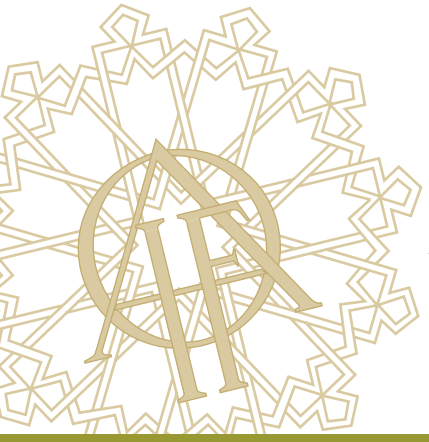

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AnIsl 26 (1992), p. 63-78

Bernard O'Kane

Poetry, Geometry and the Arabesque Notes on Timurid Aesthetics [avec 14 planches].

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POETRY, GEOMETRY AND THE ARABESQUE
NOTES ON TIMURID AESTHETICS

The recent major exhibition of Timurid art in Washington, D. C. and Los Angeles, with its sumptuous catalogue, and the associated conferences that it inspired [1] provide the opportunity not only for further research on specific topics, but also for a summary of Timurid aesthetics. There are a number of problems involved in trying to provide this. One would most like to arrive at it through the written records of the Timurids themselves, but the paucity of material imposes severe limitations on this approach [2]. There is also the problem of personal taste as opposed to a supposed objective aesthetic assessment in judging works of art, a problem compounded by our own remoteness in time and space from the Timurids and, arguably, by our own cultural prejudices. Given these difficulties, it could be suggested that one should let the works of art speak for themselves. Yet much of the thrust of recent scholarship has been to show just how much Timurid cultural patronage and its concomitant aesthetics changed because of various political, social, and economic factors.

Here we will first try to isolate the most important of these changes, then examine the role which one much vaunted factor, geometry, may have had in guiding Timurid artistic production, and finally discover what the sources yield for art historical categorisation. Meagre as the sources are on this subject, their use of the terms *islīmī* and *ḫatā'ī* shows that the word " arabesque ", nowadays sometimes cited as an inappropriate term to describe one facet of Islamic art, was a concept used, and perhaps even invented by the Timurids.

1. T. Lentz and G. Lowry, *Timur and the Princely Vision*, exh. cat. (Los Angeles and Washington, D.C., 1989); *Kevorkian Lectures on Timurid Art*, New York University, February 1989; Symposium on *New Approaches to Persian Art and Culture*, Sackler Gallery, Washington, April 1989; Symposium on *Timurid and Turkman Societies in Transition: Iran in the Fifteenth Century*, Toronto, November 1989. For a review of the exhibition and its catalogue, also with remarks on Timurid aesthetics, see J. M. Rogers, " Washington and Los Angeles : Timurid Art ", *Burlington Magazine* CXXXI (July 1989), p. 509-510. A shorter version of the present paper was delivered at the Washington symposium.

2. The limitations are discussed in W. Thackston *A Century of Princes: Sources on Timurid History and Art* (Cambridge, Mass., 1989), p. 3-8.

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Some of the problems confronting us can be seen in reports of Timurid metalwork. Clavijo, the ambassador from the king of Castile to Tīmūr, was taken on a tour of the tents belonging to Bībī Ḫānum, Tīmūr's principal wife. He describes in great detail numerous golden cups, tables and flasks, all of which were inlaid with pearls, rubies, emeralds, turquoises and other precious stones [3]. Although these objects no longer survive, they may have looked like the slightly later bejewelled Ottoman metalwork that does still exist and was seen in the recent exhibition of art from the court of Süleyman the Magnificent [4]. To many a twentieth-century observer this art can look vulgar or ostentatious. Yet it should be remembered that Tīmūr, being the founder of a dynasty, was at pains, like many nouveaux riches, to advertise his newly acquired wealth, and so ostentation was probably an attribute required of objects commissioned by him. Ibn ʿArabšāh gives the names of some of Tīmūr's goldsmiths and jewel-cutters, which was unusual in chronicles, and therefore suggests how important they were at Tīmūr's court. He also mentions that on Tīmūr's death in 1405 his weapons and equipment, all adorned with gems and gold, were hung inside the Gūr-i Mīr, the mausoleum in Samarqand where he was buried [5]. His sword may have looked like one in the Topkapı Saray Armoury [6], although the jewel-encrusted hilt and scabbard of that piece may have been too plain for his taste.

The ostentation on which Tīmūr doubtless insisted is also to be found in his architecture, the most highly visible of all the arts. Royal patronage was a driving force in much Islamic architecture, as Tīmūr vividly illustrates. The buildings that he erected are of unprecedented size, carefully calculated to reflect his exalted majesty. This is nowhere more obvious than in the remains of the portal to the Āq Sarāy, the palace which he erected in Šahr-i Sabz, whose scale reduces the human form to insignificance [Pl. 1]. The religious buildings which he commissioned are scarcely less impressive, especially the Friday mosque in Samarqand, one of several monuments that he ordered to be rebuilt on a grander scale [7].

Tīmūr's position as builder in his capital of Samarqand was different from that of other Islamic rulers. His Friday mosque covers a vast amount of space and must have required the levelling of many dwellings. Any ordinary Muslim ruler might have been afraid to do this, at least without compensation, for fear of invalidating the *waqf*, or religious endowment, that is bequeathed for the upkeep of every mosque. However, as Clavijo narrates the story, this was not the case. Tīmūr ordered a bazar to be built

3. Ruy Gonzales De Clavijo, *Embassy to Tamerlane 1403-1406*, tr. G. Le Strange (London, 1928), p. 228, 269-270.

4. J.M. Rogers and R.M. Ward, *Süleyman the Magnificent*, exh. cat. (London, 1988), Nos 65-66, 71, 87.

5. Ibn ʿArabšāh, *Tamerlane or Timur, the Great Amir*, tr. J.H. Sanders (London, 1939), p. 244-313.

6. Lentz and Lowry, *op. cit.*, p. 222, cat. no. 121.

7. For this monument and others mentioned below in Soviet Central Asia see L. Golombek and D. Wilber, *The Timurid Architecture of Iran and Turan* (Princeton, 1988), cat nos 39 (Šahr-i Sabz, Āq Sarāy Palace); 53 (Turkestan, Shrine of Aḥmad Yasavī); 28 (Samarqand, Friday Mosque of Tīmūr).

in the city, which caused the destruction of numerous houses. When the owners at last plucked up the courage to persuade intermediaries to plead for compensation, they were met with the angry reply that all the land in Samarqand was Tīmūr's own, for which he would produce the deeds the following day, if necessary. Needless to say, the townspeople withdrew their suit, rather than taking the risk of further incurring Tīmūr's wrath [8].

His Friday mosque has a completely regular and symmetrical plan [Pl. 2], qualities that appear in most of the buildings of Tīmūr and of his successors. A corollary of this regularity is that it made it possible to decorate the exterior facades, a feature rare indeed in earlier Islamic architecture. This was usually accomplished by the tiling technique known as *bannā'ī*, which combined glazed and unglazed bricks to form geometric decorative or epigraphic patterns, and which was particularly suited to being viewed from afar (it is visible on the left tower in Pl. 1). From this point on it became the custom to swathe not just a building's entrance portal but the whole of their exteriors in coloured tiles.

Another important aspect to our understanding of Tīmūr's aesthetic is unfortunately no longer extant. It was contained in the extensive series of gardens that he built to encircle the city. Earlier rulers of Iran were nomadic and spent the summer in an encampment in an upland pasturage which provided relief from the heat of their capital cities [9]. Now with his gardens Tīmūr could realise all the pleasures of these shady spots with their streams and meadows without having to move far from the attendant benefits of urban civilisation.

The pavilions in these gardens were important, not just as examples of palatial architecture, but also because their murals represented Tīmūr's only known patronage of painting. According to Ibn ʿArabšāh Tīmūr spurned poets as he did actors [10]. When he commissioned the history of his reign, the *Ẓafarnāma* (*Book of Victories*), he stipulated that it be free of rhetorical artifice and preciosity, both staples of contemporary Persian poetry. It is therefore not surprising that he kept his painters away from illustrating the usual poetic manuscripts, and instead put them to work glorifying his deeds on the walls of his palaces. Ibn ʿArabšāh offers an invaluable description of these murals, which contained scenes of battles and sieges in various countries, of his meetings with other kings, and of sultans offering him homage [11]. In his gardens too then, no less than in his more colossal architectural projects, Tīmūr was intent on awing the onlooker with his prowess.

After Tīmūr's death, Šāh Ruḫ, his eventual successor, found himself in a very different position. At the end of ten years of internecine fighting, the empire that he

8. Clavijo, *op. cit.*, p. 278-280.

9. The extent to which this was true for the Ilkhanids is demonstrated by C. Melville, " The Itineraries of Sultan Öljeitü, 1304-1316 ", *Iran* XXVIII (1990), p. 55-70.

10. Ibn ʿArabšāh, *op. cit.*, p. 298.

11. *Ibid.*, p. 309-310. Bābur confirms that one of Tīmūr's garden pavilions contained pictures of his battles in India: Ẓahīr al-Dīn Muḥammad Bābur, *Bābur-Nāmeh*, tr. A.S. Beveridge (London, 1922) p. 78.

inherited was much smaller than Tīmūr's had been. He had to reward those amirs who had sided with him against his relatives with grants of land [12], which both lessened the income of the state treasuries, and enriched the amirs so that they too could exercise patronage on a large scale. Šāh Ruḫ's sons were appointed governors of important towns, and for the most part remained there throughout their lives, enabling them also to patronize art and architecture far away from the capital. It was at this time also that a third class of patron emerged, the Persian vizirs who headed the bureaucracy. However, this dilution of patronage meant that it was no longer possible for any one patron to erect structures on a huge scale as Tīmūr had done.

Šāh Ruḫ's capital was Herat, a city that had a long tradition of Islamic rule and in which he was unable to boast, as his father had before him, that he had complete rights to all the land within the city. For this reason, after he had built a *madrasa* and *ḫānaqāh* inside the city walls, he and subsequent rulers went north, beyond the walls, to build the freestanding symmetrical structures which the Timurid aesthetic demanded.

The same problems must have faced Šāh Ruḫ's wife, Gawhar Šād, when she built her Friday Mosque in Mašhad (821/1418) [13]. The outer walls of the building were hidden by surrounding structures until they were cleared in the 1970's. Because of this crowded site, the architect designed the mosque to be seen from inside only. Looking from the courtyard, one has the impression that two-storey blocks occupy the space between the four main *ayvān*-s [Pl. 3]. In fact the upper storey is a false front leading to the roof of the lower prayer hall. This tendency towards facade architecture is also found in other major buildings of this period. The architect of the mosque of Gawhar Šād was Qavvām al-Dīn Šīrāzī, who is also likely to have been responsible for the Shrine of ʿAbdallāh Anṣārī (832/1428-9) that Šāh Ruḫ commissioned at Gāzur Gāh near Herat. To anyone standing in the courtyard of this building it must have looked very much like a *madrasa,* but a glance at the plan [Pl. 3 *b*] shows that the arcades on the eastern half of the courtyard have no cells behind them and are simply blind walls. The shrine at Tāybād (848/1444-5), commissioned by a vizir and probably built by a pupil of Qavvām al-Dīn, was similarly meant to be seen from one viewpoint. Its entrance *ayvān* is magnificently decorated in tilework [Pl. 4] and leads to an imposing dome chamber, but seen from behind the single shell dome it is dwarfed by the portal screen of the *ayvān* [Pl. 4]. Clearly this dichotomy was of no concern to the patron or architect: it was enough if it looked imposing from one direction, framing the grave of Šayḫ Zayn al-Dīn, in whose honour it was erected.

12. On these see M. Subtelny, " Centralizing Reform and Its Opponents in the Late Timurid Period ", *Iranian Studies* XXI (1988), p. 124-125.

13. For this monument and others mentioned below in Khurasan see B. O'Kane, *Timurid Architecture in Khurasan* (Costa Mesa, 1987), cat. nos 2 (Mašhad, Friday Mosque of Gawhar Šād); 9 (Gāzurgāh, Shrine of ʿAbd Allāh Anṣārī); 22 (Ḫargird, Madrasa al-Ġiyāṯiyya); 25 (Tāybād, Shrine of Zayn al-Dīn); 26 (Mašhad, Masǧid-i Šāh); 58 (Herat, Friday Mosque).

Qavvām al-Dīn is outstanding not only by virtue of the fact that he is the sole architect to be mentioned in contemporary sources [14], but also because of the spatial innovations that are found in his buildings. Chief among these is his new solution to the problem of fitting a dome on a square base, best seen in the lecture hall of the *madrasa* at Ḫargird (completed 848/1444-5) where he used a system of arches which intersected to form a central square with a diameter smaller than that of the room below. Between the arches delicate plaster ribs and stalactites joined in a complex visual web, with the real load-bearing elements hidden behind the surface [Pl. 5].

One consequence of the relatively settled life that Šāh Ruḫ and his sons led in Herat and other cities was an increasing emphasis on the urban-oriented Persian Islamic tradition of the nomadic Chingizid heritage stressed by Tīmūr. This led to the patronage of those two areas, poetry and manuscript painting, that had been neglected by Tīmūr, but whose role in enhancing the cultural brilliance of the court, and hence buttressing its legitimacy, was fully appreciated by Tīmūr's descendents.

A specific appeal to legitimacy is seen in the paintings that Šāh Ruḫ commissioned for Ḥāfiẓ Abrū's *Compendium of History* [15], a continuation of earlier Mongol histories, illustrated copies of which were preserved in Šāh Ruḫ's library. As Šāh Ruḫ's other commissioned works, such as the illustrations of his *Ḫamsa* of Niẓāmī [16] show, his painters could do much better than these often lifeless pastiches, but they chose a style reminiscent of the past, to emphasise the continuity of his dynasty.

