

**.ARCHITECTURE IN MINIATURE:  
Representation of Space and Form in Illustrations and  
Buildings in Timurid Central Asia**

by  
Hatice Yazar  
B Arch, Carleton University  
Ottawa, Canada  
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Signature of Author

\_\_\_\_\_  
Hatice Yazar

Certified by

\_\_\_\_\_  
Ronald B. Lewcock  
Professor of Architecture  
Aga Khan Professor of Design in  
Islamic Societies  
Thesis Supervisor

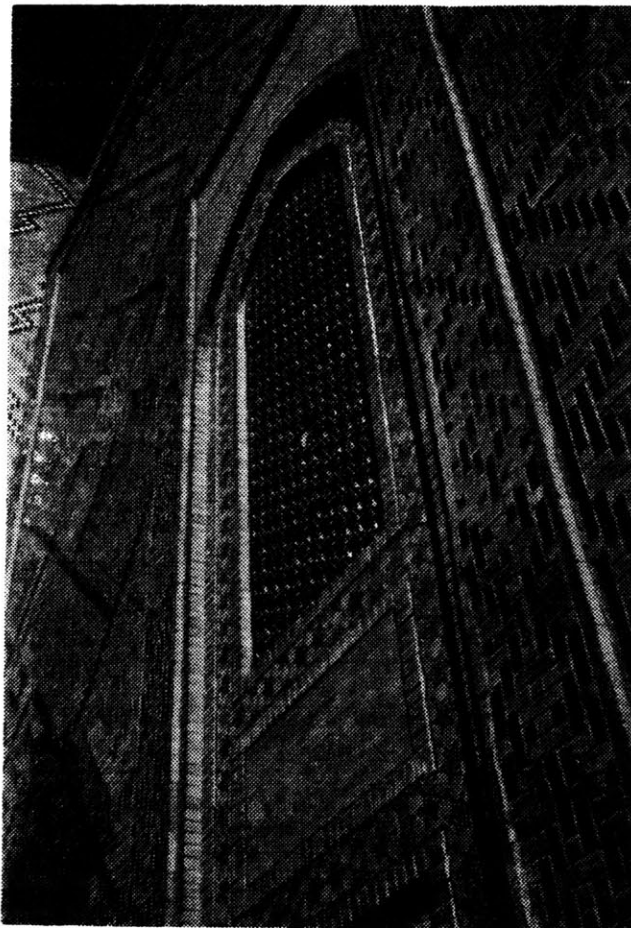
Accepted by

\_\_\_\_\_  
Julian Beinart  
Chairman, Departmental Committee  
on Graduate Studies

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'How well the brocader's apprentice said,  
When he portrayed 'Anka and elephant and giraffe-  
"From my hand there came not any form (surat)  
The plan (naqsh) of which the teacher from above  
portrayed not."  
And thus "All mirrors in the universe, I ween, display  
Thy image with its radiant sheen" (Jami, *Lawa'ih* 26

## ACKNOWLEDGEMENTS

I would like to dedicate this work to His Highness the Aga Khan.

I would like to thank the Aga Khan Program at MIT for sending me to do research in Samarkand which allowed me to pursue this heartfelt topic,

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Master of Science in Architecture Studies

**ABSTRACT**

This study attempts to explore a number of questions about the use of an architectural language in Timurid and Safavid miniature paintings of 15th and 16th century Central Asia. Of these the most important are the following: Is there a language of architectural characteristics that can be identified in the miniature? What is this language? Is it possible to find comparative expressions and representations between the painting and the architecture? Due to the lack of other records stating otherwise, architecture of this period is often described only as a craft; is it possible to identify a discourse between artists, writers and architects that indicates common ideals and intentions for such things as beauty in form and space?

In answering these questions five different methods of analysis were used. The first method was an analysis of the visual space and the formal organization of the miniature. The second method was an analysis of the content and the culture that the miniature visualizes. The third method was an analysis of the experiential space and perception of contemporary architectural forms still in existence. These were then studied in a comparative juxtaposition with the images of the architecture. This comparative analysis was organized in a fourth method as a matrix of diverse concepts and ideas in a search for possible interrelationships between several sources including literature, poetry, Arabic inscriptions and Ko'ranic verses. A final comparative method took the form of three dimensional constructs of the miniatures in order to attempt a parallel analysis of the spatial perception of the architecture and the miniature.

The question of whether an architectural language could be identified in the miniature paintings was answered positively. Starting from a basic level, there were consistent similarities between architecture and miniature in building elements and typologies. The search that was made at the conceptual level revealed many possible common expressions such as those of passage, of entrance and its use, of focal points and of nodes in the architectural and the miniature space. Building and form also appeared to be contemplated at the philosophic and spiritual level. In addition, an expressive vocabulary of design was revealed in the treatment of such architectural forms as iwans, pishaqs and their perception as rhythmic and urban structures. The shallow compressed space that emerged in the constructed interpretation of the miniature appeared to be reflected in the compact spaces created by accretions of cells of varying depths in the Ulugh Beg Madrasa in Samarkand. A potential for further significant interpretive exploration appears to have been revealed in these records of a remarkable time and culture.

Thesis Supervisor: Ronald Lewcock  
Title: Professor of Architecture  
Aga Khan Professor of Design in Islamic Societies



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## INTRODUCTION

The purpose of this thesis paper is to investigate the phenomenon of architectural representation in Central Asian miniatures chosen from Timurid and Safavid (the period following Timurid) art of the 15th and 16th centuries. The selection of this period was made both for the richness of architectural expression and as the period of co-existence of an important body of architecture and miniature belonging to the same school. Miniatures selected from manuscripts of this period were chosen for their extensive use of architecture as visual vocabulary and the proximity of the cities where they were produced to Bukhara and Samarkand. These miniatures are listed in appendix A. An essential aspect of the investigation lies in the comparison of miniatures to existing architecture and its elements. The architecture selected for comparison is composed of Timurid and post Timurid remains in Bukhara, Samarkand, and Shakhruhia (present day Tashkent). This architecture was chosen for the fact that a recent field trip allowed primary observation of buildings such as *madrasa's* (schools) and *masjids* (mosques) in these cities.

The nature of this comparison lies in the exploration of common similarities and differences between represented elements and constructed elements. The built form itself becomes the body of reference or the control subject in this experiential search for qualities that emerge in both. The search is for qualities of architectural character that are experiential and that push the limits of such concepts as symmetry, (planar and surface) composition, and geometry, such things as can be measured and deduced on the basis of remains and literary reference to building construction theories and techniques such as those of Ghiyath ad-Din Kashi (c.1423), Abu al-Wafa al-Buzajani (940 -998), Ibn Khaldun (1332-1406), and others. Miniatures may provide another set of records of a wealth of experiential moments that are transformed by the artist's vision onto paper and that are as informative about architectural knowledge as textual documents are.

The challenge is to read these visual records, these traces of a mind set in a way that comes as close as possible to the original method of perception. Only oblique clues such as these miniatures have been left for study. As Golombek comments "no Timurid art critics, if such existed, have left us treatises preserving their thoughts"<sup>1</sup> She looks elsewhere for her clues, to

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<sup>1</sup>Golombek and Wilber, p202

the writings of contemporary philosophers and poets. The method of interpretation used in this exploration lies in observation of the visual evidence produced by the miniatures and the buildings. The attempt to reconstruct this world will be based on observations of spatial and architectural relationships or the perception of reality that they embody by searching the limits of thought invoked by the art, its internal form and the conventions of representation. This exploration will also take into consideration the styles, the schools, the artists, literature, and the poetry. The conventions used by the artists aid this process because they represent a narrow field of operation. Most representations are of a limited number of scenes, seen from a set number of view points with a known narrative and subject. Once the scope of the field is known the concentration of the study may be on internal variations of expression. Miniatures were selected from between 1400 and 1580.

## VOCABULARIES AND DISCUSSIONS

In order to make valid comparisons and observations in this study three vocabularies will be developed through discussion. First the vocabulary of ways of perceiving and understanding meaning will be explored. This is a complex and often speculative vocabulary of the transformation of the visual and built environment into art through the process of representation. This vocabulary of perception will be drawn upon for its potential to bridge observation with comparison. The methods of analysis used in this study will also be developed in this discussion.

Secondly the vocabulary of the art of the miniature will be discussed through an analysis of form and its composition. Discussion of the elements of composition and their interrelationships will be developed in a hierarchy from simple to complex arrangements. Three methods of analysis were used to examine the miniatures. These methods consist of:

- 1) Visual analysis of line sketches that record structural and compositional divisions in a miniature. This is done in order to unpack the different organizational devices that serves to establish the initial character of the miniature that can be read independently of its content.
- 2) Visual analysis of groupings of shapes, outlines, and juxtapositioning that suggest three dimensional impressions; from them an attempt to interpret and extend the form into the third dimension.

3) Extension of the visual analysis of the third dimension into a model.

This extension attempts to follow certain conventions of its own with the aim of approximating the visual appearance of the original miniature from one specific viewpoint.

Thirdly the vocabulary of literature on the miniature will be discussed. Initially the discussion will focus on the subject matter of the miniatures, then the schools and styles will be discussed in order to understand the context and evolution. This type of evolution, based as it is on localized traditions, seems to echo specific characteristics in the architectural traditions as well. The emphasis on surface pattern, unity and articulation of planar surfaces that may be noted in such places as Isfahan in southern Iran are different from the juxtapositioning of forms and elements in a place such as Samarkand. The transformation of architecture into representation is influenced by the literary body of work which constitutes an essential medium by which culture is transmitted. The poetry and historical epics of such figures as Abu'l Qasim Hasan b. 'Ali of Tus known by his pen name Firdausi (935 -1005), Nasir-i-Khusrau(1003-1074), Ilyas b. Yusuf Nizami Gangevi (1141-1203), Jalal-ad-dine Rumi (1207-73), Musharrifu'd - Din bin Muslihu'd -Din 'Abdu'llah born in Shiraz known by his pen name as Sa'di (d.1291), Amir Khusraw Dehlevi(1265-1325), Shams al-Din Muhammad Hafiz (1326 -1390), Maulana Nuru'd Din Abdu'r Rahman Jami (1414-1492), and Ali Shir Navai (1441-1501), form the body of social intercourse, the well-spring of the literary subject matter of these miniatures. Finally the third discussion will conclude with a look at the literary sources and the intellectual thought that generates them.

Finally the fourth discussion will be of the vocabulary of the architecture. The vocabulary of the architecture that will be used in this paper has two sources, one researched and published, the documentation of morphologies, typologies, histories and surveys. The other is from primary personal observations made on site in Samarkand and Bukhara. Observations made on site have often revealed relationships, accretions of architectural form, qualities of character that are undocumented and that demand the addition of new terms. The discussion on architecture will first provide a brief survey of urban forms in Samarkand and Bukhara in order to provide a context for the buildings. Then qualities of form that will be compared to characteristics in miniatures will be discussed.

Experience has led to the belief that when research is undertaken the existing vocabulary may have to be expanded to describe new concepts that have not been previously perceived or tested. Care must be taken to avoid simply accepting the existing vocabularies, especially if they

have been created with specific perspectives and biases. The challenge is to be ready to employ ones critical facilities in proposing and drawing upon other points of view.

Thus, the approach to the interpretation of data is observation, followed by perception, then comparison. The study is highly interpretive and speculative, based as it is primarily on observation and interpretation where documentation serves only as the beginning of understanding. There is in no case a direct correlation between buildings which are represented in miniatures and existing architecture. Rather the correlation lies in types and groupings. This paper takes the form of discussions that start with a specific method of observation. The particular method in use is itself open to critical evaluation. Each method, or way of reading, necessarily incorporates a comparative discussion between art and architecture.

Part of the approach of this thesis is to explore linkages between perceptual relationships and conceptual models; conceptual ideas gain a presence and solidity of their own when modeled in three dimensional space. Ultimately this document is about space, perceiving it and expressing it within the miniature. It has been found through this investigation that there is a space that exists besides the one experienced in the field and the space that is an illusion of depth in the two dimensions of the paper. This space is the illusion of compacted three dimensional space that lies in two dimensions; it is the kind of space that is created by an accordian between compaction and expansion; it may also be said to exist in elements of scenery and properties designed and arranged for a particular scene in a play. The stage set distills the essence of objects in the environment, the clues that trigger the memory of a place, a character that sets the context for the play or scene.

The comparison between miniature and architecture will take place in the matrix analysis. The term matrix is used as a framework in which these different issues may be juxtaposed for comparison. It is an ordering device that helps to place a diversity of ideas side by side that would normally not be thought of together. The matrix itself is a visual juxtaposition. The organizational sketches created in the initial analysis are included in the framework. This matrix was created in conjunction with constructions that concretize some of the observations and that generate observations of their own. It was the creation of these constructions that led to the conviction that miniatures can indeed reveal something about conceptual methods in architecture.

## DISCUSSION 1      METHODS

This section will include a brief review of literature on a particular line of inquiry into methods of studying a work of visual art. While the following authors studied western types of artwork, their thoughts on visual perception and process of inquiry have been found to be applicable to this study by the discovery of common observations. As well, a review of this literature will help the emergence of definitions for several terms that are necessary to an understanding of the scope of the topic. Following this, four methods of analysis used in this study will be outlined.

This study of miniatures commenced with documentation of observations followed by a process of analysis. Arnheim's publication, *Art and Visual Perception* (1954), is important to this study for two reasons. Firstly a framework of visual terms and definitions are developed there within which many works of art can be analyzed. Secondly, this framework is then applied to a process of identifying interrelationships among the elements in a work of art and formulating structural patterns that help to explain their visual effects. Many of the effects that are identified in this study are also discussed in Arnheim's work as perceptual principles<sup>2</sup>. Examples of these include principles, such as of balance, that are created by apparent and hidden structure, dynamic visual patterns of direction, diagonal movement, and ambiguity; also of rules of groupings and organization by different categories such as size, shape, colour, location; orientation and directionality; and principles of creating depth by manipulation of form and space, whose perception begins with the subdivision of the surface, include variations in size, foreshortening, figure ground relationships, overlapping, oblique view, central perspective and tension. Arnheim differentiates shape from form by calling the former the spatial aspects of appearance and the latter the representation of objects by visual patterns that are the external form of some content in the work of art.

A further interesting point that Arnheim makes is that people, in the context of the milieu and culture that creates the work of art, consider it styleless:

"Actual illusions (of life) are, of course rare, but they are the extreme and most tangible manifestation of the fact that as a rule in a given cultural context the familiar style of pictorial representation is not perceived at all -- the image looks simply like a faithful reproduction of the object itself." "Pictorial representations that come from the

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<sup>2</sup>Arnheim, 1, p.ix

observers own cultural environment appear to him as "styleless -- that is, as done in the only natural and correct way."<sup>3</sup>

It appears that the visual record is influenced by both the culture and by the internal perception of what the right way is. The aim of gaining a more multidimensional approach to the study leads to the necessity of considering the inclusion of both stylistic and cultural methods of analysis. The effects of intentional biases on the work of art are explored in Gombrich's work *Art and Illusion*(1956). Gombrich believes that pictorial representation emerges from culturally conditioned perception. Culture lays emphasis on the creative achievement, the objects and ideas which are brought into being and transmitted from one generation to another by the acts of men in society.<sup>4</sup>

"The experience of art is not exempt from this general rule (that it is the relationship between the expected and the experienced that counts). Style, like a culture or climate of opinion, sets up a horizon of expectation, a mental set, which registers deviations and modifications with exaggerated sensitivity."<sup>5</sup>

The perceptions and experiences of the environment are distilled into conventions and the role of types and stereotypes are based on the power of traditions. Style is the way and manner an individual or group has of expressing itself which is unique to their group and period. As noted by Ackerman in *A theory of style*(1967) to identify style is to identify established schemes or formulas of expression. Gombrich believes that the artistic language is based on a developed system of schemata and correction:

"All art originates in the human mind, in our reactions to the world rather than the visible world itself, and it is precisely because all art is conceptual that all representations are recognizable by their style." "What matters to us is that the correct portrait, like the careful map is an end product in a long road through schema and correction."<sup>6</sup>

Thus the models and styles in the work should be studied to understand the mind that created them. Style may be investigated by looking at the culture that produced that method. Now it is apparent that in addition to the visual analysis it is necessary to pursue a stylistic and cultural analysis. Panofsky in *Meaning in the Visual Arts* (1955) searches for reasons why these are important. Two aspects of Panofsky are of interest. The first is the understanding that the analysis of a work of art can be termed the analysis of an aesthetic experience. An object is experienced aesthetically when one looks at it without relating it, intellectually or emotionally, to

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<sup>3</sup>Arnheim, 1, p. 92, 94

<sup>4</sup>Encyclopaedia Britannica(1964), Social Anthropology

<sup>5</sup>Gombrich, p.60

<sup>6</sup>Ibid, p.87, 90

experienced aesthetically when one looks at it without relating it, intellectually or emotionally, to anything outside itself. He then goes on to argue that this content includes more than pure form.

(content)..the basic attitude of a nation, a period, a class, a religious or philosophical persuasion-all this unconsciously qualified by one personality and condensed into one work<sup>7</sup>

The second aspect of the argument is that for its proper appreciation this aesthetic experience can be re-created in conjunction with a rational archaeological investigation. This re-creation includes an appreciation of form, subject matter, and content:

"Anyone confronted with a work of art, whether aesthetically re-creating or rationally investigating it, is affected by its three constituents: materialized form, idea [subject matter] and content.<sup>8</sup>

Herein Panofsky is defining a multidimensional approach to the inquiry into artwork that seeks to generate an internal construction of the generative influences and meanings that is checked by archaeological research. The process of discovering meaning in the work of art also has a complex definition that includes three strata: The first is of primary or natural subject matter which is subdivided into factual, the identification of the objects represented in pure forms and motifs, and into expressional qualities of forms that carry emotion or attempt to create an atmosphere. Next is of secondary or conventional subject matter, of symbols, icons, themes, types and images. The third possible understanding is of Intrinsic meaning or content that can be identified by exploring the principles and attitudes of the culture whose expression is being studied.<sup>9</sup>

Ackerman contributes one more point to the methodology of this study. He prefers a generative contextual approach that establishes an open system where each discovery is appreciated according to its own merits, as opposed to a closed system of evolutionary, determinist theories of style.

"These observations suggest a different approach to defining the process of change in style. What is called 'evolution' in the arts should not be described as a succession of steps towards a solution to a given problem, but as a succession of steps away from one or more original statements of a problem...(the artist) cannot consciously make a

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<sup>7</sup>Panofsky, 2 p.14

<sup>8</sup>Ibid, p.16

<sup>9</sup>Ibid, p.28-31



transition to a succeeding step, for if he visualizes something he regards as preferable to what he is doing, he presumably will proceed to do it."<sup>10</sup>

In a study of the relationship between reality and representation, *Picturing and Representation* (1986), Wartofsky believes that representation may provide a translation of a perceived environment by way of achieving the likeness or common properties that are reflected in the object represented.

"Therefore, the representation comes to represent by virtue of bringing about the same physiological response or visual experience as the thing or scene represented, though it does so by means that are dissimilar."<sup>11</sup>

While the language of the environment is translated into the language of art, if the aim is to create the same impression then the scene may be read as if through a screen of intentions. Using this argument it follows logically that elements of the original may be deciphered from the representation.

This discussion has been an exploration of the terms used in, the approach taken, and the method applied to the study pursued herein. By juxtaposition the nuances of the differing meanings of the words perceptual experience, visual analysis, form, style, content, aesthetic experience, and culture, have been introduced. The approach that follows is of an internal construction of interrelationships through comparison among issues. First the vocabularies are developed through discussion. Each discussion has a certain methodology which creates a framework for analysis. In a representational form of art style becomes the window through which we may make the observations that link us to their perceptions, qualities and values.

The method applied is to investigate three distinct influences on experience and meaning. Firstly the visual experience of the formal structure of the miniature will be analyzed. The list of miniatures that were included in this study are outlined in Appendix A. This includes a range of 76 miniatures that have been identified to be from manuscripts of the schools of Shiraz, Tabriz, Herat, Bukhara, and Samarkand, all within the time frame of our consideration. We have found that the expression of character varies between different schools and cities, therefore actually making it possible, if not to identify buildings, at least to identify forms and generic types of local characteristics in buildings.

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<sup>10</sup>Ackerman, 1 p.59

<sup>11</sup>Wartofsky, 1 p.313

In the next section, cultural influences are explored through an examination of literary analysis. There follows a study of the characteristics of buildings. Finally, using the technique of matrix and a model analysis observations made about miniatures are compared to those made about architectural forms. The aims of the study are two fold. First, to demonstrate that architectural characteristics can be identified through the study of an important record such as that of the miniatures and secondly to compare these characteristics to those in the built form to establish similar "mind-sets" that can be articulated in terms of architectural principles.

## DISCUSSION II : FORM & SPACE IN MINIATURES

This section will consist of a catalogue of many of the observations made about the miniatures included in this study. Further interpretations that have been made based on the miniatures will be discussed in the separate section on Matrix and Model analysis (V).

The discussion of form which follows will deal with two aspects of analysis, that of analysis of composition and subject matter and that of visual structural organization. These will be discussed in a hierarchical process moving from simple to complex descriptions. Three hierarchical levels have been identified, those of ELEMENTS, ARRANGEMENT OF ELEMENTS, where combinations create a generation of qualities not intrinsic to the surface of the paper, but intrinsic to that which is represented, and ILLUSIONS AND IMPRESSIONS OF FORM, which are created by the use of structural organizing principles.

### ELEMENTS

The elements in those miniatures which were chosen for in depth analysis, from the set of miniatures under discussion (refer to Appendix A) include the following:

- 1 TAHMINA COMES TO RUSTAM'S CHAMBER: Shahname of Firdausi (Book of Kings) Herat 1434-40
- 2 THE SEDUCTION OF YUSUF: Bustan of Sa'di (Garden) by Behzad in Herat 1488
- 3 SCENES IN A MOSQUE: Bustan of Sa'di (possibly Behzad) Herat 1488 - 89
- 4 NIGHT TIME IN A PALACE: Khamsa of Nizami (pentagram) Safavid Tabriz 1539-43
- 5 WHY IS THAT SUFI IN THE HAMMAM: Haft Awrang of Jami (Silsilatal-Dhahab/the chain of gold) Herat 1556 -1565

These five and eleven others which were evaluated for formal composition were prepared for presentation in the study and are included as part of this discussion.

The elements identified in these miniatures consist of the following . (i) interrelationships of vertical and horizontal divisions in the paper, (ii) division of the frame into half, thirds, quarters; there are also other configurations which may be odd types. (iii) shapes, (iv) outlines, (v) planes,

(vi) patterns, (vii) panels, (viii) ornamentation, (ix) geometry, (x) colour. (xi) conventions of representing typical types of objects, such as arches, doors, windows, walls, floors, interior vs. exterior, steps, stairs, domes, lanterns, raised oculars. (xii) iconographic figures identified by their social role or profession, such as shah, ruler, prince, servant, beggar, craftsman, carpenter, tailor, blacksmith, iron monger, builder, gardener, hero, heroine, beautiful woman<sup>12</sup>, literary figure, the typical black man, imam, dervish, musician, wiseman, street vendor, the flag bearer, old woman, or student. (xiii) The latter are shown in typical acts such as mourning, bathing, teaching, sleeping, holding audience, drinking, praying, hunting, conversing, making love, fighting. (xiv) They are in typical settings which are associated with types of buildings or natural backgrounds such as gardens, hills, wilderness, pavilions in gardens, houses, castles, palaces, rooms in palaces, often sleeping quarters, throne room or reception room, graveyards, hammams, madrasas and masjids.

