixies and landscape elements. Iran or Central Asia, ca. 1400–50. Black and blue inks on ivory paper, 142 x 150 mm (maximum dimensions). Diez A, fol. 73, p. 46, no. 3. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

right, and built from sinuous lines of weighted ink with small variations tested out in the patterning of the hair and the profile of the bixie's craggy horn. The treatment of the snout, the set of the eyes, and the quivering line of the jaw emphasize the dragon-like qualities of this fabulous beast. In four still smaller and incomplete sketches only the snout and eye appear, a single curving line for the forehead is at very center: perhaps this line is the artist's first, the peg on which the rest of the drawing is hung. The remainder of the sheet is given over to sketches of leafy branches.

Another study sheet shows processes similar to those seen in the sheet of bixies (fig. 7, lower left), although each one of its units is more completely resolved as a drawing than the bixies are. An array of subjects useful for a variety of contexts and purposes is drawn on this sheet; swimming and flying waterfowl appear across the top, a walking and crouching deer below them to the right, sprays of flowers to the upper left, and three perching birds at the lower left. The sheet constitutes a catalogue in miniature, offering a set of related

subjects drawn in various poses. Implicit in some of these sheets are compositional relationships between units, notably the spacing of the swimming waterfowl at the top of the sheet. Another three drawings show these kinds of considerations (fig. 13, at center right). One shows two kneeling men, the same figure transposed across the sheet by a few millimeters, an unmounted horse at the upper left in a compositional group that could fit nicely in the corner of a miniature painting. Adjacent to it is a study sheet showing a running dog and a flying bird. Each subject is repeated on the page, the dog twice at different sizes, the bird thrice at the same size. It is unclear whether spatial relationships between the sheet's components are to be read according to kind—the triangle formed between three flying birds—or if the bird and dog are to be viewed as an inseparable twinned unit.<sup>55</sup>

The graphic language of other drawings suggests that they were done as preparatory sketches (see figs. 15 and 16). The head of a man (fig. 15) is unusually minimalist, just a series of strokes on the page; in another of two camels and their riders (fig. 16), the body of the camel and the figure is a fractured nest of sketchy lines. Their sketchy quality is uncommon even among preparatory designs, which tend to be done in a measured and unambiguous line—one contour and not several contours are shown. But this raises an important point, namely, that different levels of execution were applied to preparatory designs, a feature which makes it difficult to subdivide drawings into categories such as sketch, preparatory, and process. Indeed, the evidence that a good deal of pouncing was done suggests that little if any distinction was made between preparatory and finished drawings. Even if those categories are accepted as appropriate, they had no bearing in actual practice when all drawings were viewed as models and could be duplicated by eye and hand or through a mechanical process.

#### THE USE OF MODELS

One of the principal forces that shaped the new creative expression was the visual engagement with a universe of models, prototypes culled from past and present: models could be either drawings or subjects represented on objects cycled back into the medium of drawing. The following examples are drawn from a large number of known, and sometimes noted, visual correspondences between extant drawings, paintings, and objects.



Fig. 15. Portrait of a man. Iran, ca. 1370–1420. Black ink on ivory paper, 93 x 47 mm. Diez A, fol. 73, p. 63, no. 5. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

Among the most intriguing examples to document the process is a multi-tiered drawing of five horizontal bands representing a series of narratives, some identifiable as stories from Firdawsi's *Shāhnāma* (fig. 17). For example, the second register from the top shows Bahram Gur and Azada mounted on a camel and the third shows Faridun victorious over the tyrannical Zakhak. The remaining two figural scenes are emblematic of stories in the *Shāhnāma*; one shows a



Fig. 16. Study sheet of figures riding camels. Iran, ca. 1400–50. Black ink on ivory paper, 147 x 81 mm. Diez A, fol. 73, p. 9, no. 3. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

princess riding on a horse attended by a figure holding a fan; the other is an enthronement. The lowest band is a frieze of animals—an ox, griffin, and lion—set against a ground of large-scaled, scrolling flowering plants. In aspects of the composition, figure style, and treatment of narrative the drawing is linked to a group of late-twelfth-century through mid-thirteenth-century objects, principally *haft rangī* (or *mīnā'ī*) ceramics, inlaid metalwares, and a unique illustrated manuscript of Ayyuqi's epic romance *Varqa va Gulshāh*.<sup>56</sup> Other features of the drawing make a contem-



Fig. 17. Multi-tiered drawing depicting scenes related to Firdawsi's *Shāhnāma*. Iran, after ca. 1350. Black ink on ivory paper, 537 x 235 mm. Topkapi Palace Library, H. 2152, fol. 98a, detail of page. (Photo: Topkapi Palace Museum, Istanbul)

porary dating to these stylistically and thematically related objects unlikely. The details in question are the plant motifs of the upper and lower bands of the drawing, a sinicised repertoire including lotus blossoms and leaves, elements that did not become common in Persian art until the later years of the thirteenth century but are ubiquitous by the early years of the fourteenth century. It would seem that the drawing was executed in the second half of the fourteenth century from objects made more than a hundred years earlier.<sup>57</sup> The impulse to look to objects from the past seems anachronistic, revealing an antiquarian bent. But looking to the past for new ideas was commonplace, and this example is particularly interesting because it suggests the presence of old portable ob-

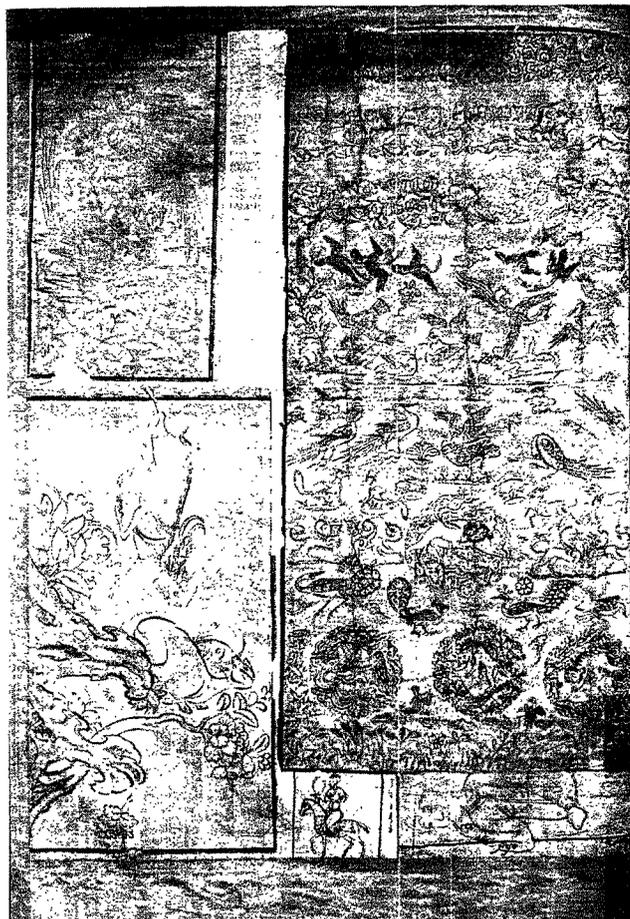


Fig. 18. Page of drawings. Iran or Central Asia, ca. 1400–30. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 54b. (Photo: Topkapi Palace Museum, Istanbul)

jects at court to be made available to artists working in or around a *kitābkhāna*. While the figure style may have been outmoded, the compositional value of these figurative bands, in which a horizontal axis is emphasized and the environment of the figures is a relatively shallow space, was still current in manuscript illustrations in the middle of the fourteenth century.<sup>58</sup>

A related drawing in the same album, also conceived as a series of horizontal bands, or friezes (fig. 18), further complicates the selective anachronism we encountered in the *Shāhnāma*-related drawing. This second sheet is composed of three bands of animal-occupied floral vegetation—done on a large scale and arranged in sprays and scrolls—that give way below to an open field of continuous space peppered with birds and animals. This space closes with a series of

roundels containing heraldically posed animals, real and fabulous, most of which are engaged in combat. Again we see the same mix of quotations excerpted from ceramic, metalwork, textile, and manuscript sources from the late twelfth through mid-thirteenth century and the more recently embraced Chinese motifs. The animals combine the stiff and emblematic poses of earlier pre-Mongol objects with the characteristically greater fluidity and animation of the post-Mongol Persian art tradition.<sup>59</sup>

This form of selective response to the art of the past continued into the early Timurid period. One well-known Timurid-period draftsman-calligrapher, Muhammad b. Mahmudshah al-Khayyam, also looked to the past for his sources of inspiration.<sup>60</sup> No less than fifteen extant drawings bear his signature.<sup>61</sup> It is a distinctive signature written in a chancery script and characterized by its repeated protocol and knotted flourish (where the *dāl* of “Muhammad” links to the *shīn* of “shah”). In one signed work, Muhammad depicts a Mongol warrior mounted on his horse (fig. 19). In subject and conception it is closely related to a visual prototype (fig. 20), also a drawing, that was presumably available to Muhammad.<sup>62</sup> He makes numerous refinements to the prototype, not only in the contours of the figure’s shape—how the warrior and horse come together to form a unit—but also in the relative positioning of limbs and in the manipulation of spatial intervals between design elements. Another order of change is found in the treatment of the folded sleeves of the warrior’s undershirt, the right arm of Muhammad’s drawing subjected to a kind of naturalism through variegation that is markedly different from the repetitive pattern-like treatment of the prototype. Presumably Muhammad’s alterations were intended to perfect, or even to correct, what he perceived as infelicities of composition and visual resolution. The end result is a more robust figure.

Although these two examples are placed together for comparison it is impossible to know the exact relationship between them, especially because the practice of copying was ubiquitous and several restatements probably stood between these two drawings yielding a sequence that amounted to a stemma of linked images. Another pair of drawings, depicting two immortals in combat, suggests a similar process.<sup>63</sup> If Muhammad’s drawing can be compared directly to the prototype, one would observe the greater proximity in composition and description—any variations enhanced legibility of detail—and close dependence on



Fig. 19. Mounted rider, signed by Muhammad b. Mahmudshah al-Khayyam. Herat (?), ca. 1420–33. Black ink and gold on ivory paper, 236 x 300 mm. Diez A, fol. 72, p. 13. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 72)

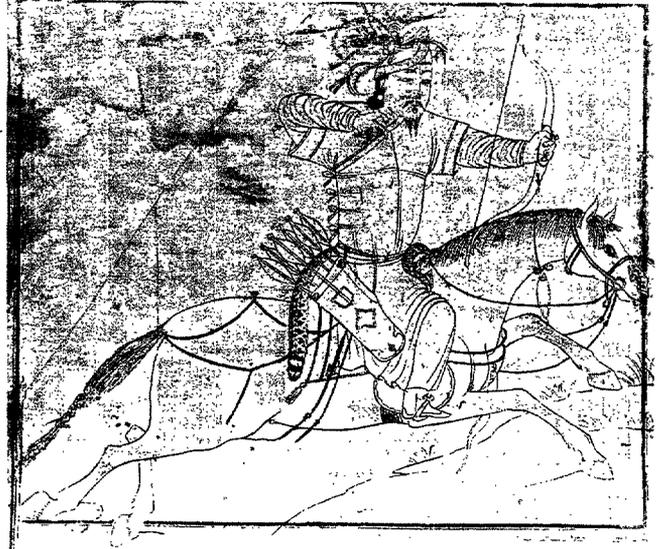


Fig. 20. Mounted rider. Iran or Central Asia, ca. 1350–1400. Black ink and gold on ivory paper, 282 x 320 mm. Topkapi Palace Library, H. 2152, fol. 50b, detail of page. (Photo: Topkapi Palace Museum, Istanbul)

line quality and mark making. Muhammad is far more willing to vary graphic qualities in the study of the mounted warrior than he is in the drawing of the two immortals.<sup>64</sup>

One final sequence of drawings again shows the perpetual return to models from the past. The Baysunghur album contains several small drawings of standing men who wear eccentric robes and half-melon-shaped hats, and hold staffs or flowers. In one, the figure has an elaborate haircut parted down the middle and gathered into bunches at the back. The drawings were most likely executed in Shiraz in the time of the Muzaffarids.<sup>65</sup> The figures wearing melon-shaped hats appear again in a drawing that depicts various dervishes.<sup>66</sup> Given the emphasis on individuating the dervishes it seems safe to conclude that different orders are being portrayed—differences are shown by clothing, the presence or absence of facial hair, and the style of haircut. Stylistic features indicate that the drawing was made in the early fifteenth century.<sup>67</sup> The drawings were still current during the last quarter of the fifteenth century when the artist Shaykhi worked from them by making further selections from the dervish types and then produced a drawing and a finished single-sheet painting.<sup>68</sup>

The common incidence of repetition can be accounted for in various ways, but it seems to have little to do with the “economy”—meant here as “cost-effectiveness”—of workshop practices.<sup>69</sup> Repetition and the related technique of pouncing are often accounted for as a means of duplication requiring little skill, allowing a large number of workers—or practitioners in training—to participate in production. But evidence of demand outstripping supply is wholly absent for the category of figurative images, and part of the cultural charge of an illustrated manuscript, the primary destination of figural imagery, was that it represented an extraordinary investment of time and labor. Why jeopardize that association by introducing a faster-paced means of production for illustrated manuscripts? An alternate set of reasons for repetition is required: especially after an analysis of the work of Muhammad b. Mahmudshah al-Khayyam. It would seem that the practice of an artist like Muhammad involved responding to the subject matter of chosen models and mimicking their graphic language. This process combined visual analysis with practice in the act of drawing, offering a means of honing artistic skill and augmenting virtuosity. In its combination of looking and doing, the practice was much like calligraphy, an art that

Muhammad excelled in as well. Repetition allowed the artist to develop and maintain various skills—visual acumen and the duplication of a drawing by freehand—in the years of training and after.