The greatest Timurid bibliophile was Šāh Ruḫ's son Bāysunġur. The numerous illustrated manuscripts that he commissioned are among the finest of the age. They are executed in a style which was first introduced in Persian painting by the Jalayirids, but was brought to a new peak of refinement under Bāysunġur. Some of its aesthetic aims can be deduced by comparing two paintings of the same subject, " Isfandiyār Fighting the Wolves ", the first from the second half of the fourteenth-century, the second a copy made for Bāysunġur's *Šāhnāma* [Pl. 6 *a-b*]. The landscape of the earlier painting is wild and forbidding; that of the later, despite the violent action, is dotted with flowers and birds. In the earlier the tension of the battle is clearly present; in the later it has been vitiated by altering the gaze of Isfandiyār to a point away from the wolves, and by removing the lower wolf to a position where it is no longer a threat. Realism has been lost; the emphasis is now on a jewel-like stage where puppet actors

14. There was, of course, no Timurid equivalent of the modern architect who worked by remote control; Qavvām al-Dīn's designs would have been realised with the help of his presence. For fuller information on him, see O'Kane, *op. cit.*, p. 37. The emerging material for a history of the Islamic architect has yet to be fully exploited; the coverage of Islam in S. Kostof, " The Architect in the Middle Ages, East and West ", in *The Architect: Chapters in the History of the Profession*, ed. S. Kostof (New York and Oxford, 1977), p. 59-95, is slight even considering the more limited material available at the time. The historiographical account of the medieval western architect in A. Saint, *The Image of the Architect* (New Haven and London, 1983), may nevertheless contain much that will be paralleled in the case of his Islamic contemporary.

15. Lentz and Lowry, *op. cit.*, cat. nos 27-28.

16. *Ibid.*, cat. no. 38.

perform for the viewer's amusement. The muted colours of earlier times have been discarded in favour of a new combination of bright hues that remained a staple of Timurid and later Iranian painting. The primary colours recall tile mosaic: their intensity is reflected in an architecture which used colour as never before to adorn buildings of all kinds both inside and out [17].

How Bāysunġur's atelier or *kitābḫāna* functioned is known through a fascinating document, the *ʿarżadāšt* or petition. In it one sentence reads: " Ḫvāğa ʿAbd al-Raḥīm is busy making designs for the binders, illuminators, tentmakers and tileworkers, " [18] revealing that the strong similarity between decoration on these and other media is explained by their origin in a common source. Fortunately, many documents from the workshop including preliminary drawings like those described, have survived in a number of albums in the Topkapı Saray, and they show a variety of designs that could have been shared among those media, and indeed by metal- and woodworkers and carpet makers as well.

The same albums preserve a number of paintings whose aesthetic concerns are very different from those governed by the restricted canon of illustrations for historical and poetic texts. In these we can find both an element of fantasy and a realism that is missing from manuscript paintings [19].

The albums also contain two other categories of material whose origin is still controversial, with suggested dates ranging from the late fourteenth to the late fifteenth-century, and locations from Tabriz to Samarqand. The first category comprises paintings with marked Chinese influence, the second that of the so-called nomad or demon paintings that bring us even further from the world of manuscripts, perhaps to echoes of the nomadic steppe culture inherited by the Timurids. Attempts to date these paintings by relating them to dated manuscripts have not been very seccessful, demonstrating that they fulfilled a very different function. Just what this function was and who these paintings were intended for are still matters of debate [20]. Their secretion in albums and their lack of imitators in the dynasties which succeeded or were influenced by the Timurids seem to indicate that they were a very private matter for their patron. What is not in doubt is the extraordinary power of the images themselves [21].

The illustration of poetic texts, however, retained the greatest popularity with patrons, not only in manuscripts, but also in metalwork and in architecture. For instance, the Masğid-i Šāh in Mašhad includes couplets of Saʿdī, Ḥāfiẓ and Qāsim Anvār

17. For a fuller discussion of the importance of colour in Timurid architecture, see O'Kane, *op. cit.*, p. 109-110.

18. W. Thackston, *op. cit.*, p. 325. J.M. Rogers has pointed out (*op. cit.*, p. 509) that there is no evidence for the existence of a *kitābḫāna* at Tīmūr's court. However, his assertion that the term *kitābḫāna* does not occur in contemporary sources is belied by its appearance in Dawlatšāh al-Samarqandī, *Taḏkirat al-šuʿarā'*, ed. Muḥammad Ramażānī (Tehran, 1338/1959), p. 264, describing Bāysunghur's atelier.

19. See the paintings under the category " Pictorial " in Lentz and Lowry, *op. cit.*, p. 180-185.

20. The proceedings of a conference on these is published in *Islamic Art* I (1981) (published 1984).

21. Lentz and Lowry, *op. cit.*, p. 232-233.

prominently displayed on its facade. All three of these poets were Sufis, and Qāsim Anvār had died only some twenty years before the building was erected in 855/1451. The most prominent Sufi in Herat in the reign of Sultan Ḥusayn was ʿAbd al-Raḥmān Ǧāmī, who was also the leader of the ulama, as well as being the finest poet of his generation. This goes a long way to explaining the popularity of poetry, in particular mystic poetry, and its frequent manifestations in art at this time, since Sufism had innumerable adherents, not only among the common people, but also among members of the government [22]. Sultan Ḥusayn and Mīr ʿAlī Šīr, the two most important patrons of the arts in the second half of the fifteenth-century, were both among the disciples of Ǧāmī. In several of his poems, such as the *Tuḥfat al-aḥrār*, Ǧāmī wrote of the pure and divine nature of poetry, illustrating this by the tale of a gnostic who heard some of Saʿdī's verses [23].

The increasing use of poetry in art is well illustrated by a series of late Timurid jugs, probably made in Herat, which display verses of the same poets who were featured on the Masǧid-i Šāh in Mašhad [24]. In addition to illustrating poetic works, many of them also carry verses specially composed to refer to the functions of the vessel that they adorn [Pl. 6 *c*] [25]. One might also be tempted to draw a parallel between the intricate small-scale decoration of late Timurid metalwork and manuscript illumination [26] with contemporary historical writing and especially poetry, which is noted for its preoccupation with technical embellishment, frequently to the detriment of content [27]. However, the comparison is not always valid: manuscript painting shows a new realism, very different from the artifice of Bāysunġur's atelier [28].

22. On the importance of poetry to Timurid society, see M. Subtelny, " The Poetic Circle at the Court of the Timurid, Sultan Ḥusain Baiqara, and Its Political Significance, " unpublished Ph.D. dissertation, Harvard University, 1979; *eadem*, " The Persian Poetry of the Late Timurid Period ", *Zeitschrift der Deutschen Morgendländischen Geselschaft* CXXXVI (1986) p. 56-79.

23. *Mathnavī-yi haft awrang*, ed. M. Gīlānī (Tehran, 1337/1958), p. 465-467. I am indebted to Marianna Shreve Simpson for this reference.

24. On these see L. Komaroff, " Timurid to Safavid Iran: Continuity and Change ", *Marsyas* XX (1979-1980), p. 11-16; *eadem*, " Persian Verses of Gold and Silver: The Inscriptions of Timurid Metalwork ", *Timurid Art and Culture: Iran and Central Asia in the Fifteenth Century* (Papers from the Toronto, November 1989 Symposium) (in press); I am grateful to the author for providing me with a copy of this); *eadem*: " The Timurid Phase in Iranian Metalwork: Formulation and Realization of a Style ", unpublished Ph.D. dissertation, New York University, 1984.

25. For examples of these, in addition to the articles cited in the previous note, see A.S. Melikian-Chirvani, *Islamic Metalwork from the Iranian World: 8-18th Centuries* (London, 1982), p. 231-259.

26. For good illustrations of this trend in manuscript illumination see Lentz and Lowry, *op. cit.*, p. 237, 268-269.

27. For the negative reactions of twentieth-century critics, and even of contemporaries, to late Tumirid poetry, see Subtelny, " Persian Poetry ", p. 57-60.

28. It has also been suggested that late Timurid architectural decoration adopts a two-dimensionality which betrays the influence of manuscript painting: A.S. Melikian-Chirvani " Eastern Iranian Architecture: à propos of the Ghūrid Parts of the Great Mosque of Harāt ", *Bulletin of the School of Oriental and African Studies* XXXIII (1970), p. 322-327.

The increase in land grants and tax immunities under Sultan Ḥusayn broadened the base of cultural patronage at the expense of central government control [29]. As an example of how this fragmentation affected cultural patronage one can mention Amir Fārsī Barlās, a not particularly important official, who was the patron of a *Ḫamsa* of Niẓāmī that is arguably the finest surviving illustrated manuscript from the reign of Sultan Ḥusayn [30]. Many of the miniatures in this manuscript have been ascribed to Bihzād, and the intimate relationship between him and Sultan Ḥusayn is described by the literary historian Vāṣifī, who relates how it was Bihzād's custom to carry round several miniatures to show to Sultan Ḥusayn should the latter need his spirits lifted.

Compared to the miniatures of Bāysunġur's atelier those of Bihzād display greater interest in genre scenes and characterisation. " The Building of the Castle of Ḫvāranaq " from Amir Barlās's manuscript is a good example [31], and it also provides us with details of building techniques which are valuable as a guide to Timurid architectural practise. Another tale by Vāṣifī about Bihzād and Mir ʿAlī Šīr and his companions is illuminating for the evidence it gives of contemporary attitudes towards the painter. Bihzād had given ʿAlī Šīr a miniature showing him leaning on his stick in a blossoming garden, with trays of gold coins in front of him. The amir asked his companions what they thought of it. Two of the three approved of its realism, to them its most striking feature. This tells us that this new element noted by art historians did not go unremarked by Bihzād's contemporaries. The third companion refused to speak lest he give offence — could he have preferred the older styles of depiction [32]?

* * *

Geometry, has recently been favoured as the key to Timurid artistic production [33]. For anyone familiar with the elaborate vaulting systems of Timurid buildings — their use of *muqarnas*, of intersecting arches forming squinch-nets, of varied arch profiles — it is clear that careful planning by someone skilled in geometry must have gone into these buildings. Qavvām al-Dīn [34] was said by one historian to have been skilled in surveying, drawing and architecture (*muhandisī, tarāḥī, miʿmārī*), indicating that he must have been capable of making drawings for his buildings.

29. Subtelny, " Centralizing Reform ", p. 123-151.

30. Lentz and Lowry, *op. cit.*, cat. no. 140.

31. Illustrated in *ibid.*, p. 288.

32. Zayn al-Dīn Maḥmūd Vāṣifī, *Badāʾiʿ al-vaqāʾiʿ*, ed. A.N. Boldyrev (Tehran, 1350/1972), II, p. 150; the mention of Bihzād cheering up Sultan Ḥusayn is in *ibid.*, II, p. 145.

33. See M. Bulatov *Geometricheskaya Garmonizatsiya v Arkhitekture Srednei Azii IX-XVvv* (Moscow, 1978); R. Holod, " Defining an Art of Architecture ", in *Architecture Education in the Islamic World* (The Aga Khan Award for Architecture, Proceedings of Seminar Ten in the Series Architectural Transformations in the Islamic World) (Singapore, n.d.), p. 26-32; *eadem*, " Text, Plan and Building: on the Transmission of Architectural Knowledge ", in *Theories and Principles of Design in the Architecture of Islamic Societies*, ed. M. Ševčenko (Cambridge, Mass., 1988), p. 1-12; Golombek and Wilber, *op. cit.*, p. 137-173; E. Sims, " Painting in Timurid Iran ", *Asian Art* II/2 (1989), p. 62-79.

34. See note 14 above.

Geometry clearly played a major role in decoration, as illumination in manuscripts and the angular interlacing strapwork of tilework shows. A fifteenth-century Persian translation of a tenth-century text on geometry for craftsmen has an anonymous appendix that includes designs for tilework, and more are preserved in a possibly fifteenth-century scroll in Istanbul and in a sixteenth-century paper roll that also includes architectural plans [35]. The latter are interesting in that they are done on paper divided into small squares, one square in each case being presumably equal to a *gaz*, or Persian cubit. This unit was certainly used in planning buildings — the dimensions of two of Tīmūr's buildings, his Friday Mosque in Samarqand and the Shrine of Aḥmad Yasavī are partially given in *gaz* by Šaraf al-Dīn Yazdī, Tīmūr's biographer, and Soviet scholars have reconstructed the grid of *gaz* on which the plan of these buildings might have been drawn [Pl. 7] [36].

Bulatov and others have also attempted to reconstruct the proportional theory that was used in plans and elevations, but so many different systems of proportions are claimed to have been at the disposal of the Timurid architect — the square, the equilateral triangle, the semisquare, the root five rectangle, *and* all their derivatives [37] — that it may be wondered whether such a theory can be applied to almost any building. Another difficulty in determining the validity of proposed geometric schemes is that modern drawings of monuments rarely specify whether they are in part reconstructions, or are records of the standing monument, in which craftsmen may have made mistakes or purposely have diverged from an original design. For instance, an analysis by Bulatov of the elevation of the Mausoleum of the Samanids [Pl. 9 *a*] fails to take into account

35. The Istanbul scroll, in the Topkapı Saray Museum, was discussed by G. Necipoğlu-Kafadar, " Design Scrolls as Evidence for Timurid Architectural Practice ", *Symposium on Timurid and Turkman Societies in Transition: Iran in the Fifteenth Century*, Toronto, November 1989, and will also appear in the publication cited above, n. 24. For the sixteenth-century roll, in the Uzbekistan State Public Library, Tashkent, see Bulatov, *op. cit.*, Appendix 2, and N. Baklanov " Arkhitekturniye chertezhi uzbekskogo mastera XVI veka ", *Soobscheniya Instituta Istorii Teorii i Arkhitektury, Akademiya Arkhitektury SSSR* IV (1944), p. 1-21.

36. For the grid of the Friday Mosque of Samarqand, see SH. E. Ratiya, *Mechet' Bibi-Khanym* (Moscow, 1950), Fig. 82. That of Aḥmad Yasavī is reproduced in L. IU. Man'kovskaia, " Towards the Study of Forms in Central Asian Architecture at the End of the Fourteenth Century: the Mausoleum of Khvāja Aḥmad Yasavī ", *Iran* XXIII [1985], Pl. XI. The account of Šaraf al-Dīn ʿAlī Yadzī is in his *Ẓafar-nāma* II, ed. Muḥammad ʿAbbāsī (Tehran, 1336/1957), p. 6 (Aḥmad Yasavī), p. 145 (Friday Mosque). It is to be wondered where Yazdī, working at the Shiraz court of Ibrāhīm Sulṭān acquired the figures of the *gaz*. He was not an eyewitness to the events he described, and is unlikely to have taken the measurements himself. Nor is a *vaqfnāma* of the monument likely to have contained measurements of its parts. Were they preserved in the form of an order from Tīmūr regarding the (perhaps minimum) dimensions, or could *gaz*-based plans have been available to him? The fact that he gives a figure in *gaz* for the height of the columns and the ceiling of the Samarqand Friday mosque suggests that the figures may have been obtained from a source other than a plan, as no studies have so far been able to relate elevations to modular units such as the *gaz*. On the reliability of Yazdī's work, see J. E. Woods, " The Rise of Tīmūrid Historiography ", *Journal of Near Eastern Studies* XLVI/2 (1987), p. 99-105.