The hammam has at least three recognizable components such as entrance, changing room and bath area. Madrasas and masjids are identified by at least two forms: the iwan form, also identifiable as the portal form, a frontally centered room with an arch over the entrance; and the porch form, fronted by columns (Fig.1), arched or otherwise, presented with or without both exterior and interior view, with an entrance, a door or a gate often shown at an angle

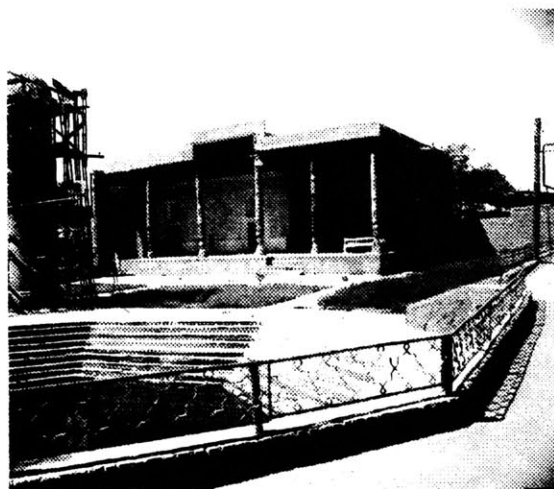


Fig. 1a. Kos Khavuz masjid, Samarkand, facing west  
 Fig. 1b. Detail of east wall showing exterior mihrab. This is comparable to A6 (illustrated) madrasa, or A51, a masjid.

<sup>12</sup>The archetype of a beautiful woman is described in literature and represented by a woman with a moon face.

The presence of a mihrab (Fig 1) or of figures that are holding books, writing instruments, as in numerous instances of Madjnun and Lailai in school: A6, A8, A53, or of figures that appear to be in prayer as in SCENES IN A MOSQUE (A52), differentiate the building type from that of palace, or pavilion. Palace or house types also take on at least two forms: that of the iwan (A25), and that of an enclosed mass seen from the outside and often shown with one angled side (A44) or a combination, (A68, A72).

The entrance form is common to many miniatures and has a great range of expression. Within the form of entrance there are many components. There is the component of door, door in wall, door within arch, door within gate, door as gate, door with two panels, one panel open and one closed, one panel partially open, or fully closed. There is the object in the door, a girl, a servant, a tree, the hero or heroine of the story, a boy, a beggar, an old woman petitioning, or sometimes the doorway is empty. There are a number of ways of representing doors: frontal door, oblique door, oblique door in frontal arch (there seems to be no contradiction), doors in a sequence, doors in a sequence that indicate different events in a sequence of time, a narrative, a passage of time, doors that have thresholds, doors without, doors that have steps. Sometimes there is pattern on the door, pattern that follows the direction of the door, that is oblique or frontal. There is the component of inscription over the door which is legible and often has very pointed meanings. There is the component of a dome which is over the wall in which the door rests. Many of these representations may have meanings in the narrative, such as the threshold which is passed over, not passed over, representing open minded, closed minded, a station in life. As well as being a place for sitting, praying, or sleeping, the iwan form also has connotations of entrance, especially when there are doors placed in the background. This may be an expression of its multipurpose use, easily appropriated to many functions, or it may possibly be used to express implicit contradictions between transition and rest.

A comparative discussion of one pair of doorways in miniature and architecture reveals several similarities of form (Fig. 2) This is a comparison between forms in a miniature such as (Fig. 2a.) Khusraw and Shirin (c. 1530) and the entrance portal of (Fig. 2b.) Imam Kaffal-Shashi Mausoleum (1541-1542) in Tahkent. As seen in the diagram (Fig. 2c.) there is a common representation of doorway within an arch. As well, a window over the door disappears into the shadow of the iwan. The door is framed by a band of ornament in the palace or calligraphy in the mausoleum which may differentiate between functions. The inscription over the door to the mausoleum is from Sura 3/96:

"The first shrine that was made for people is the one in Bakka (Mecca); it is blessed and in it there is guidance for people"

This inscription may help to promote the mausoleum as a Shrine.

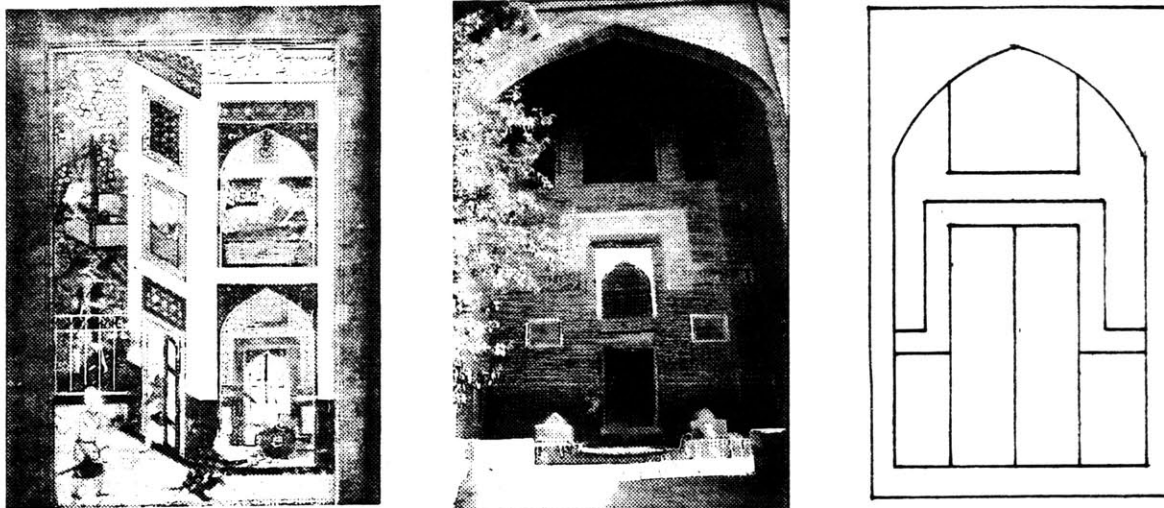


Fig. 2a. KHUSRA AND SHIRIN (1530)  
 Fig. 2b. Imam Kaffal - Shashi Mausoleum (1541-1542)  
 Fig. 2c. elements that are common to both

Note: KHUSRAW AND SHIRIN from Nizami's Khamsa, 1530. From Soucek, P: Sultan Mohammad Tabrizi: Painter at the Safavid Court, in MARG Vol. XLI No.3 Painters of Persia and their Art June 1988 (printed March 1990)

Inscriptions over doorways often make reference to some function or form of the door. The quote, "O opener of doors (gates)" is present in miniatures of both religious and secular themes, as is the inscription "Your nest is on the arch of my eye's gaze"

Other typical forms include groupings of buildings to represent an urban complex including a recognizable building type with interior and exterior all enclosed by a wall. This ranges from the palace pavilion with an interior courtyard (A12) through the house in a garden (A72). More complex variations on this include ensembles where at least two separately recognizable building types are enclosed by a wall. These range from a simple masjid madrasa combination where the one is shown used for prayer and the other for teaching such as in SCENES IN A MOSQUE (A52), through a number of buildings forming part of a palace complex including pavilion, kitchen, vendors stalls, house and masjid such as in NIGHT TIME IN A PALACE (A76), to a castle complex identified by a high stone wall and turrets as in ARJASP SLAIN BY

ISFANDIYAR IN THE BRAZEN HOLD (A43). Other elements such as the window can also be put to similar dynamic use.

There is another common recognizable form here in the wall, which creates a separate enclosure from that of the picture frame and is used in an interior vs exterior identification. Such identification is aided by showing differing types of materials<sup>13</sup>. Identifiable materials range from wood, dressed and rough, to earth and mud walls, baked and unbaked brick, wall tile, floor tile, glazed and unglazed mosaic, metal screens and gates, cloth for hanging, for towels, for clothes, bed spreads, and carpets.

#### ARRANGEMENT OF ELEMENTS

Compositional devices that were revealed in TAHMINA COMES TO RUSTAM'S CHAMBER (A42) include division of the paper into thirds vertically and quarters horizontally, without strictly equal dimensions; and interpositioning of plan and elevation elements, which can be compressed into a plan and a fully frontal elevational view without the partial diagonal viewpoint. Compositional devices that were revealed in NIGHT TIME IN A PALACE (A76) include similar divisions of the paper. Diagonal divisions within the quadrants are sometimes implied by stepping back and forth and also by sometimes escaping the orthogonal to use diagonal lines that represent fence. These divisions are structural and organize how the objects are grouped. Figure groupings occur in circular, spiral or diagonal order. Another compositional device that can be identified is in the use of material representation. The conventions of material representation seem to be prevalent across a number of miniatures. Conventions include differentiations between vertical and horizontal surfaces. Where few figures occur in a miniature, as in THE SEDUCTION OF YUSUF, to help us differentiate between vertical and horizontal surfaces, the material references clarify the forms to the extent of defining what is narrow and long wall tile vs floor tile which occurs in larger and more polygonal units. Even the use of pattern will serve to define wall, which is given a pattern whereas the floor, is not. In this miniature, love is connoted by a labyrinthine maze and not necessarily denoted by the figures which are used only to recall the story to mind. This is an integration of concept to impart allegorical meaning.

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<sup>13</sup>Many of the materials were identified in NIGHTTIME IN A PALACE (A50)

The forms which are used to illustrate leisure, prayer or teaching are otherwise often similar forms, differentiated only by the actions of the figures. These forms can be recognized just by the presence of the elements in the picture. Having identified their presence in the picture one can analyze the methods of arrangement which produce other levels of identification and create a scene. These methods include overlapping or layering, juxtaposition, nesting, interlocking, symmetry on a central axis, organization composed with reference to one border of the illustration, or around one focal point in the paper which attracts the eye, balance, rhythm, axial organization, geometry and proportion. Typical arrangements include the creation of a foreground and a background by leaving a strip at the bottom of the picture separated by a vertical division, either narrow, which is equated with raised floor or platform, or broad, which equals gate or wall, and another floor plane which indicates either interior or court. The interior is often broken into three parts: the ground in front of the house, pavilion, masjid etc., the picture of the floor plane, and the walls: one back with a window opening, and two side walls, placed obliquely.<sup>14</sup> (Fig. 3) If this occurs once then the interior floor is followed by a strip of wall with sidewalls and a window and is topped by an arch, which denotes an enclosure.

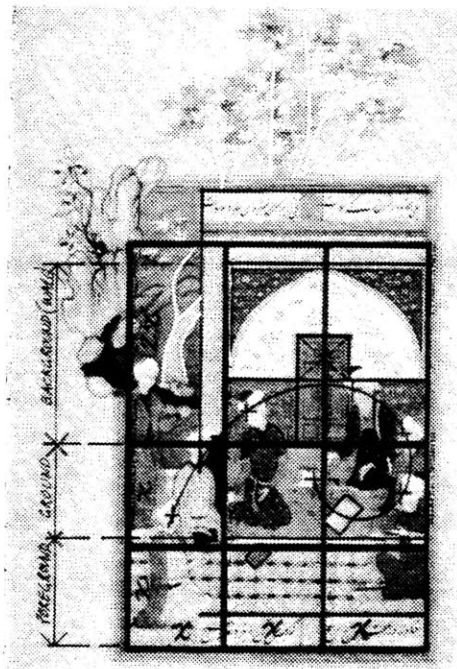


Fig. 3 A DERVISH, A JUDGE AND A SCIENTIST TALKING (A15) showing the division into foreground, ground (floor) and background(wall)

<sup>14</sup>Ashrafi, p.20



This sequence of floor, wall, arch may be repeated a number of times by nesting one within another, or by layering in strips from bottom to top (A26, A32). Strips are identified as horizontal by the placement of figures. The use of a broader or a narrower horizontal strip may identify a viewpoint which is higher or lower. In the picture the artist may simply need more floor area in that particular division. Often, the depth of the floor strip is not homogeneous in the same picture among different rooms. This method of placing strips one above the other from bottom upwards is often used as a technique of base layers on which to create other impressions. These other impressions may include those of movement and depth. Movement may be generated by placing figures in a manner that causes the eye to follow a defined path in the picture. These placements include linear, diagonal, circular or spiral arrangements, often with directionality from one side of the picture to the other. If figures, or objects, which can simply be identified by the lines which form their edges, are placed closer together, the eye is drawn from the denser area of action towards the less dense, or the other way around.

Some miniatures seem to have a centre of symmetry which is curiously only slightly off the center of the page, making one side slightly wider than the other. This often occurs so that the weight moves from right to left. It is tempting to identify this displacement or off centering from one side to the other as an intentional effect especially in that it might provide insight into an art created by those who read from right to left but it may be caused by something as simple as the process of publishing and binding. To decide this issue would need both primary study of originals and more consistent observation and analysis. This displacement is sometimes done deliberately as in A37 or A52.

Depth is created by a variety of methods, which range from the very two-dimensional juxtapositioning of planes without the interpositioning of figures, the suggestion of hidden lines using only the method of foreground-and-background created by suggestion of a typical type of place, the similar suggestion of interior-and-exterior by context or materials, and by the telescoping that may develop when objects are nested within one another. In addition there is the possible use of event horizons. An event horizon is a line in the miniature which forms a back to the scene and prevents the development of vistas or perspective space behind it. The interposition of figures and hidden lines which suggest a space or an event horizon creates the impression of levels of objects occurring one behind or one in front of the other. Overlapping and material differentiation are techniques used to suggest planes of space.

Appreciating this variety of methods leads to an understanding of the interdependence of devices used to create the picture. If the architectural form is considered separately from the

figures that populate it, it may lose several characteristics such as space, overlays of depth, movement, and even the concept of function.

The simple displacement of planes may be used to create foreground and background. This involves a mixture of vertical and horizontal strips that create distinct elements, such as a wall or a wall with a door or window which is then identified as a plane when it has its own border. Then the planes may be displaced downwards or upwards with respect to each other to suggest that one plane forms the back of the room and another the front (A25). This creates a cubic volume without having to use any intermediary devices such as figures or hidden lines. Herein we may consider alternative ways of describing what we see in a miniature: plan, elevation, orthographic projection. Planes may simply be juxtaposed one against another in a play of colour or pattern.

The transition from foreground to background may also be bridged by angled walls. Where both the top and the bottom are angled the wall is fully apparent and whether the angles are parallel or are a different expression of a higher or lower viewpoint may be investigated. Where the bottom is angled the top may disappear behind the picture plane or may coincide with it. The angled wall helps to imply an enclosed space by creating a tension between the planes it joins. The junction creates a continuity that demands to be resolved rationally.

Often the picture frame is itself employed as a plane in the composition. When elements are juxtaposed against the frame by overlapping it, the frame becomes another layer that can be explored for its own intrinsic qualities. Angled walls may be considered in combination with both the tilting of floor plane and the overlapping of some form over or in front of the picture plane at the top or the side. With this juxtapositioning we may get the impression that the bottom is further in and the top is further out of the picture plane. This implies that, while the picture plane may appear as an homogeneous and amorphous void which encloses the scene of action, it may be conceived of as a tool itself -as part of the construction of a rationally ordered space without leaps of logic. This type of manipulation thus recognizes the planar qualities of the surface of the paper itself.

By all these ways of manipulating foreground and background the impression of perspective may be created. Two definitions of perspective may be useful for this study. The first is the definition of a visual scene or field that gives a distinctive impression of distance or depth, the appearance to the eye of objects in respect to their relative distance and positions. This impression of distance may be created by many methods including size, scale, foreground -

background, foreshortening and converging lines. Arnheim discusses methods by which depth and thereby space is created. He discusses each on its own merits where the use of one does not imply another. These methods are the definition of figure - ground, patterns, multiple depth levels, frames and windows, overlapping, distortion or oblique view, three dimensionality and forms of linear perspective.<sup>15</sup>

These impressions may be discussed independently of the second definition which is that of linear perspective, the technique of representing on a plane or curved surface the spatial relation of objects as they might appear to the eye. This is a theory of construction of a space wherein from one point the object looks as if it were real. The second definition is the product of the Renaissance and can be discussed for its merits as a scientific and realistic method of representation. Panofsky has commented however that perspective too is a method of representation and involves an extremely bold abstraction from reality when it limits the eye from motion or projects on a plane surface rather than a curved one.<sup>16</sup>

Wartofsky goes on to refute the concept of linear perspective as a "correct" mode of representation:

"there is no criterion of veridicality that is not itself a product of the social and historical choices of norms of visual representation"<sup>17</sup>

Gombrich explores the perceptual aspects of perspective. He supports the veracity of linear perspective and the illusion of reality that it creates with its basic principles of converging lines and stationary eye.<sup>18</sup> He goes on to show that this scene may actually have many possible configurations but that the observer is prepared for what he sees by his expectations.

As suggested in the METHOD discussion(1), the view taken in this study is that the search of an artistic generation is towards the best expression of the qualities of their immediate environment and the perceptual impact that they wish to convey at a given period of time. This is in lieu of a goal of an unknown form of representation that may be more expressive of certain qualities that may emerge or were preferred at a later date. It must be accepted that they would consider their

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<sup>15</sup>Arnheim, Chapter V

<sup>16</sup>Panofsky, p.2

<sup>17</sup>Wartofsky, p.307

<sup>18</sup>Gombrich, p.250-257 "perspective aims at a correct equation.(image to appear like the object).... and does not claim to show how things appear to us"

means of representation at the time as the best and most realistic. Experiments that change the future development of art are possibilities and potentials, not implicit destinations.

## ILLUSIONS AND IMPRESSIONS OF FORM

The processes through which two dimensional elements may be combined to create the three dimensional effects of space, motion and depth, are identified above. These effects may be classified as illusionary. Illusion forms the third level of identification of the product. But this level also introduces new measures of complexity. These representations or observations of objects are manipulated to generate alternative perceptions. The qualities of illusion, ambiguity, and compacted space that may emerge from the surface lie in this level of product. The miniature may be considered a complete product that achieves a purpose in representation at any or all of the three hierarchies discussed thus far.

One kind of illusion is that produced by ambiguity. Planes may be manipulated to such an extent as to indicate either complete flatness and patterned texture or a fully articulated space with built elements and a suggestion of depth. As both illusions are legible, the reading of the picture depends on the viewer. The manipulation of planes may also create a tension between foreground and background, leaving the viewer to determine which is dominant. Both may carry equal weight and any unresolved points where they meet act as a dynamic focus for the eye around which the ambiguity is fixed and rotates as if it were another element for manipulation.

The properties of compacted space include, as well as the illusions of depth, layers and form, a rational construction without breaks of continuity between planes, which allows the possibility of unpacking it and creating a three-dimensional model of a two-dimensional representation. This model then becomes a representation of shallow space. This is further elaborated in a following discussion(V).

In developing an understanding of the structure of form in the miniature the point has been reached where the scene takes on or can be attributed characteristics that are greater than the sum of the measurable and divisible elements from which they are perceived. The synthesis of these elements produces impressions of and literal similarities to three dimensional images, the experience of which may be manipulated to explore the extent to which these illusions coincide with concepts of qualities of form that are perceived in reality.

## ANALYSIS OF MINIATURES

The following sixteen miniatures have been briefly analyzed on the basis of composition, geometry and meaning. Following are comments on a few that are not included elsewhere:

### Fig. 6 SCENES IN A MOSQUE (A52)

Lentz and Lowry refer to this painting as "OLD MAN REFUSED ADMITTANCE INTO A MOSQUE" The reference "hypocrite" that is found in inscription (i), may not be a refusal of admittance but rather a criticism of the man at the entrance leaving the mosque on a pretext. The interesting compositional device is in the diagonal bridge formed by the minbar which joins the beginning of the text (i) in the background with the entrance to the enclosure in the foreground which is shifted to the right.

### Fig. 11 IN SCHOOL (A10)

While the title of this miniature appears to be "IN SCHOOL" the inscriptions and figures reveal a duality of purpose. The man on the roof beside the inscription "allah u akbar" appears to be calling to prayer. The left third of the picture appears to be a mihrab surrounded by praises of God. The phrase "O opener of doors", over the wall of the mihrab is contrasted by the apparently open window in the background of the iwan surrounded by the names of God "The Hidden" and "The Manifest (obvious)". The occurrence of the name "Ali" identifies Shi'ite religious content in this miniature.

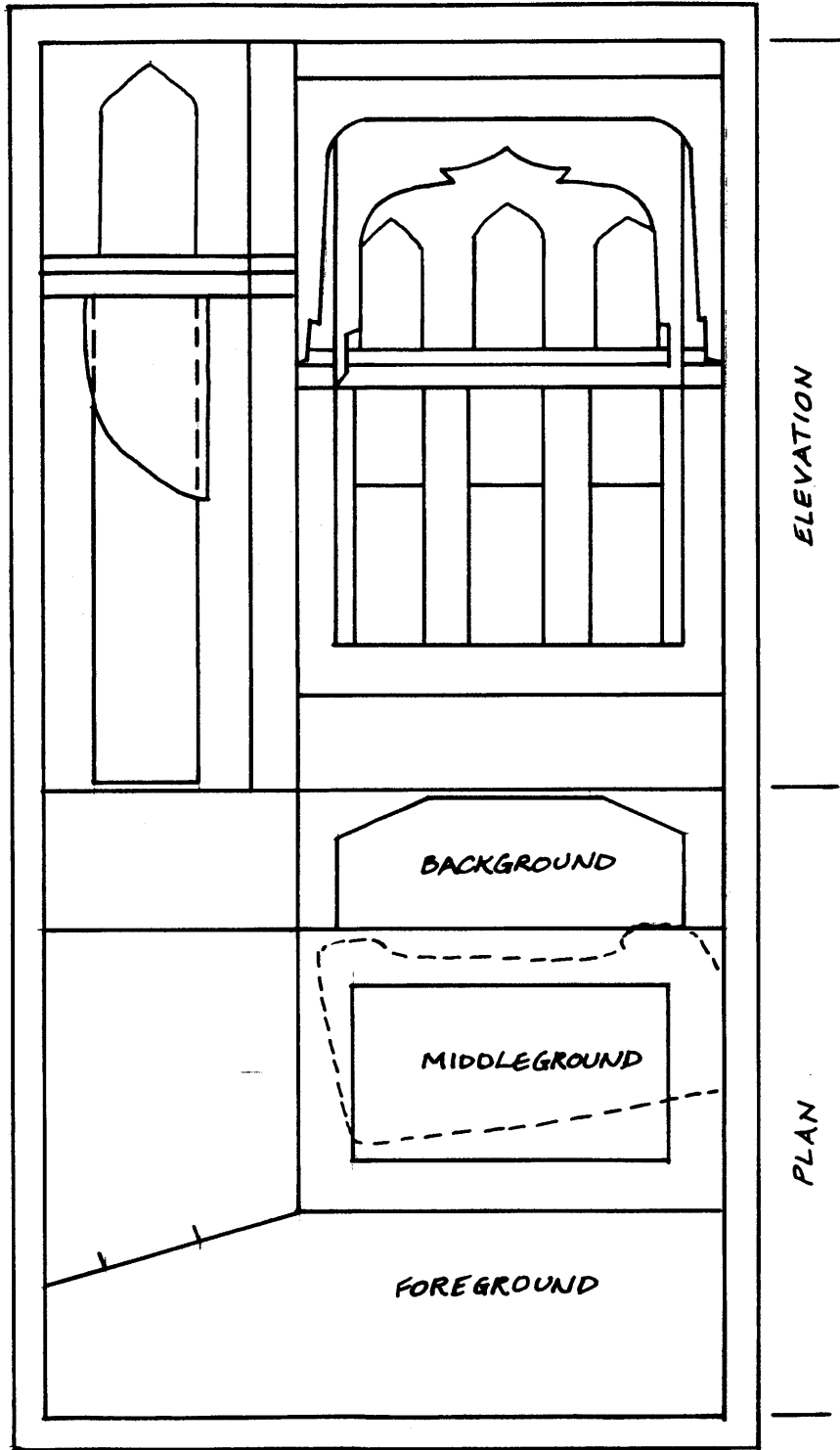
From both these miniatures (A52 and A10) it may be seen that the inscriptions help define the architecture in many ways: the visual composition, types and elements, and intrinsic meaning.