#### POUNCING AND OTHER PROCESSES OF TRANSFERRAL AND TRANSLATION

In a linear written reconstruction of process, the logical successor to a discussion of copying or, put more broadly, models would be the methods used to translate designs from one sheet of paper to another or from the paper model into another medium. But it would be logical only if the methods described actually paralleled the process, and that is probably not the case. The system of creativity was more flexible than that—just as old designs could be revived through the saved paper model, so could designs be excerpted from older objects. Moreover, drawings that we might categorize along a scale from preparatory sketch to finished line drawing were equally likely candidates for inspiration. They were scrutinized by artists who drew freehand copies from them or used them to make pounces. The process of image recycling did not discriminate between exploratory and finished works—after all, the model was more often than not used as a starting point and various orders of change could and would be made in the artist's restatement of it.

So, what of the mechanical methods used to transfer or duplicate designs? As soon as scholars realized that designs done first on paper were executed in various media, they asked questions about the means used by artists to transfer designs.<sup>70</sup> However, scholarship about methods of design transferral, admittedly somewhat scarce and summary, tends to emphasize pouncing over any other process.<sup>71</sup>

Pouncing is a method of transfer that involves placing a thin, semi-transparent sheet of paper (*charba*, *garda-yi taşvîr*, *kāghazi sūzan zadan*)<sup>72</sup> or a deerskin<sup>73</sup> on the drawing, then making evenly spaced pinholes along the contours of the design. When complete, the pounce is then placed on the surface that will receive the design, and a small mesh bag containing ground charcoal or chalk is then tapped lightly against the surface of the pounce. When the pounce is removed a trail of spots of powder remains. These dots form the proto-outline that then guides the practitioner in his work. An ink line connects the dots together. Changes in the original design can be made, not only in the details but also in the contours of the figure's

disposition. It is also possible to reverse the pounce to create a mirror image of the original.<sup>74</sup>

It is important to make a distinction between those drawings used to make pounces and those generated by the process of transferral itself. The album contains some drawings transferred by a method for which only the pinholes, and not the final drawing in ink, are executed.<sup>75</sup> Of the group that combine pinholes and ink line, it remains unclear which were used as pounces and which constitute designs transferred by the process.<sup>76</sup> A variation on the pouncing technique helps to illustrate this particular dilemma. In this variant method of pouncing the drawing functions as the actual pounce. It is placed on the surface that will receive the design. In this simpler process, the contours of the drawing are pricked so that the stylus penetrates the paper, leaving marks on the sheet beneath it. This method did not involve the use of pounce powder, and so reduced the labor involved, but had the disadvantage of damaging the original drawing. One way to begin to distinguish between drawings according to their specific pouncing technique would be to hold them up to the light to determine whether the marks are pinpricks or pinholes, that is, surface marks or perforations entirely penetrating the support.

Some examples may help to illustrate these variations in transfer process. One design for a cusped medallion, containing a lion and dragon and floral border (fig. 4, at top left), was executed in ink but the paper shows numerous pinholes. These have not been inked. The absence of powder on the paper's surface and the presence of un-inked pinholes suggest that the design was transferred to this sheet by the variant pouncing method involving the stylus without the pouncing powder. To execute the drawing, the artist relied upon a trail of pinholes as his guide. Another design for an oval cusped medallion, containing two simurghs (fig. 13, at top left), also with a floral spray in the corner, is marked by pinholes. In this example, the pinholes intersect exactly with inked lines. Hence this drawing was most likely used as a pounce, that is, placed on a blank sheet and pricked with a stylus.

Numerous drawings bear the marks of one or the other of these pouncing processes, attested mainly by the presence of pinholes. But evidence gathered from the corpus of drawings also suggests other methods of transfer. In a third method, red chalk or charcoal was applied to the reverse side of the original design. The original sheet was laid on the receiving sheet and

the outline of the original design traced with a stylus.<sup>77</sup> The pressure exerted by the stylus inscribed around the drawing's outline transferred thin lines of the chalk or charcoal from the reverse side of the sheet onto the underlying sheet of paper. Evidence of this method of pouncing is suggested by patches of black or red discoloration on the paper sheets now in the album.

One large study sheet (fig. 4, at lower right) with five pairs of animals (one drawing of two qilins, four of a lion and ox in combat) and the head of a horse, is marred by a large smudge of red chalk that circles around the area of the study where the two qilins appear. Pinholes are entirely absent from the sheet. Localized smudges of powder appear in another example (fig. 21, at lower right). This design is of lotus plants and lotus flowers drawn in red ink and arranged in a circle. The lotus leaf and flower in the upper-left section are marred by a black shadow. In many such instances the discoloration appears to be on the upper surface of the paper. This impression, however, is misleading because no known process would explain why the charcoal or chalk would appear in such large amounts on the upper surface. Further evidence of this process is offered by drawings with lines scored into the paper, presumably with a stylus. One problem of interpretation in this last example concerns the inability to determine whether the stylus was used to lay out a design in a preliminary graphic process or whether it was used over an existing drawing in ink to transfer the design.

Some might argue that the charcoal or chalk stains result from the first pouncing method. However, the excessive quantity of charcoal or chalk would make this process unlikely; its plausibility is also limited by frequent examples of completely executed drawings in conjunction with the charcoal or chalk.<sup>78</sup> Would it have been possible, or even desirable, for the artist to execute a complete sketch over the charcoal? Furthermore, there are examples of charcoal smudges on drawings that lack pinholes, offering further support to the second method of pouncing by the use of charcoal powder on the reverse side of a drawing.<sup>79</sup> The logical explanation for the appearance of smudging on upper surfaces is that the charcoal or chalk has lifted through the paper from the reverse over time.

Two last groups of drawings demonstrate variations on these several processes. The selective excerpting of an element from a larger design by way of the stylus plus chalk/charcoal transfer method could also be

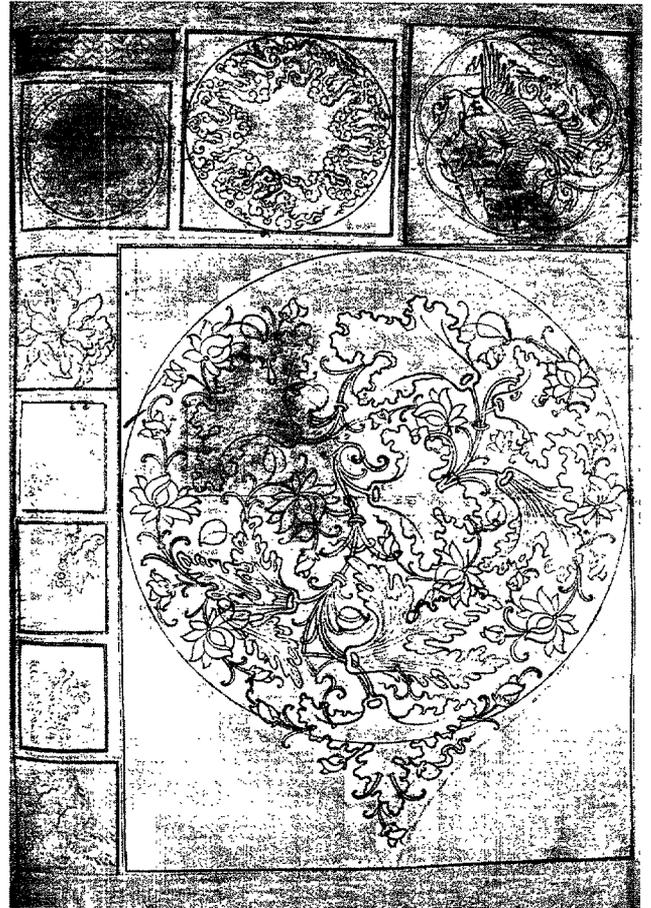


Fig. 21. Page of drawings. Iran or Central Asia, ca. 1400–30. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 70b. (Photo: Topkapi Palace Museum, Istanbul)

achieved in the first group by using the stylus to make pinpricks,<sup>80</sup> placing a transparent sheet of paper over the design, and tracing its outlines with a series of pinholes. Or the drawing itself could be laid over the receiving sheet and the compositional element pricked, the stylus going through the upper drawing to the sheet below. In the second group of drawings—a considerable number—evidence of pinholes and powdered chalk or charcoal can be found. Five ink designs on one study sheet (fig. 7, at lower left) show this combination. Presumably these physical traces of transfer indicate a double process. The powder could be explained by the primary method of pouncing, but it is too extensive to have resulted from the minimal amount of powder—a trail of spots—tapped through

the pounce. It probably results from the stylus and chalk/charcoal method.<sup>81</sup> A second transfer occurred when the elements of the study sheet were pricked with a stylus.<sup>82</sup>

#### DESIGNS RELATED TO MANUSCRIPT PAINTINGS

A large proportion of early-fifteenth-century Persian drawings appears to have been made as designs for execution in other media; these fit under what Lentz and Lowry described as the decorative category. The drawings could be applied to portable objects in addition to a manuscript's binding, marginal schemes, and illuminations. An almost equally large number of drawings, however, depict single figures or figural groups, units that could be inserted into expanded compositions. The large size of some drawings of human figures (for some examples, see fig. 22) prompted Lentz to argue that they constituted the remnants of a figural wall-painting tradition, a tradition attested in the written sources but with no known extant examples.<sup>83</sup> Many more figural drawings were made for the reduced format of the illustrated manuscript. These figures can be divided according to type, producing a world of stock characters that could be applied to the narrative framework of any given manuscript illustration.

One of the most intriguing questions about the illustrated manuscript concerns the artistic process that lay between the manuscript's finished paintings and the drawings that can be identified as design steps along the way. More often than not, pouncing is thought to have been the essential bridge that expedited the movement of the figural unit into the final manuscript composition. In a purely imaginary version of the process, the preliminary steps of this design sequence would involve selecting a gathering of appropriate compositional units, reducing them to the same scale, and orchestrating them into a final composition (we will return to this proposition later).

Several kinds of evidence are marshaled to support the notion that pouncing played an essential role in the execution of manuscript paintings, though again, it is important to emphasize that this process has been accepted as a given and without examination. One kind of evidence, albeit circumstantial, is the repetition in fifteenth-century Persian paintings of compositional elements—single figures or groups or more extended compositional schemes—,<sup>84</sup> that is, the architectural setting and perhaps its integration with selectively



Fig. 22. Page of drawings. Iran or Central Asia, ca. 1400–30. Various inks on paper, 680 x 500 mm (total page). Topkapi Palace Library, H. 2152, fol. 49b. (Photo: Topkapi Palace Museum, Istanbul)

repeated figure groups that inhabit the space. It is often assumed that these repetitions were actualized through the process of pouncing, although such a process is not supported by firm and systematically gathered evidence.<sup>85</sup> For example, one might measure the repeated compositional units to determine whether or not there are differences in size or test for the presence of pinholes or pouncing powder on the paper.<sup>86</sup>

Measurements take on a particular importance especially because the largest number of figural drawings that do survive are drawn to a scale greater than that required for the format of the average fifteenth-century illustrated manuscript. This discrepancy might not seem problematic at first because procedures for image reduction or miniaturization as well as expan-

sion, existed through the simple squaring grid.<sup>87</sup> While gridded papers are attested in contemporary architectural practice,<sup>88</sup> no extant figural drawing is done on gridded paper, and none of the drawings which appear to be developed compositions for manuscript illustrations is superimposed with grids.<sup>89</sup> The absence of evidence across such a large corpus of material calls into question the method used to reduce or enlarge designs, and, in fact, whether it occurred through a mechanical process at all.

The second form of evidence adduced for the practice of pouncing is a corpus of drawings whose subjects appear in completed manuscript paintings of the fifteenth century.<sup>90</sup> These drawings are the strongest evidence of a direct link between a design process and completed paintings.<sup>91</sup> Of the drawings that are connected to known paintings, most are representations of discrete figures or groups of figures and are not fully developed compositions. The most developed compositions linked to manuscript paintings depict a scene from Firdawsi's *Shāhnāma* where Rustam lassoes the Khaqan of China (see fig. 23)<sup>92</sup> and another, Shirin seeing the portrait of Khusraw, from Nizami's *Khamsa* (see fig. 24).<sup>93</sup> Other drawings and their illustrated text versions are the "Attack on the Camel" from the *Kalīla wa Dimna*;<sup>94</sup> "Arab Horsemen" from the *Haft Paykar* of Nizami;<sup>95</sup> and a standing soldier from "The Murder of Siyavush" in the *Shāhnāma* (for drawing, see fig. 4, at lower center).<sup>96</sup> Only the sketches showing Rustam and Shirin are of approximately the same relative size as their painted versions. In all the other examples the drawings are larger than their painted versions. Only one drawing, the soldier figure related to the illustration for the murder of Siyavush, has traces of pouncing in the form of pinholes and shadows of powder. The discrepancy in size between this drawing and its painted version indicates that the perforations could not have been made for transferring this design to the painting.