37. Golombek and Wilber, *op. cit.*, p. 140-141.

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the inward slope of the sides of the building [Pl. 9 *b*]. A similar pitfall occurs when a drawing is made to fit a pre-conceived idea of the proportional system. Such seems to be the case with a recent analysis of the mausoleum in the *Madrasa* of Gawhar Šād, Herat (820-41/1417-38) [Pl. 10 *a*) [38], which does not match a more accurate elevation of the building [Pl. 10 *b*], or even a previously published innaccurate one [39]. In the case of the Shrine of Aḥmad Yasavī, it has also been suggested that the relationship between the principal parts of the building may have been determined by geometrical processes, but the three scholars who analysed the plan [Pl. 8 *a-c*] produced three quite different schemes. A square grid [Pl. 7] was used as an aid to determining the plan. This raises the question of which one of these ways of generating the plan geometrically, if any, was used by the original architect. It is unlikely that more than one was used, but this implies that the other two are no more than geometric doodling, made possible by the centralised and symmetrical nature of Timurid architecture. Another reason why different geometric schemes have been suggested for this and another buildings [40] stems from a potential problem inherent in the use of plans that are both based on a modular unit, such as the *gaz*, and are generated geometrically. The latter technique will produce incommensurable irrational numbers, such as $\sqrt{2}$, which can only be approximated. Man'kovskaia notes several cases in the Shrine of Aḥmad Yasavī where theoretical dimensions were adjusted, sometimes substantially, to the modular grid [41].

It is even less clear how the transition was made from ground plans drawn on squared paper to elevations. A recent study has suggested that plans on squared paper were also used for Ottoman architecture, but that for elevations only imprecise sketches were drawn, whose accurate interpretation would have depended on the presence of the architect at the site [42]; such may also have been the case in Timurid architecture. The following working method that Purdon Clarke witnessed in Tehran in the 1870's is not likely to be very different from that of earlier centuries:

> [The Persian architect] has first of all worked out the general scheme... on a sectional blind tracing board, every square of which represents either one or four square bricks... The

38. Golombek and Wilber, *op. cit.*, p. 158.

39. O'Kane, *op. cit.*, Fig. 14.4; for the earlier inaccurate section see G. A. Pugachenkova, *Chefs-d'œuvre d'architecture de l'Asie centrale, XIV^e-XV^e siècle* (Paris, 1981), p. 126. Another methodological pitfall occurs when certain dimensions are arbitrarily chosen in order to suggest a constant proportion, e.g. A. A. Sultan, " Notes on the Divine Proportions in Islamic Architecture ", *Process Architecture* XV (1980), p. 136-145, or when evidence is selectively chosen: *ibid.*, p. 146, analysing the two " Qa'a-Mandaras " of Bait Suḥaymī which fit his conclusions and ignoring the seven others.

40. The analysis by Bulatov of the Mausoleum of the Samanids (Fig. 3 *a*) can also be contrasted with radically different versions in SH. E. Ratiya, *op. cit.*, Fig. 78 and P. SH. Zakhidov, *Osnovy Kanona Garmonii v Arkhitekture* (Tashkent, 1982), Fig. 22.

41. Man'kovskaia, *op. cit.*, p. 118. For the ways in which Gothic architects resolved incommensurable ratios into numbers see F. Toker, " Gothic Architecture by Remote Control: An Illustrated Building Contract of 1340 ", *Art Bulletin* LXVII (1985), p. 82-84.

42. G. Necipoğlu-Kafadar, " Plans and Models in 15th- and 16th-Century Ottoman Architectural Practice ", *Journal of the Society of Architectural Historians* XLV (1986), p. 224-243.

surface is ruled both ways with fine lines parallel to the sides, like the sectional paper used by engineers. It is then protected by a coat of varnish, which allows the drawing to be washed off when done with. The system of planning is simple, as in Persia the bricks are square. A reed pen or brush is used to dot with Indian ink each small square which represents either one or four bricks, and when the design has been found to work out satisfactorily the squares are filled in with black and the plan is ready. It is then copied by an assistant on to similar squared paper and the work is set out by laying bricks corresponding with those on the plan... [operations proceed on] the floor of the workroom, which is generally a space within the building in progress, and here the full size details are sorted out either by enlargements by squares or geometrical methods mostly empirical. The preparation of this floor requires their greatest care, as its finished face is fine plaster of Paris evenly laid. The patterns, once worked out, are incised on the plaster, which being greased is ready to serve as a mould for slabs of plaster which are cast from it. These, which take the place of tracings with full size details for us, are given out to the workmen and serve as templates to shape the work to. Perfect accuracy and fitting of the several parts are thus assured, as all emanates from one original [43].

He also describes how two Persian workmen, sent by the Shah to build a kiosk in Paris in 1878, erected *muqarnas* vaulting using plans, without any sectional drawings:

... the whole is planned and cut into the floor of the room, then, starting with a profile of the horizontal section of the lowest bracket, successive plans were made by running thin sheets of plaster on to the floor and cutting them to the outline of each successive row of cusped brackets, and these, fastened up one above the other four or five inches apart, only required filling in with plaster mostly applied with a trowel, and the workmen had nothing to think about beyond doing this work neatly [44].

Clarke also undertook an experiment to show that when the size of the space to be vaulted was given, any master-mason could execute the stalactite work from the plan alone:

He [Clarke] made a plan, elevation and section of a cornice at Tehran, and wishing to have a similar one at the British Embassy he was building, some hundred miles away, he showed

43. C. Purdon Clarke, " The Tracing Board in Modern Oriental and Medieval Operative History ", *Ars Quatuor Coronatum, Transactions of the Lodge Quatuor Coronati, No. 2076, London* VI (1893), p. 100-101.

44. *Ibid.*, p. 107. This account can be supplemented by G. Aitchison's report of Clarke's observations of *muqarnas* construction techniques in Iran: " The floor of the room to be vaulted was levelled on a bed of ashes, a thin coat of plaster was run over this, and the whole plan laid out; the lines were then cut with a knife in a V form, and the plaster was saturated with hot suet. A cast of this was taken in plaster about half an inch thick, and the first plan, that is to say, the heads of the first line of stalactites were cut out by the workmen, stuck up horizontally against the wall, and supported by means of sticks and soft plaster; the visible part of the stalactite was then finished by hand down to the wall. Another sheet was then run and the second line was cut out, stuck on as before, and thus continued until the whole was completed " (C. Purdon Clarke and T. Hayter Lewis, " Persian Architecture and Construction ", *Transactions of the Royal Institute of British Architects* XXXI [1881], p. 173).

the plan to the master mason and asked him if he could execute it from the plan alone. The answer was " Certainly ", and when it was done Mr. Clarke verified it from his drawings, and found it exact [45].

Clarke also acquired rolls of architectural drawings in Tehran; these were deposited in the Victoria and Albert Museum and most of them have since been cut up and mounted on 53 sheets [46]. Most of the drawings are designs for squinch-nets [Pl. 11 *b*] and ornament, the latter both of Qajar versions of baroque stucco and of designs for tilework. Four sheets have building plans on squared paper, either alone or, as in the example illustrated [Pl. 11 *a*], with tile decoration [47]. Although one sheet contains a design, on squared paper, for a mihrab decorated with *bannā'ī* tilework [Pl. 11 *c*], there is nowhere to be found within them an elevation of a building [48], which corroborates the idea that earlier architects worked empirically.

It has also been proposed that designs in other media were based on geometric systems. As early as the twelfth-century a Khurasanian bronze ablution bucket is said to display the use of modular relationships [49]. The thickness of one of the bands between two incised filets is 1 mm (the alleged module); other parts of the bucket and its decoration measure (significantly, it is claimed) 7, 12, 15, 21, 27, 28, 30, 32 33, 44, 70, 77, 144, and 660 mm. Even assuming that the bucket did not shrink in the casting process (which would clearly obviate any numerical relationship), the proposal that medieval artists were using a modular unit as small as a millimeter and that references to the lunar cycle were involved in those parts of the bucket measuring 28 mm may strike many as utterly fantastic.

Several studies have explored the possibility that paintings were also organized on geometric principles [50]. In her work on sixteenth-century Shiraz painting, Grace Guest

45. Clarke and Lewis, *op. cit.*, p. 173.

46. R. P. 8278-8834, June 13, 1877, now kept in the Indian Department in Portfolios P.3, P.3.a and P.4.c, acquired by C. Purdon Clarke in January 1876. Two rolls have been preserved in their original state as Nos 54 and 55. On sheet 48 is an inscription with the date 1243/1827-8; most of the drawings could therefore be ascribed to the nineteenth-century. I am grateful to the staff of the Indian Department for facilitating my study of this material, which merits a thorough publication.

47. The building plans are on sheet 23, Figs. III-IV; sheet 24, Figs. II, III, VIII; sheet 25, Figs. III, IV, VI-VII; and sheet 26, Fig. VI. That on sheet 24, Fig. III, is reproduced in Clarke, *op. cit.*, Pl. IV, and G. Necipoğlu-Kafadar, *op. cit.*, Fig. 13.

48. Some elevations of arches are found in the drawings, but rather than demonstrating a variety of profiles, these serve either as a vehicle for the display of spandrel patterns, or as an aid to the construction of the squinch-nets, with marks on the sides corresponding to the intersection of the arches.

49. A.S. Melikian-Chirvani " Les bronzes du Khorāssān—VI. L'œuvre de Ḥasan-e Bā Sahl: de l'emploi de l'unité modulaire et des nombres privilégiés dans l'art du bronze ", *Studia Iranica* VIII (1979), p. 7-32.

50. G. Guest, *Shiraz Painting in the Sixteenth Century* (Washington, D.C., 1949); C. Adle, " Recherche sur le module et le tracé correcteur dans la miniature orientale. I. La mise en évidence à partir d'un exemple ", *Le Monde Iranien et l'Islam* III (1975), p. 81-105; Sims, *op. cit.*, p. 71-77.

noticed the similarities in the proportions of many miniatures. This is hardly surprising; in the second half of the fifteenth-century Shiraz functioned as what has with justice been called a commercial school, churning out nearly identical manuscripts at a greater rate than any other center. In the sixteenth-century the quality of its output improved, but its manuscripts still used many similar compositions.

Based on another Safavid Shiraz manuscript, it has also been proposed that a module corresponding to the thickness of the frame of the folio rulings was used for the major dimensions of the manuscript, that is, for the length and width of the folios themselves, of the text space and of the painting space. It is certainly likely that the pages were ruled out initially to fixed repeatable formulae. It is harder to accept the contention, however, that the miniatures in the manuscript also employed the same module as the basis for their compositions. The proposed module (c. 5 mm) is so small that a grid of this size superimposed on the paintings will inevitably impinge on all the major points of composition.

Another recent suggestion is that Timurid painting was based on grids related to the height and width of the painting. As an experimental example, the Bihzād miniature of " Yūsuf fleeing Zulayḫā " was overlaid with a grid of sixty-four rectangles [52], each of which has the same proportions as the larger rectangle of the painting. Some of the major points of the composition lay on the axes of the grid but several did not; many more examples need to be produced before the theory is convincing.

On several occasions Timurid painters copied compositions from earlier manuscripts, with Bihzād on one occasion even copying one of his own compositions [52]. These are not exact copies, however, as they would have been if the system of proportion had been uppermost in the artist's mind. Rather, as Tom Lentz and Glenn Lowry have suggested, a series of stock compositions (mostly of figures) were borrowed and altered as a way of suggesting connoisseurship of earlier paintings [53]. If grids were used in manuscript painting, one might expect to find physical evidence of this in the manuscripts themselves. In medieval Qurans one frequently finds faintly-impressed lines on the page that served as guides for the calligrapher; these were made by pressing the paper on a *miṣṭara* (a sheet of thick paper threaded across with thin cords) [54]. One could imagine a *miṣṭara* that would produce a grid, but, as far as I know, no such impressed lines are to be found in medieval non-Quranic manuscripts [55].

The strongest evidence against the use of proportional systems in painting however, comes from the album pages in the Topkapı Saray and Berlin libraries [56]. In the case

51. Sims, *op. cit.*, Fig. 3 *a*.

52. Lentz and Lowry, *op. cit.*, reproductions on p. 376-379 and 282 (Bihzād miniature), discussion in text, p. 274-284.

53. *Ibid.*, p. 171-177.

54. D. James, *Qur'āns of the Mamluks* (London, 1988), p. 15-16.

55. One seems to have been used to produce what the author calls a " blind grid " for the plan of an Ottoman mausoleum: Necipoğlu-Kafadar, *op. cit.*, p. 230.

56. The most comprehensive illustrations are in *Islamic Art* I (1981) (published 1984) and M. Ş. Ipşiroğlu, *Saray-Alben: Diez'sche Kleberbände aus den berliner Sammlungen* (Wiesbaden, 1964).

of the architectural workshops we have only a few chance survivals of sketches, but from the Timurid painting ateliers we have in these albums hundreds of unfinished designs for manuscripts, and several unfinished manuscript pages. Had grids or any other geometric setting-up procedure been the norm, one would expect to find evidence for it in these pages, but again, to my knowledge, no such evidence exists.

Numerous commentators have remarked on the harmonious unity or clarity in works of art which display geometric relationships. But the question needs to be asked whether there is in fact any relationship between the aesthetic value of a work of art and the presence or absence of an underlying geometric organisation.