### Fig 12 SHAH'S TALK WITH A DERVISH (A11)

The figure is standing in a full height archway with one door panel in it. However the bottom of a second arch nested within it is blocked off and appears like a window. Spatial field between three separate objects is created by juxtaposition of diverging and converging lines.

### Figure 17 BAHRAM IN SANDAL PALACE (A25)

The curves represent figure groupings. The dashed lines represent the displacement of planes that forms a directional field between foreground and background.



ELEVATION

PLAN

BACKGROUND

MIDDLEGROUND

FOREGROUND

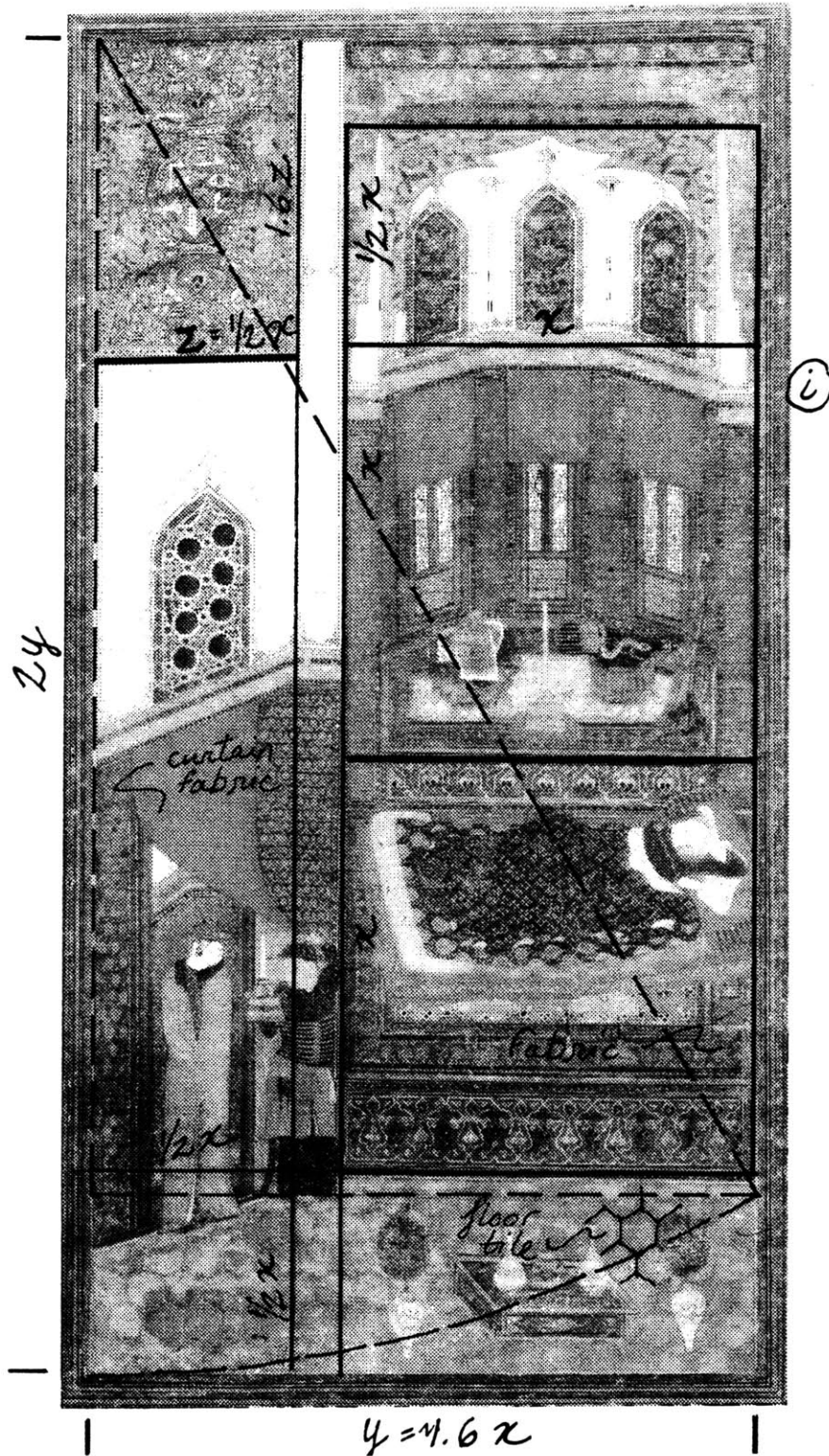


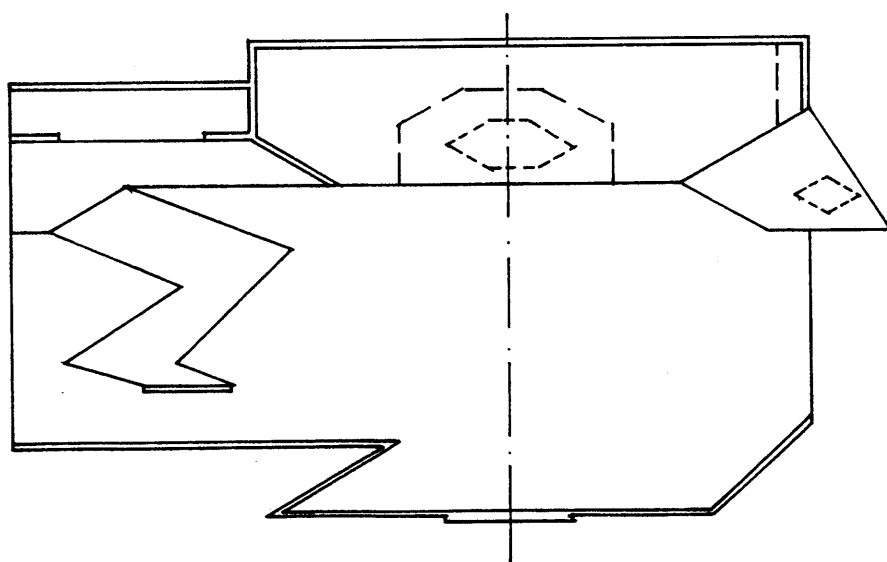
Fig. 4a.  
Fig. 4b.

Overlay - Juxtaposition of plan and elevation in Miniature  
TAHMINA ENTERS RUSTAM'S CHAMBER (A42)  
i) *al-mulk li'llah* (dominion is God's)



Fig. 4c. Sketch of Miniature (A42)





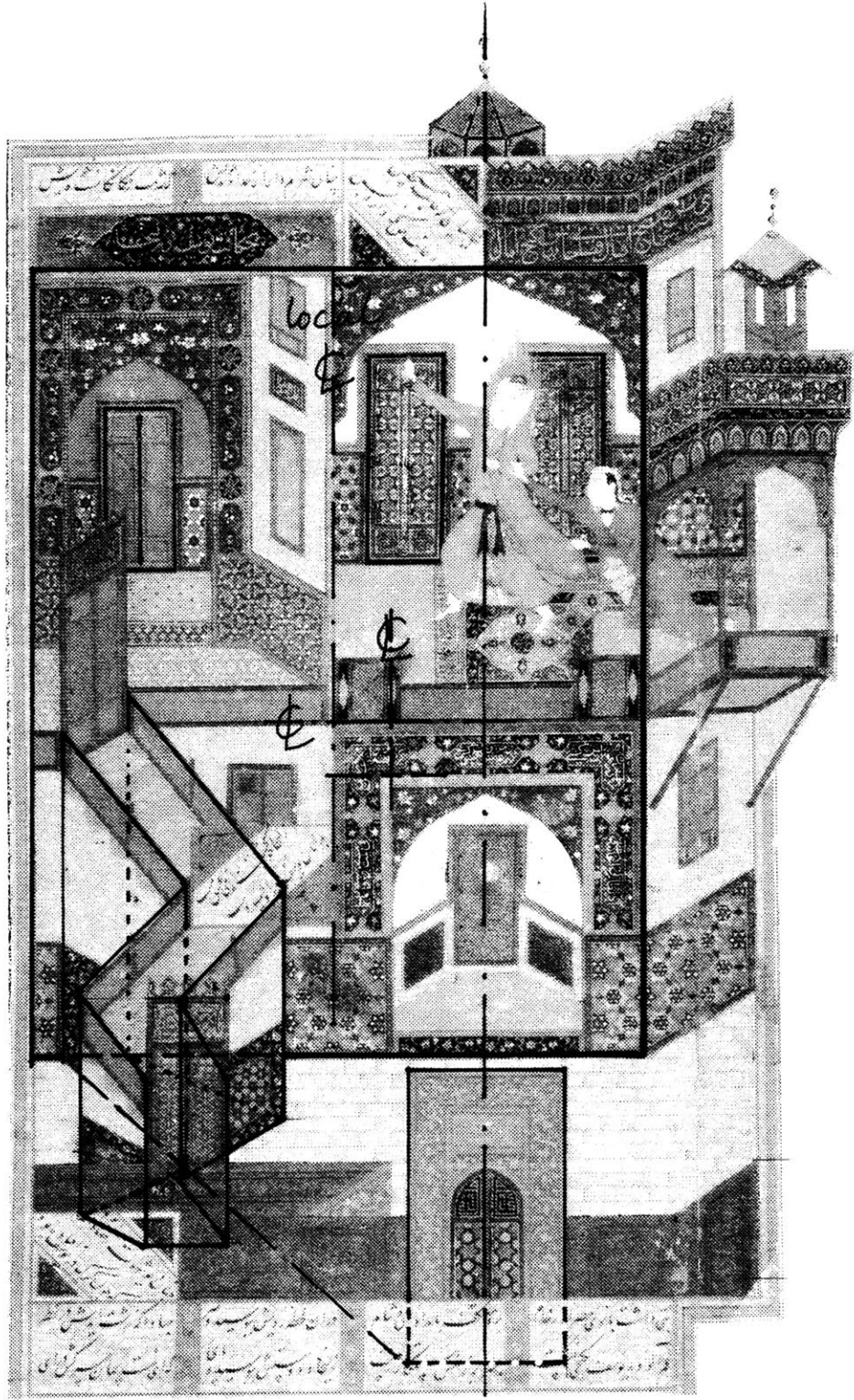
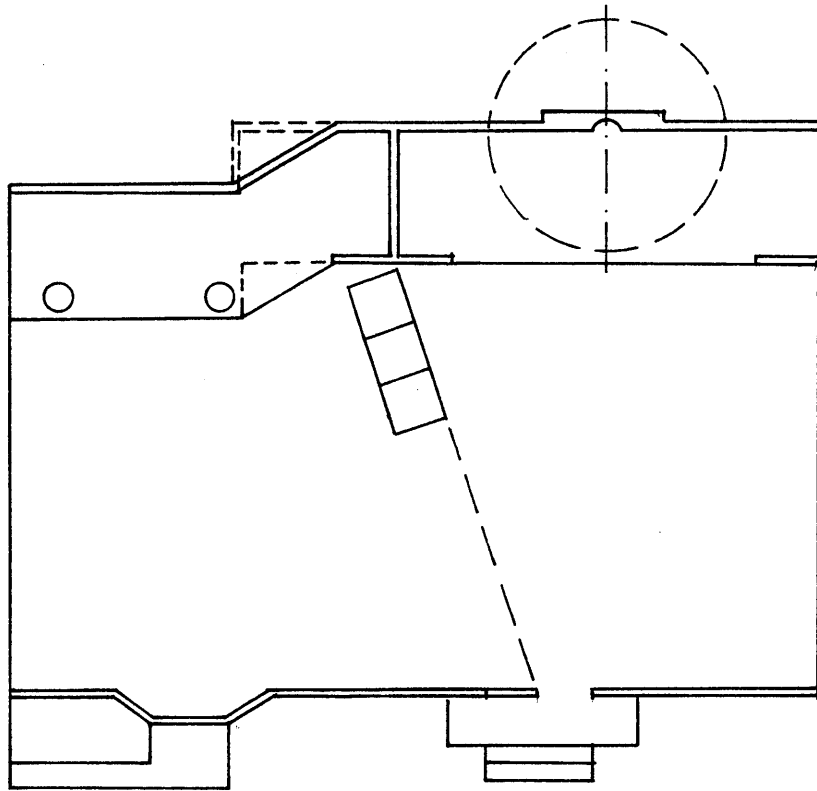


Fig. 5a.  
Fig. 5b.

Overlay - Possible plan of A50  
THE SEDUCTION OF YUSUF (A50)



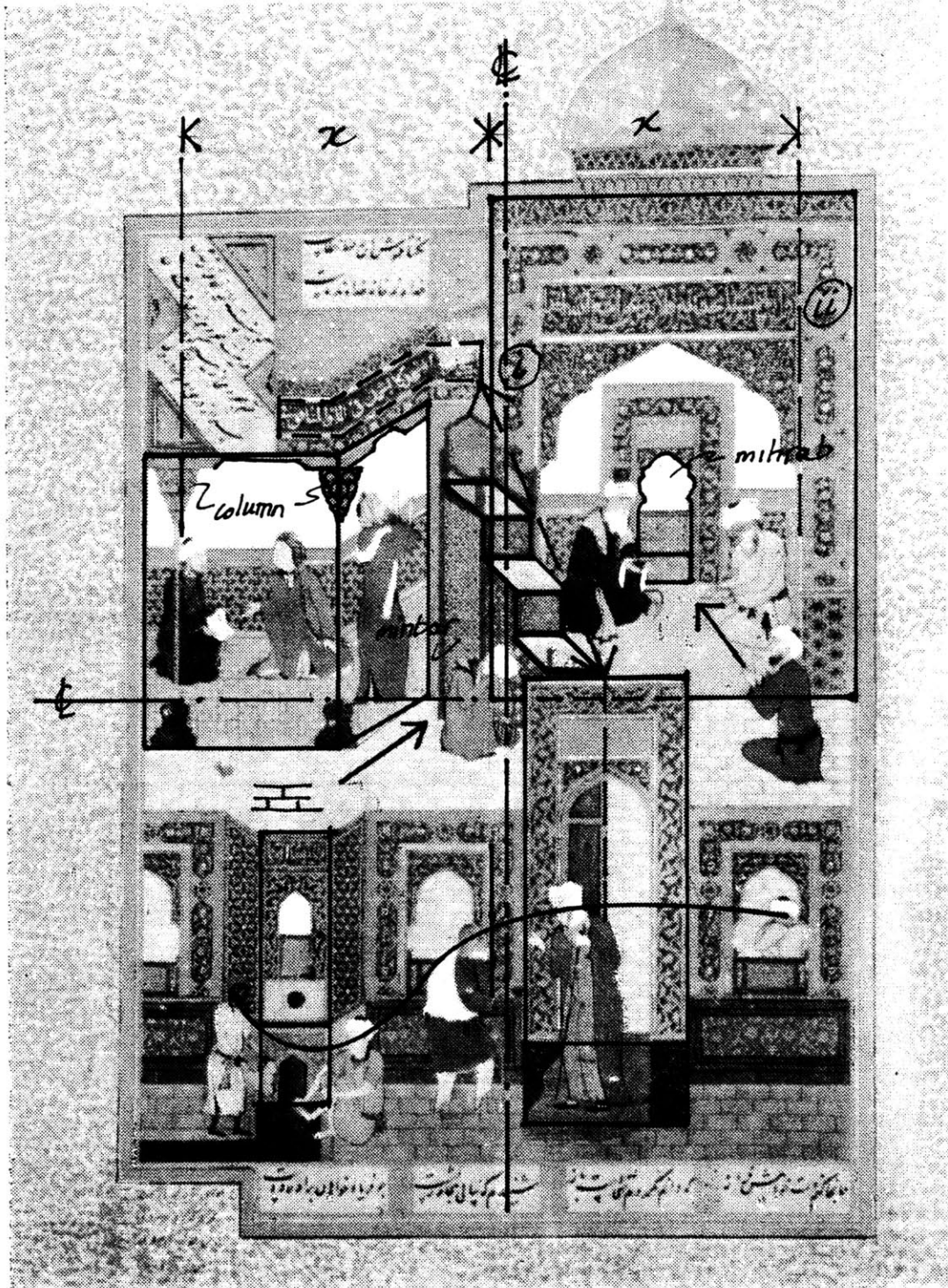
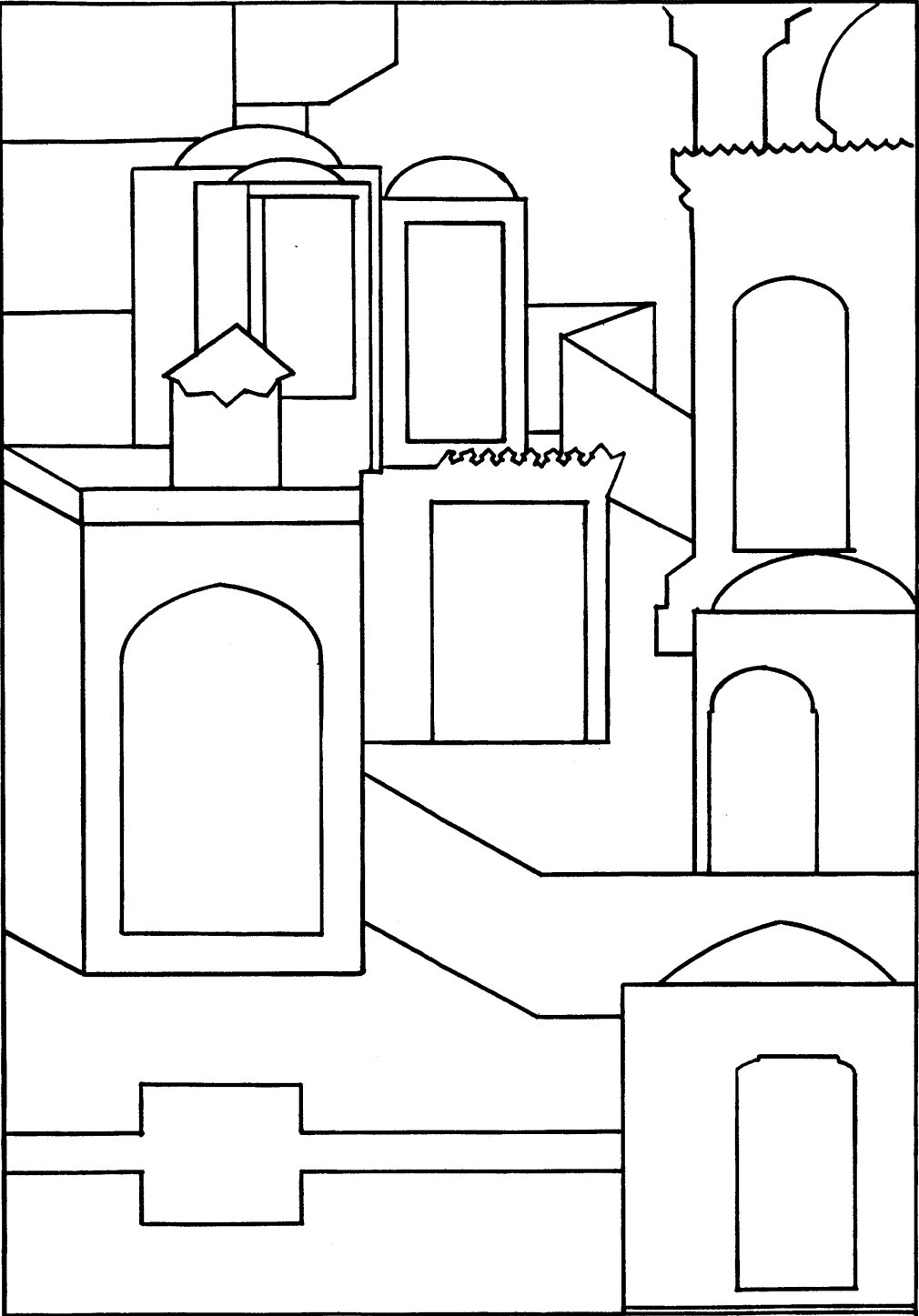


Fig. 6a.  
Fig. 6b.

Overlay - Possible plan of A52  
SCENES IN A MOSQUE (A52)

Men are shown in different stages of prayer, performing ablutions, starting prayer, in prayer, ending prayer. The imam is giving a lecture and students are in discussion with a page of grammar between them that reads 'zayid daraba amri' (zayid hit amri).

- i) (the faithful in a) mosque as fish in water and the hypocrite in...
- ii) Sura 72/18 Mosques are for God. Do not pray for any other than God.





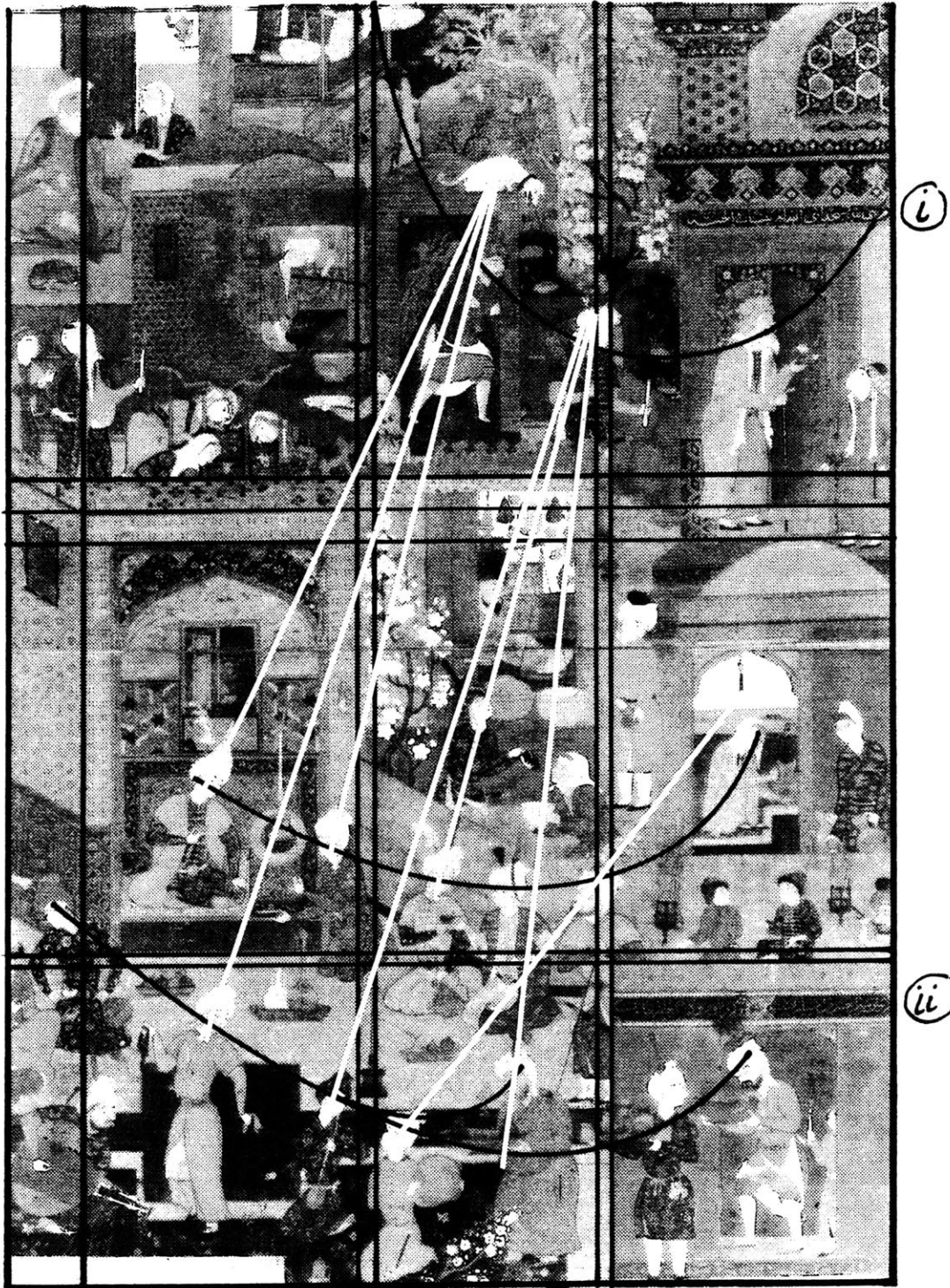


Fig. 7a.  
Fig. 7b

Overlay - Form groupings  
NIGHTTIME IN A PALACE (A76)

i) God will build a dwelling in Paradise for anyone who builds a Mosque for God. (hadith) ii) You r nest is on the arch of my eye's gaze. Be kind enough to come down for my house is yours.