A third form of evidence for the use of pouncing in the production of manuscript illustrations comes from a very small number of drawings (made as completed compositions and not single units) and paintings that have pinholes, apparently because they were used directly as pounces or to make a pounce. The best-known and illustrated example of the drawings depicts a sky filled with angels and swirling clouds, with a group of turbaned figures at the lower right.<sup>97</sup> It is a drawing stylistically linked to manuscripts made for Iskandar Sultan (thus before ca. 1413) and its dimen-

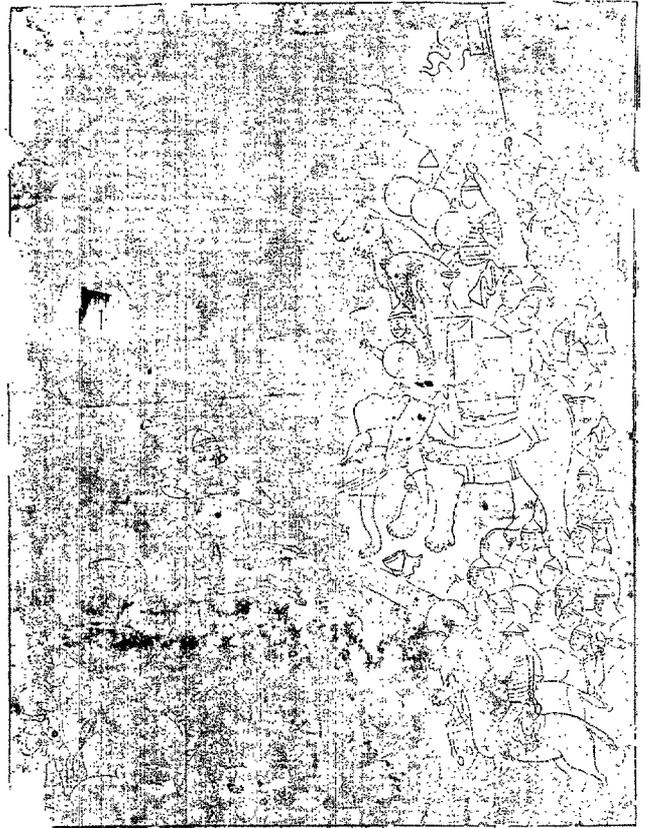


Fig. 23. Composition of Rustam lassoeing the Khaqan of China. Related to an illustrated *Shāhnāma* of Firdawsi made for Baysunghur in Herat, 1430. Black ink on ivory paper, 301 x 223 mm. Diez A, fol. 73, p. 57, no. 6. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

sions directly correspond to his manuscripts. It is the strongest evidence we have for pouncing in manuscripts. A second drawing depicts two students sitting before their teacher in a developed composition that shows a pavilion, trees, and plants.<sup>98</sup> Some body color has been applied to the drawing sheet, but its principal medium is ink. The outlines of the composition have been pricked with a stylus suggesting that the drawing was pounced for transfer.<sup>99</sup> In addition to these drawings, there are a few manuscript paintings that are marked with pinholes,<sup>100</sup> but in every instance, the pinholes resulted from the use of the painting to make a pounce and not from a process related to the painting's production.

Manuscript paintings resulted from countless explo-



Fig. 24. Composition for Shirin seeing the portrait of Khusraw. Related to the *Khamsa* of Nizami. Iran, ca. 1420–50. Black ink and opaque pigment on ivory paper, 275 x 225 mm. Diez A, fol. 73, p. 76, no. 2. (Photo: courtesy Staatsbibliothek zu Berlin, Preussischer Kulturbesitz, Orientabteilung, ms. Diez A, fol. 73)

rations in drawing and from long, patient labor, but evidence for pouncing in this process is entirely inconclusive, and notions that it was prevalent as a technique are possibly even wrong. The problems of discrepancy of size between drawings and paintings (in the admittedly rare instances where we can match them) is exacerbated by the absence of evidence of a reduction mechanism or any traces of such a process: a counter-argument based on the notion of self-selection, viz., that such materials were systematically discarded, is not convincing mainly because a large number of extremely fragile and damaged drawings bearing the marks of extensive pouncing have survived (the majority connected with the “decorative” category). Taking a still more commonsensical approach, there is a problem with pouncing itself—it was a cumbersome and messy process, hardly suited to the practicalities of working in the extremely restricted

confines of the manuscript folio.<sup>101</sup> The importance of maintaining the cleanliness and crispness of the paper sheet throughout the processes of picture making—drawing the composition, applying color, burnishing the sheet—must have been particularly important given that the calligrapher had already completed his work by the time artists received the pages in the form of a proto-codex.<sup>102</sup>

Several extant drawings, most likely conceived as working compositions, help to elucidate the process that lay between the single units or compositional groupings and the finished manuscript painting. All of the drawings are characterized by their relatively small size, unweighted line, vertically oriented rectangular format, and developed compositions often populated by numerous figures (see figs. 23–25). Although some of these drawings are colored, it is not always possible to determine if they were done as full-scale maquettes for a manuscript painting or as the foundation, a design armature, that would ultimately receive pigment and be completed as a single sheet painting. It is important to state these potential differences between a group of what we consider like materials because it indicates a range of potential functions. Although these composition drawings seem to be serving the same function, they might originally have been made for various purposes.

Two of these manuscript composition drawings, for example, carry text written in *nasta'liq* and arranged in two columns. One of the drawings is identifiable as illustrating Suhrab's battle with the female warrior Gurdafarid;<sup>103</sup> it appears to have been an actual manuscript page because text also appears on the reverse side. A visible grid of rectangular boxes (*jadval*) to guide the calligrapher was made on the paper by using a *mastar*. A second drawing, also with text, shows Shirin contemplating the portrait of Khusraw, in an episode from Nizami's *Khamsa*.<sup>104</sup> Both these examples were probably intended for manuscripts, but for some reason they were either removed from their manuscript context, or never made it inside the book's covers. One of their values is that they reveal an order of execution, the inscription of the *jadval* onto the page, the execution of the calligraphy, followed by the rulings and the painting's underdrawing. The line quality of the drawing is firm, sure, and economical, with a distinct emphasis placed on the unambiguous delineation of contours and no additional visual coding (such as wash and stippling). Details to the level of facial features are visible.

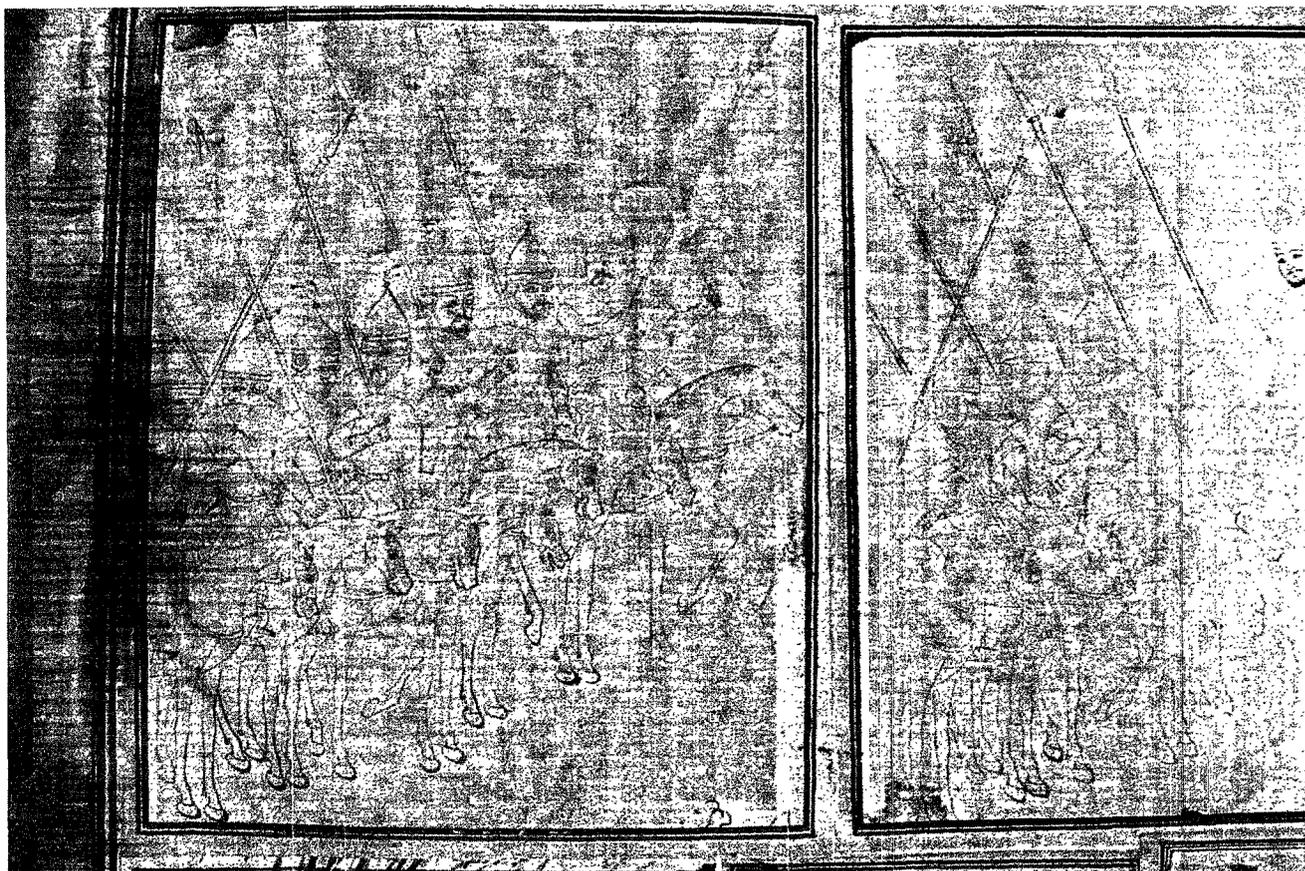


Fig. 25. Two compositions showing an army of soldiers mounted on horses and assembled for battle. Red ink on white paper, 176 x 143 mm (at left) and 171 x 148 mm (at right, cropped in photograph). Iran, ca. 1420–50. Topkapi Palace Library, H. 2152, fol. 87b (nos. 2 and 5), detail of page. (Photo: Topkapi Palace Museum, Istanbul)

Rare among composition drawings are examples that combine underdrawing and pigment; the best known is of Shirin looking at the portrait of Khusraw (see fig. 24). The sheet of paper has no calligraphy on either side, and the drawing is done in a fine line of black ink. It does not have a level of detail equal to the drawing of Suhrab and Gurdafarid; indeed, some of the faces are devoid of features, forever expressionless. It may well be that the patches of blue pigment and curious passages of washed out green were later additions to this sheet. The corpus of incomplete paintings with underdrawing tends to show slightly greater detail than this example.<sup>105</sup>

A third group of compositional drawings has neither text nor pigment,<sup>106</sup> but its drawings exhibit the same variation in line quality and level of detail as that found in the first two groups. One of these composition drawings, done in a delicate line of red ink, por-

trays lines of mounted horsemen arrayed in preparation for battle (see fig. 25).<sup>107</sup> They hold long lances and are decked out in military apparel; small changes in pose—of both riders and horses—animate what could have been a repetitive line of figures receding into the middle ground. This compositional group is repeated three times on the page in same-sized drawings. The basic compositional scheme is retained in each of the three; the principal difference between the drawings resides in the level of added detail, especially in facial features and such elements as beards and mustaches. Not one of the three drawings shows any evidence of a transfer process that could explain the repetition by mechanical means. Another example (see figs. 1 and 2)<sup>108</sup> is a design for an outdoor enthronement: a prince sits on a carpet with attendants behind him and a line of figures in the foreground. This drawing is the exception because the figures

behind the seated prince have been pricked with a stylus and presumably transferred. Yet another compositional drawing of a similar subject shows changes made to the figures during the design process itself: the composition's seated figures, drawn in brown ink, were originally drawn standing and in red ink.<sup>109</sup>

In virtually every example of composition drawings, the quality of line and physical evidence suggest a freehand execution with only an occasional use (perhaps even anomalous) of transfer methods. The principal point of these drawings is to arrange the figures into a composition and to show visual plotting in a straightforward line with minimal visual interference (to achieve this end other kinds of information are either entirely absent or severely restricted). The drawing of warriors assembled for battle is particularly instructive because it is repeated three times freehand and at virtually the same size (differences in dimensions result from sheet size and do not refer to the compositional group): no changes are made to the composition proper and differences between them reside in the degree of completeness in the figures' details. It is the type of developed compositional drawing that was presumably made as a maquette for a manuscript painting and came at the end of a long process that involved the close visual study and selection of prototypes, the recasting of these chosen elements, and their orchestration into a final composition. Unanticipated effects of these unions, such as how the contours of figural units intersected, could be corrected when the composition was drafted. The manuscript painting would be based on a final compositional drawing.