In the case of the mausoleum of the ʿIšraṯḫāna in Samarqand (c. 1464) one could presumably hypothesize that it was designed along the same proportional systems used for other Timurid structures, but any analysis of this would still not absolve it from the charge of having had a ludicrously elongated drum [Pl. 12 *a*]. In terms of their ground plans, the sixteenth-century ḫānaqāh of Qāsim Šayḫ at Kermina and the Taj Mahal are both related to earlier Timurid centralised mausoleum plans [Pl. 13 *a-b*]. In elevation, however, the comparison is much to the disadvantage of the former with its again over-extended drum, harsh transitions between different forms, poorer materials and lack of decoration [Pl. 12 *b*]. Just as the use of a geometrically proportioned form is no guarantee of aesthetic harmony, it is equally possible for harmony to be present when no underlying geometry is involved. The Mamluk monuments of Cairo, for instance, had to be squeezed into whatever irregular urban space was available to them, but despite this, or the lack of symmetry in their plans or elevations, many of them are architectural masterpieces.

* * *

Finally, I propose to return to the sources to see if they yield any evidence for Timurid aesthetic or art historical categorisation. That this might be the case is shown by their use of the term *islīmī*.

The earliest use of this is, to my knowledge, in the *ʿarżadāšt*, the petition of Bāysunġur's library head. Its meaning there is not clear from the context, although it has been translated as arabesque [57]. Other examples have been recorded in the poetry of Ašraf Marāġa'ī (before 848/1444-5), one of which reads:

> Ṭāliʿ-i šuhrat čunan dāram ki dawrān gar kišad
> halqa bar nām-i man islīmī ḫaṭā'ī mīšavad.
> My increasing fame is such that if time were to draw a circle against my name [i.e. to disgrace me] it would emerge as decoration of *islīmī* and *ḫatā'ī* [i.e. would enhance me] [58].

57. Thackston, *op. cit.*, p. 324.

58. Quoted in Yaḥyā Zukā, " Mā va ḫvānandigān ", *Hunar u Mardum* XVII (1342/1963), p. 37. I would like to thank Bert Fragner for his help in deciphering this verse.

The pairing of *islīmī* with *ḫatā'ī* (literally Chinese, but meaning Chinese-derived ornamentation) also occurs in the next two known uses, both descriptions of architectural decoration. The Timurid historian Ḫvāndamīr mentions that in the late-fifteenth-century repairs to the Herat Friday Mosque, the arches and arcades were decorated with *islīmī* and *ḫatā'ī* images (*nuqūš*) [59]. The Mughal Sultan Bābur, in his autobiography, also uses the same terms to describe the decoration of Ulūġ Beg's now no longer extant mosque in Samarqand [60]. These terms are further discussed in several Safavid sources on painting, where they occur most frequently as the names of two of the seven basic styles of painting [61]. In some of these sources *islāmī* is substituted for *islīmī*, and this variant also occurs in a story repeated by three of the Safavid sources on the origin of Islamic painting: at the time of the Prophet Muḥammad Chinese painters took a sample of their work to his son-in-law ʿAlī as a challenge, and with his pen ʿAlī drew an *islāmī* painting that dumbfounded them [62]. In these later sources *islāmī* is a variant for *islīmī*, although it is quite possible that this also represents a reversion to what may have been the original form of the word, from which *islīmī* was later derived. Thus *islīmī* would represent the quintessentially Islamic form of decoration to the Timurids and Safavids — the equivalent of what we call an arabesque. It has been claimed that the word arabesque is an " Orientalist theme corresponding to an outsider's view of an alien art rather than an insider's definition of himself " [63], but it seems from this evidence that the Timurids, while of course rejecting the specifically Arab connotations of the word arabesque [64], may have been the first to employ it as a concept.

What is an arabesque? It is a term which is used loosely to apply to a variety of vegetal decoration, often symmetrical, which consists of branching leaves connected by thin stems [65]. Particularly under the Timurids a hybrid form of *islīmī ḫatā'ī*, or Chinese influenced arabesque, was popular, and we are fortunate in that some of the original decoration of the Herat Friday mosque which was described as *islīmī* and *ḫatā'ī* by Ḫvāndamīr still survives [Pl. 14 *a*]. The symmetrical design is dominated by

59. Ḫvāndamīr, *Ḫulāsat al-aḫbār*, partially ed. Gūyā I'timādī as *Faṣlī az Ḫulāṣat al-aḫbār* (Kabul, 1345/1966), p. 12; *Idem*: *Makārim al-aḫlāq*, ed. T. Gandjeï (E. J. W. Gibb Memorial, N.S., XXVII) (n.p., 1979), f. 149 v.

60. *Bābur-Nāmeh*, *op. cit.*, p. 79.

61. M. B. Dickinson and S. C. Welch, *The Houghton Shahnameh* I, Appendix I, " The Canons of Ṣādiqi Bek ", p. 262; Qāżī Aḥmad b. Mīr Munšī al-Ḥusaynī: *Gulistān-i hunar*, ed. Aḥmad Suhaylī Ḫvānsārī (Tehran, 1359/1980), p. 132, where *islāmī* is used for *islīmī*; Mīr Sayyid Aḥmad, " Preface to the Amir Ghaib Beg Album ", in Thackston, *op. cit.*, p. 356, where again *islāmī* is used for *islīmī*.

62. Qāżī Aḥmad, *op. cit.*, p. 128-129; Mīr Sayyid Aḥmad, *op. cit.*, p. 355; Dūst Muḥammad: " Preface to the Bahrām Mīrzā album ", in Thackston, *op. cit.*, p. 343, where the caliph ʿAlī is credited with the invention of *islāmī* painting.

63. O. Grabar, " Geometry and Ideology: The Festival of Islam and the Study of Islamic Art ", *A Way Prepared. Essays in Islamic Culture In Honor of Richard Bayly Winder*, ed. F. Kazemi and R. D. Mc Chesney (New York, 1987), p. 149.

64. As the most frequent contact of medieval Europe was with Arab Islamic art, the concept became known in European languages as an arabesque, rather than an " islamesque ".

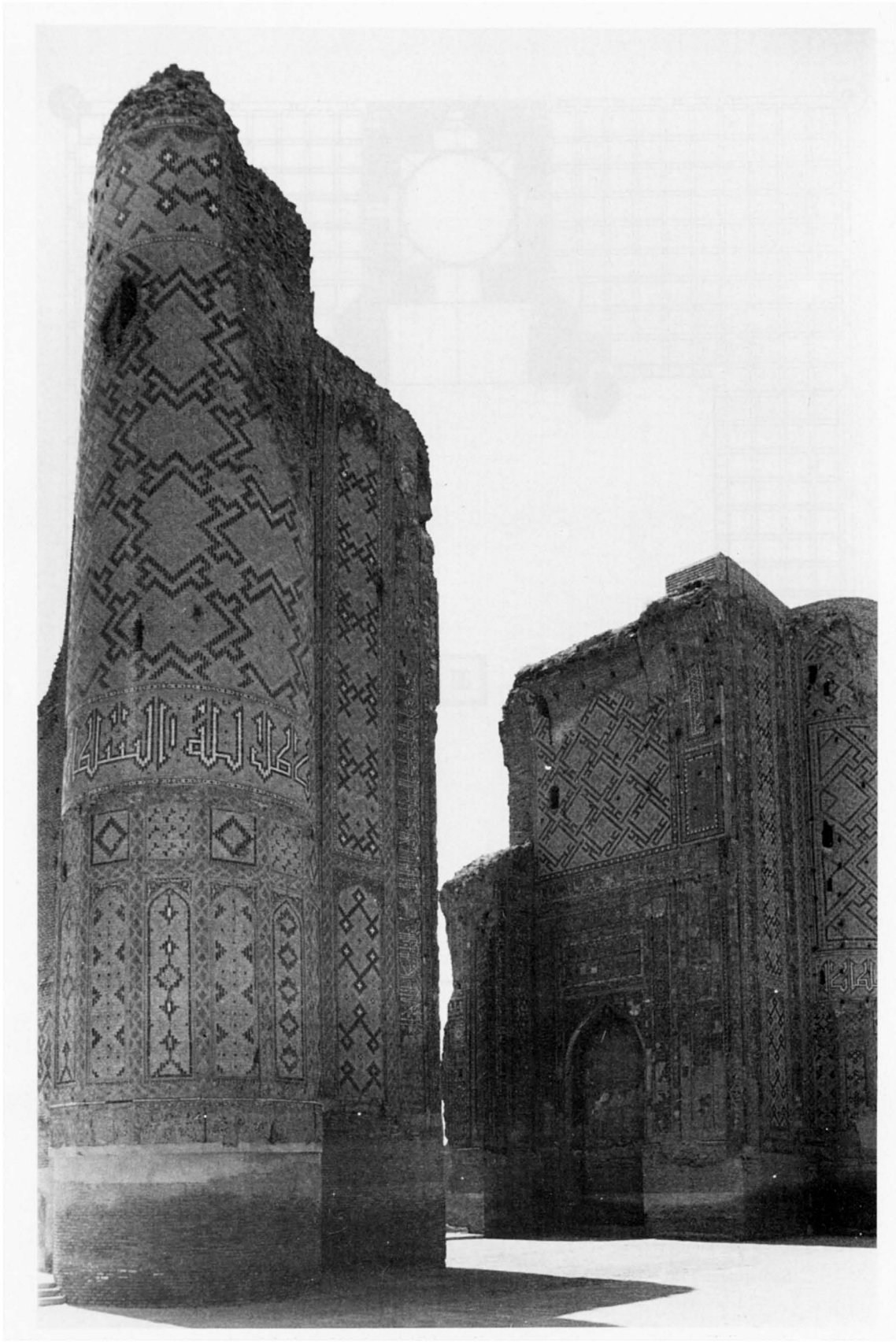
65. For a brief general survey, see E. Kühnel, *The Arabesque: Meaning and Transformation of an Ornament*, tr. R. Ettinghausen (Graz, 1976).

Chinese lotus blossoms which are connected by thin blue stems to more typically Persian rosettes.

The influence of Chinese forms has not been mentioned so far, but it is especially important for decoration. The decision, for such it seems to have been, of the Timurid court to use imported Chinese porcelain rather than make do with local varieties, can be seen as an aesthetic choice as much as a practical one, and indicates the prestige which Chinese products had in Timurid royal circles. Chinese animals first appeared in Iranian art in the dragons and phoenixes of the tiles of a palace at Taḫt-i Sulaymān that the Mongol Abaqa Ḫān restored in 1270-1275. The transformation of Chinese motifs which took place under the Timurids is well illustrated by comparing two drawings in the Topkapı albums with related designs in tile mosaic. One drawing shows a vase on a stand with fantastic Chinoiserie blossoms emerging from it [Pl. 14 *b*], while in the other [Pl. 14 *c*] the blossoms have been tamed in order to fit into the framework of an arch. Only half of the design was completed, it being understood that symmetry would furnish the rest. A further stage of abstraction is visible in a panel of tile mosaic from the shrine at Tāybād [Pl. 14 *d*]: the design is again symmetrical, like that of the Herat Friday Mosque [Pl. 14 *a*], and in place of the thick leaves and stems of [Pl. 14 *b*] we have a delicate interweave of abstract flowers with lotuses, a perfect representation of the *islīmī ḫatā'ī* fusion referred to in the texts. In some Timurid manuscript illumination the Chinese blossoms were reproduced with greater fidelity, although they were still adapted to the Timurid aesthetic by placing them within an *islīmī* framework [66].

I have tried to show that the search for a single Timurid aesthetic is likely to prove elusive. Patronage over a period of more than a century both demanded and was responsive to continuous stylistic developments, as well as to changes in the political, social and economic composition of the state. Only the main motivating factors of Timurid art have been examined here, and while some of these may be said to be present in all of its forms, their disparity, which to a certain extent precludes categorisation, is one of its main strengths.

66. Lentz and Lowry, *op. cit.*, p. 128-129, 205.



Šahr-i Sabz, Āq Sarāy palace, 1379-1396, remains of entrance portal.

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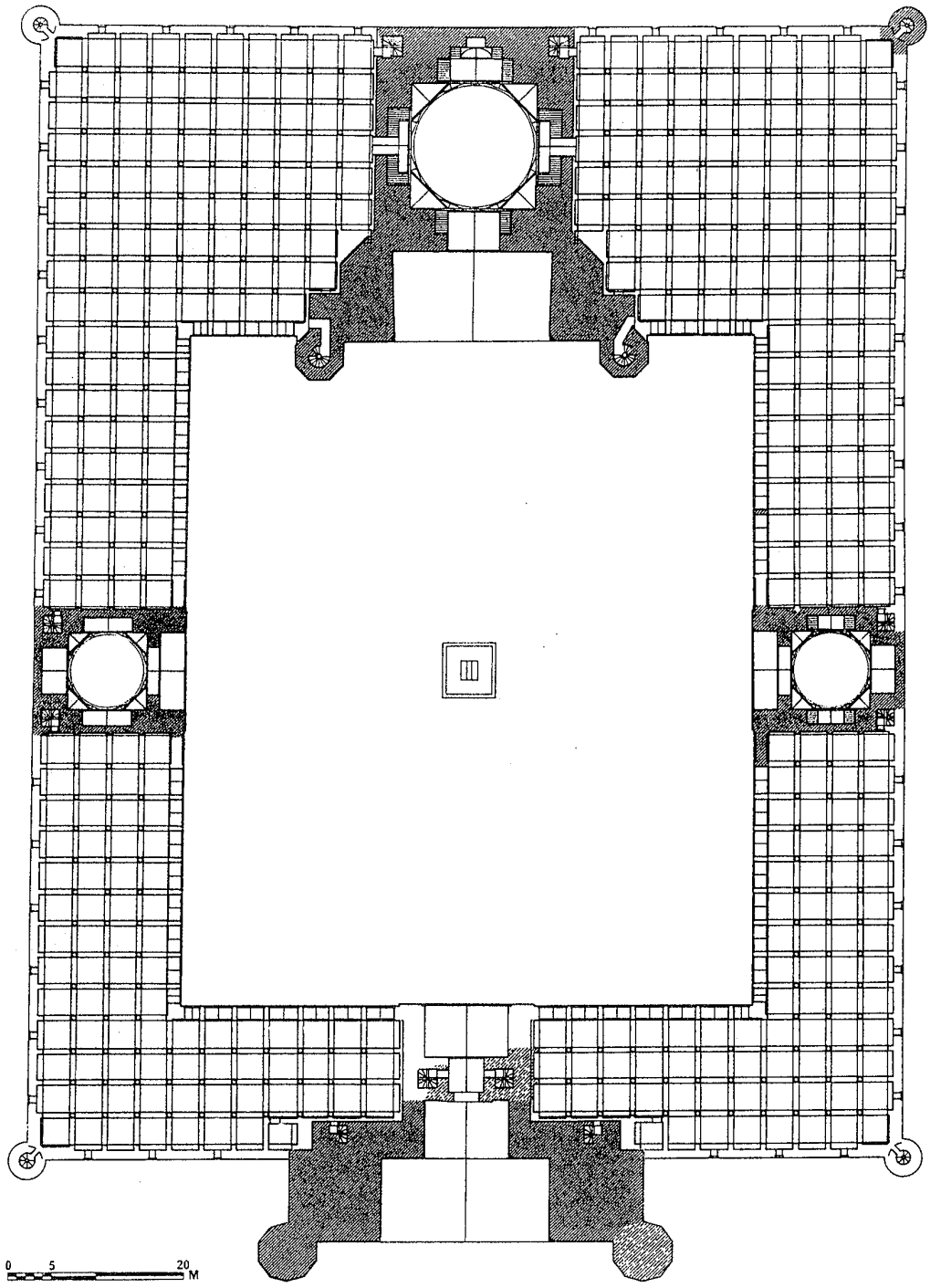
Pl. 2



Samarqand, Friday Mosque of Tīmūr, 1398-1405, plan (**after Golombek and Wilber**).