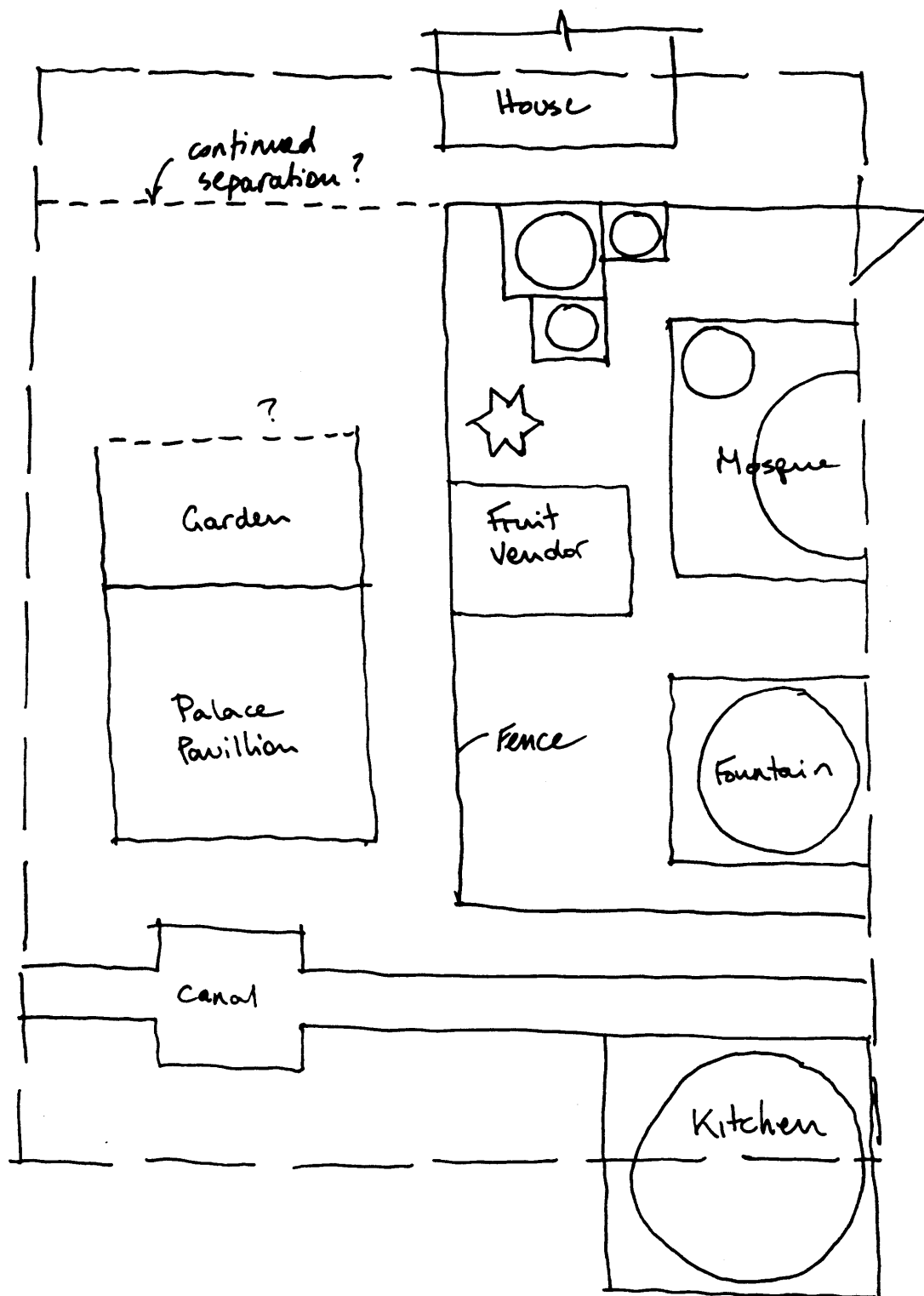


Fig. 7c. Possible plan of A76

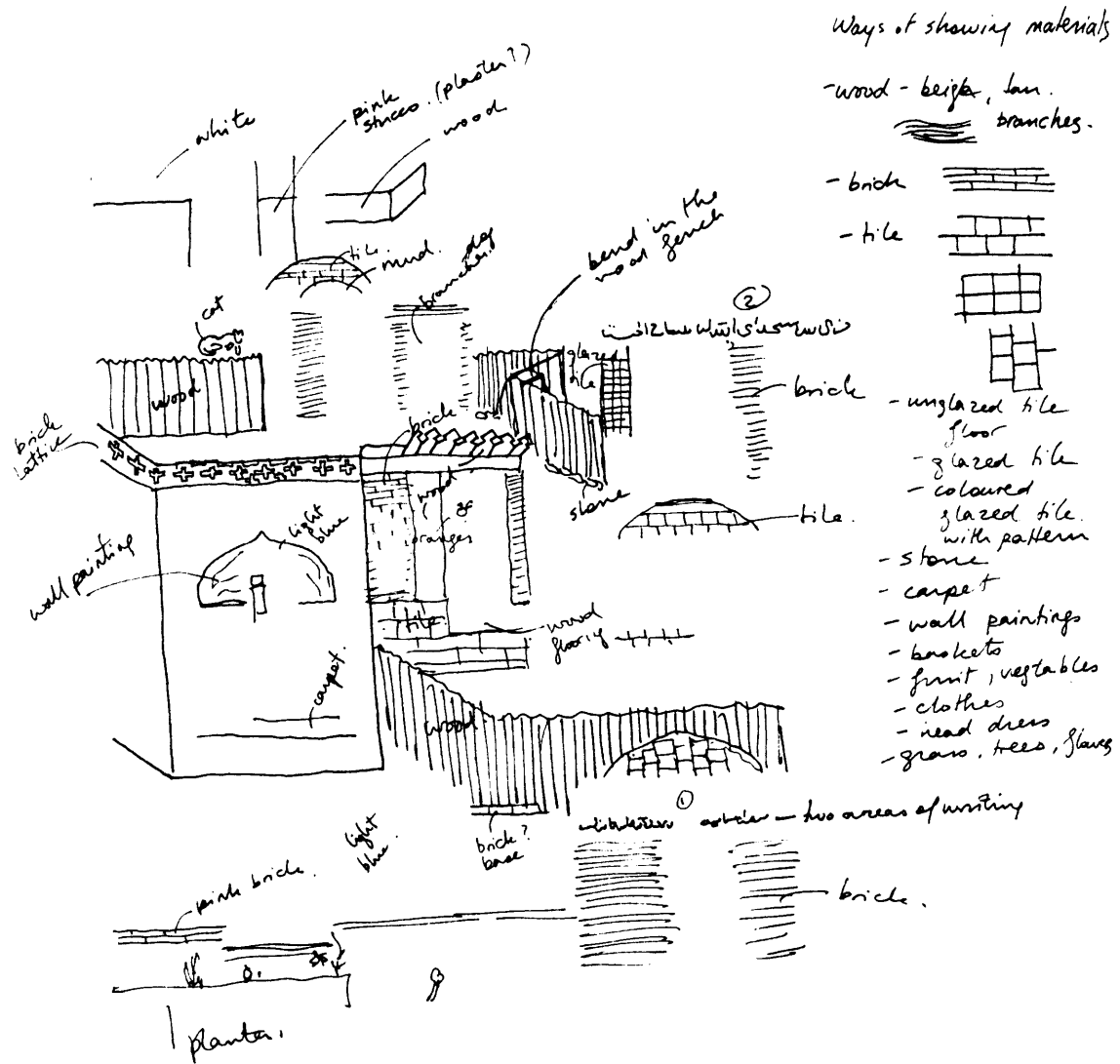


Fig. 7d. Materials classification of A76



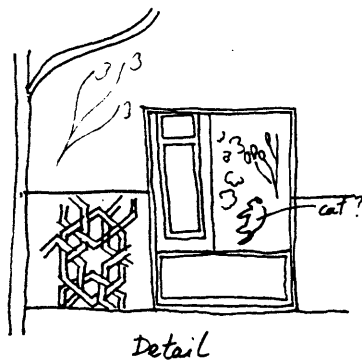
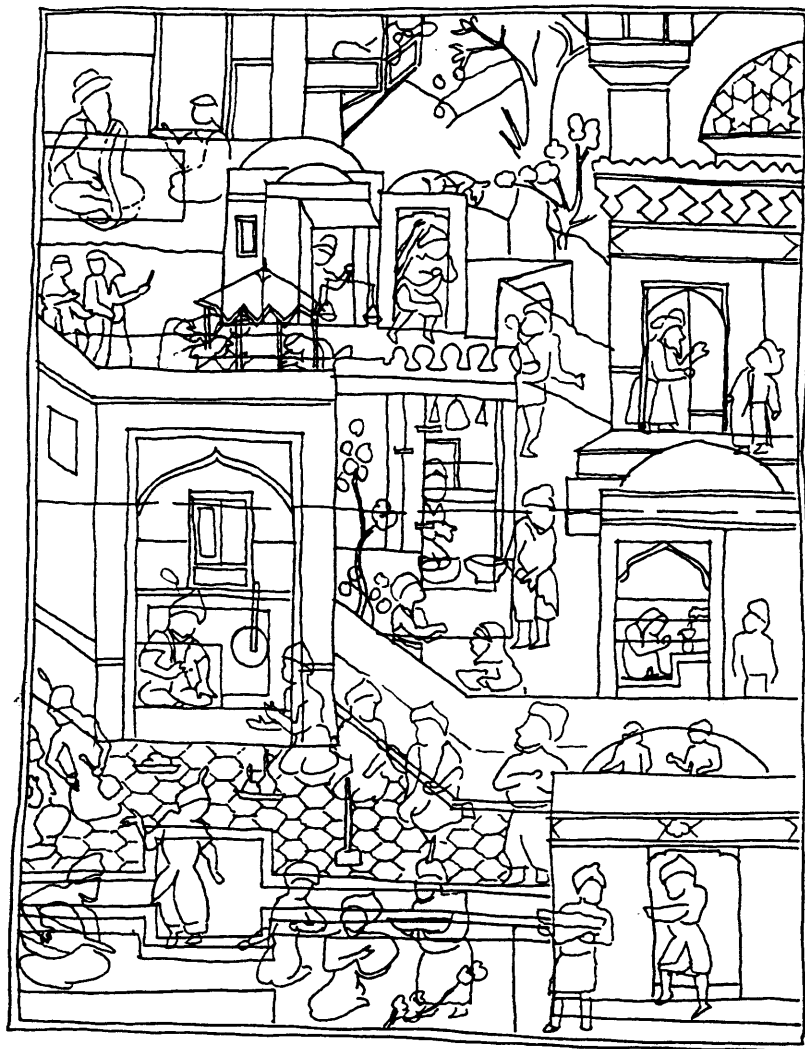
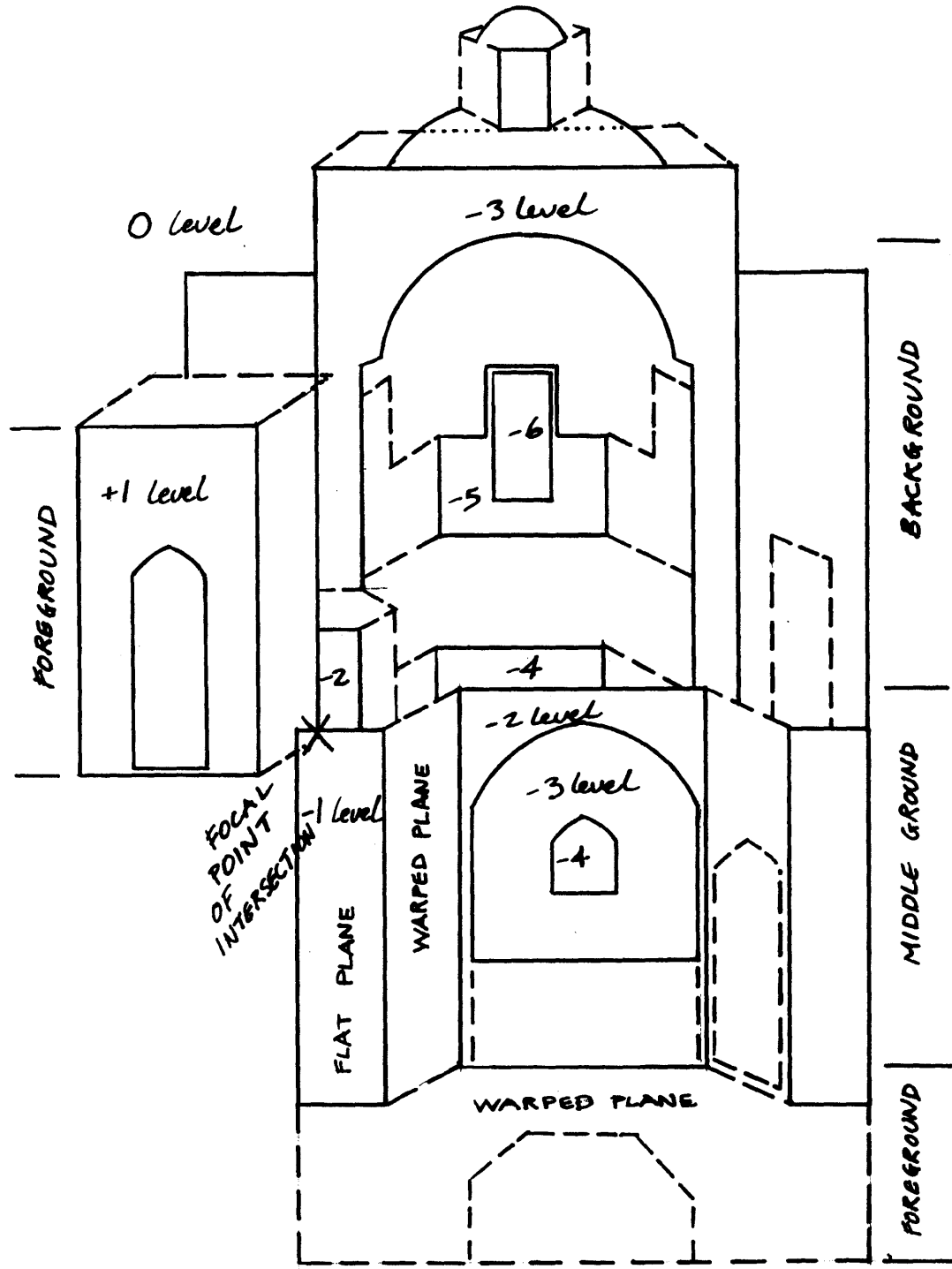


Fig. 7e. Sketch with reference to people groupings overlaying forms



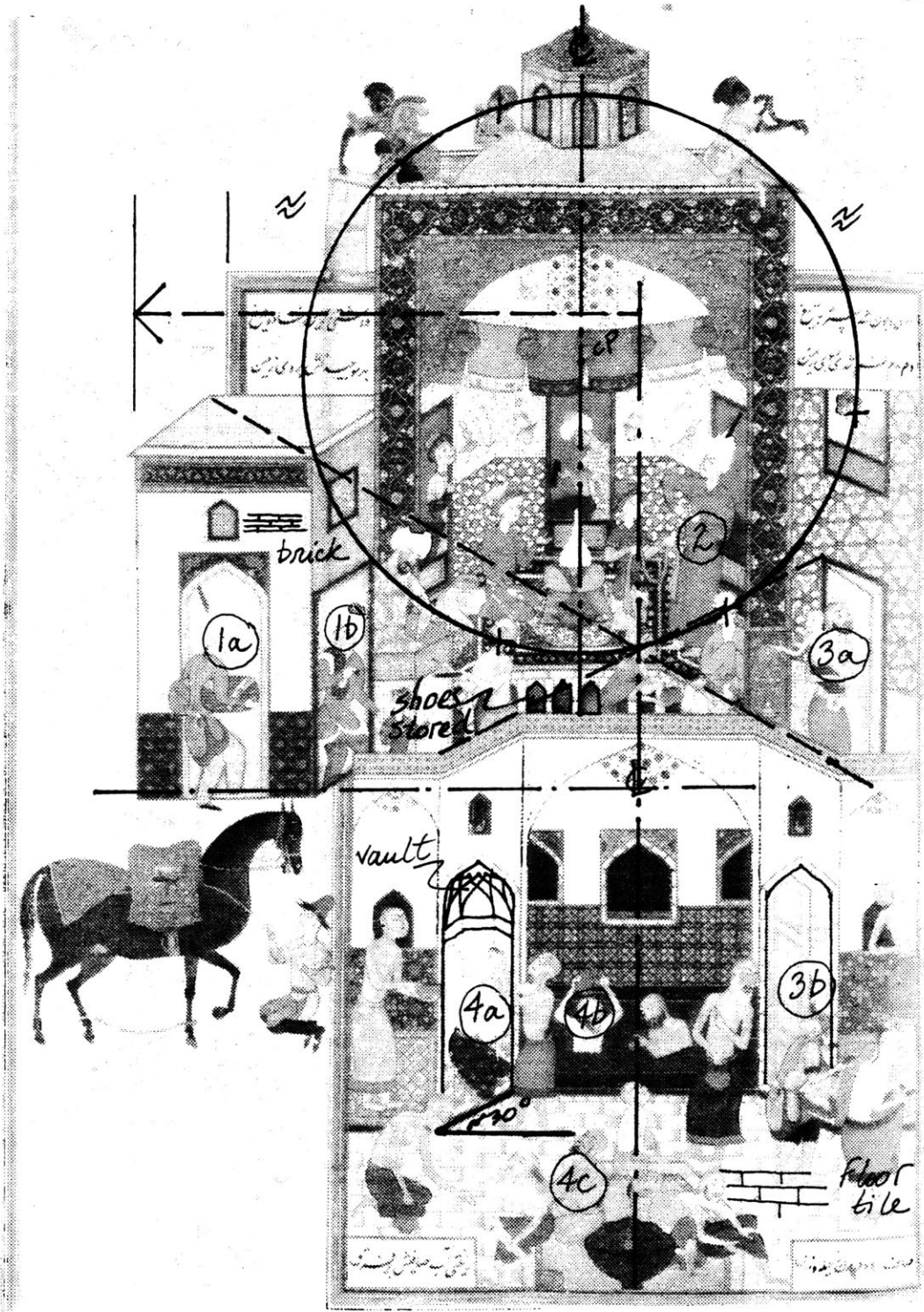


Fig. 8a. Overlay - differentiates between levels of planes in depth and shows the warped planes that connect them.