#### CONSEQUENCES OF DESIGN PROCESSES: COMPOSITIONALITY

The processes of design proposed here can be divided into two main groups, roughly according to materials used. For the drawings that in subject matter and size are related to objects or other non-paper-based media, transfer methods such as pouncing were the essential processes. In the corpus of drawings connected to manuscript painting, the use of transfer techniques was far less common than initially believed and in fact stopped at the point between the design of the unit (or group) and the full-fledged compositional drawing. Although there is no compelling reason to suppose that the cadre of designers was similarly divided along these media-based lines, the evidence does sug-

gest a level of specialization, perhaps even a hierarchy of ability, in the execution of designs. If the final stages of designing manuscript paintings and the drafting of designs on the manuscript page did occur without the use of transfer methods, the only option was to draw freehand after a visual model or even to recall from memory an often drawn compositional unit.

The three-times repeated drawing of the assembled army is powerful evidence of the practitioner's sheer dexterity, an ability in "outlining" (*tahrir kardān*) mentioned in contemporary documents like the *'arizadāsh*t,<sup>110</sup> and a technique that would become a criterion for praise in artistic practice by the late fifteenth century. Practitioners who were especially adept in this technique, which depended on razor-sharp eye-to-hand coordination, would have been assigned the task of transferring compositional maquettes to the manuscript page. This process allowed considerable flexibility, or put another way, the possibility of finessing the final composition. It was probably just as well because in most instances a picture did not entirely fill the space allotted for it on a folio but needed to come into a balanced relationship with the adjacent text—which could occupy the page in a number of ways—or with the image on the facing page.<sup>111</sup> So the picture's composition did not only require the organization of its individual units—a kind of thinking from within the image proper—but also a symbiotic ordering between the contents of the picture frame and the major lines of the text (arranged in columns) in addition to the corners of the painted surface (that would serve as the anchor points of the painting's diagonal axes).<sup>112</sup> Moreover, the individual painting needed to be scaled according to the proportional scheme of all paintings in the manuscript, one additional force that determined the visual result of an image.

Although this essay could easily end here, the processes of design and the conception of images demand some further word. What I want to argue combines two conclusions that are seemingly unconnected—that the element of design transferral deduced from the corpus of extant drawings is suited to most media, the exception being the painting for the illustrated book, but that the design process did have critical implications for compositions in book paintings. The gap, if others will accept it, amounts to a disconnect in actual process but shows how preparatory processes, regardless of the intended final media of the design's destination, habituated the practitioner to a certain mode of visual thinking.

The legitimacy of Lentz and Lowry's typological model of images should be beyond question by now. This creative conception and behavior, in which paper arguably played the fundamental role, was long-lived; first discernable in the fourteenth century it endured until the late sixteenth century. But of equal interest to the way of seeing a visual world in terms of a set of fixed types and symbols—equally true in the practices of poetry and architecture—<sup>113</sup> is the process of transforming images from single units to insertion into larger ensembles. For despite this movement, one never loses sight of the image's initial conception as an autonomous unit; the larger composition as a spatial ensemble is a beguilingly simple aggregate of units. The manipulation of intervals between units within the picture's frame and responses to such anchors as the extra-pictorial textblock—not the structure provided by a single-point perspective—were the forces that held the picture together. Although the vast majority of paintings from the fifteenth century onward took on a vertically oriented format, this system of organizing composition as a continuous field, which was only arbitrarily brought to an end by the frame (or the size of the paper sheet), could also be extended along the horizontal axis as it would be later in the century in a group of Turkman drawings that portray landscapes populated with real and fantastic animals. These landscapes, similar to picture scrolls in many ways, convey the impression of an endless space in which compositional principles work at the level of adjacent pictorial units whose interrelationships result from an intuitive process akin to a cartographer's triangulations.

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#### NOTES

*Author's note:* I would like to thank the graduate students in a seminar led by Gülru Necipoğlu and myself in spring 2001 for the classroom discussions about drawing that prompted me to write this essay. I also acknowledge the insightful remarks and guidance of Craigen Bowen, Straus Center for Conservation, Harvard University Art Museums, Cambridge, Mass.; Shelley Fletcher, National Gallery of Art, Washington, D.C.; and Massumeh Farhad, Renata Holod, Linda Komaroff, and Thomas Lentz.

1. Potential groupings could be thematic/typological; examples from this page are "the mounted rider" and "the enthronement" (as a common element of enthronements, the standing courtier would be thematically linked to the enthronement drawing beneath it).
2. The main examples are in three albums in Istanbul (H. 2152, H. 2153, and H. 2160, all in the Topkapi Palace Library) and drawings from the Diez albums in Berlin (Diez A, fols. 70–74, Staatsbibliothek, Preussischer Kulturbesitz [henceforth, SPK]). Together they contain the largest share of extant drawings worldwide. For a catalogue of the Diez album drawings, accompanied by many illustrations, see M. Ş. İpşiroğlu, *Saray-Alben: Diez'sche Klebebände aus den Berliner Sammlungen* (Wiesbaden: Franz Steiner Verlag, 1964). The three Istanbul albums still lack published catalogues. References to drawings in the Baysunghur album (H. 2152), by folio and number, are derived from David J. Roxburgh, "Our Works Point To Us': Album Making, Collecting, and Art (1427–1565) under the Timurids and Safavids," 3 vols., Ph.D. diss., University of Pennsylvania, 1996, vol. 3, "Catalogue: Album H. 2152," pp. 644–770.
3. One example is the painting of a figure in album H. 2160, fol. 31a (at upper right). Examples of a parsimonious use of paper seems to go against the general idea about the availability of the medium. Given our inadequate knowledge about the requisitioning of materials in the workshop it is difficult to know if such economic measures were a matter of practice or a response to the shortage of materials.
4. Examples in album H. 2153 include fols. 44b, 83b, and 103b. The first two are large studies, usually referred to as cloud collars; the third is a painting from a fourteenth-century *Shāhnāma* depicting Isfandiyar killing the witch. Fol. 44b has a drawing on the reverse side representing a design filled with arabesques, and fol. 83b has studies of two men wearing turbans. The drawing on the reverse of the *Shāhnāma* painting depicts a man wearing a helmet. Like numerous other fourteenth-century *Shāhnāma* paintings in album H. 2153, this example was heavily restored and repaired before album assembly. At some point in its existence the reverse side was used for drawing.
5. I will treat the formation of the Baysunghur album (H. 2152) and its hypothetical function as a model book in a chapter of a forthcoming study about the Persian album.
6. We are well served by two general catalogues of drawings in the collections of the Metropolitan Museum of Art and the Freer Gallery of Art. See Marie Lukens Swietochowski and Sussan Babaie, *Persian Drawings in the Metropolitan Museum of Art* (New York: Metropolitan Museum of Art, 1989), and Esin Atıl, *The Brush of the Masters: Drawings from Iran and India* (Washington, D.C.: The Freer Gallery of Art, Smithsonian Institution, 1978). Studies emphasizing technique are few and far between—the most comprehensive analysis of manuscript-making procedures to date unfortunately does not consider the role of drawing in the design of manuscript illustration. See Elaine J. Wright, "The Look of the Book: Manuscript Production in the Southern City of Shiraz from the Early-14th Century to 1452," Ph.D. diss., 3 vols., Oxford University, 1997.
7. I will not consider the final processes of transferring designs to various media or problems of translation between media, of culling a motif or compositional element from an object, drawing it, and transferring it to another medium. Linda Komaroff is currently investigating both topics in a

- study focused on art of the Ilkhanid period. She has already explored some of these topics in an article titled "Paintings in Silver and Gold: The Decoration of Persian Metalwork and Its Relationship to Manuscript Illustration," *Studies in the Decorative Arts* 2, 1 (Fall, 1994): 2–34. For the essay dealing with the Ilkhanid period, see idem, "Transmission and Dissemination of a New Visual Language," in *The Legacy of Genghis Khan: Courtly Art and Culture in Western Asia, 1256–1353*, ed. Linda Komaroff and Stefano Carboni (New York: Metropolitan Museum of Art, 2002).
8. Thomas W. Lentz and Glenn D. Lowry, *Timur and the Princely Vision: Persian Art and Culture in the Fifteenth Century* (Los Angeles and Washington, D.C.: Los Angeles County Museum of Art and Arthur M. Sackler Gallery, 1989), chap. 3, esp. pp. 166–232. Lentz had already written about the album materials in his doctoral dissertation, "Painting at Herat under Baysunghur Ibn Shah Rukh," Ph.D. diss., Harvard University, 1985, chap. 2, esp. pp. 147–78.
  9. Lentz and Lowry, *Timur and the Princely Vision*, chap. 3, esp. pp. 166–232. The idioms fall under three categories—illustrative, pictorial, and decorative.
  10. Presumably, speculative production in the workshop can be added to the mechanism of direct commission.
  11. The most critical evaluation of this ideologically driven model of aesthetics was made by J. Michael Rogers, "Centralisation and Timurid Creativity," *Oriente Moderno* 15, 2 (1996): 533–50. Although Rogers's criticisms are leveled principally at an essay by Lisa Golombek ("Discourses of an Imaginary Arts Council in Fifteenth-Century Iran," in *Timurid Art and Culture: Iran and Central Asia in the Fifteenth Century*, ed. Lisa Golombek and Maria Subtelny [Leiden, New York, and Cologne: E. J. Brill, 1982], pp. 1–17), they are also relevant to the model advanced by Lentz and Lowry.
  12. These types are summarized by Lentz as: (1) the prince; (2) warriors; (3) courtiers and attendants; (4) other male figures and group scenes; (5) female figures; (6) animals, real and mythical ("Painting at Herat under Baysunghur," pp. 160–63).
  13. Lisa Golombek and Donald Wilber, *The Timurid Architecture of Iran and Turan*, 2 vols. (Princeton: Princeton University Press, 1988). One key example is the impact of southern and central Iranian architectural vaulting and decorative systems on the later Herati metropolitan tradition, fostered especially through the buildings of architect Qivam al-Din Shirazi.
  14. The closest earlier historical parallel to what occurs under the Timurids, in terms of aesthetic interrelationship across media and structures of patronage and production, is under the Mongol Il-khans. For an overview of major Ilkhanid patrons, see Sheila S. Blair, "Patterns of Patronage and Production in Ilkhanid Iran: The Case of Rashid al-Din," in *The Court of the Il-khans 1290–1340*, ed. Julian Raby and Teresa Fitzherbert, *Oxford Studies in Islamic Art* 12 (Oxford: Oxford University Press, 1996), pp. 39–62. For connections between metalwork and manuscript painting in the fourteenth century, see Komaroff, "Paintings in Silver and Gold." In a note Komaroff suggests that the "diffusion of artistic talent among several media may prove to be the rule rather than the exception in Islamic art" (*ibid.*, p. 23, n. 31). For further discussion of correspondences between metalwork and manuscript painting, see Wright, "The Look of the Book," pp. 65–69.
  15. Textual sources in western Europe corroborate this commodity status of drawings through what Susie Nash lists as "... a series of recorded quarrels, disputes, and court cases over the theft of drawings"; Susie Nash, "Imitation, Invention or Good Business Sense? The Use of Drawings in a Group of Fifteenth-Century French Books of Hours," in *Drawing 1400–1600: Invention and Innovation*, ed. Stuart Currie (Aldershot: Ashgate, 1998), pp. 12–25, esp. 12. For additional examples, also see Carmen Bambach, *Drawing and Painting in the Italian Renaissance Workshop: Theory and Practice, 1300–1600* (New York: Cambridge University Press, ca. 1999), p. 92; and Jean C. Wilson, "Workshop Patterns and the Production of Paintings in Sixteenth-Century Bruges," *Burlington Magazine* 132, 1049 (August 1990): 523–27, esp. 525.
  16. A common context for references to aspects of technique and process is the recipe book, but texts that deal explicitly with drawing, painting and the arts of the book tend to be later in date, including Sadiqi Beg's *Qānūn al-suwar* ("Canons of Painting," between 1576 and 1602) and Qazi Ahmad's *Gulistān-i hunar* ("Rose Garden of Art," 1596–1606). In Qazi Ahmad's treatise, the recipes and pared down technical instructions appear as a conclusion (*khātima*) at the end of a biography-cum-history of calligraphers and depicitors. His information is directed collectively at those who work in the *kitābhāna*. Sadiqi Beg's treatise deals exclusively with technical advice for depicitors and comprises general advice about aspects of practice with guidelines for techniques and recipes. One of the earliest treatises to contain recipes was composed by Simi Nishapuri not before ca. 1435. For the text of the treatise and an analysis of it, see Yves Porter, *Peinture et arts du livre: essai sur la littérature technique indo-persane* (Paris and Tehran: Institut français de recherche en Iran, 1992), app. 2, pt. 1; and idem, "Un traité de Simi Neysāpuri (IX/XVe S.), artiste et polygraphe," *Studia Iranica* 14, 2 (1985): 179–98. For a translation, see 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*, ed. Michel M. Mazzaoui and Vera B. Moreen (Salt Lake City, Utah: University of Utah Press, 1990), pp. 219–28.
- It is also the case that terms for "drawing" are few and used infrequently, a silence that makes it difficult to explore cultural notions on the status and significance of drawing. Think, for example, of the inextricable connection between "drawing" and "design" in the Italian term *disegno*, and the idea which followed, viz., that drawing is the closest representational activity to the mental idea, the least mediated of expressions, and therefore analogous to writing as a concept-expressing medium. The most commonly used term for drawing is *taṣvīr* (vb. "to depict," vn. "depiction"), a term that doubles for painting. The triliteral root is also linked through the Arabic second form to "imagining" and "conceptualizing" (*taṣavvur*). The specific medium of drawing is sometimes referred to by the term *qalam-siyāhi* (lit. black pen). Sakisian calls sketch *nī-rang* (lit. "no color"). For a discussion of drawing terminology, see Armenag Sakisian, "Persian Drawings," *Burlington Magazine* 69, 400 (July 1936):