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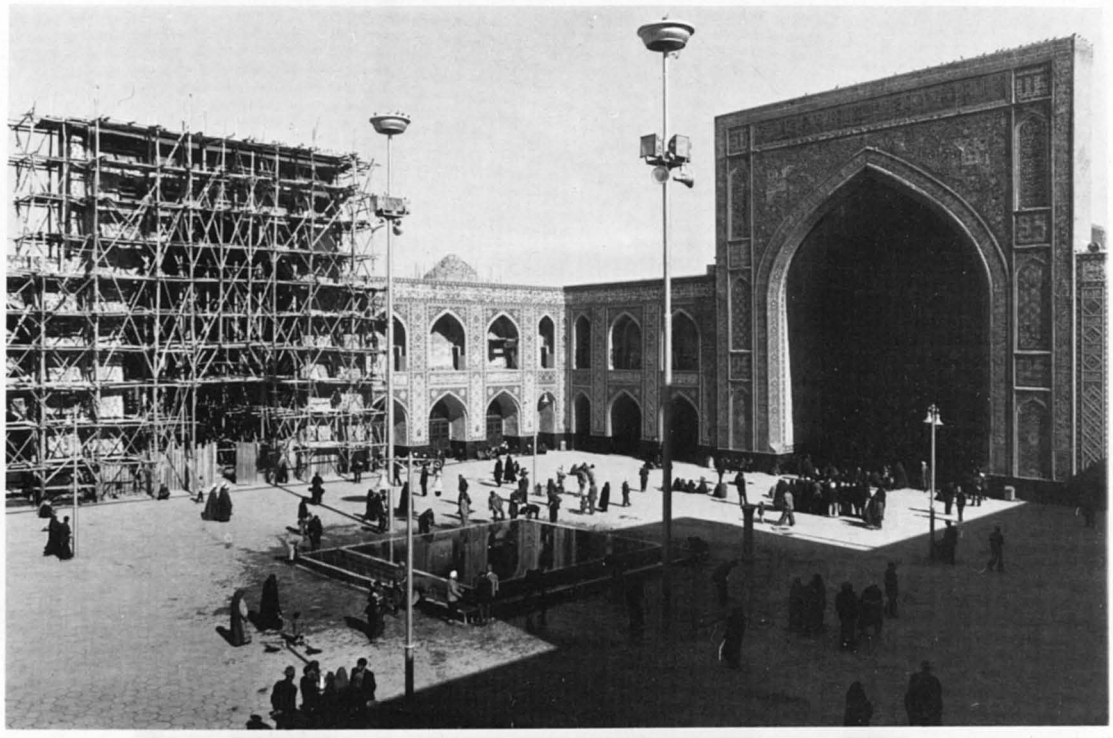
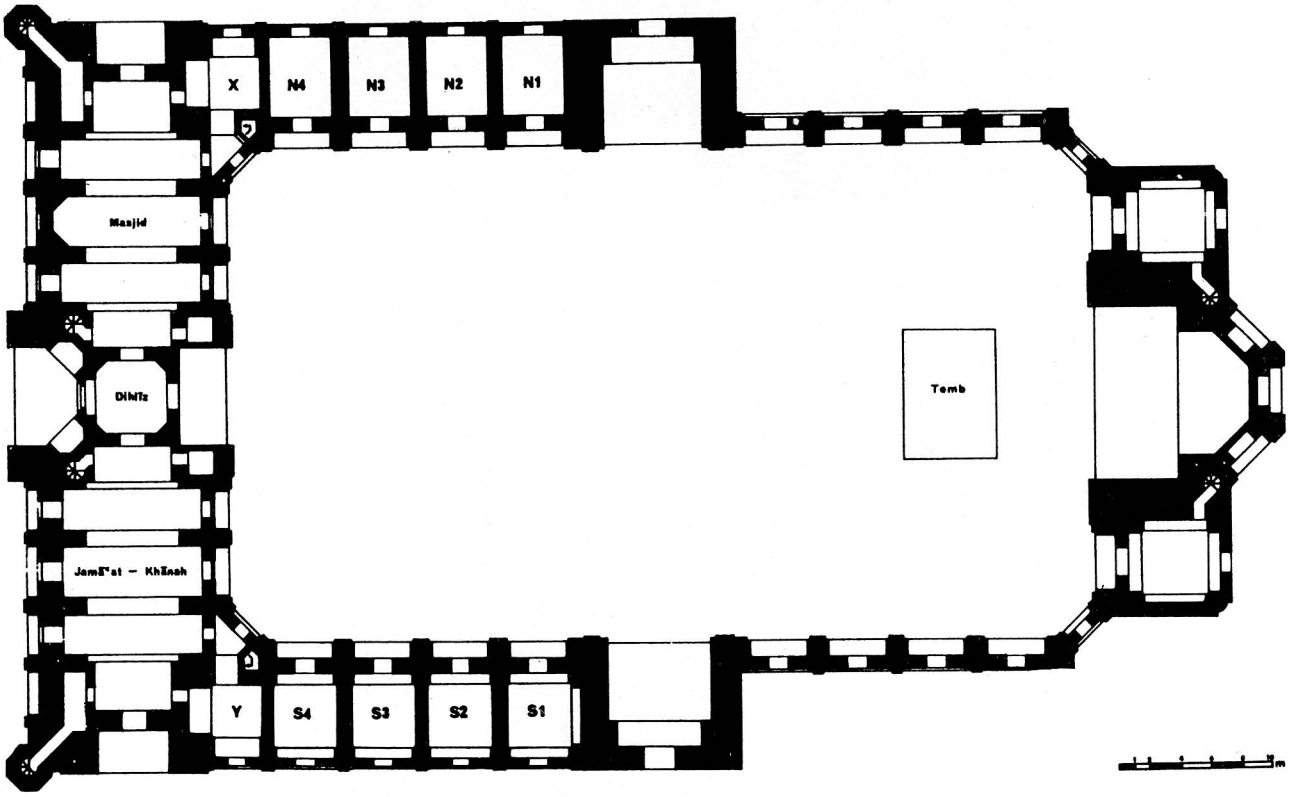


a. Mašhad, Friday Mosque of Gawhar Šād, interior of courtyard, 1418.



b. Gāzur Gāh, near Herat, Shrine of ʻAbd Allāh Anṣāri, 1425, reconstruction of plan (**after Golombek**).

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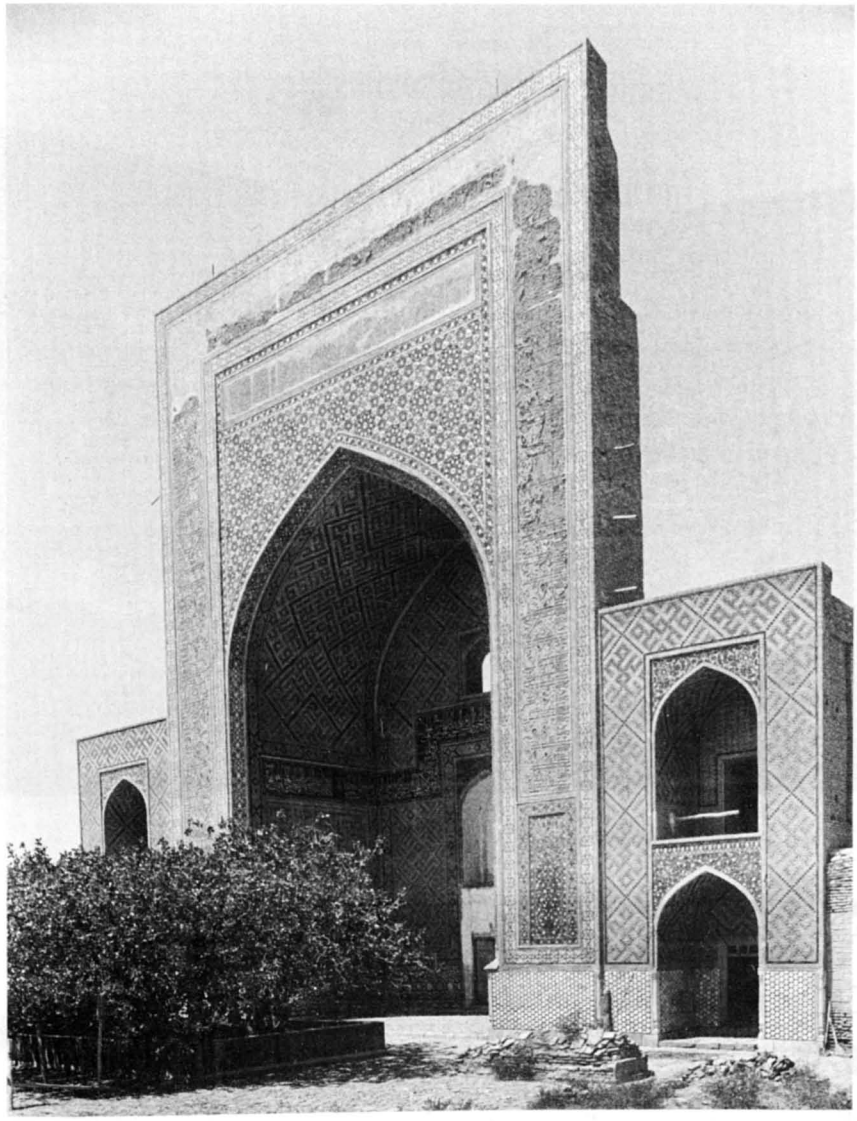
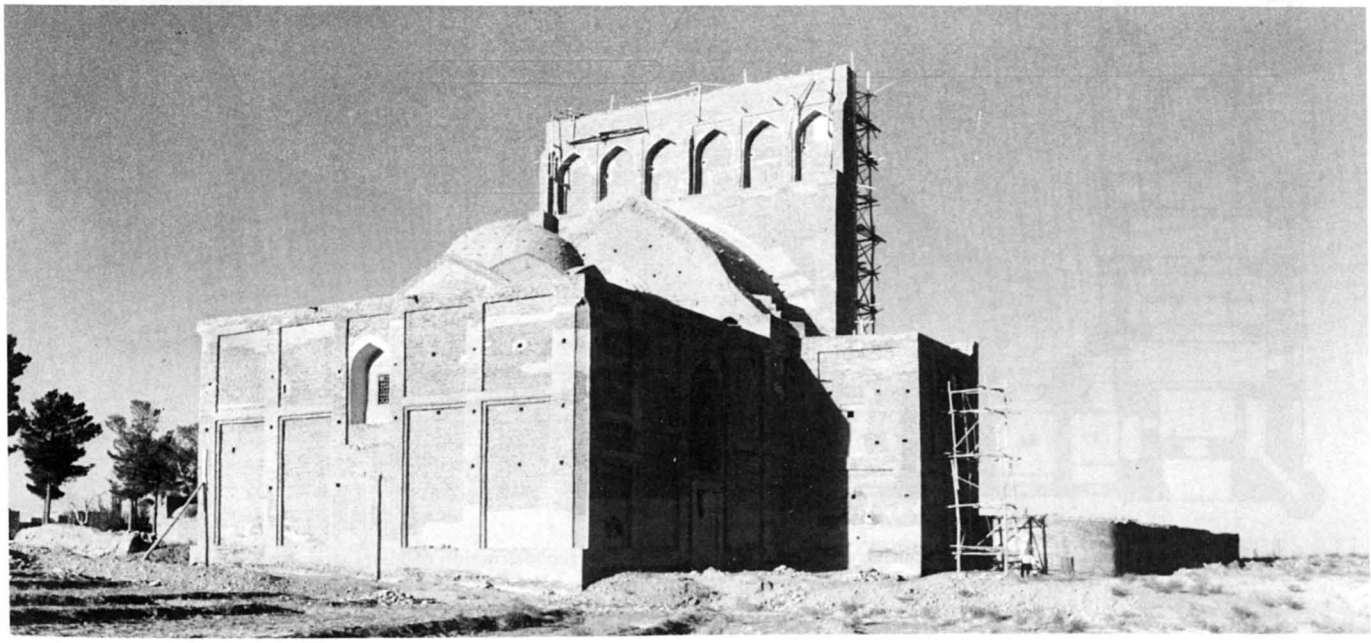
Pl. 4





Tāybād, Shrine of Zayn al-Dīn, main facade and rear, 1444.