Fig. 8b. WHY IS THAT SUFI IN THE HAMMAM (A37)  
 Narrative of bathing sequence in space: 1) passing through 2 stage entrance 2) change area 3) 2 stage passage from change room to cold room 4) a) washing b) bathing c) massage and grooming

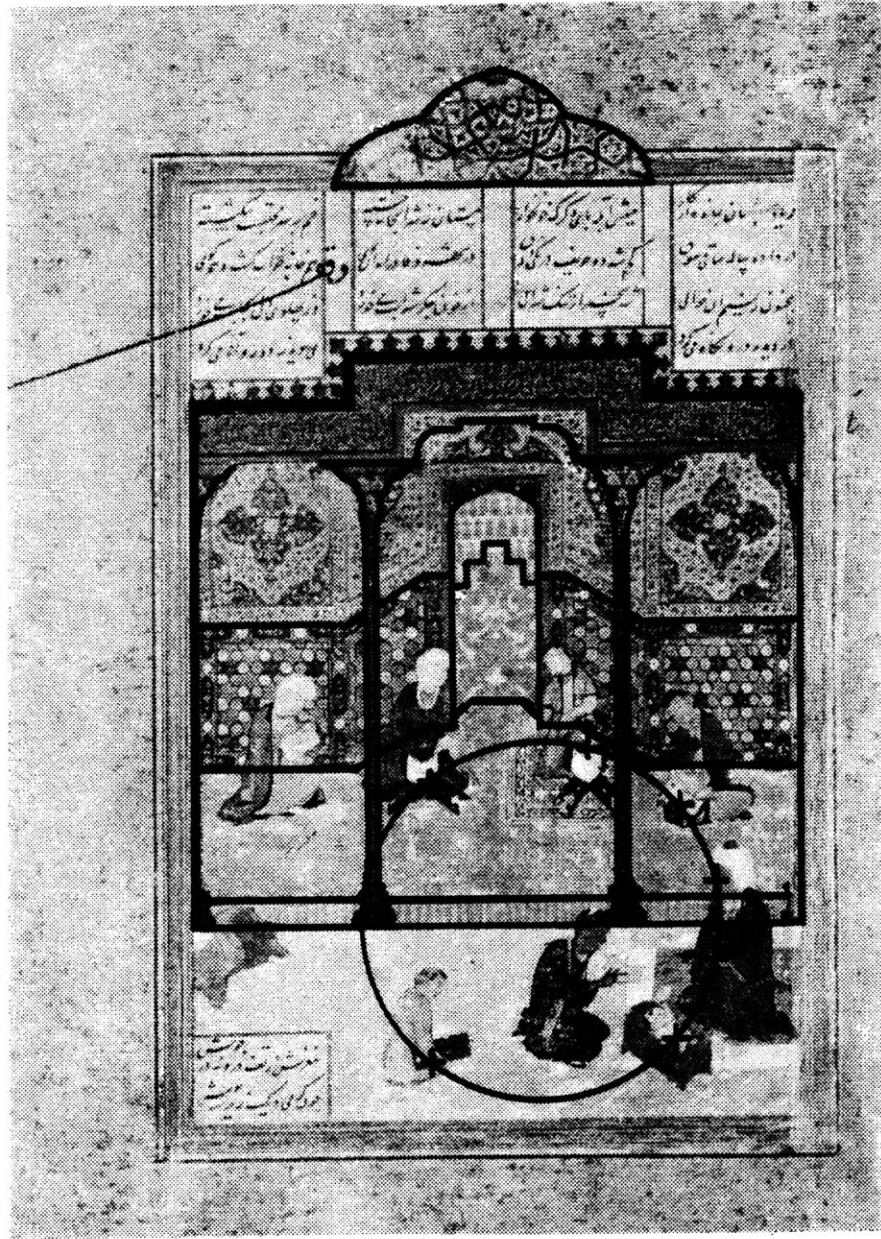


Fig. 9

LAILA AND MADJNUN IN THE MADRASA (A6)

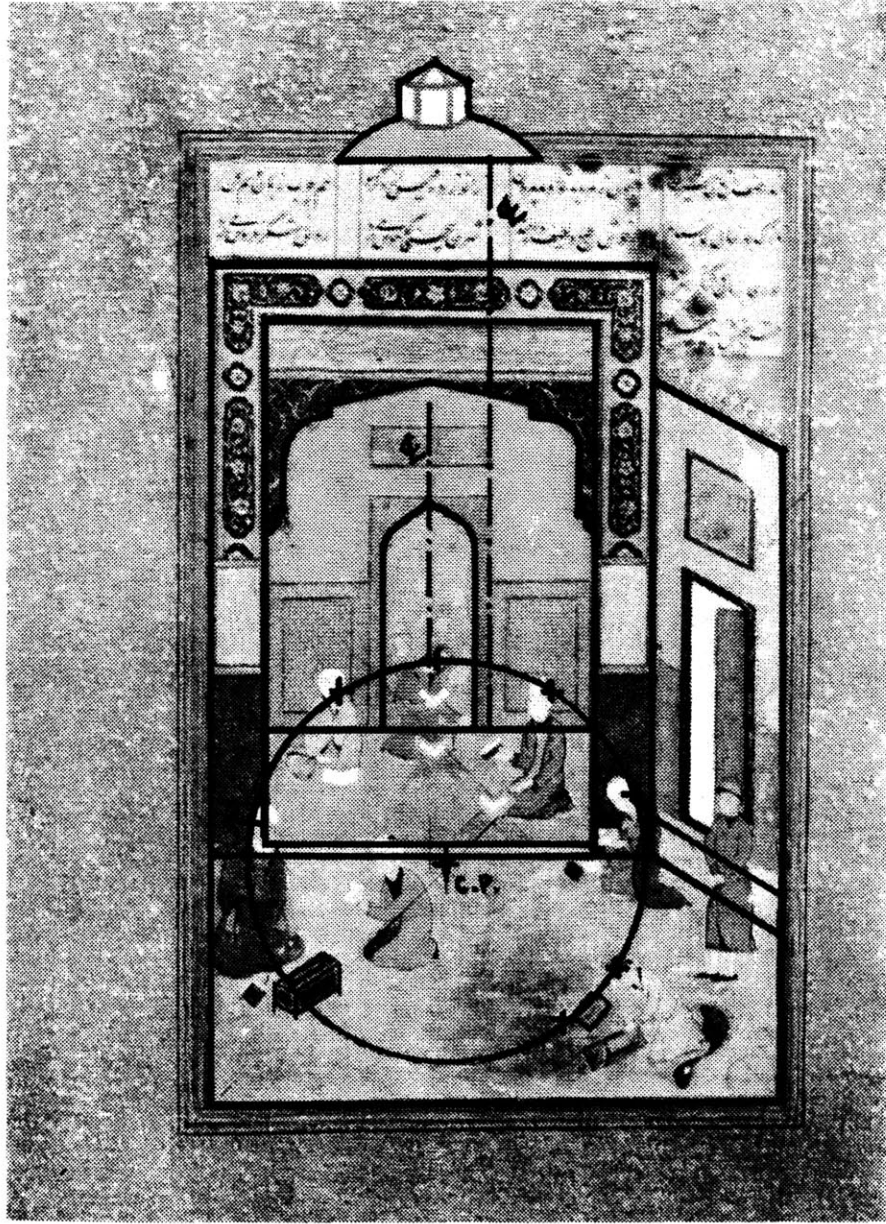


Fig. 10 IN SCHOOL (A8)



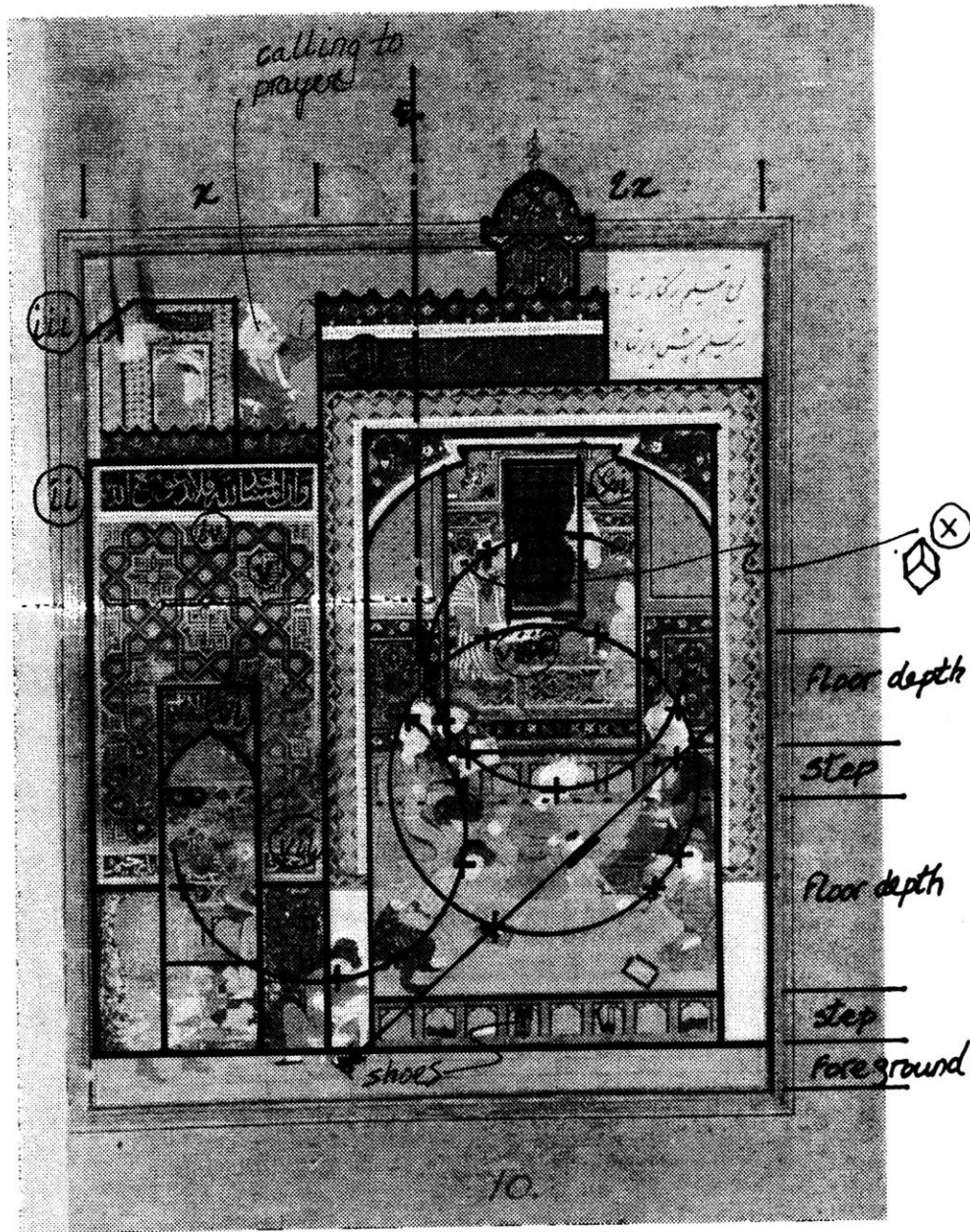


Fig. 11

## IN SCHOOL (A10)

i) Sura #9/18) *innama ya'muru masjidallahi man amana billahi walyaumi-lakhir*  
 (Only those who believe in God and the last day enliven the mosque) ii) (Sura  
 #72/18) Mosques are for God. Do not pray for any other than God) iii) *allah u*  
*akbar, allah* iv) *mohammad resul ullah* v) *la illahi il allah* vi) *Ya mu fatteh*  
*alabwab* (Opener of doors) vii) *ya rahman, ya rahim* viii) *Abjad Howaz Hutti*  
*kalman Sa'fas Qarshat Thakna thun Dha Dha qhun* (Alphabet) *ABJD HWB*  
*HTY KLMN S FS QRSHT Tk KH TH Dh Dh Gh x) ali, ali, ali xi) (names of*  
 God): The Hidden, The Obvious (manifest)

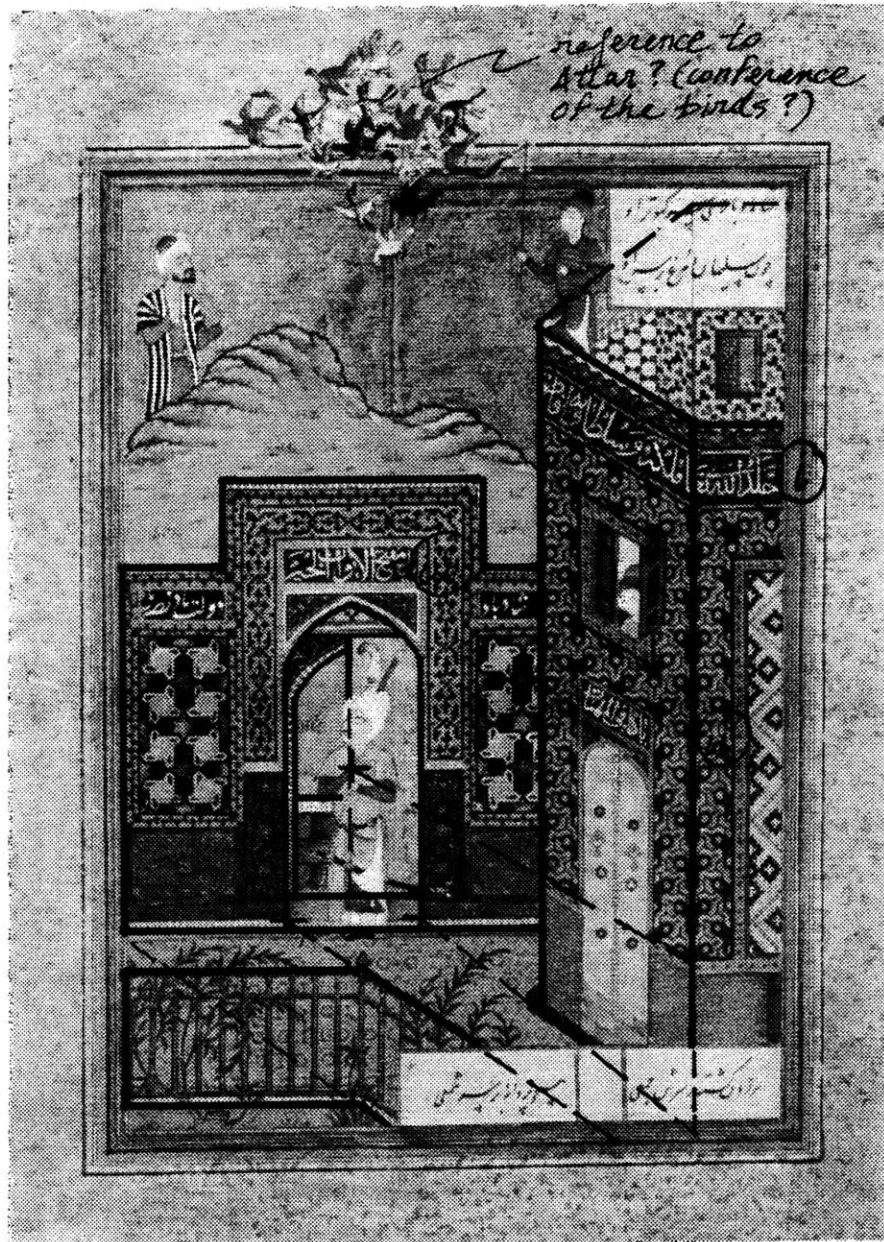


Fig. 12

## SHAH'S TALK WITH A DERVISH (A11)

i) may god make his rule and kingdom eternal and flood ii) (push) cast off your troubles iii) O ye opener of doors, (of) the good

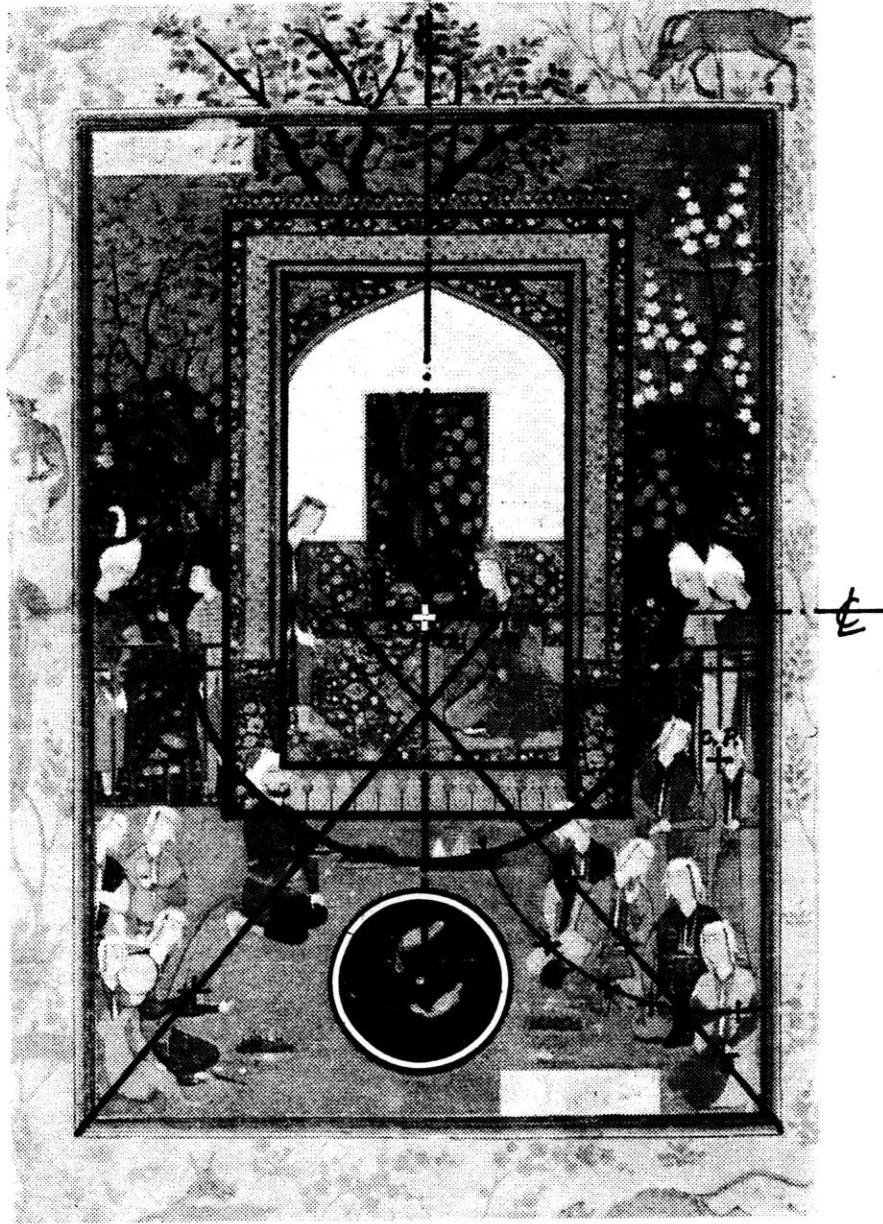


Fig. 13 AT SHIRIN'S RECEPTION (A12)



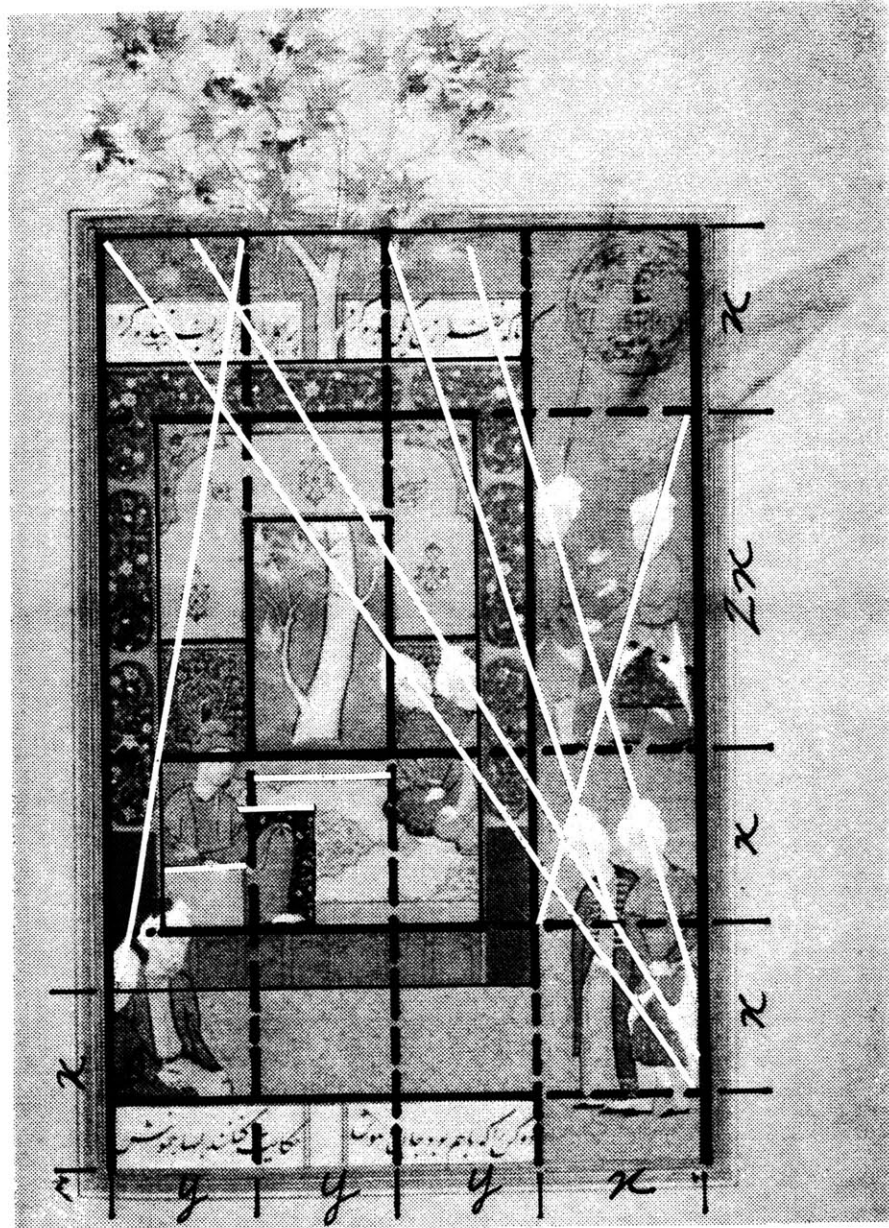


Fig. 14

A TALK WITH THE SHAH (A14)

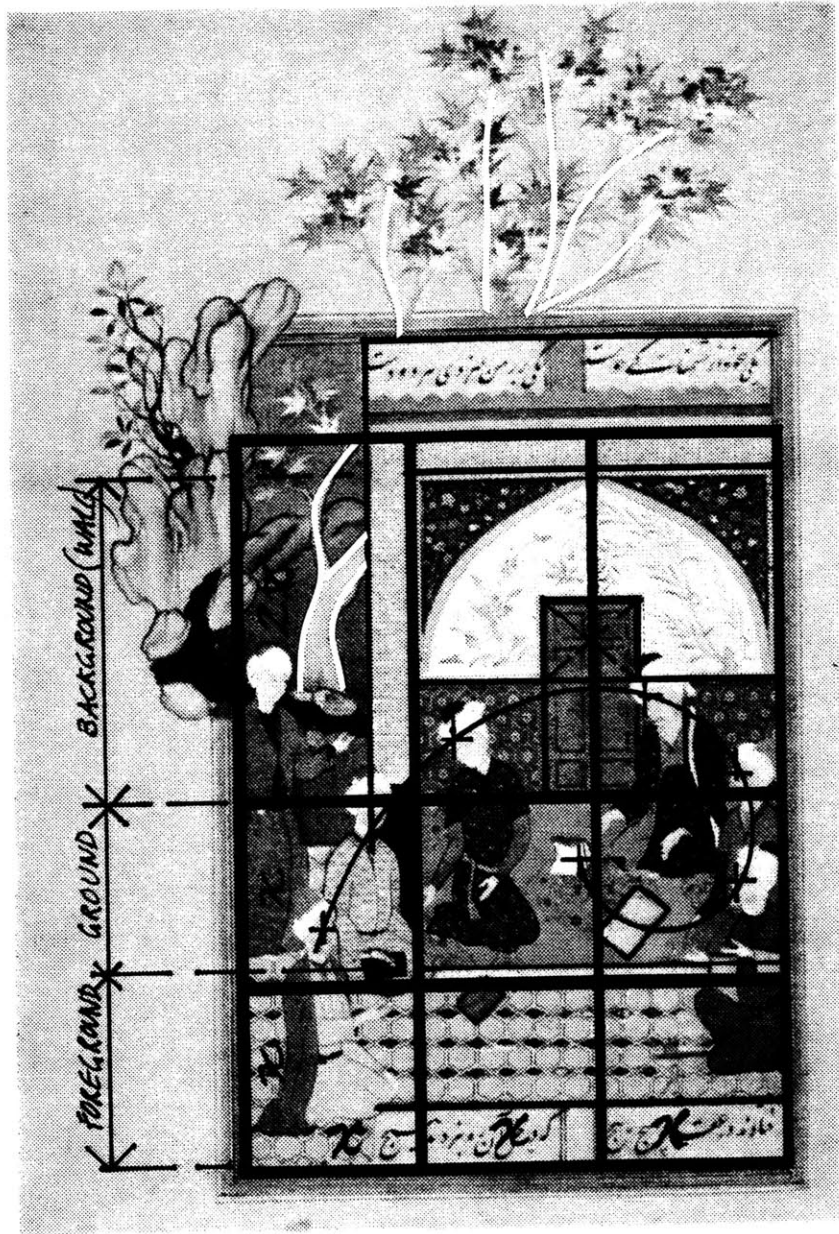


Fig. 15

A DERVISH, A JUDGE AND A SCIENTIST TALKING (A15)