- 14–20, esp. 14–15.
17. At this time it is relatively easy to list the major publications about materials and technical analysis, with the exception of the expansive literature on Mughal material. The most salient examples for an Iranian and Central Asian milieu, in order of publication, include: A. P. Laurie, "Materials in Persian Miniatures," *Technical Studies in the Field of the Fine Arts* 3 (1934–35): 146–56; Elisabeth West FitzHugh, "Appendix 9: Study of Pigments on Selected Paintings from the Vever Collection," and Janet G. Snyder, "Appendix 10: Study of the Paper of Selected Paintings from the Vever Collection," in Glenn D. Lowry and Milo Cleveland Beach, *An Annotated and Illustrated Checklist of the Vever Collection* (Washington, D.C., Seattle and London: Arthur M. Sackler Gallery, Smithsonian Institution, and University of Washington Press, 1989); Nancy Purinton and Mark Watters, "A Study of the Materials Used by Medieval Persian Painters," *Journal of the American Institute for Conservation* 30, 2 (Fall 1991): 125–44; and Ibrahim Chabbouh, "Two New Sources on the Art of Mixing Ink," in *The Codicology of Islamic Manuscripts*, ed. Yasin Dutton (London: Al-Furqan, 1995), pp. 59–76. Many analyses have been completed on the materials of Persian painting and drawing under the auspices of the Harvard University Art Museums but few, if any, have been published. Purinton and Watters refer to several of these studies in their essay (*ibid.*, p. 128).
  18. Paradigmatic of this interest is Bambach's *Drawing and Painting in the Italian Renaissance Workshop*. A different emphasis is found in Robert W. Scheller, *Exemplum: Model-Book Drawings and the Practice of Artistic Transmission in the Middle Ages (ca. 900-ca. 1470)*, trans. Michael Hoyle (Amsterdam: Amsterdam University Press, 1995), where he discusses the function of the model book in artistic production. Also relevant are some of the essays in Currie, ed., *Drawing 1400–1600: Invention and Innovation*, especially, Frances Ames-Lewis, "Training and Practice in the Early Renaissance Workshop: Observations on Benozzo Gozzoli's Rotterdam Sketchbook," pp. 26–44.
  19. Two studies on paper, each with a different emphasis, were published in 2001. For a technically oriented inquiry, see Helen Loveday, *Islamic Paper: A Study of the Ancient Craft* (London: Don Baker Memorial Fund, 2001). Jonathan Bloom frames his study of paper through its introduction and dissemination (*Paper Before Print: The History and Impact of Paper in the Islamic World* [New Haven: Yale University Press, 2001]).
  20. Laurie lists differences between the fibers of Persian and modern papers, notably that Persian pulp comprises longer interlocking fibers that are also coarser. See Laurie, "Materials in Persian Miniatures," p. 152.
  21. Simi Nishapuri refers to the way that sizing improves the smoothness of paper: "By means of other things flimsy paper can be reinforced so that the tufts that are raised and prevent the pen from moving swiftly can be removed" (trans. Thackston, "Treatise on Calligraphic Arts," p. 221).
  22. I do not want to risk overstating the frugal attitude toward paper, simply because the system of supplying materials to the workshop is unknown, and it is impossible to determine which drawings were made by artists during periods of independence and contracted labor. Different conditions must have prevailed in each kind of circumstance. A larger question concerns the general availability of paper throughout the period under discussion here and the implications this had for an artist's practice—over the period paper was a constant. It is often argued that the increased availability of paper and its comparatively lower cost created a change from dependence on model book to sketch book with the concomitant "trend towards active and incidental drawing" and a resulting new "naturalism." See *The Dictionary of Art* (New York: Grove, 1996), s.v. "Drawing" (Beverly Schreiber Jacoby [I-IV]), p. 220. The shift is exemplified by Pisanello's pen-and-ink studies of the 1430's.
  23. Calligraphic palimpsests are common and in fact even developed into an art form in their own right. These pieces are termed *karalama*, which by the eighteenth century and in the Ottoman world, in the words of Nabil Safwat, "...had come to mean the process of turning a sheet of paper black by writing on every available surface" (*The Art of the Pen: Calligraphy of the 14<sup>th</sup> to 20<sup>th</sup> Centuries*, vol. 5, *The Nasser D. Khalili Collection of Islamic Art* [London and Oxford: The Nour Foundation in association with Azimuth Editions and Oxford University Press, 1996], pp. 32–39, especially 32).
  24. The drawing is in Istanbul (TSK), H. 2153, fol. 77a. For an illustration where the pinholes are readily visible, see Filiz Çağman and Zeren Tanındı, *The Topkapi Saray Museum: The Albums and Illustrated Manuscripts*, translated, expanded, and edited by J. M. Rogers (Boston: Little, Brown and Company, 1986), fig. 103 and cat. no. 103, p. 154.
  25. The paintings are also in album H. 2153, fol. 50b, lending credence to the notion that the album's contents represent a corpus of workshop material. For an illustration, see Ernst J. Grube and Eleanor Sims, eds., "Between China and Iran: Paintings from Four Istanbul Albums," *Colloquies on Art and Archaeology in Asia* 10 (1985), fig. 24.
  26. For a list of drawings with phantom pinholes, see below, n. 75.
  27. Purinton and Watters refer to charcoal made from a "charred tamarind twig" and used as a drawing tool or powdered for pouncing ("Study of the Materials Used by Medieval Persian Painters," p. 135). I have been unable to confirm the source that they cite. The red chalk appearing on numerous Persian drawings may be comparable to a red earth powder attested in Chinese drawings and known from such sites as Dunhuang. For a discussion of it, see Bambach, *Drawing and Painting in the Italian Renaissance Workshop*, p. 77.
  28. The earliest dated example of preparatory drawing in red ink that I have discovered thus far is in a *Maqāmāt* of al-Hariri, dated 1323 (London, British Museum, Add. 7293, fol. 285b). For an illustration of the drawing, see Sir Thomas W. Arnold, *Painting in Islam: A Study of the Place of Pictorial Art in Muslim Culture* (Oxford: Oxford University Press, 1928), fig. 10. The practice of using red ink for underdrawing continued into the second half of the fifteenth century and is attested in several paintings attributed to Muhammad Siyah Qalam, the majority of which are still in Topkapi album H. 2153.
  29. Through particle morphology it would be possible to determine the presence of charcoal or lampblack particles in the drawing medium and to have a firmer idea about the type of materials available to the artist.
  30. Another contributory factor that accounts for the paucity

- of a written technical literature is surely the transmission of knowledge by instruction.
31. For the treatise, see Porter, *Peinture et arts du livre*, app. 2, pt. 1; and idem, "Un traité de Simi Neysâpuri (IX/XVe S.), artiste et polygraphe."
  32. The artist Riza 'Abbasi (d. 1635) apparently used white opaque pigment to correct mistakes or to mask undesirable lines made in the process of working out the pose of a figure. For illustrations, see Friedrich Sarre and Eugen Mittwoch, *Zeichnungen von Riza Abbasi* (Munich: F. Bruckmann, 1914), pl. 4, a; pl. 5; pl. 6; pl. 7; and pl. 8. An earlier example, a single-page painting whose subject is identified as Sultan Husayn Mirza and artist as Bihzad, in the Harvard University Art Museums (Arthur M. Sackler Museum, Gift of John Goelet, no. 1958.59), also has white opaque pigment that was used to conceal lines of ink in the drawing process. It is uncertain whether the pigment was a later addition or if it was used at the time when the image was made.
  33. It is only when *qalam* (reed pen) is construed with *mû* (hair) that "brush" is clearly meant in the written sources. Authors generally move between the terms, using *qalam*, *khâma*, and *halk* as synonyms for brush and even when "depiction" is clearly the topic—and not calligraphy—it is not possible to determine which instrument is being used (brush or pen). The conceptual linkage between writing and depiction, through the shared instrument, moreover, may have overthrown the need for such distinctions. More complicated terms attested in Qazi Ahmad's *Gulistân-i hunar* include the *âlat-i chûb*, or "wooden instrument," and *khâma-yi tahrîr*, or "pen of outlining." These may have been instruments used for special purposes.
  34. The literature on this question is sadly limited and typically focuses on the late sixteenth century through the mid-seventeenth century when drawing becomes most visibly "autonomous" and highly esteemed as a medium. For a discussion of this period, see Sheila R. Canby, "The Pen or the Brush? An Inquiry into the Technique of Late Safavid Drawings," in *Persian Painting From the Mongols to the Qajars: Studies in Honour of Basil W. Robinson*, ed. Robert Hillenbrand (London and New York: I. B. Tauris, 2000), pp. 75–82. At one particularly interesting moment, Canby proposes that the artist Muhammad Shafi' 'Abbasi attempted to make marks with a pen that resembled brushstrokes (ibid., p. 80).
  35. One example is a drawing of a seated Qalandar dervish attributed to Bihzad in the 1544–45 Bahram Mirza album (TSK, H. 2154, fol. 83b). The drawing mimics Chinese "nail-head" drawing technique, but Bihzad's strong calligraphic lines were done over a conservative underdrawing in an unweighted line.
  36. For example, see H. 2153, fol. 3b. It is a study of two leaf-shaped forms containing a simurgh and dragon. Executed in black ink and a gray wash, the outline of the drawing was first scored into the paper with a stylus. Another example is a partially completed drawing of a domed pavilion (Baysunghur album [H. 2152], no. 4, fol. 72a). The dominant lines of the pavilion were first indented in the paper; only some sections have been inked in black and red.
  37. Such lines are only visible in the blank paper margins where the indented lines extend beyond the limits of the illuminated figure as protracted construction lines.
  38. The standard example is the manuscript of the *Manâfi'-i hayavân* by Ibn Bakhtishu, dated 1297–98 or 1299–1300 at Maragha, Iran, and currently in the Pierpont Morgan Library, New York (cat. no. M. 500). For a description of the manuscript, see Barbara Schmitz, *Islamic and Indian Manuscripts and Paintings in the Pierpont Morgan Library* (New York: Pierpont Morgan Library, 1997), cat. no. 1, pp. 9–24. The main changes include a repertoire of sinicising forms (encompassing animals and landscape elements), an interest in landscape and the effects of atmosphere, and spatial constructions including overlapping planes that signal spatial recession and figures cut off by a framing ruling where the picture is understood as a space extending beyond the frame.
  39. The earliest scholar that I have found to note this in print is Sakisian, "Persian Drawings," 19, though the idea must have had currency before then, given "F.V.P.'s" questioning of it (F. V. P., "The Goloubew Collection of Indian and Persian Paintings," *Museum of Fine Arts Bulletin* 13, 74 [February 1915]: 1–16, esp. 3).
  40. See Sheila S. Blair, *A Compendium of Chronicles: Rashid al-Din's Illustrated History of the World*, Nasser D. Khalili Collection of Islamic Art 27 (London and Oxford: Nour Foundation and Azimuth Editions, 1995), chap. 2, esp. pp. 46–51. For a general discussion of Chinese derived subjects in Persian drawings, see Basil Gray, "Some Chinoiserie Drawings and Their Origin," in *Forschungen zur Kunst asiens in Memoriam Kurt Erdmann* (Istanbul, 1969), pp. 159–71.
  41. The only exception is the category of scientific manuscripts, which incorporates works on such topics as geography, astronomy, physics, and mechanics. Images of a broad variety of types played an important role in these texts and they were most frequently line-based diagrams annotated with captions or other abbreviations. The best-known manuscript is surely the copy of al-Sufi's *Kitâb al-kawâkib al-thâbita* ("Book of Fixed Stars"), dated 1009–10, and in Oxford (Bodleian Library, Marsh 144).
  42. Incomplete manuscripts are dated to 1314 (London, Nasser D. Khalili Collection; and Istanbul, TSK, H. 1653), ca. 1315 (Edinburgh, University Library, ms. Arab 20), and 1317 (Istanbul, TSK, H. 1654).
  43. For an adequate definition, see *The Dictionary of Art*, s.v. "Drawing."
  44. The drawings can be attributed to Iran in the early fifteenth century (before ca. 1430). It was a period of increased diplomatic exchange between the Timurid and Ming courts during the reigns of Shahrukh (r. 1409–47) and the emperor Yongle (r. 1403–24). Well known is the narrative report of the artist Ghiyath al-Din Naqqash who traveled from Herat to Peking as representative of Baysunghur, son of Shahrukh, between the years 1419 and 1422. It was also a time when, to quote Sakisian, "a fresh wave of Chinese influence brought by the Timurids overspread the country" ("Persian Drawings," p. 19).
  45. See Basil Gray, "A Timurid Copy of a Chinese Buddhist Picture," in *Islamic Art in the Metropolitan Museum of Art*, ed. Richard Ettinghausen (New York: Metropolitan Museum of Art, 1972), pp. 35–38. The drawing was published some years later by Swietochowski and Babaie, *Persian Drawings*, cat. no. 2, pp. 14–15.