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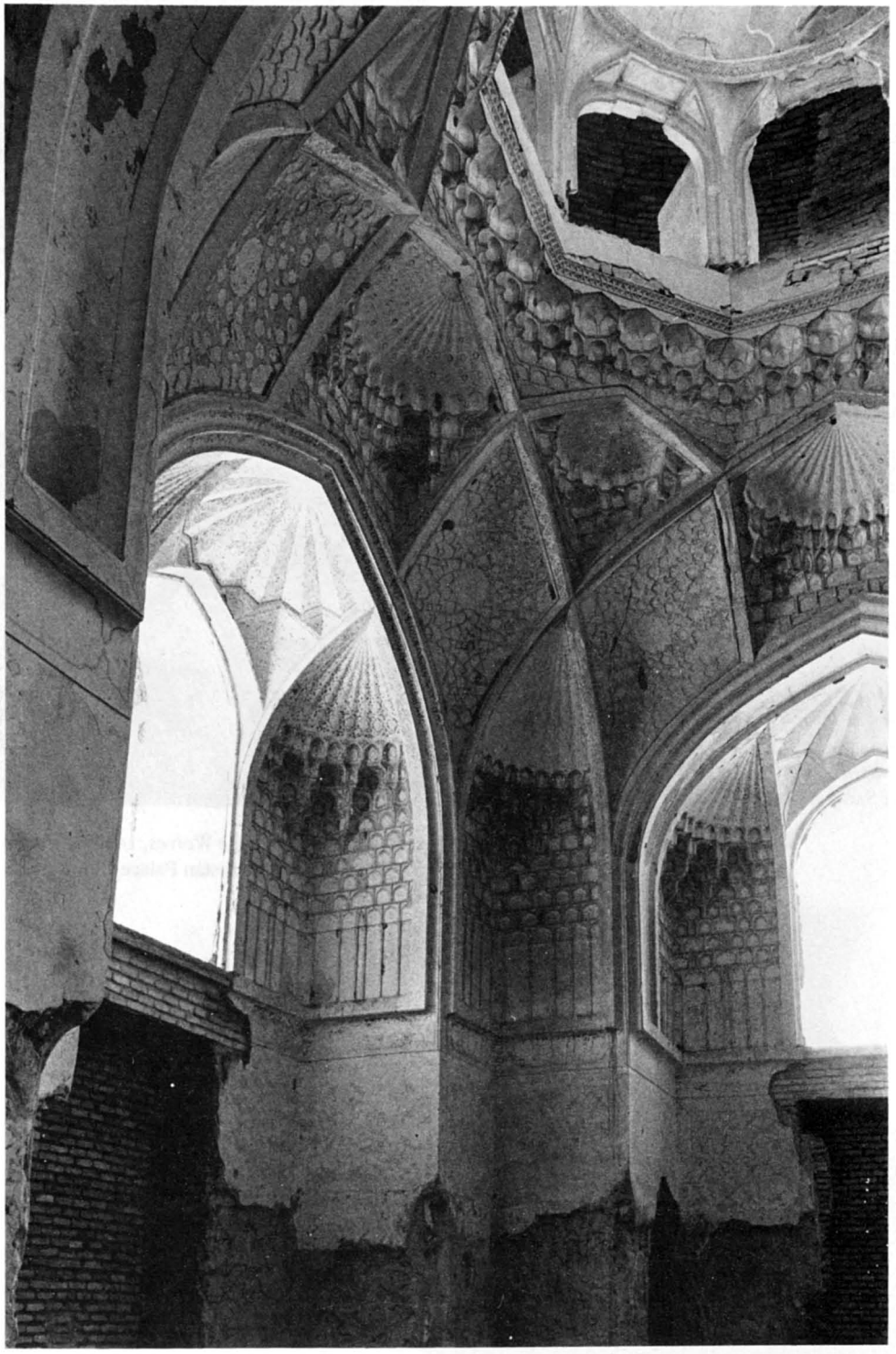

Ḫargird, Madrasa al-Ġiyāṯiyya, interior of lecture hall, 1444.

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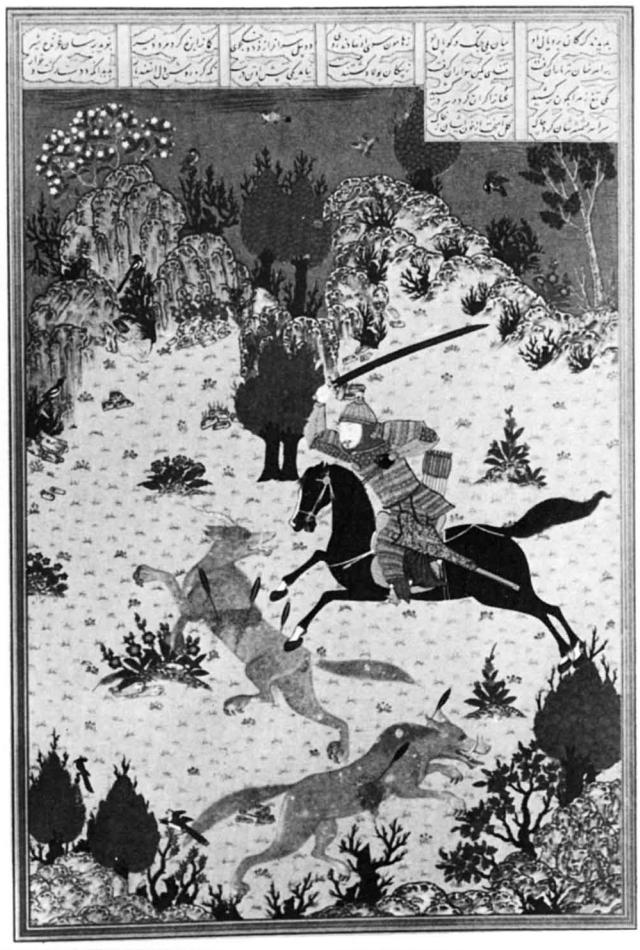
Pl. 6

a. Isfandiyār Fights the Wolves, ca. 1370, in Firdawsī, *Šāhnāma*, Istanbul, Topkapı Saray Museum, H. 2153, f. 73*b*.



b. Isfandiyār Fights the Wolves, 1430, in Firdawsī, *Šāhnāma*, Tehran, Gulistan Palace Library, Ms. No. 61, p. 393.

c. Timurid Inlaid jug, 899/1493, Museum of Islamic Art, Cairo, no. 14759 (ph. B. Iverson).

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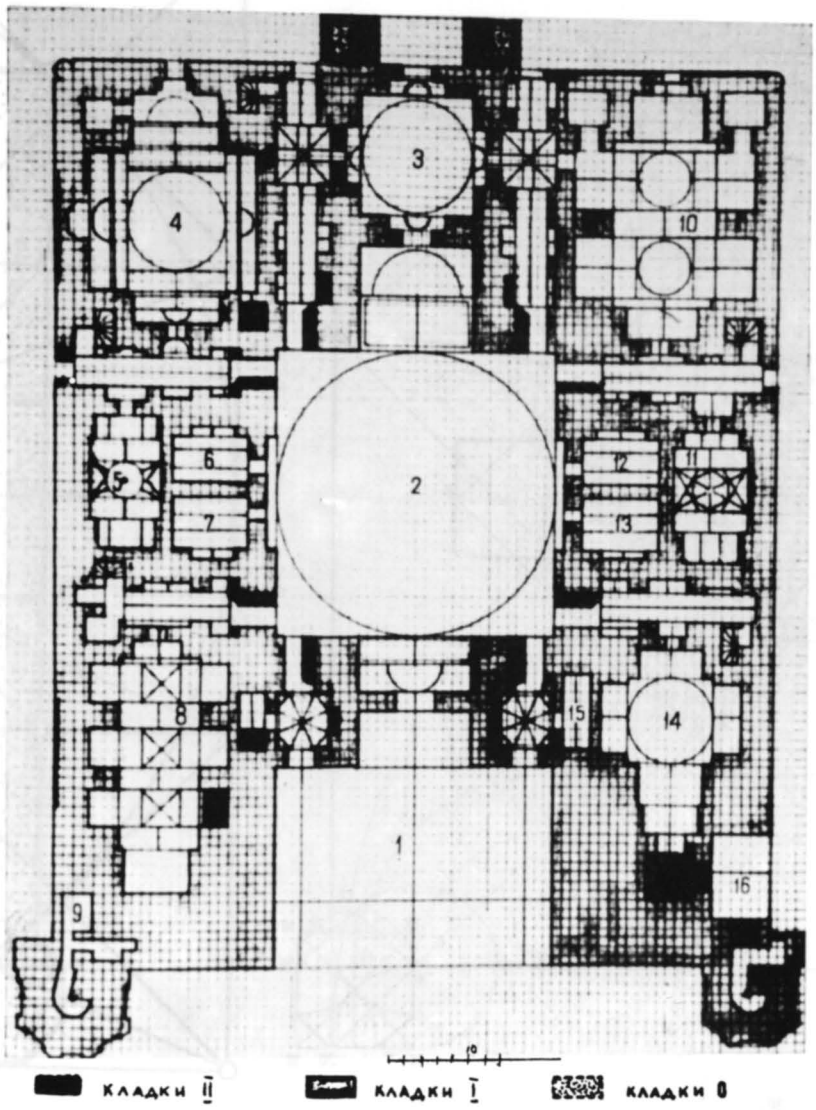

Turkistan, Shrine of Aḥmad Yasavī, 1397- 1399, reconstruction of grid plan (**after Man'kovskaia**).

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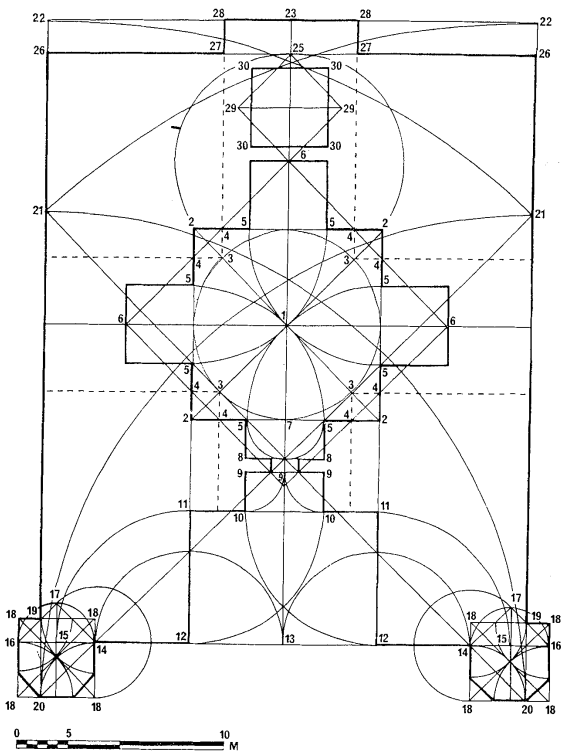
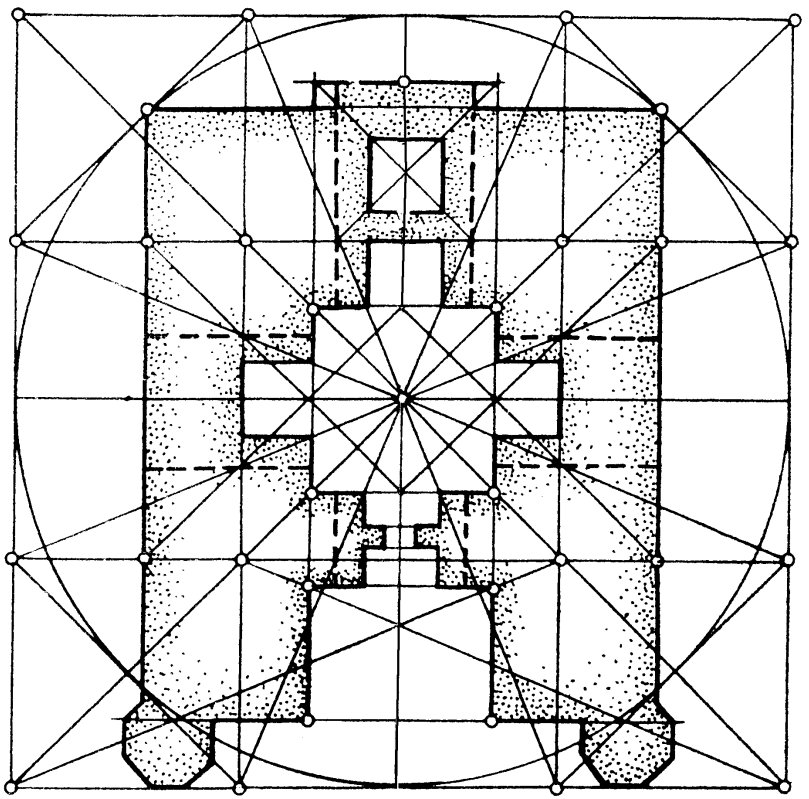
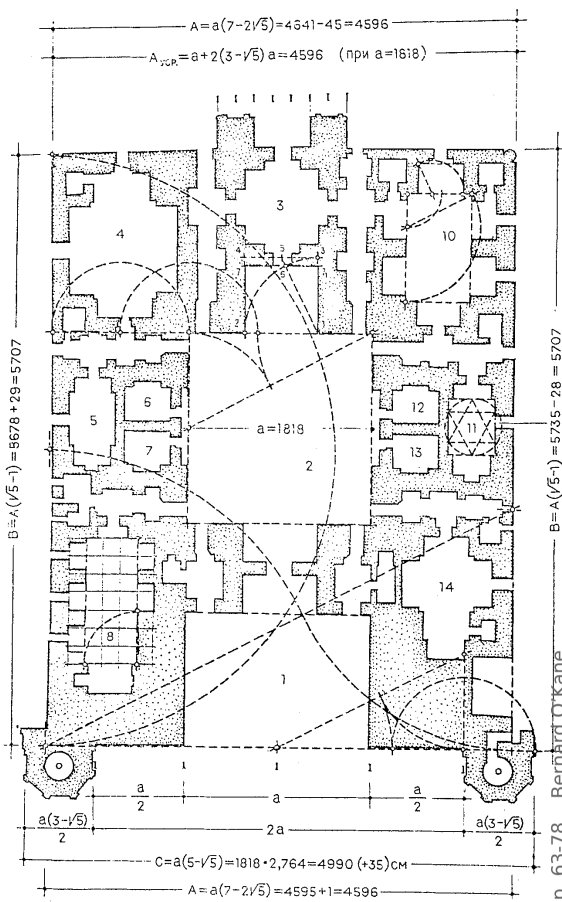


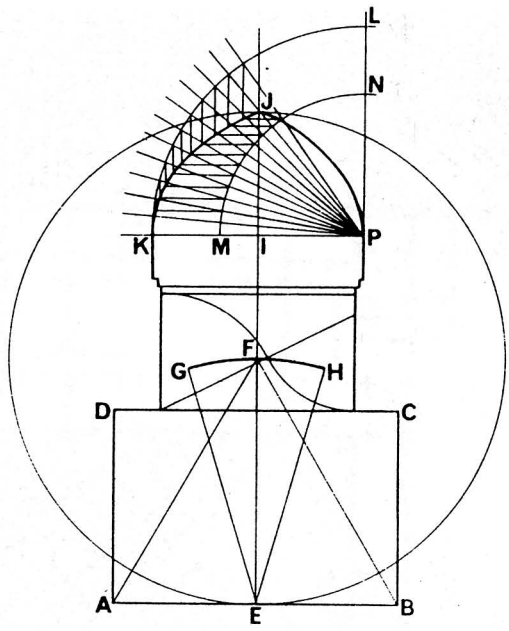
a. Turkistan, Shrine of Aḥmad Yasavī, 1397- 1399, geometric analysis of ground plan (**after Man'kovskaia**).