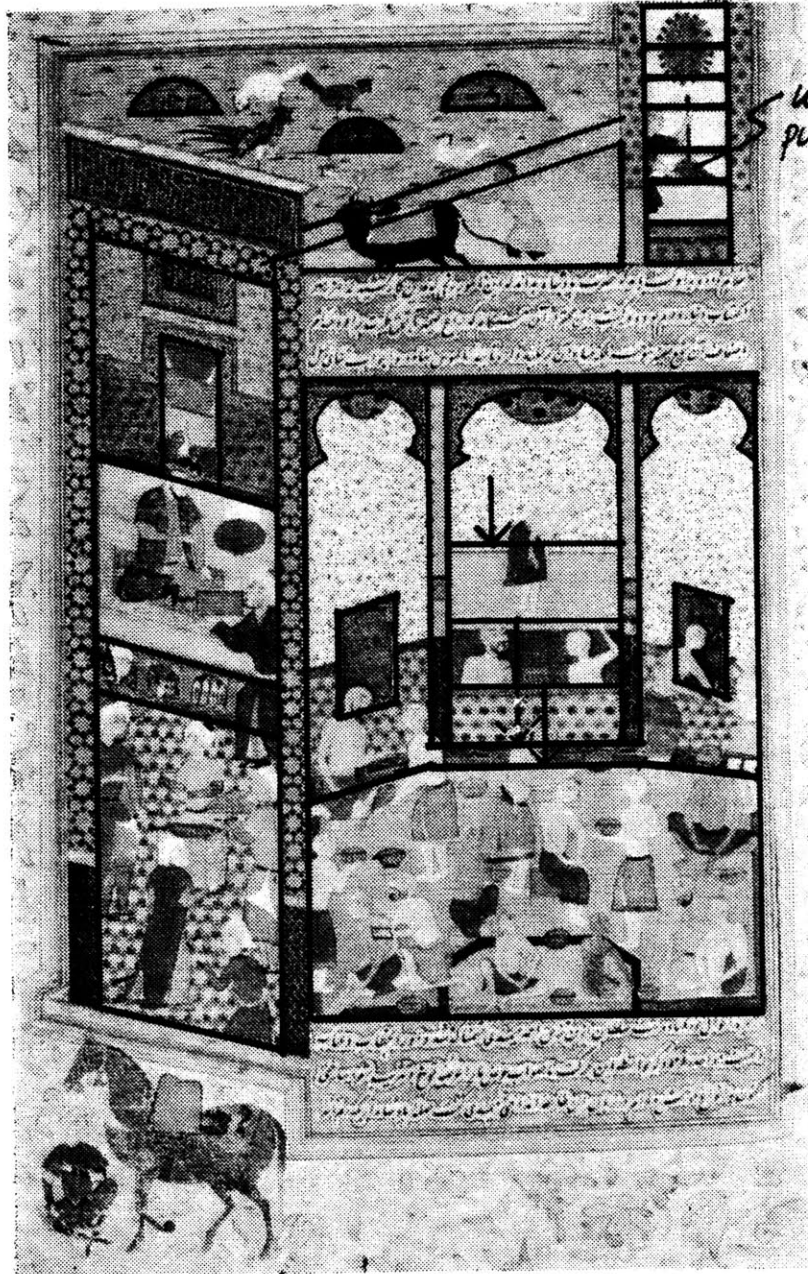


Fig. 16

IN BATHS (A24)

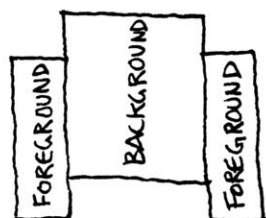
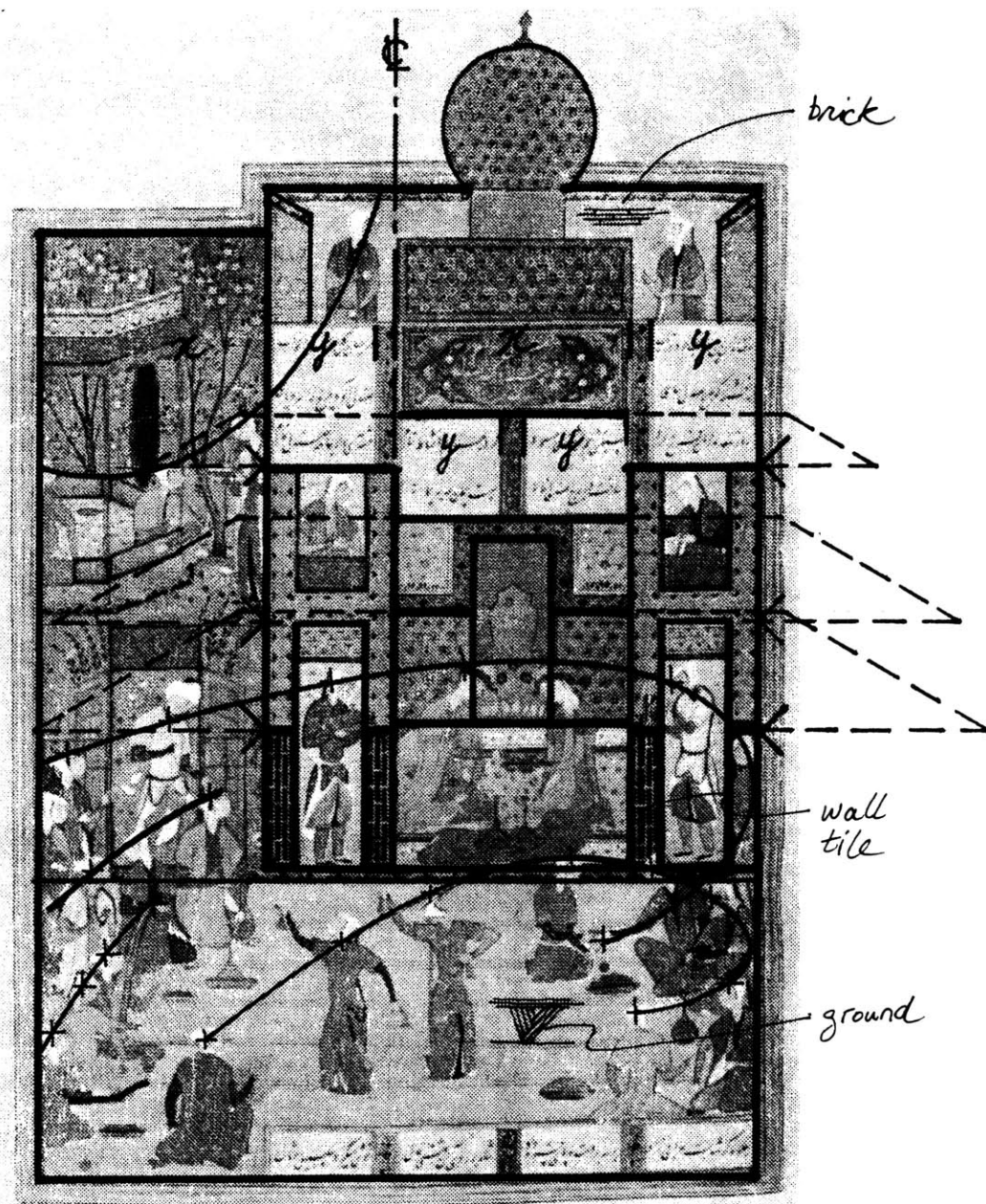


Fig. 17

BAHRAM

IN SANDAL PALACE (A25)



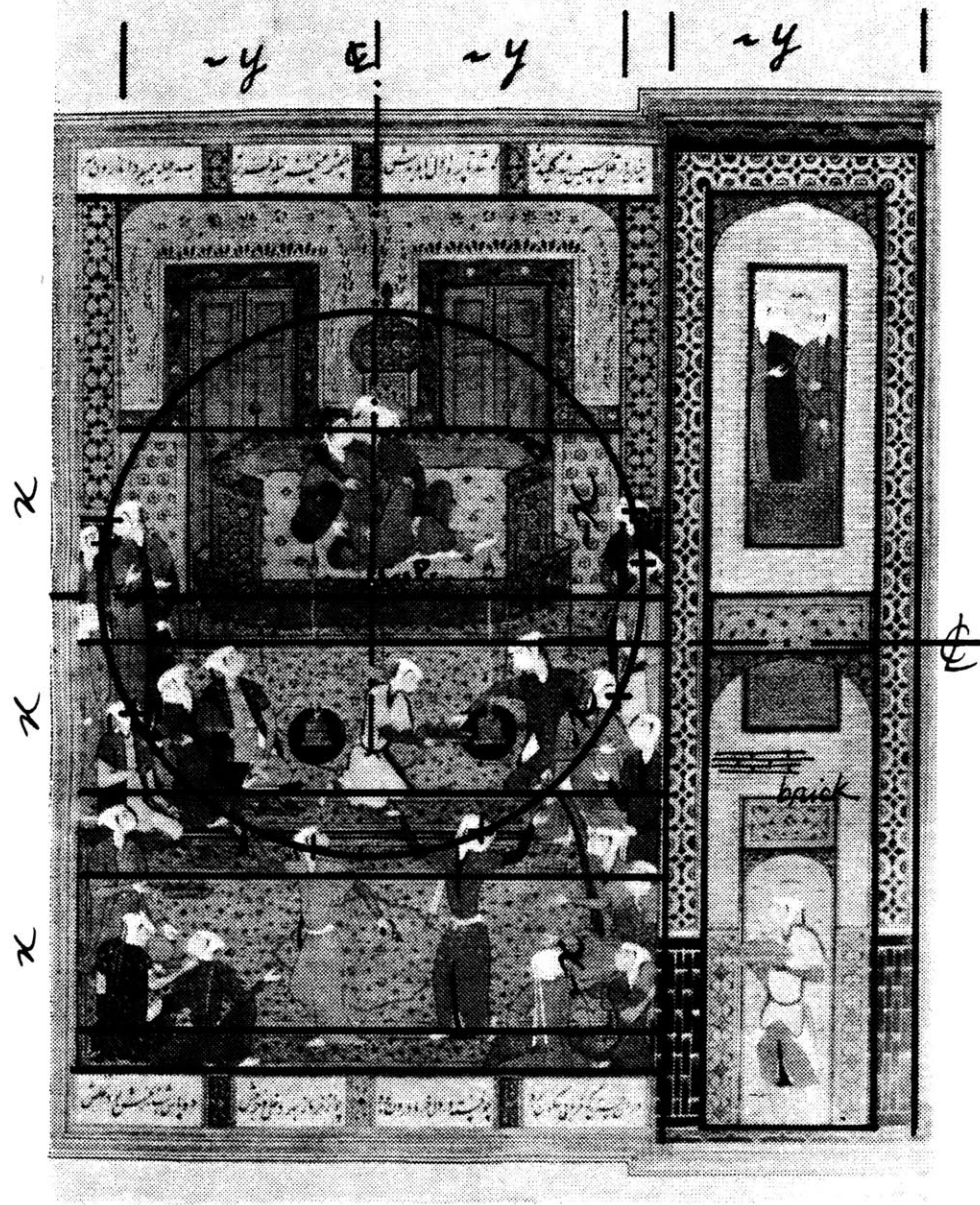


Fig. 18

KHIZRKHAN AND DUVALRANI IN THE PALACE (A26)

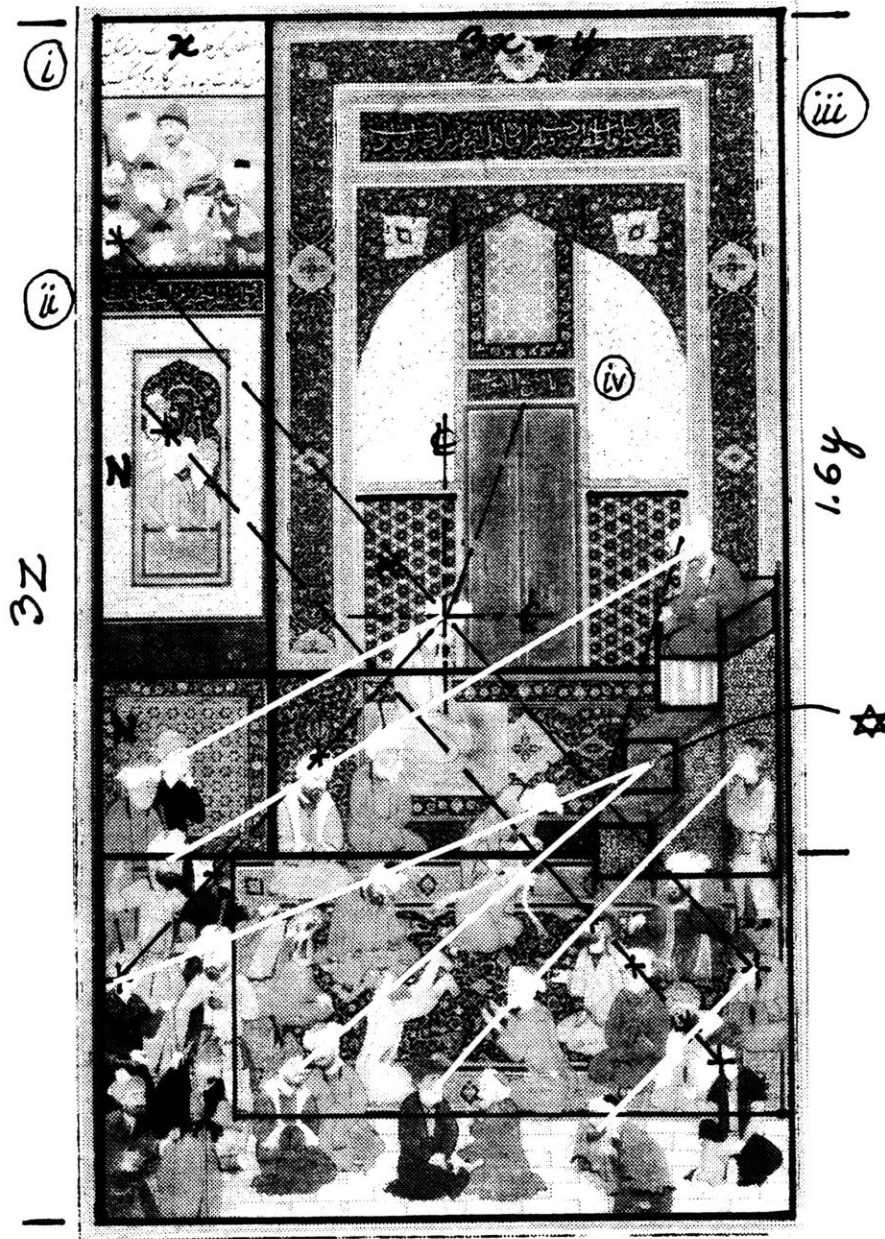


Fig. 19

## SCANDAL IN A MOSQUE (A32)

i) Preachers make a big show before mihrab and minbar . When they are off alone, they do something else ii) Your nest is on the arch of my eye's gaze iii) Mind your own business, preacher! Why are you raising a cry ? I've lost my heart in love: what have you lost ? iv) O Opener of gates

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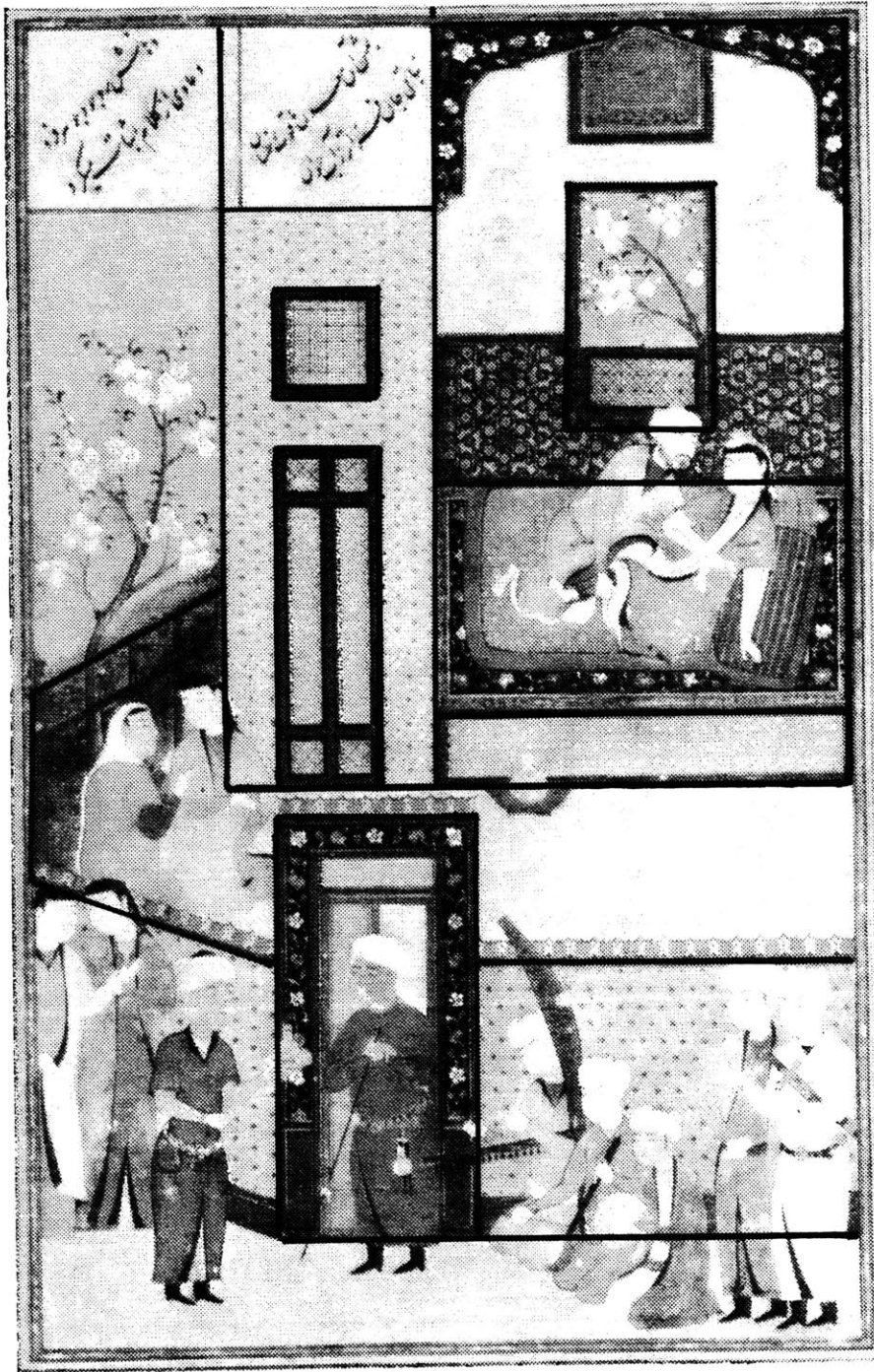


Fig. 20

THE MARRIAGE OF MIHR AND NAHID (A68)

## DISCUSSION III: LITERATURE

### A EARLY CONTENT

In the brief exploration of the time and place that created the environment for the culture of the miniature it is found that it was the development of the literary art in Islamic culture as a whole which preceded that of the illustration. Historically this literary development is traced by the record of extant manuscripts which exponentially increase in number as the 15th and 16th centuries are approached. The first element of this discussion lies both in the evolution of themes and the origins of the tales that are focused on by authors in the Central Asian scope of influence. A second line of inquiry lies in the development of schools of illustrations in different cities through the patronage of rulers and in how developments in aspects of representation are transmitted and migrate from city to city. The styles expressed in these miniatures and their development through schools of illustration will also be explored. The differences which are observed may indicate that conventions and characteristics of spatial and architectural types represented are shown to be place-specific.

A number of themes have been identified as the principle focii of widely copied and illustrated manuscripts. Such themes are traced through their historic development. The first phase of development in the Islamic text is, of course, that of Arabic calligraphy and the illumination of the Kor'an. An essential aspect of the Kor'an is that it was revealed in the Arabic language and that it was necessary to quickly disseminate it to the growing number of the faithful. The Word of the Kor'an and its glorification as the holy text was an essential subject for copying of manuscripts in the Arabic language. A second subject that generated manuscripts was the translation of Greek texts into arabic for the *kutubhane's* of various institutes in centers of learning such as Baghdad. By the 12th and 13th centuries manuscripts of these texts were accompanied by illustrations. A rare instance of solely architectural illustration, such as the elevation in a fragment of parchment found in Yemen that is dated in the eight century remains without certain provenance. Surviving manuscripts such as Pseudo Galen's *Kitab. al-Diryaq* (Book of Antidotes 1199), al-Jazari's *Automata* (1200-23), and Dioscrides *Materia Medica* (1220) were accompanied by illustrations showing plants, mechanical devices and events and meetings among teachers, students and patients as described therein. Galen's *kitab al-Diryaq* includes simple representations of enclosures that act as frames for the figures which take up most of the space.



The theme of moralistic preaching permeated into Arabic culture with the translation of such literature as the Indian fables of Bidpai into its Arabic language version *Kitab Kalila wa Dimna* by Ibn al-Muqaffa (d. 757) in Basra. These were collections of animal tales that conveyed allegorical meaning on the outcomes of misguided behaviour and actions and were very popular among the wealthy and the influential who could afford to have them copied. A similar theme was that of social commentary within the community. This was exemplified by the *Maqamat* (Assemblies) of Hariri written and illustrated by al-Wasiti in Baghdad, 1237. This features the scoundrel Abu Zayd who uses his cunning and wit in clever defiance of official moral codes in a humorous satire of urban life. The text represents locations from many lands and shows a growing interface between a representation of popular culture vs. the princely cycle. Scenes are mainly of groups of figures as in a suq, a mosque, a neighborhood or in a camp within the simple but expressive settings, typical of these places.

The princely or Royal cycle was the predominant theme that was represented in Pre-Islamic times. This theme includes Persian and Hellenistic tales that glorify royalty and power in hunting, in leisure, feasting, holding audience and enthronement scenes. Examples may be cited in extent frescos and mosaics from buildings such as those in the eight century Sogdian town of Marakanda in Central Asia near present day Samarkand, or in a bathhouse, Qasr al Amr in present day Jordan. Depictions of the princely style are distinguished by symmetrical arrangements frontality and static poses. All themes interlock and in the development of Persian poetry we find the theme of the heroic love story in the epic poem of *The Romance of Warqah and Gulshah* by Ayyuqi (d 1050) a Persian poet. These lovers fight to overcome misfortunes that keep them apart. In a manuscript of the *Romance of Warqah and Gulshah* dated ca. 1200-1225 written and illustrated by Abd al-Mu'min b. Muhamma al-Khuwayyi (Istanbul Topkapi Saray museum), we find the first example of a full narrative story depicted in sequential images. This manuscript is found to have features in it that were affected by the plane ornamental painting of Moslem architecture and the monumental style derived from preislamic wall painting traditions.<sup>19</sup> The concept of a narrative structure in miniatures is important to this study. This suggests the consideration of time as an organizational device, that progression of spaces are not simply linear but cyclical and can reoccur as in time.

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<sup>19</sup>Ashrafi: p.8

Written in a similar time frame is Firdausi's *Shahname* (Book of Kings, 955-1005) the great Heroic epic history of Iran. The *Shahname* was to become the most copied and illustrated Persian epic. This tale relates the mythicized story of generations of superhuman kings and heroes facing wars and demons, court intrigues, marriages, and the rise and fall of their fortunes with heroes such as Rostam and Saram, tales of Iskandar, or villains such as Zahak. A famous illustration of the *Shahname* is a 1330-31 AD manuscript referred to as the Demont *Shahname*. Themes illustrated in the Demont *Shahname* were of enthronements, fantastic events of heroes demonstrating superhuman strength in overcoming demons and armies, death and mourning, and the legitimacy and role of women.