46. Diez A, fol. 73, p. 40, no. 5. Red ink on ivory paper, 83 x 98 mm. See İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, p. 93, cat. no. 118.
47. For illustration, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, pl. 65, no. 103, and for a description, p. 105, cat. no. 176. The drawing measures 97 x 103 mm.
48. The Diez albums contain another two single-page colored drawings that are congruent with this group, Diez A, fol. 73, p. 54, no. 3 and Diez A, fol. 73, p. 64, no. 4. For illustrations and catalogue entries, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, pl. 61, no. 97, cat. no. 171, and pl. 66, no. 106, cat. no. 205, respectively.
49. For an expanded treatment of selected anthologies and the drawings in them, particularly concerning the ongoing dialogue between visual genre formation and its manipulation, see David J. Roxburgh, "The Aesthetics of Aggregation: Persian Anthologies of the Fifteenth Century," in *Islamic Art and Arabic Literature*, ed. Oleg Grabar and Cynthia Robinson (Princeton: Markus Wiener, 2001), pp. 119–42. On the subject of autonomy, see idem, "The Pen of Depiction: Drawings of 15<sup>th</sup>- and 16<sup>th</sup>-Century Iran," in *Studies in Islamic and Later Indian Art from the Arthur M. Sackler Museum, Harvard University Art Museums* (Cambridge, Mass., 2002): 33–47, esp. 34–40. The prime example of a manuscript "illustrated" with ink drawings done in monochrome is the *Divān*, or collected poetry, of Sultan Ahmad Jalayir (Washington, D.C.: Freer Gallery of Art, cat. nos. 32.29 and 32.30–32.37), attributed to Tabriz and dated generally ca. 1400, therefore, roughly contemporary with the south- and central-Iranian material.
50. The best illustrations for the marginal drawings can be studied in Atul, *Brush of the Masters*, pp. 18–27.
51. I have discussed issues related to the autonomy of drawing—its self-sufficiency—in another essay ("The Pen of Depiction").
52. A corpus of material that cannot be considered here due to constraints of length is drawing associated with the Turkmen courts of western Iran from approximately 1450 to 1500, especially large-format cloud collars and other works attributed to the artists Shaykhi and Darvish Muhammad. Under the Turkmen, the sinuous and calligraphic qualities discernable in early Timurid drawing had become formalized into a distinct vocabulary, a graphic language that in turn would be of vital importance to the so-called "saz" style of the Ottoman milieu.
- The most up to date articles on Muhammadi, with some emphasis on his involvement in the single-page drawing, are by Abolala Soudavar, "The Age of Muhammadi," *Muqarnas* 17 (2000): 53–72; and Adel T. Adamova, "On the Attribution of Persian Paintings and Drawings of the Time of Shah 'Abbas I," in *Persian Painting from the Mongols to the Qajars*, ed. Hillenbrand, pp. 19–38, esp. 20–22.
53. *bî* = to avoid; *xiē* = evil force, aberrant, baleful.
54. This marks a broad shift from the preceding century when the subject matter of metalwork objects in particular was characterized by figural scenes. The appearance of figural subjects in fifteenth-century metalwork wanes with the century, replaced by poetry and intricate geometric structures composed of plant forms.
55. A good example of a drawing that is preparatory and in which compositional relationships are being considered is the study of a hunt scene (Diez A, fol. 73, p. 34, no. 4; black ink on ivory paper, 98 x 185 mm). It shows a field of five mounted hunters using lances and spears to slay lions and dragons, others shoot with bow and arrow, and one holds a falcon. Numerous deer run through the landscape and birds fly above. For further information, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, pp. 90–91. It is much like another drawing in the Diez albums that shows the tentative relationships between compositional elements (Diez A, fol. 73, p. 76, no. 4; illustrated in *ibid.*, fig. 51).
56. For illustrations of these comparanda, see Marianna Shreve Simpson, "Narrative Allusion and Metaphor in the Decoration of Medieval Islamic Objects," in *Pictorial Narrative in Antiquity and the Middle Ages*, ed. Herbert L. Kessler and Marianna Shreve Simpson, *Studies in the History of Art* 16 (Washington, D.C.: National Gallery of Art, 1985), pp. 131–49; and Richard Ettinghausen and Oleg Grabar, *The Art and Architecture of Islam 650–1250* (London: Penguin Group, 1989), pp. 360–61.
57. Ernst Grube attributed the drawing to Shiraz under the Muzaffarid dynasty (r. 1314–93). See Ernst Grube, *Persian Painting in the Fourteenth Century: A Research Report*, Istituto Orientale di Napoli, supp. no. 17 to the *Annali* 38, 4 (Naples, 1978), p. 21.
58. Interesting here is the temporal cycle of a drawing or object. Evidence suggests that older art objects had a longer life than those in the West, not only attracting interest for a host of reasons but actively—even if selectively—used in the production of new objects.
59. Several other examples could be mentioned, but for sake of brevity, only one additional drawing will be discussed (Diez A, fol. 73, p. 47, no. 5). For an illustration, see Lentz and Lowry, *Timur and the Princely Vision*, p. 173, cat. no. 60. It is a rectangular drawing comprising three roundels: two containing enthronements, the third a stag set against a landscape of rocks and a craggy pine tree. Additional motifs fill the roundel's interstices—a Chinese cloud bank, deer, and fungus. The drawing has been torn across the bottom, later patched and the lost drawing redrawn. The drawing is derived from Mongol visual prototypes, linked most closely to the enthronement images found in the Chinese section of Rashid al-Din's world history, the *Jāmi' al-tawārīkh*, and to a series of single-page enthronement paintings also from the fourteenth century. But the drawing could date to the early fifteenth century, a time when Mongol visual models were avidly appropriated, especially in Timurid historical projects. Based on stylistic grounds alone, then, the drawing could have been made at any time between 1330 and 1430. Its major importance for our interests is that the roundels are possibly designs for execution in textile or metalwork and represent another dimension of the forces driving the creative process.
60. This artist attracted the attention of scholars early on, Sakisian remarking upon his ability as a calligrapher and a draftsman (Sakisian, "Persian Drawings," p. 14). J. Michael Rogers wrote at length about Muhammad's signed works, but dated his period of activity to the later years of the fifteenth century (J. M. Rogers, "Siyah Qalam," in *Persian Masters: Five Centuries of Painting*, ed. Sheila R. Canby [Bombay: Marg, 1990], pp. 21–38, esp. 25). Muhammad was active during

- the early years of the fifteenth century, however. His hallmark signature appears alongside that of the Timurid prince Baysunghur in a calligraphy exercise bound into the Baysunghur album (Baysunghur album [H. 2152], fol. 31b), suggesting also that he was a member of the prince's retinue. In fact, Muhammad's line of calligraphy comes next after Baysunghur's, which is only preceded by that of Ahmad al-Rumi. The line by Ahmad al-Rumi served as the model for the several calligraphers who participated in this exercise.
61. The following list divides Muhammad b. Mahmudshah al-Khayyam's drawings into two groups according to signature type (his characteristic signature and its variations in protocol) and attributive signature. The presence of signature and attributive signature on some drawings suggests that the drawings once constituted a group that was viewed together.
1. Signatures of Muhammad b. Mahmudshah al-Khayyam:
- (a) "pen of the least of the slaves Muḥammad b. Maḥmūdshāh al-Khayyām" (*qalam-i kamtarīn-i bandagān Muḥammad b. Maḥmūdshāh al-Khayyām*), Baysunghur album (H. 2152), no. 1, fol. 45b (combat between two figures on horseback, one of whom has lost his head); no. 3, fol. 51b (mustachioed man wearing hat, ankle bracelets, and carrying a staff with bells attached to it); no. 3, fol. 56a (study of a lion); no. 1, fol. 56b (princely figures on horseback); no. 6, fol. 56b (two branches with perching birds); no. 3, fol. 61a (landscape inhabited by a dragon and two simurghs); no. 4, fol. 64b (crane standing on one leg); no. 1, fol. 71b (figure on horseback attacked by a bear); no. 10, fol. 87b (lion biting the head of a man); Berlin SPK, Diez A, fol. 72, p. 13 (warrior on horse; also bearing attribution "Muḥammad-i Khayyām"); Geneva, Musée d'Art et d'Histoire, Pozzi Collection, inv. 1971–107/398 (Khusraw watching Shirin bathing).
- (b) "copied after the pen of Master Haybat Naqqāsh [by] the least of the slaves Muḥammad b. Maḥmūdshāh al-Khayyām" (*naql ast az qalam-i Ustād Haybat Naqqāsh kamtarīn-i bandagān Muḥammad b. Maḥmūdshāh al-Khayyām*), Baysunghur album (H. 2152), no. 4, fol. 85a (lion wearing a bell collar); Berlin, SPK, Diez A, fol. 71, p. 65 (two immortals in combat).
- (c) "drawing (?) by Khwāja 'Abd al-Ḥayy, pen of the least of the slaves Muḥammad b. Maḥmūdshāh al-Khayyām" (*raqm-i Khwāja 'Abd al-Ḥayy qalam-i kamtarīn-i bandagān Muḥammad b. Maḥmūdshāh al-Khayyām*), Baysunghur album (H. 2152), no. 5, fol. 85a (lion with a curly mane).
- (d) "pen of Khwāja 'Abd al-Ḥayy Naqqāsh, Maḥmūdshāh al-Khayyām" (*qalam-i Khwāja 'Abd al-Ḥayy Naqqāsh Maḥmūdshāh al-Khayyām*); Berlin, SPK, Diez A, fol. 70, p. 26, 1 (duck swimming in water).
2. Drawings carrying only the attributive signature (*Muḥammad-i Khayyām*): Berlin, SPK, Diez A, fol. 70, p. 24 (armored warrior spearing a dragon); Diez A, fol. 70, p. 25 (mounted hero killing a dragon); Diez A, fol. 72, p. 3, no. 2 (drawing after Tazza Farnese showing Dionysus and Triptolemus and other gods); (*qalam-i Muḥammad-i Khayyām*): Diez A, fol. 72, p. 7 (hunt scene).
62. I place Muhammad's study after this drawing principally because physical features suggest significantly more handling before it found its way into the album (it has been damaged, the upper left section torn away and its surface scuffed), and also because it is hard to imagine the design sequence in reverse order.
63. Both drawings have been published and can be examined in Grube and Sims, eds., "Between China and Iran," figs. 457 and 458 (printed back to front). The drawing signed by Muhammad b. Mahmudshah al-Khayyam is in Diez A, fol. 71, p. 65; the other version appears in album H. 2153, fol. 87a.
64. Muhammad b. Mahmudshah al-Khayyam did not just study works on paper that were at his disposal. In another drawing, not bearing his signature, but attributed to him, we encounter a circular composition containing classicising figures (Diez A, fol. 72, p. 3, no. 2; for illustration, see Rogers, "Siyah Qalam," fig. 4). The drawing gives us a greater understanding of his predilections. It depicts a series of gods, identifiable as Dionysus, Triptolemus, wind gods, and their attendants. The drawing is after an antique cameo known as the Tazza Farnese. For an illustration of the cameo, see Cristina Acidini Luchinat, ed., *Treasures of Florence: The Medici Collection 1400–1700* (Munich and New York: Prestel, 1997), p. 76. The scholar Horst Blanck traced the movements of the cameo ("Eine persische Pinsel-Zeichnung nach der Tazza Farnese," *Archäologischer Anzeiger* [1964]: 307–12): it is first attested in Europe in 1471 in the collection of Lorenzo de' Medici; he acquired it from Pope Sixtus IV, who had acquired it from Paul II (r. 1464–71). The cameo may have had an intermediate context in Constantinople during the reign of Sultan Mehmed II. It is likely that before the possible Ottoman intermediary, the Timurids owned the cameo when Muḥammad would have had access to it.
65. Baysunghur album (H. 2152), fol. 45a, nos. 2–4.
66. Diez A, fol. 71, p. 68 (180 x 278 mm). For further discussion and an illustration, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, pp. 74–75, and pl. 60, fig. 94.
67. In figure style, the drawing can be most closely connected to a large format painting also in the Baysunghur album (H. 2152, fol. 59b) labeled "Khalil-Sultan b. Miranshah at the Wall." The painting is attributed to Samarqand (?) during the period of Khalil Sultan's governorship there (ca. 1405–9). For an illustration, see Lentz and Lowry, *Timur and the Princely Vision*, p. 68. Although it is impossible to be certain, the drawing may once have been bound into the Baysunghur album since many of the materials now in the Diez albums were taken from the Baysunghur album in the late eighteenth century.
68. Shaykhi's period of activity coincides approximately with the rule of Ya'qub Beg Aqqoyunlu (r. 1478–90). Illustrations of the painting and the drawing, shown side by side, can be examined in Grube and Sims, ed., "Between China and Iran," figs. 17 and 18. Both works are in album H. 2153 (Istanbul, TSK); the drawing is unattributed (fol. 136a), and the painting (fol. 32a) is attributed as "done by Shaykhī al-Ya'qūbī" (*'amal-i Shaykhī al-Ya'qūbī*).
69. As suggested by Bambach (*Drawing and Painting in the Italian Renaissance Workshop*, p. 81) and Nash ("Imitation, Invention, or Good Business Sense?," p. 18).
70. Paradigms for workshop production methods centered on the use of a paper design are best known and thought through for the post-Mongol period in western Asia. Design methods for earlier historical periods and the role of pa-