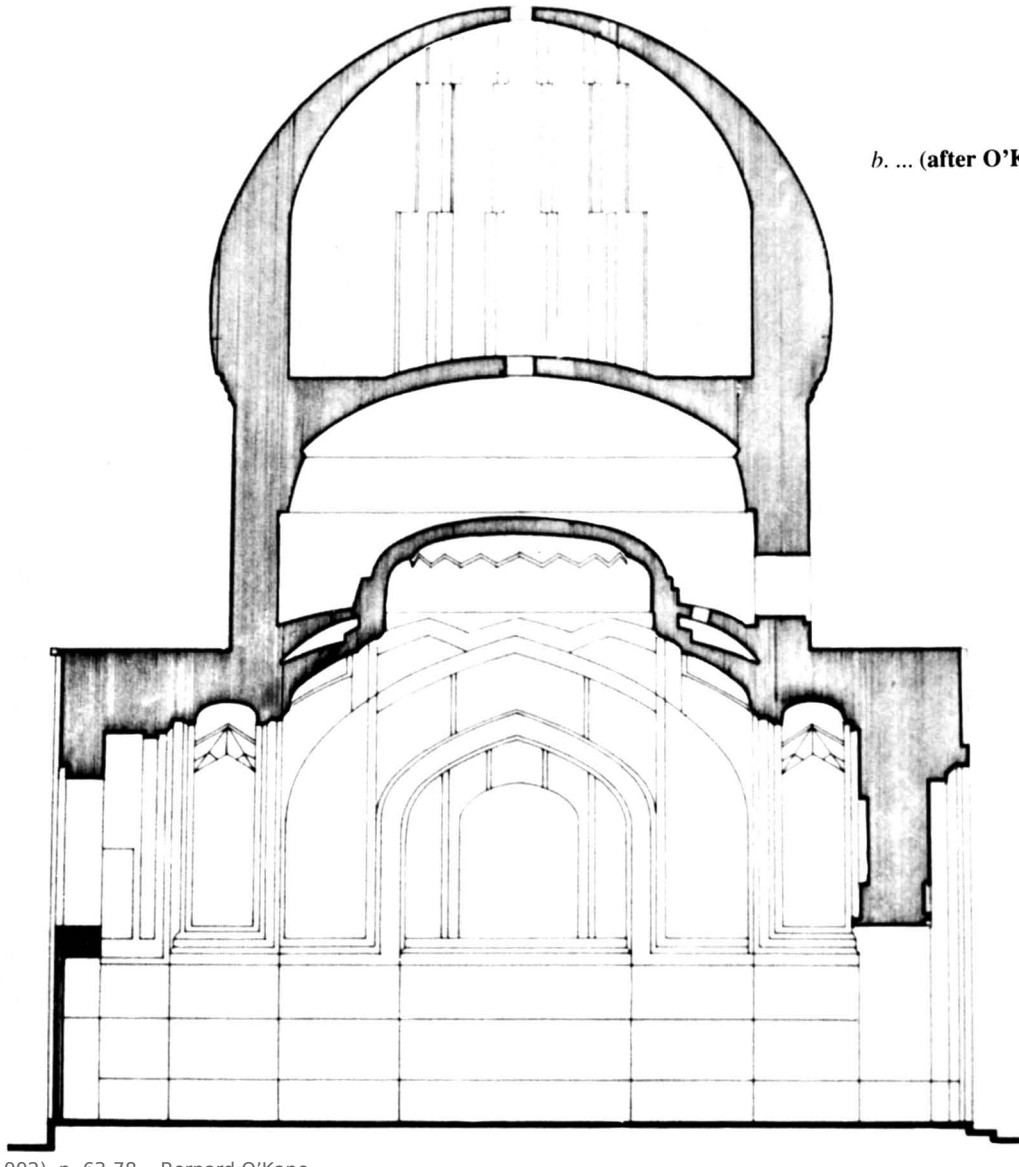
b. Turkistan, Shrine of Aḥmad Yasavī, 1397- 1399, geometric analysis of ground plan (**after Zakhidov**).



c. Turkistan, Shrine of Aḥmad Yasavī, 1397- 1399, geometric analysis of ground plan (**after Bulatov**).

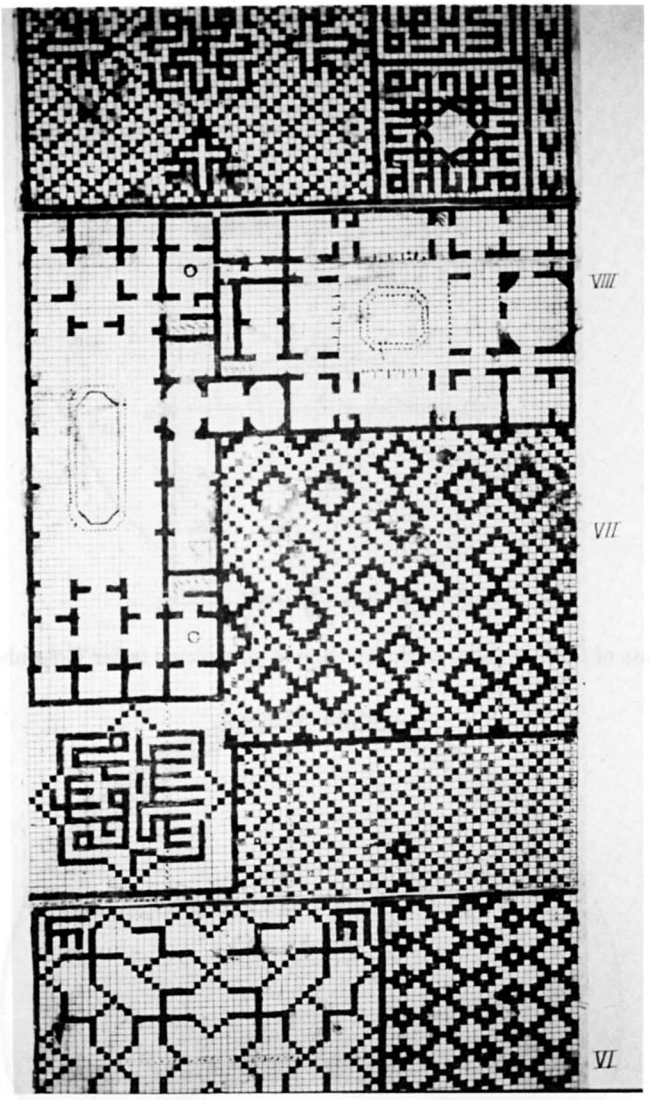


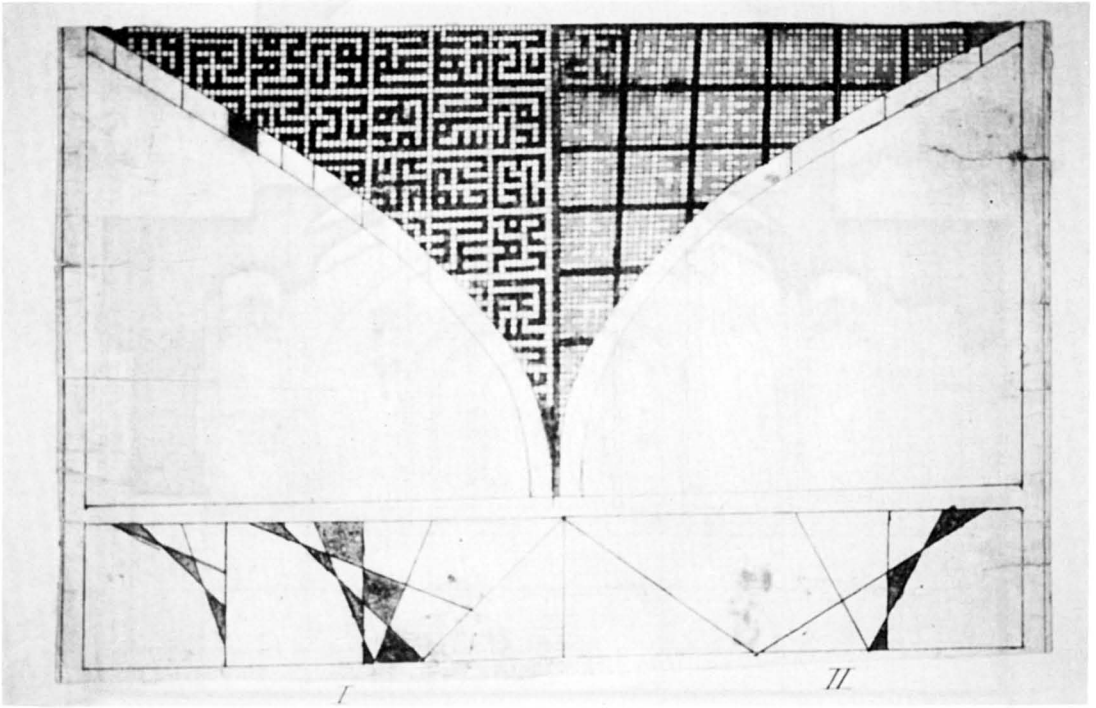
a. Herat, Madrasa of Gawhar Shād, 1432, elevation of mausoleum (**after Golombek and Wilber**).



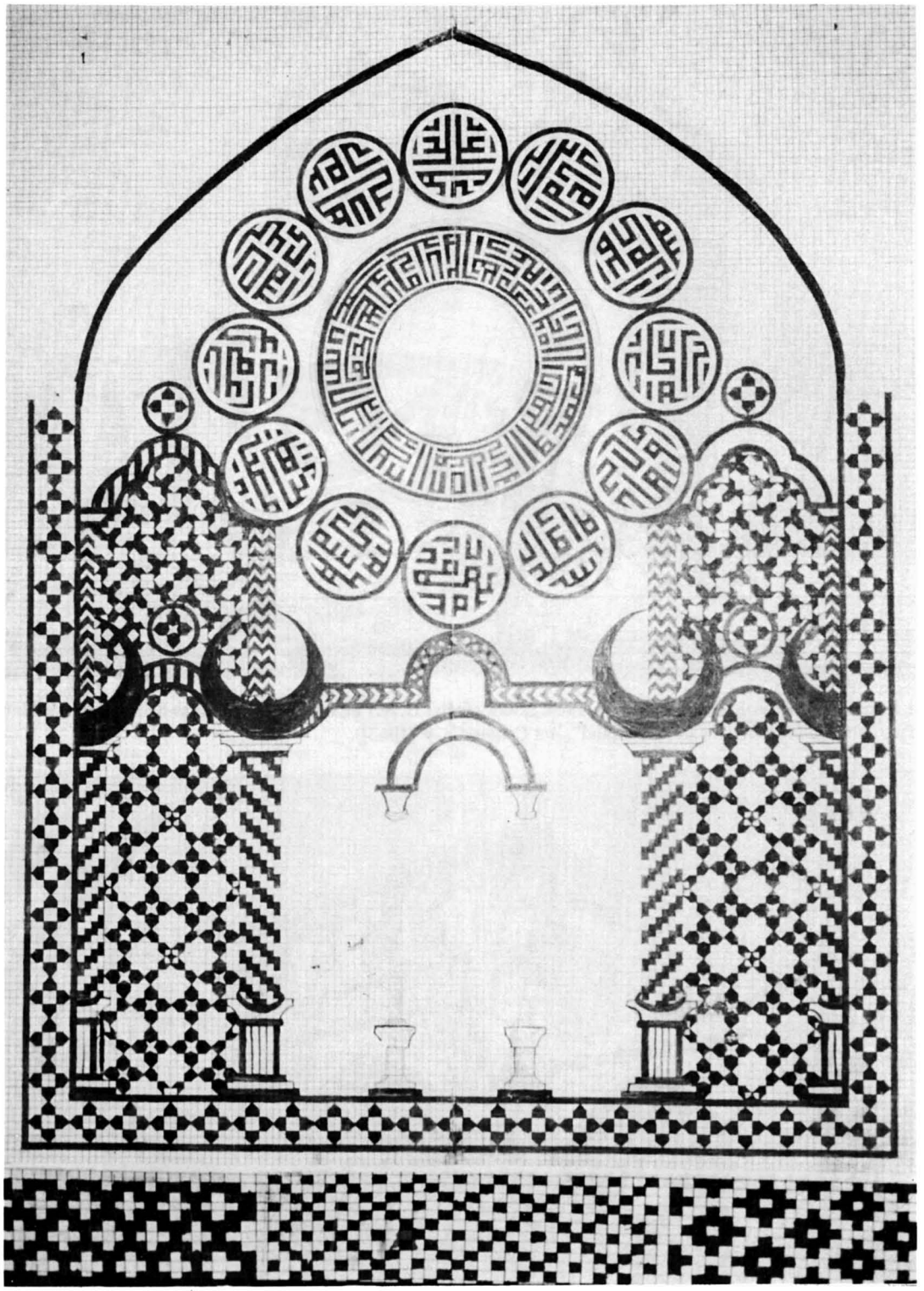
b. ... (**after O'Kane**).

a. Plans and architectural ornament, Iran, 19th century, London, Victoria and Albert Museum, R.P. 8278-8834, sheet 24.





b. Squinch-nets, Iran, 19th century, London, Victoria and Albert Museum, R.P. 8278-8834, sheet 32.



c. Mihrab, Iran, 19th century, London, Victoria and Albert Museum, R.P. 8278-8834, sheet 14.