Buildings illustrated in these manuscripts are generally sparse and simple, the action usually occurs against natural landscapes. However, new codes of tripartite spatial division, oblique lines, horizontal division of layers, show an evolving and complex spatial expression. The emphasis on social interaction and the depiction of narratives also shows that the wellspring of illustration lies within man's representation of himself and that all representations of objects and settings represent ways in which he would like to see himself. In fact in these early manuscripts the focus is mainly on the human figures. This emphasis changes after the 1370's. Before this time figures are larger than life in miniature representation and take up most of the space, whereas after the 1400 and the mongol invasion of Transoxania and Persia, figures in miniatures recede into one of many compositional elements. Perhaps one position is that the influx of migrants promoted an expanded world view and the greater awareness of other cultures, although one knows that distant lands were well represented in *The Romance of Warqah and Ghulshah*. Another position, however, may be a new awareness that the understanding of human behaviour and emotion could be connoted implicitly as well as literally, therefore implying an expanded vocabulary of objects analogous to human gesture and expression.

The last theme to be introduced herein is that of the epic history. In contrast to the heroic epic this takes place in the history of the world as it was known in an account of Biblical events, the life of the Prophet Mohammed and current dynasties and battles. The illustration of Rashid ad-din's *Jami al-tawarikh* (World History) written in 1317-36 is an example of this form. Rashid ad-din is also known for a record of a lost manual of architecture *Kitab-alahia-on-alathar* (Book of the living and of the Monuments).<sup>20</sup>

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<sup>20</sup>mentioned in Wilber (1976) and Lewcock (1978) this manual included a chapter that dealt with the rules to be followed in building houses, fortresses and structures of all kinds.

The consideration of such records as those of Rashid al-Din may help the understanding of the extent of the work of chroniclers, scientists, theologians, and philosophers of the times. While this brief outline has focused on literature concurrent with the evidence of illustration in this time frame between the rise of Islam in 652 and 1370 the actual field of literature generated is enormous in scope and ranges from well developed theological schools of thought to scientific and philosophic dissertations of such figures as al Farabi, born in Turkestan (d. 950) and al-Ghazali (1058-1111), to chronicles of travelers throughout the Islamic world such as Ibn Battuta(1304-1377?) and Ibn Jubayr (1145-1217) , to historical narratives such as that by Rashid ad-din and Mutahhar b. Tahir al-Maqdisi (c 945-1000) of Transoxania. A quotation from al-Maqdisi's work, the *Kitab al-Ba'd wa al-Ta'rikh* (Book of Creation and History) composed in 965-6, is used to identify steps in the process of construction. The opening line of the quote is also of interest to this study in the firm association that it makes between building, writing, design and illustration as occupations with a similar creative impulse.

"If it were permissible to imagine the creation (*huduth*) of this world without a creator (*muddith*), it would in fact be possible to imagine the existence of a building (*bina*) without a builder (*bani*), of a piece of writing (*kitabah*) without a writer (*katib*), of a design (*naqsh*) without a designer (*naqqash*), of an image (*surah*) without a painter (*musawwir*).<sup>21</sup>

Poetry and literature flourished in centers of learning, *kutubhanes* and *madrasas* from Damascus, Baghdad, Cairo to Audalousia through successive dynasties.

## B CONTEMPORARY CONTENT

The second part of this discussion focuses in the area and time selected for study. The picture of Central Asia in Timurid and later times is of short lived and local dynasties ruled by descendants of historical figures, who attract a certain cultural density to their capitals, where intense activity in literature, art and architecture takes place for the duration of that ruler's dynasty and then migrates with new influences. The themes of manuscripts move away from the epic cycle to that of lyrical poetry. In the 16th century, illustrations began to depict realistic scenes of everyday life, including bathing in a bath house, drunkenness and feasts and games.<sup>22</sup>

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<sup>21</sup>Grabar and Holod, p.313

<sup>22</sup>Ettinghausen p.259., also shows that different human activities were popular in illustrations of varying periods

The work of Firdausi's *Shahname* and of the *Khamsa* (pentameter) by the Azerbaijanian Poet Nizami Gangevi (1141-1203) became the most popular of illustrated works of Persian-Tajik poetry.<sup>23</sup> To give a brief understanding of the range of stories and therefore the possible range of illustrations within a collection of poems the stories of Nizami's *Khamsa*, otherwise known as the *Pandj Gandj*, will be listed. These included *Makhzan al-Asrar* (The Treasury of Secrets), *Khusraw u Shirin* (Khosraw and Shirin), *Layla in Magnun* (Layla and Majnun), *Iskandarnama* (The Book of Anthology of Alexander), and *Haft Paykar* (The Seven Beauties)<sup>24</sup>. Nizami was the first to author these stories. Poets such as Amir Khausraw Devlavi (1265-87), Ali Shir Navai (1441-1501) and Abd al-Rahman Jami (1469or1414?-1506) would later write khamsas of the same name but of variations on the original themes. Devlavi and Navoi wrote these khamsas as *Naziras*, literary responses to the works of Nizami. Sufi poets such as Jami, himself born near Samarkand and Navoi would use the theme of earthly love as an allegory to that of the divine love of God. The content of an exemplary poem such as *Layla and Majnun* involved a tale of ill-fated lovers. The character Kays met Layla in school where they fell in love. Later Kays was refused Layla's hand in marriage and went mad thereby acquiring the name Majnun. The story symbolizes the idea of the quest for divinity in the hearts of the characters<sup>25</sup>. The scene of Kays and Layla in school (*Madrassa*) was a popular illustration among others in manuscripts of this story.

Existing manuscripts are selections from the works of many different authors while the illustrations are selected from a small number of scenes of slightly differing versions that appear in several manuscripts. However, each rendition of the madrasa could vary from manuscript to manuscript depending on many factors such as where and when the manuscript was produced, who commissioned it, for what purpose, and of course on the studio and the artist who executed it.

Manuscripts emerged from schools or a studios which were institute in a city where a number of calligraphers, book makers and artists gathered to prepare manuscripts and their illustrations for the patrons who funded their work. Manuscripts from each of these schools has its own artistic style that is distinguishable from others by the treatment of the subjects. Ashrafi in *Persian Tajik*

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<sup>23</sup>Persian-Tajik Poetry in XIV-XVII Centuries Miniatures pg. 18

<sup>24</sup> Kritzcek, J.: Anthology of Islamic Lterature, p. 219

<sup>25</sup> Poliakova and Rakhimova:L'Art de la miniature et la literature de l'Orient pg. 74.

*Poetry in XIV-XVII century Miniatures* writes of the distinction of the schools of painting after the Mangol invasion of 1220 in Central Asia and Iran.<sup>26</sup> The continuity of painting schools is redeveloped in Shiraz, Tabriz and Baghdad in the 14th century, when each had a separate style that had integrated the influence of Chinese artisans who had migrated with this invasion.<sup>27</sup> Migration continued to play an important role in the transmission of styles. After the conquest of Baghdad and Tabriz (1401, 1402), Timur (1336-1405) transported many artisans to his capital in Samarkand. His successor and son Shahrukh (1377-1447) removed his capital to Herat. Ulugh-Beg (1394-1449), Iskandar Sultan (1384-1415) and Baysungher (1397-1434), the grandsons and successors of Timur each had centers in Samarkand, Shiraz and Herat respectively. Herat remained the capital until the last Timurid Sultan Husain Baykara (1469-1506). At this time the Safavids gained power in Iran, while the Sheybanids remained in Central Asia. The Safarid capital was moved to Tabriz by Shah Ismail (r. 1522). The migration of painters during this time followed the movement of rulers.

Ashrafi points out certain characteristics that are intrinsic features of the style of the school with which they are associated. For instance, the Shiraz School retains a way of space construction swung from top to bottom and always adapted to a strict plane system of representation.<sup>28</sup> On the other hand, in Herat of the 15th c. there is accuracy and refinement of the line and complicated rhythmic structure of composition that becomes multi-form. Other distinctive characteristics of the Herat school were such compositional devices as the arrangement of figures in circles, figural proportionality, inner motion and an iconography of figures. Variations in intensity of the rhythm can suggest dynamic action or contemplative calm. The basic distinction between the two schools throughout their evolution remained that Shiraz favoured a flat planar style while a the multi-form style used to create the illusion of extension and depth in Herat. Herat was the workplace of the painter Behzad (1439-1505). Ashrafi gives us the following description of Behzad's qualities.

"A man is the central personage of Behzad's art. The evolution of his creative work is first of all that of a painter's view on how to depict a man. He looks for the new means and devices of showing him in motion, expressing through time contour his lively pose and gesture and more real proportion of her body. With him the nature and architecture is not just the background, but the surrounding of his hero. The figures now interact with each other and with the space around... Within a narrow space of the miniatures there is room

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<sup>26</sup>Ashrafi p. 8

<sup>27</sup>ibid p. 12

<sup>28</sup>Ashrafi, p.15

still enough for various architectural buildings... All this diversity referred proportional correlation, obtaining irreproachability only through geometric methods of construction... His miniatures are firmly and exactly built compositions, the basis of which is more often a circle.<sup>29</sup>

According to Ashrafi there are few remaining records of early Timurid Bukhara and Samarkand manuscripts. What she records is the transposition of the Herat school to Bukhara in the 16th century. First the style of the Herat school was more apparent than that of Bukhara. Eventually Bukhara elements such as larger scale drawings, more attention to man than detail and landscape illustrations emerged. By the end of the 16th century the Bukhara school showed less and less buildings, instead favouring open landscapes.

#### INTERPRETATION OF THE LITERATURE

"During its development painting sought for an account of artistic and poetic languages able to combine subtle decoration and thorough finish, florid metaphor and dainty refinement.. Miniature obtained deep sincere accordance with poetry. But it happened only after a long and complicated period of development." <sup>30</sup>

The depth of the integration of poetry with the artistic illustration may underline the nature of the integration of all the arts in this culture, including the art of architecture. The following powerful description of the structure of poetry and its expression provides metaphors of craft that may integrate all three traditions under exploration. J. W. Clinton reviews a Kasida ( ) of Nasir -i Khusraw (born in Balk1003-1074) of which the following verses are an extract:

8. I shall make a castle of my qasida, and within it/Create gardens and porticoes from its verses.

9. I will make a place in it like an elevated prospect./I will make a place in it spacious and open like a maydan.

10. At its entry, from among the rarities of prosody/I will make a learned and trustworthy one the gateman.

11. The meter *maf'ul fa'ilat mafa'il fa'*/Will I make the foundation of this auspicious building.

12 Then will I invite the learned of all regions/To gather as guests at my castle

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<sup>29</sup>Ashrafi, p.15; also described by Lentz, p.40

<sup>30</sup>Ashrafi, p.8

13. So that no ignorant person will enter it./For I will make my home inappropriate for them.

14. I will spread a feast by which I will make/Learned men astonished and incapable [of consuming it all].

15. In the body of discourse I will give life to good and rare themes with learned examples.

16. If you have not seen humanity in speech,/I will give human appearance to speech for you.

17. With fine descriptions and choice stories/I will give it twisted lovelocks and laughing lips.

18. I will give its meaning a lovely face and then,/I will conceal it in the veil of expression.<sup>31</sup>

Clinton makes several comments about the content of the poetry with the intent of demonstrating that the poet treated the poem more as a unified ensemble than a simple composition of elements. Thus through metaphor this poem is descriptive of how the structure of poetry is generated. Clinton analyzes metaphors of poets as craftsmen engaged as artisans, builders and painters. The *kasida* (poem) is compared to a *kasr*(castle) in line 8 possibly suggesting the image of noble structures that provide a place where the learned can meet or of orderly, artful constructions of great beauty.<sup>32</sup> For the purpose of this study, lines 17 and 18, are also of great interest in that they appear to draw an analogy to representation in implying the veil of expression of stories. The act of illustrating them may be considered a veil that hides the true reason for their existence. The Sufi view of art expressed through poetry is dedicated to the search for the divine hidden in the terms of the immediate world such as wine and women and earthly love.

"Tis love alone from thyself will save thee  
even from earthly love thy face avert not .  
Since to the Real it may serve to raise thee "<sup>33</sup>

In this quotation we see that a thing of one nature, such as sensual love, connotes another face such as divine love. Two further aspects of this exploration are as follows. One aspect is that

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<sup>31</sup>Clinton, p.74

<sup>32</sup>Clinton, p.87

<sup>33</sup>Arts of Islam, p.313

poetry, architecture and representation may be considered together as a set when raising images of design and works of art. All three may thus be considered to have similar artistic qualities and may evoke similar images of structure and of beauty. Herein lies a second aspect for exploration. Can building, which is often described as a craft, also have qualities of form and space which are deliberately designed to produce an appreciation of beauty? Both these ideas, one of the consideration of poetry, representation and architecture as a set and the other of the beauty of structures, are considered together in Ettinghausen's discussion of al-Ghazali's book *Kimiya-i Sa'adat* (Alchemy of Happiness<sup>1108</sup>). He quotes from al-Ghazali:

"The beautiful work of an author, the beautiful poem of a poet, the beautiful painting of a painter as the building of an architect reveal also the inner beauty of these men."<sup>34</sup>

If the meaning of this sentence is investigated a definition of both beauty, and by the analogy made, of beauty in architecture may emerge.

Ettinghausen cautions that the author, a mystic, could not have had a material interest in art. However, quotations from al-Ghazali's writing emphasize the conception of reasoned beauty perceived separately from that of impressions produced by the senses:

"...the perception of beauty is pleasure in itself and is loved for its own sake and not for anything else. Do not believe that love of beautiful forms is conceivable only for the satisfaction of sensual desire."<sup>35</sup>

Herein it is realized that it is possible to appreciate objects aesthetically for the beauty of form and of formal characteristics that emerge in the expression of the perfection in their particular nature. Therefore, it is also possible to search for the best expression of this nature in a deliberate and self-conscious manner.

The interest of this study lies in al-Ghazali's discussion of outer beauty in form. However, ultimately al-Ghazali is searching for spiritual enlightenment through inner beauty. The perception of beauty through reason leads to this inner vision of beauty which in its most perfect form is the love of God.

"The inner vision is stronger than the outer one, the 'heart' keener in perception than the eye and the beauty of objects perceived with the 'reason' is greater than the beauty of outer forms which presents

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<sup>34</sup>Ettinghausen, p.164

<sup>35</sup>Ibid p. 162



themselves to the eye. Hence the pleasure of the 'heart' over the exalted, divine objects which it sees and which are too lofty to be perceived by the senses must necessarily be more perfect, greater."<sup>36</sup>

The concept of the objects of perfection which cannot be easily perceived is a reflection of the philosophic and theological position based on the Platonic concept of Form. Plato believed in a set of higher realities beyond the world of immediate phenomena, true realities which would be apprehensible only rarely by the mind and not through the senses. In Sufi ideology the true world to be attained is that of the higher reality of divinity.

"le monde n'est qu'un mirage et le dieu seul est une realite. Le monde reel est une enveloppe qui cache son createur." Connaitre la verite significant con naitre le dieu."<sup>37</sup>

Poliakova and Ratihimave go on to extend this idea to describe the poets' attitude towards man.

"Les poetes les plus remarquables de l'Orient cherchent a creer dans leurs oeuvres un ideal d'homme d'une grande purete morale."<sup>38</sup>

The development of the ideal man is traced through the works of Nizami Gangevi (1141-1203), Amir Khusraw Devlavi (d. 1325), Ali Shir Nawoi (1441-1501) and Abdurakhman Jani (1414-1492).

The visions of divinity and divine love are accompanied by other representations of man as ideal monarches or warriors. The commentary on man and his behaviour, on self-reflection appears to be one of the central preoccupations of Persian Poetry. Poetry such as the *Kasida* by Khosraw and the writings of al Ghazali equate the qualities of physical form with the qualities of character.

Just as there are conventions for representing beauty through human archetypes like the face of a woman, there may also be conventions for qualities of form. Thus, rather than an esoteric vague image of form associated with a human ideal, specific forms may take on meanings that can be associated with thoughts of beauty or nobility, or of love. Coomaraswamy quotes a passage that suggests that the ultimate form is the form of thought:

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<sup>36</sup>Ibid p 163

<sup>37</sup>Poliakova and Rakhimova, p.74

<sup>38</sup>Ibid, p.74

"The whole concept of 'form' is exemplary (of the proper object of desire).

Thus,

'the arts and crafts (*pestik*) are all the shadow of the form of thoughts';

(Rumi, *Mathnawi*, vi 3728)

'to whatever side thou gaze, my form thou shalt enjoy'

(Shams-i-Tabriz, Ode xxv in R.A. Nicholson's *Selected Poems*

*from the Diwani Shams-i-Tabriz*)

' How well the brocader's apprentice said,  
when he portrayed ' Anka and elephant and giraffe --

"From my hand there came not any form (*surat*),

The plan (*naqsh*) of which the teacher from above portrayed not."

And thus "all mirrors in the universe, I ween, display

Thy image with its radiant sheen:'

(Jami, *Lawa'ih* 26)."

Sadi's *Bustan* (v.133-135)<sup>39</sup>

Characteristics of architecture, whether as an art or a craft, thus may be generated by the desire to consciously impart human and aesthetic qualities to them. These may be qualities of emotion, of reason, of delight, of place, form and space. Painting and decoration plays an important role in manifesting these qualities in images. These can be recognized and appreciated as such when recognized by the receptive viewer. Thus qualities of space and form found in paintings may echo and bridge the thought of the intellectual and the expressions in the architecture.

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<sup>39</sup>Coomaraswamy, p.381

## DISCUSSION IV: ARCHITECTURE

This section will deal with a development of the architectural forms, with which parallels can be made between the miniature and the architecture. As the interest of the study is to emerge with a picture of architecture it is of value to try to associate the findings with those from actual forms. This section consists first of a contextual outline of buildings observed in the cities of Bukhara and Samarkand. Then two forms such as entrance and pistaq are explored for their spatial sequence and visual impact. This is to help understand whether the experiential space of the architecture may have any similar characteristics to that of the miniature. The purpose of the discussion is also to introduce a similar vocabulary of architectural images as have been developed for the miniatures.

### SELECTED URBAN FORM

A hierarchy of urban forms coexist within the patterns that define the structure and scales within the old city of Samarkand as was discussed in an earlier study<sup>40</sup>. These defining elements are (Fig. 21):

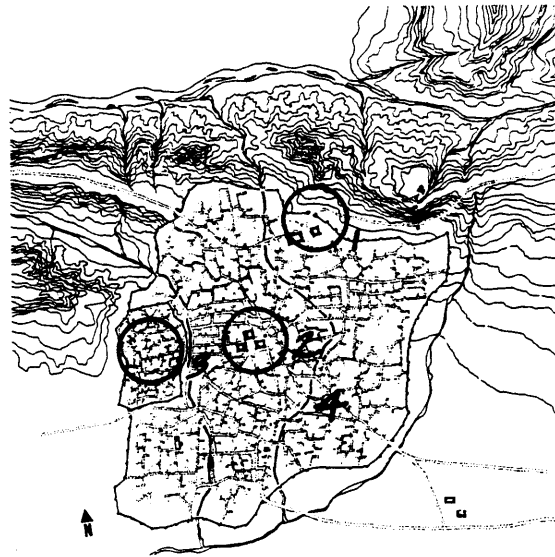


Fig. 21 Plan of the old city of Samarkand (from Herdeg , (2))

<sup>40</sup>Yazar, H: *The Texture of the City of Samarkand* Paper submitted for Aga Khan program research travel grant 1990

1. the node at Akhana gate, the genesis of the city ; 2.Registan square, the defining center and node of the old city; 3. The citadel , one of the three components of inner city form (*kohandez, sahrestan, rabad*); and 4. The inner network of roads, canals,and lanes which defines the infrastructure. These systems are discussed by Notkin as a development of the 14th to 19th centuries in Central Asian cities:

“....the stabilizing influence of the nucleus at the center and the hierarchy of zones and lines of communication and the strengthening of ties with the city’s environs generated a branching centrifugal-centripetal system of spatial ties which nonetheless still maintained the orientation toward the main gate of the city. The process of understanding this environment grows out of an awareness that its complicated structure proceeds by stages along arteries and nodes towards focal points.”<sup>41</sup>

The city fabric was composed of *suqs* (market places), residential neighborhoods and civic and religious institutions. The original forms of traditional civic institutions, such as caravansarays, hammams, and *suqs*, have mainly disappeared. However, the remains of several religious institutions, both of monumental scale and of those oriented towards smaller groups, have been preserved. Existing building types include *masjids* (mosques), *madrasas* (schools and religious schools), *khanqas* (hostels for Sufi followers), *mausolea* (tombs) and *hammams* (public baths).

As noted by Pugachenkova<sup>42</sup>, three kinds of mosques became discernable between the 11th and 12th centuries: the main congregational mosque, the *Jami Masjid* for Friday prayers; the country mosque, *Namazgah*, for the al-Fitri and al-Adha Eid celebrations; and inner block *guzara* mosques, where the *guzara* or the *muhalla* (community) pray daily. Of these types the *Jami Masjid* of Timurid Samarkand was the Bibi Khanum Masjid, a monumental construction of rubble, stone and brick with glazed tile and mosaic faïences. The *Namazga* lies near the north west wall of the city.

The monumental mosques in Samarkand and Bukhara are combinations of at least three distinct forms. One is the hypostyle form, with rows of arched columns. Another is the iwan style of form, with one to four iwans placed axially within a rectangular courtyard. The iwan also plays a second important role in the composition when considered individually as a portal type (*pistaq*). The third is a form composed of an individual dome placed in front of the *mihrab*. The hypostyle form can be traced to early mosques in Arabia. The iwan style is present in pre-islamic Sasanian

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<sup>41</sup>Notkin, p 53

<sup>42</sup>Pugachenkova, p.32

palaces and finds its first expression in a mosque in Seljuk Persia such as the *Masjid-i-Jumah* at Isfahan(12th century addition) and in the 10th century *Arab-ata Mausoleum* in Thim. The single domed unit may have emerged as a development from Zoroastrian fire temples. The overall mosque form that is achieved in Timurid Samarkand and Bukhara is a juxtaposition of these elements within the framework of a very symmetrical order. Each element clearly has its own identity but is also balanced and integrated into the whole. There were many possible configurations.