- per in them are still contested. For the case against the use of drawings on paper in the design processes of certain media, see Jonathan M. Bloom, "The Introduction of Paper to the Islamic Lands and the Development of the Illustrated Manuscript," *Muqarnas* 17 (2000): 17–23, esp. 20–22.
71. Norah M. Titley, *Persian Miniature Painting and Its Influence on the Art of Turkey and India: The British Library Collection* (Austin, Texas: University of Texas Press, 1983), chap. 14, esp. pp. 216–18; Porter, *Peinture et arts du livre*, p. 69; and Bloom, *Paper Before Print*, pp. 189–90. A concise discussion of pouncing can be found in *The Dictionary of Art*, s.v. "Pouncing" (Carmen Bambach Cappel).
  72. *Garda-yi taşvîr* can also refer to the powder used for pouncing. These terms do not occur in fifteenth- or sixteenth-century written sources but are attested in later periods; see Porter, *Peinture et arts du livre*, p. 69, nn. 34 and 35, where he cites the authority Anand Ram Mukhlis.  
In western Europe, Miner notes that a transparent "tracing paper" (*carta lustra/carta lucida*) made from sheets of glue was used—other materials included thin vellum and oiled papers (Dorothy Miner, "More About Medieval Pouncing," in *Homage to a Bookman: Essays on Manuscripts, Books and Printing Written for Hans P. Kraus*, ed. Hellmut Lehmann-Haupt [Berlin: Mann, 1967], pp. 87–107, esp. 87).
  73. The use of animal skins for pouncing in the fifteenth century is still an open question. Titley identifies the material of one pounced drawing in the Baysunghur album (H. 2152, no. 1, fol. 52a) as a deerskin but the surface lacks any discernable features that might secure its identification as skin and not paper (Titley, *Persian Miniature Painting*, p. 216 and fig. 68).
  74. Some drawings show a combination of both methods, that is, reversing a pounce and altering the disposition of the body as an additional transformative step. One drawing in album H. 2153, fol. 8b, shows two running wolves. The principal element of the body is used for both wolves though it is reversed for the second, and the head of the second wolf is drawn in an upright position and turning back (the front legs also reach forward). These changes of disposition enabled a dynamic design to be made showing two wolves running in opposite directions with each one turning its head back in a direction opposite to its forward momentum. Their locked stares energize the empty space they run through.
  75. Pinholes visible on paper but design not drawn in ink: Baysunghur album (H. 2152): no. 5, fol. 49a; no. 5, fol. 49b (head of a man); no. 5, fol. 57b (plant study); no. 4, fol. 60a (mounted figure shooting an arrow); no. 1, fol. 72a (architectural structure or throne); no. 5, fol. 87a (seated man wearing a turban); no. 12, fol. 87b (study of a head); no. 6, fol. 89b (eagle attacking a gazelle); and no. 1, fol. 93b.  
Album H. 2153 (Istanbul, TSK): fol. 77a (three outlines in pinholes: (1) man killing a dragon that has attacked a deer; (2) mounted archers; and (3) figure mounted on a galloping horse); fol. 79a (design in pinholes underneath drawing of eight-lobed disc containing flowers); fol. 83b; fol. 87a, at lower left (design for man on a horse pricked on reverse side of drawing in ink).
  76. Further research will be required to separate the corpus of drawings with pinholes into two groups. Pinholes: Baysunghur album (H. 2152): no. 2, fol. 44a (branch); no. 3, fol. 44a (two trees); no. 3, fol. 44b (blossoming branch); no. 5, fol. 49b (two male figures); no. 1, fol. 47a (rocks, plants, figures); no. 11, fol. 47b (goose); no. 4, fol. 49a (figure group); no. 2, fol. 49b (princess); no. 3, fol. 49b (two men); no. 7, fol. 49b (border design); no. 1, fol. 52a (prince attacking a lion); no. 3, fol. 52a (border with waterfowl); no. 4, fol. 52a (lion and deer); no. 8, fol. 52a (dragon walking over rocks); no. 2, fol. 53b (two figures on horseback); no. 5, fol. 53b (figures); no. 2, fol. 54b (prince on horseback with falcon); no. 5, fol. 54b (birds and flowers); no. 1, fol. 56a (dragon's head); no. 1, fol. 61a (five qilins); no. 1, fol. 61b (study sheet of various animals); no. 2, fol. 62a (medallion containing simurgh, only partially executed in ink); no. 7, fol. 62a (kneeling woman); no. 2, fol. 62b (medallion containing dragon and simurgh, only partially executed in ink); no. 7, fol. 62b (warrior); no. 4, fol. 65a (bands of floral ornament); no. 1, fol. 65b (circular composition containing qilins); no. 2, fol. 67a (dragon); no. 3, fol. 67a (two dragons); no. 5, fol. 67a (triangle containing dragon and simurgh); no. 4, fol. 67b (lion); no. 8, fol. 67b (border); no. 1, fol. 68a (figures); no. 7, fol. 70a (cloud band); no. 1, fol. 70b (cartouche); no. 2, fol. 70b (roundel containing simurgh); no. 3, fol. 70b (roundel containing cloud band); no. 4, fol. 70b (roundel containing simurgh, partially executed in ink); no. 6, fol. 70b (flower); no. 8, fol. 70b (dragon's head); no. 9, fol. 70b (duck); no. 1, fol. 71a (two monkeys); no. 2, fol. 71a (medallion with waterfowl); no. 2, fol. 71a (qilin); no. 4, fol. 71b (domed pavilion); no. 4, fol. 72a (domed pavilion); no. 7, fol. 72b (finch); no. 2, fol. 75a (man with lion); no. 1, fol. 77b (painting: one of the wrestlers is pounced); no. 1, fol. 79a (hero fighting div); no. 5, fol. 83a (cartouche containing birds); no. 3, fol. 84b (running lion); no. 1, fol. 86a (cusped medallion containing two simurghs); no. 5, fol. 86b (deer); no. 6, fol. 86b (medallion containing lion and sun); no. 8, fol. 86b (tree); no. 10, fol. 86b (roundel containing pattern of birds); no. 11, fol. 86b (peacock; only the body is pounced); no. 1, fol. 87a (seated figure); no. 2, fol. 87a (figure sitting on carpet); no. 4, fol. 87b (prince killing a lion); no. 10, fol. 87b (lion biting a man; signed by Muhammad b. Mahmudshah al-Khayyam); no. 14, fol. 87b (figure on horseback); no. 6, fol. 88a (two finches on lotus plant with insects); no. 4, fol. 88a (seated prince); no. 5, fol. 88a (prince on horseback); no. 7, fol. 88a (medallion containing floral ornament); no. 18, fol. 88b (tree); no. 7, fol. 89b (simurgh); no. 1, fol. 90a (roundel containing two simurghs); no. 2, fol. 90a (roundel containing a sun face); no. 3, fol. 90a (roundel containing a simurgh); no. 8, fol. 90a (medallion containing lotus leaves); no. 1, fol. 90b (roundel containing two qilins); no. 2, fol. 90b (roundel containing birds and plants); no. 3, fol. 90b (roundel containing a dragon biting a fish); no. 1, fol. 92b (dragon and three foxes); no. 3, fol. 92b (simurgh); no. 1, fol. 93a (figure on horseback); no. 2, fol. 94a (bird); no. 4, fol. 94a (bird and decorative components); no. 2, fol. 94b (dragon); no. 1, fol. 96a (some elements of the sheet are pricked including clouds and birds); no. 2, fol. 97a (flying birds); no. 5, fol. 97a (hybrid creature).
- Diez Albums (Berlin, SPK): Diez A, fol. 72, p. 8, no. 3 (furniture study [?]) comprising rectangular panel containing

dragon and geometric motif); Diez A, fol. 73, p. 3, no. 3 (study of two birds); Diez A, fol. 73, p. 5, no. 3 (man with horse); Diez A, fol. 73, p. 39, no. 1 (scene from paradise); Diez A, fol. 73, p. 41, no. 2 (cloud collar containing crane and flowering plants); Diez A, fol. 73, p. 69, no. 5 (warrior); Diez A, fol. 73, p. 71, no. 3 (study of stag in a landscape). The following two drawings exhibit lines of colored dots, suggesting pinholes, but it is not possible to determine at present whether these are dotted lines of pigment or pinholes that have been saturated with pigment: Diez A, fol. 73, p. 75, no. 2 (foliage study); and Diez A, fol. 73, p. 77, no. 2 (floral band).

Album H. 2153 (Istanbul, TSK): fol. 5a (two monkeys in a landscape); fol. 8a (circular drawing depicting a bixie in a landscape); fol. 18a (horizontal band containing dragon and foliage); fol. 21a (figures in tents); fol. 26a (dragon-like creature attacking a fish); fol. 26b, at top of page (study of animals in a landscape of flowering plants); fol. 26b (male and female deer in landscape); fol. 42b (study of two ducks); fol. 56b (cloud collar design comprising dragons and cranes); fol. 62b (bixie and birds in a landscape); fol. 65a (circular composition containing two birds and foliage); fol. 65b (circular composition containing a peacock with open tail); fol. 69a (study sheet comprising animal—bixie, dragon, and crane—and plant studies); fol. 69b, at lower left (design for a border comprising a flowering, leafy branch with birds); fol. 69b, at top left (design for a border comprising two simurghs); fol. 72b (horizontal composition depicting an outdoor enthronement); fol. 71b, at center left (study of three cranes amid foliage); fol. 71b, at top right (circular disc with Kufic inscription surrounded by serpent); fol. 78a, at center left (study of birds amid foliage); fol. 79a, at top left (striped lion); fol. 80b (two ducks in a landscape); fol. 83b (cloud collar comprising dragons in a landscape with flying birds); fol. 91b (frieze of lotus flowers and leaves); fol. 91b (woman riding on a donkey and supported by man on foot); fol. 100a, at lower page (circular composition containing two dragons in a landscape); fol. 101b (foliage study with birds); fol. 104a (largely symmetrical study of two plumed birds set against flowering trees); fol. 110b (cusped border containing landscape elements and an insect); fol. 115b, at lower page (two figures in a Europeanizing mode, one tearing his robe in two); fol. 127a (six ornamental bands each containing a different subject—foliage, animal types—only the second band has pinholes); fol. 132b (study for a cloud collar comprising dragons amid dense foliage with flowers); fol. 157b (circular composition depicting a dragon wrapped around a tree); fol. 163b (cloud collar depicting a dragon in a landscape with lotus plants).

Album H. 2160 (Istanbul, TSK): fol. 14b (study of two qilins); fol. 68a, top (study of various borders comprising lotus flowers and blades of grass; a plant resembling bamboo with ducks; rosettes; flying birds and clouds; waterfowl with lotus leaves and flowers).

77. In Renaissance workshop practice this technique was termed *calco*. Bambach notes that it ultimately supplanted pouncing, or *spolvero*, because it was less labor intensive (*Drawing and Painting in the Italian Renaissance Workshop*, p. 16). The artist Giulio Romano used the technique of stylus-traced carbon copies (or *calchi*) to make images that were “admired

as bona-fide drawings” (ibid., pp. 79–80).

78. Pinholes combined with discoloration from charcoal or chalk: Baysunghur album (H. 2152): no. 1, fol. 44a (flowering branch); no. 4, fol. 49b (seated princess); no. 8, fol. 50a (kneeling figure); no. 1, fol. 50b (enthronement scene); no. 2, fol. 50b (standing male figure offering a dish); no. 6, fol. 50b (enthronement scene); no. 2, fol. 52a (figures); no. 2, fol. 53a (lions and figures); no. 1, fol. 61a (symmetrical study of a lotus plant); no. 3, fol. 62a (study sheet of waterfowl, flying and swimming); no. 4, fol. 62a (flower study); no. 3, fol. 62b (qilins); no. 7, fol. 67b (prince on horseback slaying a lion); no. 3, fol. 70a (prince on horseback); no. 10, fol. 70a (lion shot with an arrow); no. 12, fol. 72b (numerous components on sheet); no. 7, fol. 83a (lion); no. 11, fol. 84b (prince firing an arrow at a lion); no. 14, fol. 84b (angels holding objects); no. 7, fol. 86a (fox); no. 12, fol. 86a (dragon and rocks); no. 6, fol. 87a (Rustam lassoes Rakhsh); no. 7, fol. 87a (lion); no. 4, fol. 95b (figure on horseback attacking a dragon); no. 5, fol. 96b (prince on horseback firing an arrow at a lion).
- Diez Albums: Diez A, fol. 73, p. 76, no. 1 (two mounted warriors).
79. Charcoal or chalk discoloration but no pinholes: Baysunghur album (H. 2152): no. 4, fol. 47b (lotus leaves); no. 5, fol. 70b (roundel containing two leaves); no. 4, fol. 89b (lion and ox). Diez Albums: Diez A, fol. 7, p. 3, no. 6 (study of a finch: paper blackened on reverse side but charcoal not visible on upper surface).
80. One example is a study sheet comprising horses, dogs, and rabbits (Baysunghur album [H. 2152], no. 1, fol. 61b). Only the horses have pinholes.
81. It could have resulted equally well from a process in which the drawing was pricked and used as the pounce, powder tapped over its upper surface and passing through the holes to the sheet below. This is the method emphasized by Lentz and Lowry, *Timur and the Princely Vision*, cat. no. 66, p. 343. Although this is entirely plausible, I prefer the stylus with reverse chalk-charcoal method as an explanation.
82. It is easy to understand how the repeated use of drawings led to their disrepair. One example is a drawing of a running stag amid a landscape (Diez A, fol. 73, p. 71, no. 3; for description, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, p. 119). Repeated use damaged the drawing to such an extent that fractures, coinciding with the drawing's principal outlines, opened up in the paper. The drawing was attached to a sheet of paper to save it and the damaged sections redrawn and tinted with a purple wash.
83. Thomas W. Lentz, “Dynastic Imagery in Early Timurid Wall Painting,” *Muqarnas* 10 (1993): 253–66. Lentz illustrates several examples from the Baysunghur album. For an essay on non-figurative wall paintings from the Timurid period, of which several examples survive, see Lisa Golombek, “The Paysage as Funerary Imagery in the Timurid Period,” *Muqarnas* 10 (1993): 241–52.
84. For a detailed study of repeated composition, see A. Adamova, “Repetition of Compositions in Manuscripts: The *Khamsa* of Nizami in Leningrad,” in *Timurid Art and Culture*, ed. Golombek and Subtelny, pp. 67–75. For an illustrated series of visual filiations, see Lentz and Lowry, *Timur and the Princely Vision*, appendix 3, and their discussion on p. 176.