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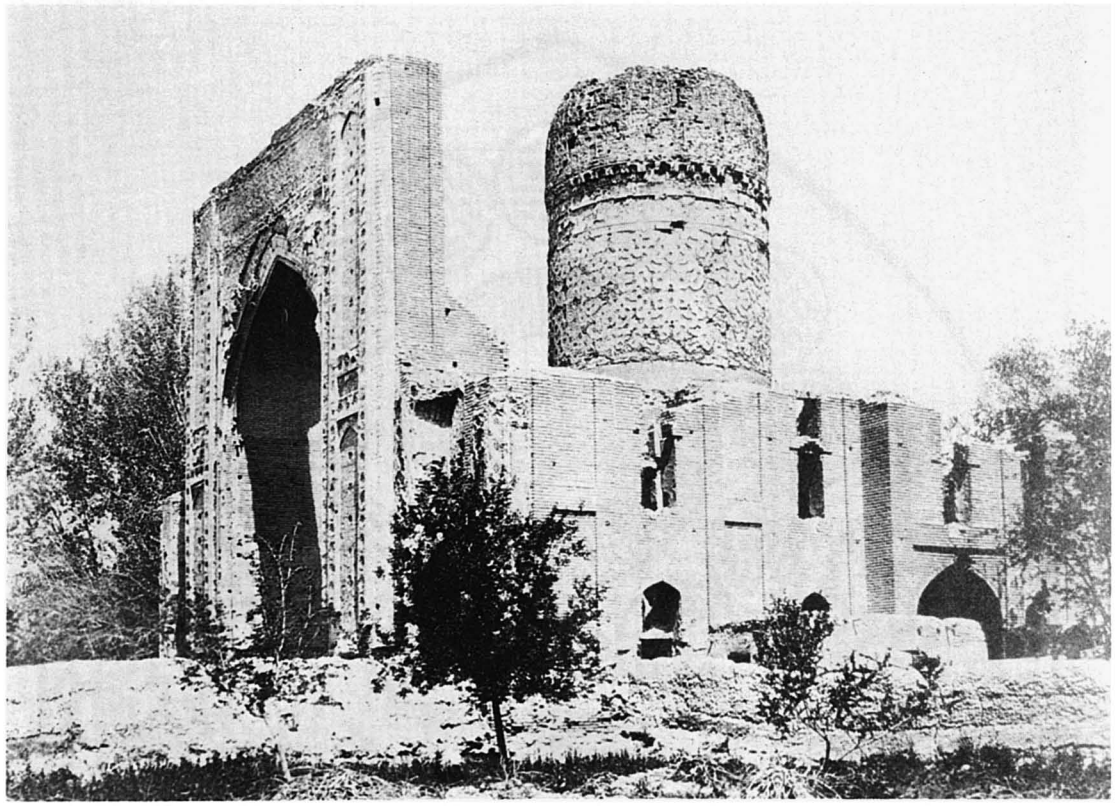
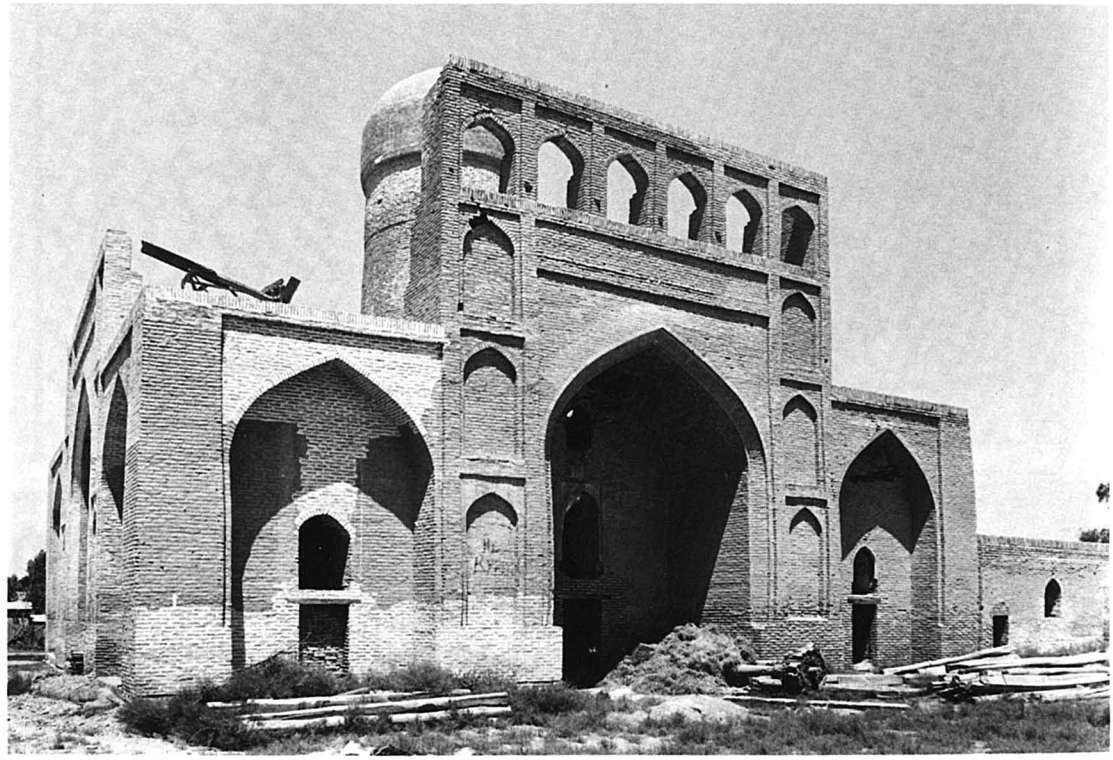
Pl. 12

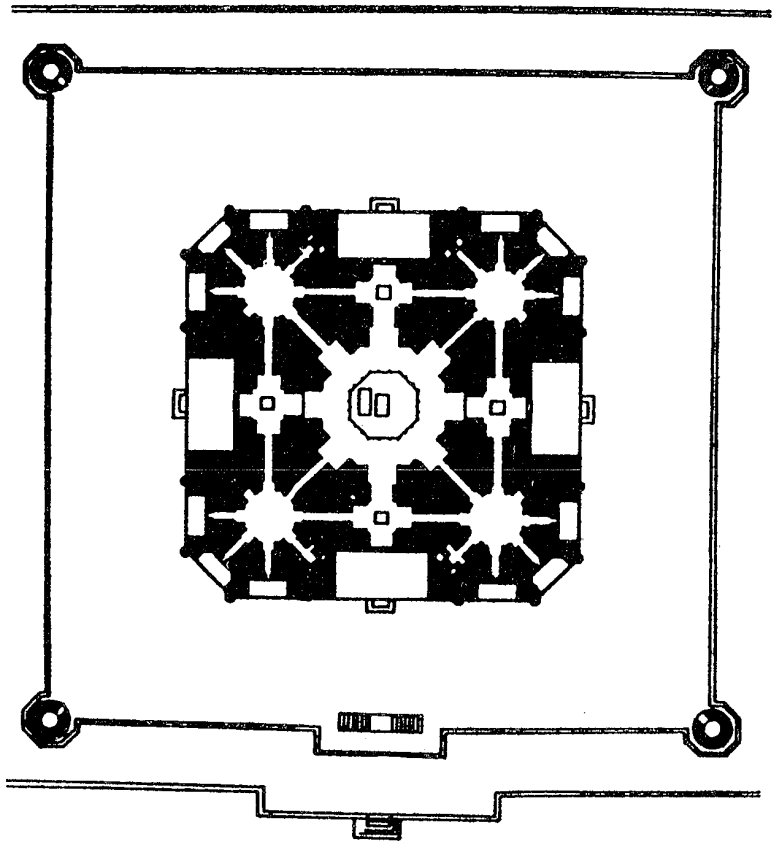


a. Samarqand, ʻIšraṯḫāna Mausoleum, ca. 1464, exterior (**after G. A. Pugachenkova**, " 'Ishrat-Khāneh and Ak-Saray, Two Timurid Mausoleums in Samarqand", *Ars Orientalis*, V [1963]).

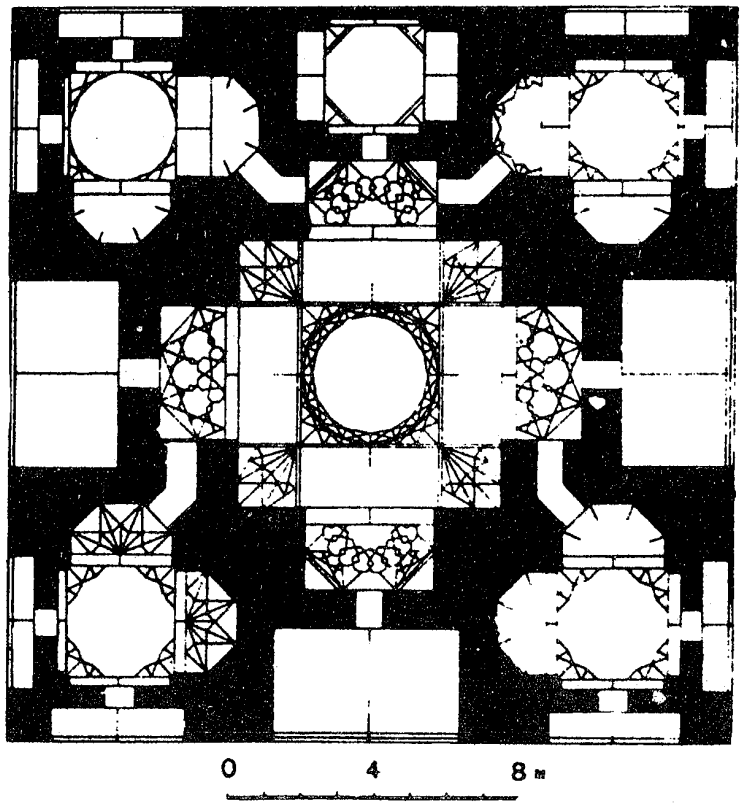


b. Kermine, Ḫānaqāh of Qāsim Šayḫ, 1559, exterior.

AnIsl 26 (1992), p. 63-78 Bernard O'Kane
Poetry, Geometry and the Arabesque Notes on Timurid Aesthetics [avec 14 planches].

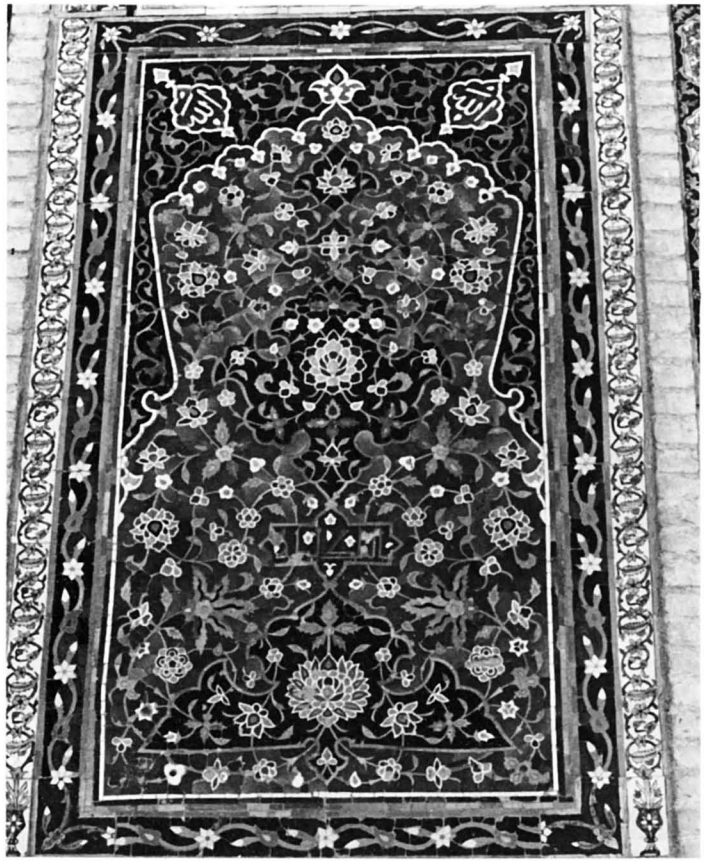


a. Agra, Taj Mahal, begun 1632, plan (**after Golombek**).



b. Kermine, Ḫānaqāh of Qāsim Šayḫ, 1559, plan (**after L. Golombek**, "From Tamerlane to the Taj Mahal", *Essays in Islamic Art and Architecture in Honor of Katharina Otto-Dorn*, ed. A. Daneshvari, [Malibu, 1981]).

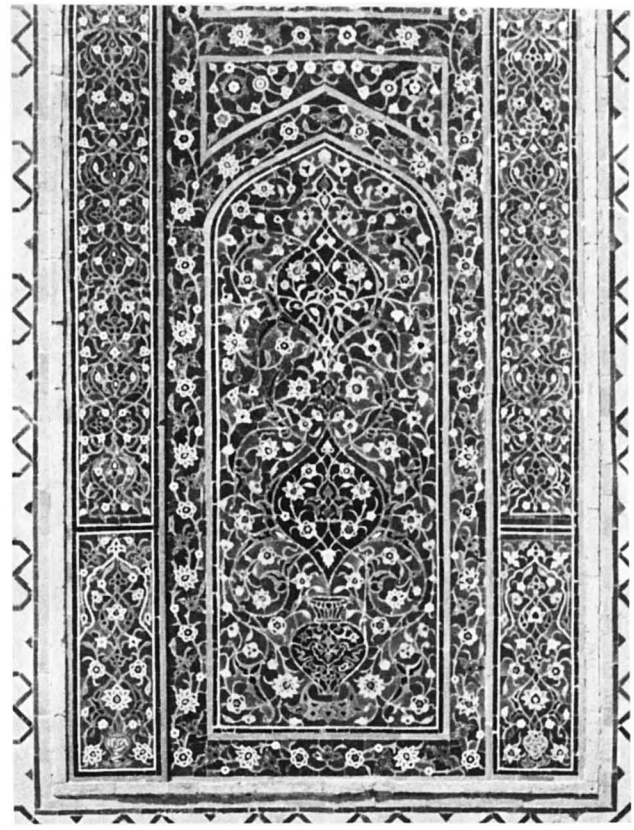
Pl. 14



a. Herat, Friday Mosque, 1498-1500, panel of tile mosaic on facade of south *ayvān*.

b. *Vase with Flowers*, Iran, 15th century, Istanbul, Topkapı Saray Museum, H. 2153, f. 91b (ph. Museum).

c. *Vase with Flowers*, Iran, 15th century, Istanbul, Topkapı Saray Museum, H. 2152, f. 61 b.



d. Tāybād, Shrine of Zayn al-Dīn, 1444, panel of tile mosaic on entrance facade.