- Some scholars have suggested that the practice of repetition begins in the fourteenth century. For a discussion of this, see Komaroff, "Paintings in Silver and Gold," p. 32, n. 40.
- For a summary of the various kinds of changes that could be made to models in the context of fifteenth-century French Books of Hours, see Nash, "Imitation, Invention, or Good Business Sense?," pp. 14–16.
85. For example, see Titley, *Persian Miniature Painting*, p. 216 and p. 218. Titley provides one example of a painting, "The Murder of Siyavush," marked with pinholes (*Shāhnāma*, British Library, London, Add. 15531, fol. 119b). She notes that it is only select compositional groups and not the main actors in the image that were later used as a visual resource. Also see Lentz and Lowry, *Timur and the Princely Vision*, p. 343, cat. no. 66.
  86. Although X-ray reflectography has been extremely successful in establishing the presence and scope of underdrawing on panels and frescoes, it remains to be tested for something as minimal as powdered charcoal. Lentz considered the dimensions of drawings in his study of Timurid-period wall painting. He was careful to emphasize the large size of figure drawings and suggested a wall painting context for them. He notes that some of these figures are as tall as 420 mm, and the average size of a figure in a contemporary manuscript ranges from 10 mm to 50 mm (Lentz, "Dynastic Imagery," pp. 258–59).
  87. Although it would have been extremely difficult for work on a small scale, it was the only system available that could move beyond the 1:1 reproduction systems based on pouncing techniques (pouncing or *calco*). The squaring grid was the method most commonly used in Renaissance Italy. For mechanical processes of reduction through gridded paper and the squaring grid, see Bambach, *Drawing and Painting in the Italian Renaissance Workshop*, p. 13, fig. 13, and p. 51.
  88. The best-known example is the "Topkapı scroll" (Istanbul, TSK, H. 1956), attributed by Gülru Necipoğlu to a Timurid-Turkmen milieu in the late fifteenth century. For discussions about gridding systems and illustrations of the scroll, see Gülru Necipoğlu, *The Topkapı Scroll—Geometry and Ornament in Islamic Architecture* (Santa Monica, Calif.: The Getty Center for the History of Art and the Humanities, 1995).
  89. The only example I have encountered that even comes close depicts a group of six seated and turbaned men (Diez A, fol. 72, p. 4, no. 4). For a description and illustration, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, p. 77, fig. 101. The figures are drawn in a black ink over a red ink scheme that comprises gridded squares set on the diagonal and tipped up as if to represent a tiled floor seen from above—the "tiles" come up against a vertical wall divided into bands (resembling a dado). The combination of inks may result from the reuse of a sheet of paper already marked with drawing in black or red ink. At any rate, the relationship between the two systems of drawing notation has nothing to do with the procedure of using a gridded square. The purpose of the drawing in red seems to have been to provide an architectural setting for the figures in black.
  90. Through his work on Baysunghur, Lentz was able to link drawings in the albums to extant illustrated manuscripts ("Painting at Herat under Baysunghur," p. 176).
  91. Lentz suggested that the drawings could have been made after the finished paintings (*ibid.*, p. 177). If this were the case, they were done freehand and not by using pounces. Differences in size between the drawings in question and their corresponding elements in paintings show that they could not be direct transfers.
  92. Diez A, fol. 73, p. 57, no. 6 (301 x 223 mm). The *Shāhnāma* manuscript was made for Baysunghur in Herat in 1430 (Tehran, Gulistan Palace Library, no. 61). Its folios measure 380 x 260 mm.
  93. Diez A, fol. 73, p. 76, no. 2 (275 x 225 mm). The composition is most closely related to a painting identified by Lentz and Lowry as "Baysunghur with his Ladies in a Garden," in an *Anthology* made for Baysunghur in Herat in 1426–27 (Florence, Settignano, I Tatti [Harvard University], Berenson Collection, fol. 44a). The folios measure 231 x 151 mm.
  94. Diez A, fol. 72, p. 6, no. 3 (84 x 165 mm). The composition is linked to a *Kalīla wa Dimna* made for Baysunghur in Herat in 1429 (Istanbul, TSK, R. 1022, fol. 44a). The orientation of the painting is reversed. The painting surface measures 105 x 110 mm.
  95. Diez A, fol. 73, p. 9, no. 4 (58 x 58 mm). The composition is linked to a *Haft Paykar* of Nizami, attributed to Herat (?) between ca. 1425 and 1450 (New York, Metropolitan Museum of Art, Gift of Alexander Smith Cochran, 13.228.13, fol. 10a). The painting surface measures 197 x 120 mm. I thank Navina Haidar for providing information about this painting.
  96. Baysunghur album (H. 2152), no. 7, fol. 62b (measurements 87 x 51 mm). The *Shāhnāma* manuscript was made for Baysunghur in Herat in 1430 (Tehran, Gulistan Palace Library, no. 61). Its folios measure 380 x 260 mm.
  97. Diez A, fol. 73, p. 39, no. 1 (measurements 102 x 77 mm). For illustration, see İpşiroğlu, *Saray-Alben: Diez'sche Klebebände*, p. 92, fig. 75.
  98. Diez A, fol. 72, p. 18, no. 4 (measurements 140 x 115 mm). For description, see İpşiroğlu, *ibid.*, p. 82; for illustration, see Lentz and Lowry, *Timur and the Princely Vision*, p. 177, fig. 66.
  99. For another example, but dating to a later period, see Swietochowski and Babaie, *Persian Drawings*, p. 4, fig. 3. It is a drawing of a "Scene in the Bathhouse," from sixteenth-century Safavid Iran.
  100. For example, see Basil Gray, "The School of Shiraz from 1392–1453," in *The Arts of the Book in Central Asia 14th–16th Centuries*, ed. Basil Gray (Paris: Unesco, 1979), pp. 121–44, fig. 74 and p. 134. Gray notes that an enthronement scene in the Lisbon anthology of Iskandar Sultan (Gulbenkian, LA 161) has pinholes. The observation was reiterated by Bloom (*Paper Before Print*, p. 189). Although this colored drawing might provide evidence for the use of pouncing in the production of an image, it is still unclear whether the pricked holes represent a step in the transfer of the image or its later "capture" by the technique of pouncing.
  101. The viability of pouncing, long considered essential in the production of western European manuscripts, was recently questioned by Carmen Bambach; see *Dictionary of Art*, s.v. "Pouncing" (Carmen Bambach), pp. 378–79. Earlier, Miner qualified her discussion of medieval pouncing by noting that before the fourteenth and fifteenth centuries it was only used

- when there was an "urgent need" and when a suitable drawing was in a 1:1 ratio to the intended final image; after the fourteenth century, an increased demand for books led to an increased use of pouncing in production techniques (Miner, "More About Medieval Pouncing," pp. 90 and 103).
102. As the fifteenth century passed it became increasingly common for paintings to be executed on single sheets and inserted into manuscripts. But this system was not common during the period when the drawings studied here were made.
  103. Diez A, fol. 73, p. 70, no. 1 (reddish-brown ink on polished ivory paper, 220 x 120 mm). The drawing is datable to ca. 1425–50. For an illustration, see Lentz and Lowry, *Timur and the Princely Vision*, p. 177, and cat. no. 65.
  104. Baysunghur album (H. 2152), fol. 25a, black ink on white paper, 240 x 163 mm. The drawing is datable to ca. 1425–50. It is not possible to determine if there is text on the reverse side of the drawing.
  105. There are numerous examples of single sheets bearing completed underdrawings and having a greater amount of pigment; most likely these works are incomplete paintings. Some examples include: Album H. 2153, fol. 2a (double-page image of a battle between Timur and Toqtamish Khan, possibly related to the *Zafarnāma*, before ca. 1435); "Meeting of King and Poet," Tabriz, Safavid period, mid-sixteenth century, Metropolitan Museum of Art, Rogers Fund, 1918, 18.26.1 (for illustration, see Swietochowski and Babaie, *Persian Drawings*, fig. 5); and "Garden Scene," late fifteenth century, Herat (for illustration, see F. R. Martin, *The Miniature Painting and Painters of Persia, India, and Turkey from the 8<sup>th</sup> to the 18<sup>th</sup> Century* [London: Holland Press, 1912], pl. 68). The process of painting and its relationship to the underdrawing can best be studied through such works.
  106. This last group includes the following examples: Baysunghur album (H. 2152): no. 4, fol. 49a (prince seated in a garden); nos. 2, 3, and 5, fol. 87b (same composition of mounted warriors); no. 1, fol. 87b (three figures in a landscape); Diez albums (Berlin, SPK): Diez A, fol. 73, p. 61, no. 32 (prince enthroned in a garden); Album H. 2153, fol. 21a (Bahram Gur and the Shepherd); fol. 59a (outdoor enthronement); fol. 137b (procession in landscape with rocky landscape and hill-top towns in the distance); fol. 153a (procession in a hilly landscape).
  107. Baysunghur album (H. 2152), fol. 87b: no. 2 (red ink on white paper, 176 x 143 mm), no. 3 (red ink on white paper, 180 x 250), no. 5 (red ink on white paper, 171 x 148 mm).
  108. Baysunghur album (H. 2152), no. 4, fol. 49a (brown ink on ivory paper, 260 x 122 mm).
  109. Baysunghur album (H. 2152), no. 1, fol. 87b.
  110. See Wheeler M. Thackston, "Arzadasht (Report)," in *Album Prefaces and Other Documents on the History of Calligraphers and Painters*, Studies and Sources in Islamic Art and Architecture 10 (Leiden, Boston, Cologne: Brill, 2000), p. 43 (right hand column). The term *tarh*, used in the same text, refers to a finished underdrawing.
  111. A potentially anomalous example of this transfer process is offered by a series of reused pictorial compositions in fifteenth-century manuscripts. Although it was possible to reproduce a composition in all of its details, it rarely occurred; rather, compositional elements were added, repositioned, altered, or removed. Changes could also be made to the environment containing the narrative. Substantially reiterated compositions from one manuscript painting to another, moreover, were sometimes applied to texts that were different than their original usage. For example, the painting of "Humay before Humayun's Castle" in a 1396 *Three Masnavis* of Khvaju Kirmani became "Khusraw before Shirin's Castle" in a *Khamsa* of Nizami dated 1431.
  112. Some years ago now, Chahryar Adle investigated a system of ordering manuscript paintings and the use of a module, continuing the interests of Emmy Wellesz, K. Blauensteiner, and Grace D. Guest. See Chahryar Adle, "Recherche sur le module et le tracé correcteur dans la miniature orientale," *Le Monde iranien et l'Islam* 3 (1975): 81–105. After lamenting a paucity of references to "rules of composition" ("Rien, pratiquement, ne nous est parvenu concernant les règles de composition," *Peinture et arts du livre*, p. 70), Yves Porter summarizes Adle's major points (*ibid.*, pp. 71–72), and adds the observation that in a manuscript of the *Anvār-i suhaylī* ("Lights of Canopus"), probably made for Akbar, the major elements of the composition correspond to the *jadval* pressed into the page (as a guide for the calligrapher). These kinds of basic correspondences between the grid of the text and the elements of the painting are ubiquitous in the Persian tradition and make complete formal sense. For a more recent investigation of the integration of text and image, see Wright, "The Look of the Book," pp. 218–46.
  113. For a discussion of the conception of poetic practice as the recombination/resequencing of a pre-existing corpus of images, often likened to a jeweler's practice, see Roxburgh, *Prefacing the Image: The Writing of Art History in Sixteenth-Century Iran*, Studies and Sources in Islamic Art and Architecture 9 (Leiden, Boston, Cologne: Brill, 2001), pp. 109–12. For architectural practice under the Timurids, which it is possible to reduce to a series of morphological units recombined, see Golombek and Wilber, *Timurid Architecture of Iran and Turan*, 1: 73–90.