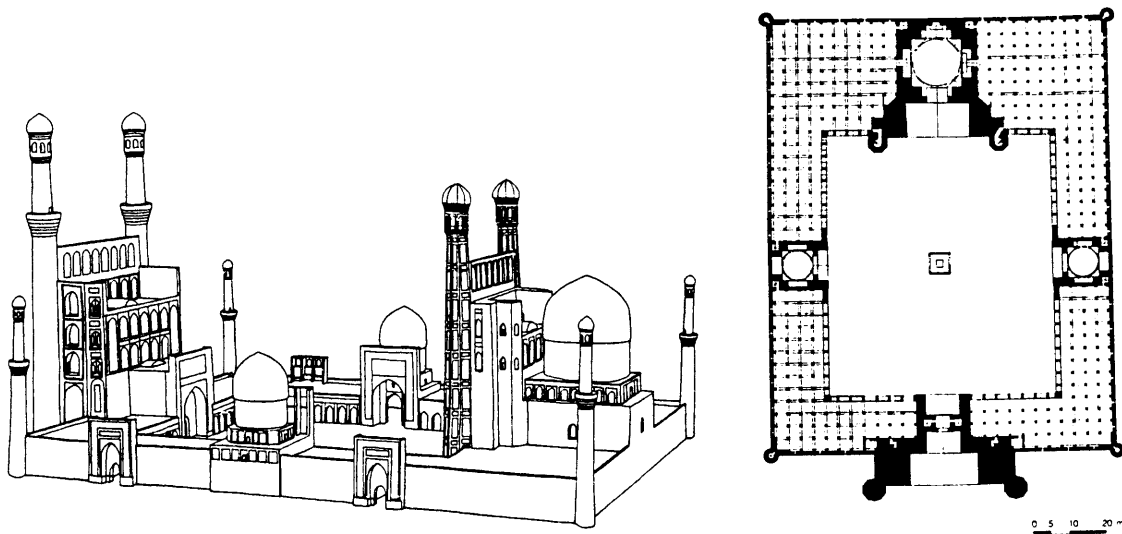


Fig. 22 Bibi Khanum Masjid (From International Competition on Ideas for the Ulugh Beg Cultural Center 1991 documents)

The Bibi Khanum Masjid (1399 - 1404) is a monumental combination of these forms (Fig. 22). One enters through an immense portal iwan, of a scale that makes it an urban landmark from all the hills around Samarkand giving it an immediate presence over the much lower scale of the city fabric despite its distance from the center (Fig. 23) A smaller iwan is setback within this portal, in a deliberate shift of scale that, though in ruins today, still gives an impression of telescoping. The interior is an arrangement of three domed units connected by a no longer extant hypostyle arcade around a central courtyard. Four iwans of different scales both face the courtyard symmetrically and act as portals to their individual units. The iwans along the east-west axis are of varying sizes placed in juxtaposition. The high double-shelled dome of the main unit rises

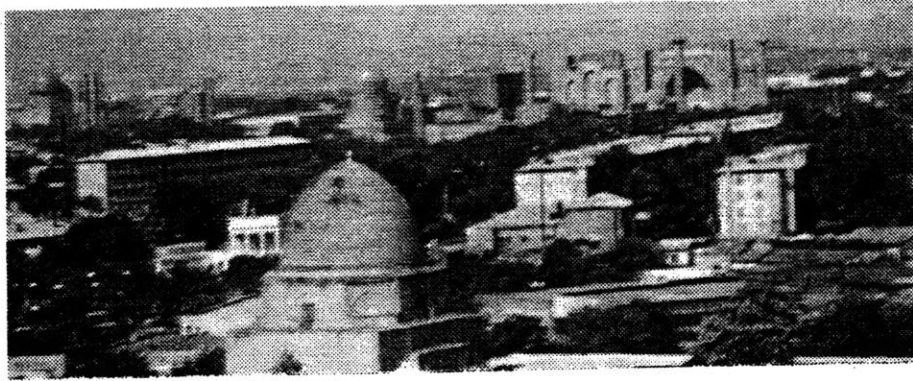


Fig. 23 Photograph of Samarkand looking east with Registan Square in background to right and Bibi Khanum masjid in the distance at left

from a cube behind the portal in a very striking juxtaposition. The contrast between this exterior expression of composite masses and the interior expression of a single fluid soaring volume under the dome is also striking and suggests a masterly deliberate design of complementary and contrasting forms.

On the exterior drum of the dome in large *ku fi* script is written *el Bahka li la* (no one is forever but God) (Fig. 24ii) and inset in small script is *al Kudra li la* (power is of God) (Fig. 24ii). Above this in *thuluth* script are the words "for God is East and West and wherever you face there is the face of God." (Fig. 24i) Inset into this ring in smaller script is the sentence from Sura 3/96 that has been referred to before (Fig. 2). Beneath the drum, on the cubic base of the dome there is another quote from the Ko'ran from Sura 6/59 (Fig. 24iii):

He has the keys of the Unseen (unknown, hidden). No one knows it except Him. He knows what is on land and in sea and knows every single falling leaf.

A point for reflection that supports this agile facility in the masters' conception is the display of similar forms in later building types. Abdul Aziz Khan Madrasa in Bukhara (1654) incorporates a domed mosque chamber in one quadrant, a *khanqa* in another. High portals in the courtyard are flanked by a double-storey courtyard. Both the entrance facade and the rear facade have an external elevated portal expression that from a distance creates a visual progression of the eye from one end to the rear of the complementary Ulugh Beg madrasa on the same axis (fig 25). While here domes are compositional elements for aggregation in another form a single domed chamber may take precedence as the overall unifying element. The Baha-al-Din *Khanqa* (1544-45) may be considered a square madrasa plan with a domed center. Abdi Darun *Khanqa* (17th c.) incorporates a *mihrab* into one wall of its north facing entrance portal. These instances

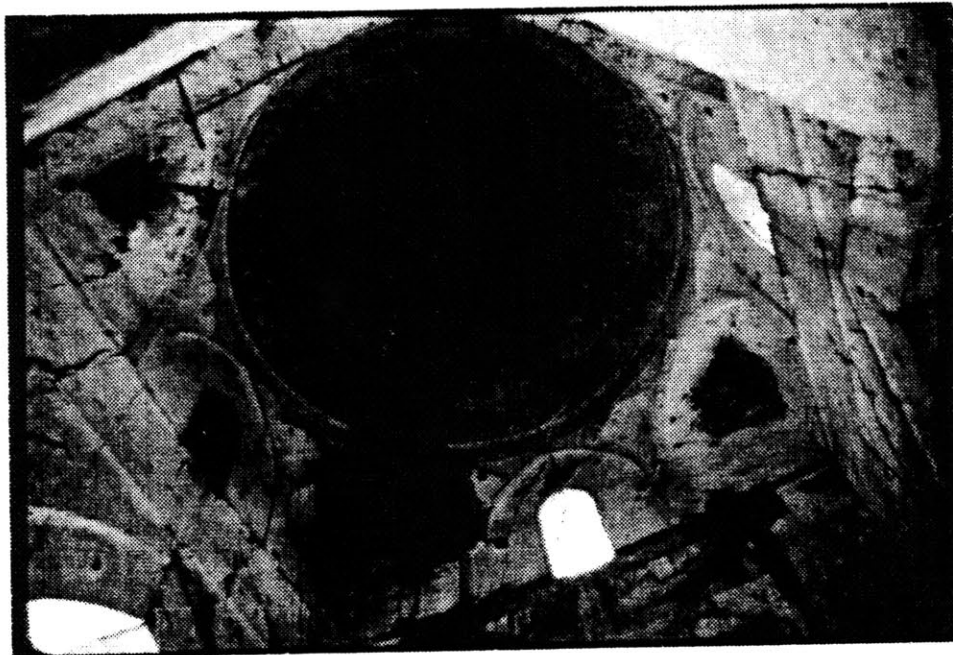
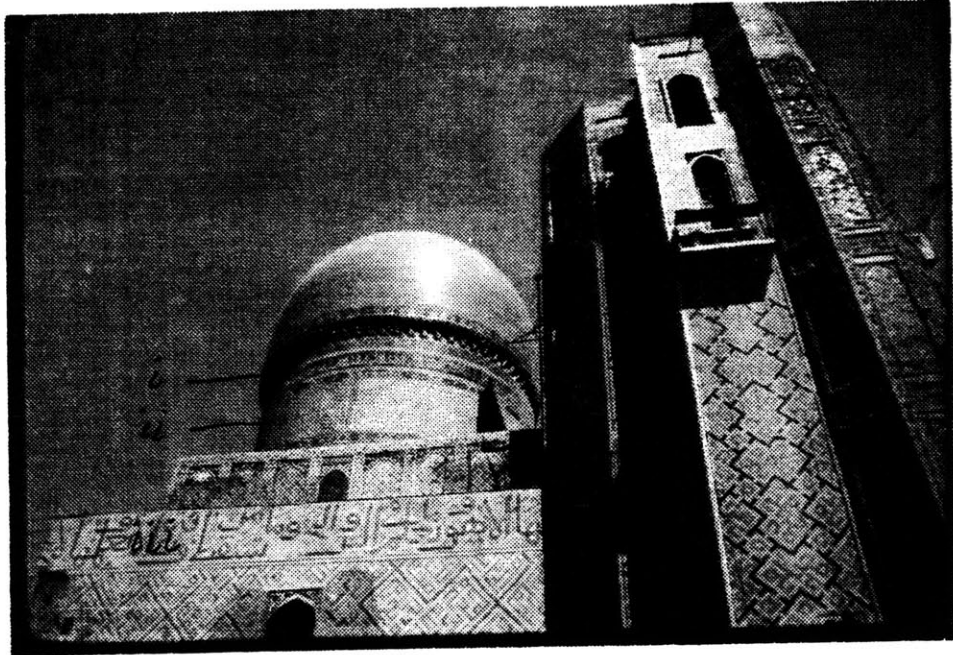


Fig. 24 Exterior - interior contrast of Bibi Khanum dome.



Fig. 25 Abdul Aziz Khan Madrasa

appear to indicate a conceptual ease with the manipulation of scale, both for a coherent juxtaposition and for an inversion of forms such as the dome or the *pistaq* which can act as an element in one case or can form the integrally unifying order in another.

The pursuit of an understanding of various manipulations of form in the architects' vision may be expanded further. Pugachenkova attributes the following formal description to Jami masjids developed in the 11th and 12th centuries:

“As a rule the Jami mosque had a courtyard surrounded with penthouses on wooden columns or arched-cupola galleries on pillars; on the main axis of the courtyard opposite the entrance there was a vaulted iwan of the main building with a niche for praying in its wooden wall. Very close, or at a little distance in the corner, there was a minaret-tower from where believers were called to come and pray. Generally Central Asian minarets were circular, contracting upwards and crowned with a rotunda-lantern; the trunk was dismembered with concentric strips forming a design”<sup>43</sup>

It appears that two kinds of mosques developed from this point, the grand monumental structures and the wooden neighborhood mosques in their own popular indigenous form. This is here considered as the fourth distinctive element of mosque architecture in Central Asia. Though no examples survive that are contemporary to Timurid times later relatives may be looked at. These *guzara* mosques are of timber frame with mud brick infilling and are sometimes domed when doubling as a *khanqa*, or are covered with flat timber roofs on columns. The enclosed portion commonly takes a rectangular form with the long western end as the Qibla wall. It is possible though to have square plans or the alternative rectangular orientation with the short wall facing west. The height of this enclosure is approximately 5.5 m and there is evidence of some that take a cubic shape. The distinctive element of this type of masjid is the iwan, or

<sup>43</sup>Ibid, p.32



porch, a roof supported by an arcade of cylindrical wood columns siting on balls carved out of wood. This arcade may be on one, two or three sides of the enclosure. Such a masjid often focuses on a square, octagonal or rectangular pool and may be part of a complex that includes a madrasa. A masjid of this type may be found in each quarter of the city. Kos Khavuz in Samarkand is a simple composition of masjid, minaret and *khavuz* (Fig. 26) The Madumi Azan ensemble of the Abdullahan period in the 16th century is a combination summer and winter masjid with a pool.

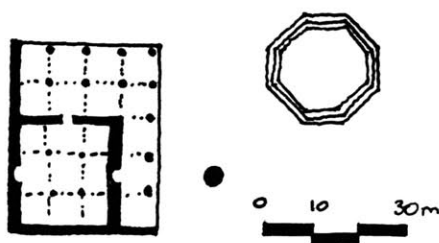


Fig. 26a. Kos Khavuz Masjid



Fig. 26b. column detail

This *guzara* mosque type was observed to have a generic type of form that expressed the order within the city and that acted as a focal and compositional element at many scales. By its recurring nature it helps to express the character of the neighborhoods and to reiterate the unified continuity of expression throughout the city. Today many of the *guzara* mosques are in ruins but their very presence, as a carpet layer of buildings infused throughout the quarters, defines the extent of neighborhood units and may still act as social centers of gathering. There were often times I was accosted by children or drawn into conversations by curious onlookers while standing before one. At another level, when the *guzara* mosque is included in the composition of an ensemble as in the Baha-al-Din ensemble which is outside the city of Bukhara it both reminds one of the neighborhood scale and symbolizes the building as a quarter or city unit itself.

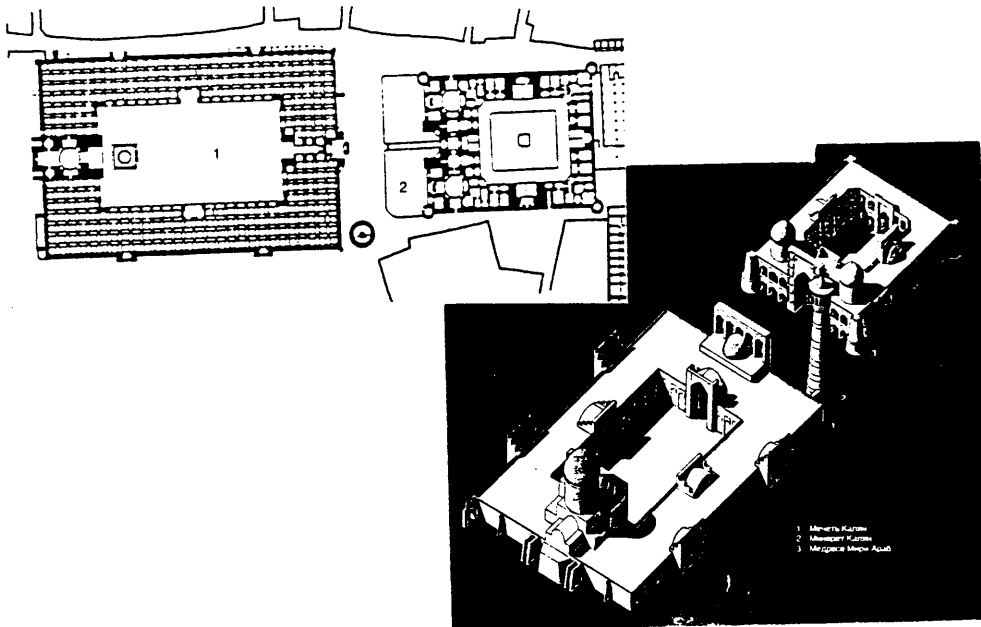
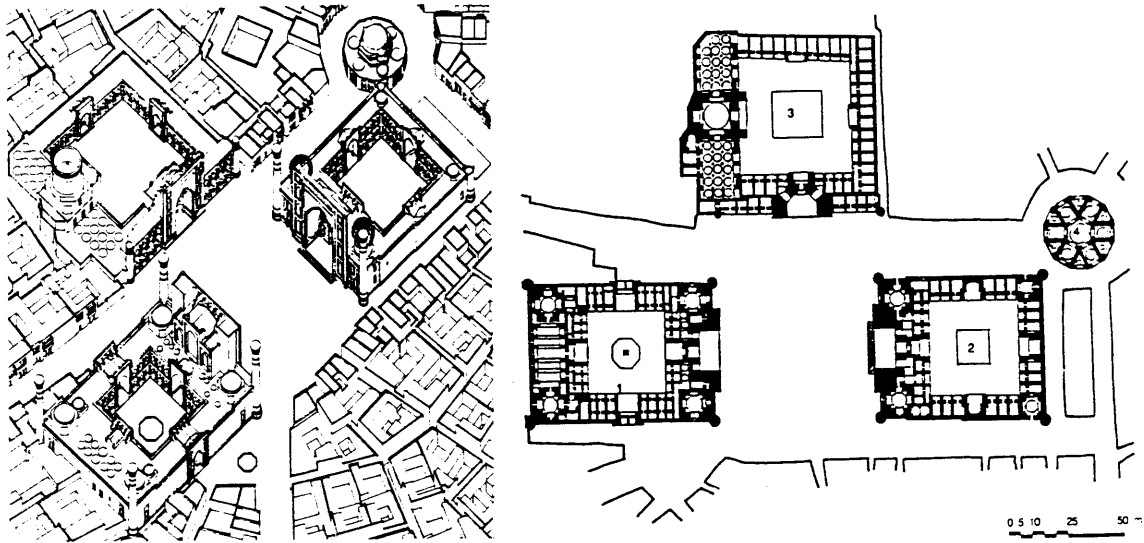


Fig. 27a. Registan ensemble of Samarkand (15th to 17th c.)  
 Fig. 27b. Po-i-kalyan Ensemble in Bukhara (12th to 20th c.)

Pugachenkova describes groupings of buildings as “ensembles”. The 16th and 17th centuries ensembles were composed of monuments built adjacently, or two opposite to one another on a common axis, or three buildings surrounding a maydan. The Registan ensemble of Samarkand (15th - 17th c) and Po-i-Kalyan in Bukhara (12th - 20th c) are two fine examples of these principles (Fig. 27). Often the composition includes a pool, as in the Lyabi Khavuz ensemble (Fig. 28a) in Bukhara(1620+) where the central element is a large water basin, or the Khoja-Zain-ud-din Khanqa ( 16th c.) masjid ensemble also in Bukhara where the pool acts as a third compositional element (Fig 28b).

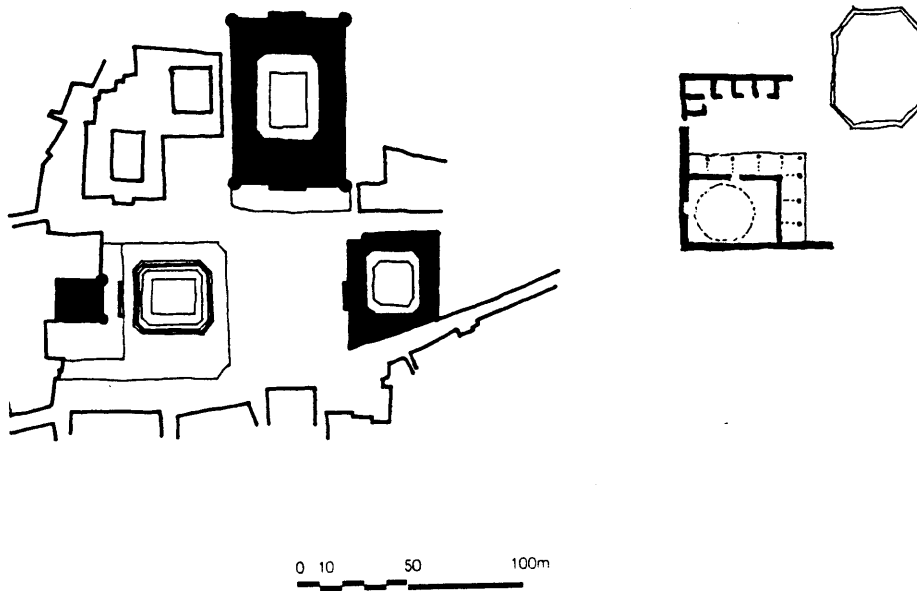


Fig. 28a. Lyabi Khavuz Ensemble

Fig. 28b. Khoja - Zain - ud - din Khanqa

These ensemble groupings are generated around one main focal point governed either by the volume of space between the two, a relationship which has been demonstrated to have geometric properties<sup>44</sup>, by the linear axis such as in the Shah-i-Zindeh necropolis, by the center of symmetry, or by a loose grouping around a maydan.

<sup>44</sup>Bulatov

Another possible layout for an ensemble is a complex form that combines these techniques into a sophisticated expression with multiple nodes and progressions. The Baha-al-Din Naqsh Bandiya ensemble (14th -17th c) to the north of Bukhara was an accretion of buildings that grew around the tomb of Baha-al-Din (d.12th c) founder of the Sufi order of Naqsh Bandiya, now the most important shrine in Bukhara. The layout of this complex was sketched in order to better understand structural techniques, variations in facade, the accretion of new buildings over centuries, the different uses to which similar types were put, the locations of water pools, and siting (Fig. 29).

The tomb of the saint is located in an open courtyard enclosed by a wall to the south and east. To the west lies a row of masjids ranging from the oldest, with a 14th century square enclosed plan, nearest to the tomb, followed by a summer masjid, a winter masjid, and a Khanqa (1545 - 46, a hostel for devotees) to the north, outside the enclosed area of the sanctuary. Another winter masjid, which forms the north border of the sanctuary, and a madrasa to its north are both 17th century additions to the ensemble (Fig. 30). Behind the qibla walls of the masjids lie the tombs of various Bukhara Sultans, buried close to the saint with the intent of attracting the blessings and merit of his shrine. The word ensemble signifies the great integration that is felt among the buildings acting together as the shrine, and is favoured by Mohammad Ahmedov, dean of the Samarkand Institute of Town planning, as a word reflective of the spirit within such a collection of building of different types arranged by or around a pool of water. The Khanqa is described as composed of *houjra* or small cells, with a big hall for the practice of religious traditions. It has a two storey loggia with pointed arches and a deep iwan within the portal. The arches create a solid monumental expression.<sup>45</sup> The dome of the Khanqa is particularly interesting in that it springs from a square base and in that there are eight ribs within forming an octagonal ocular, but only four structural ribs are visible from the exterior. Today, the madrasa is once again in use and though the dome of the Khanqa is in ruins the remainder of the ensemble receives a growing number of pilgrims.

#### OBSERVATIONS AND PERCEPTUAL IMPRESSIONS OF FORM

The preceding discussion took place in order to introduce a set of architectural images from Bukhara for comparison with images of miniatures. This section will be a short exploration and

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<sup>45</sup>Aetmatov, IX - XIX c., p 128

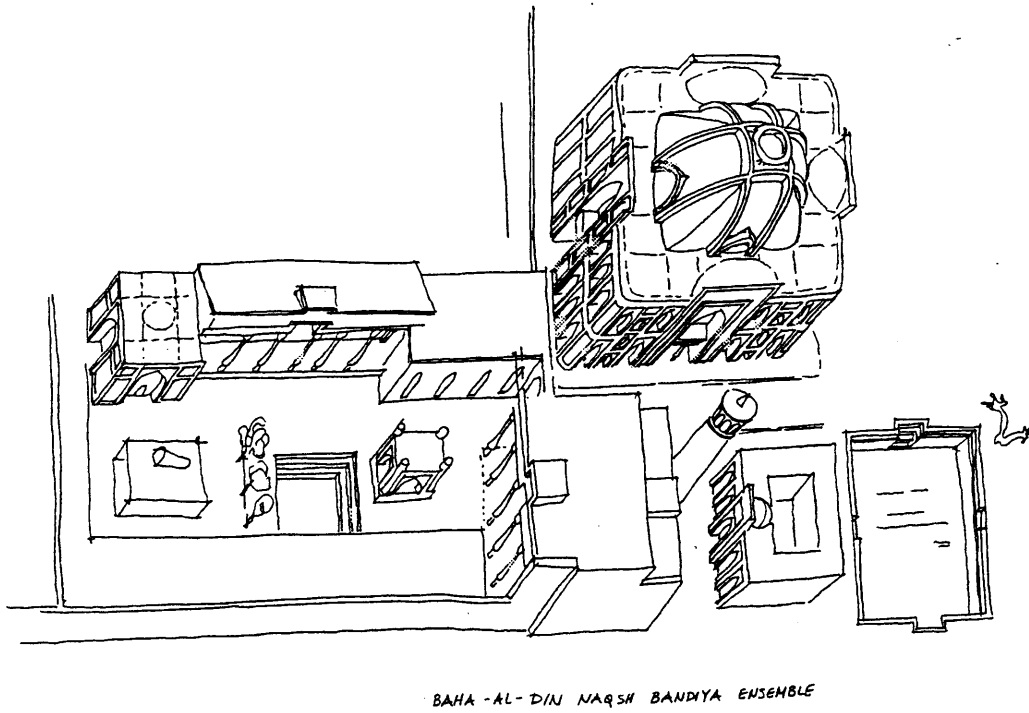
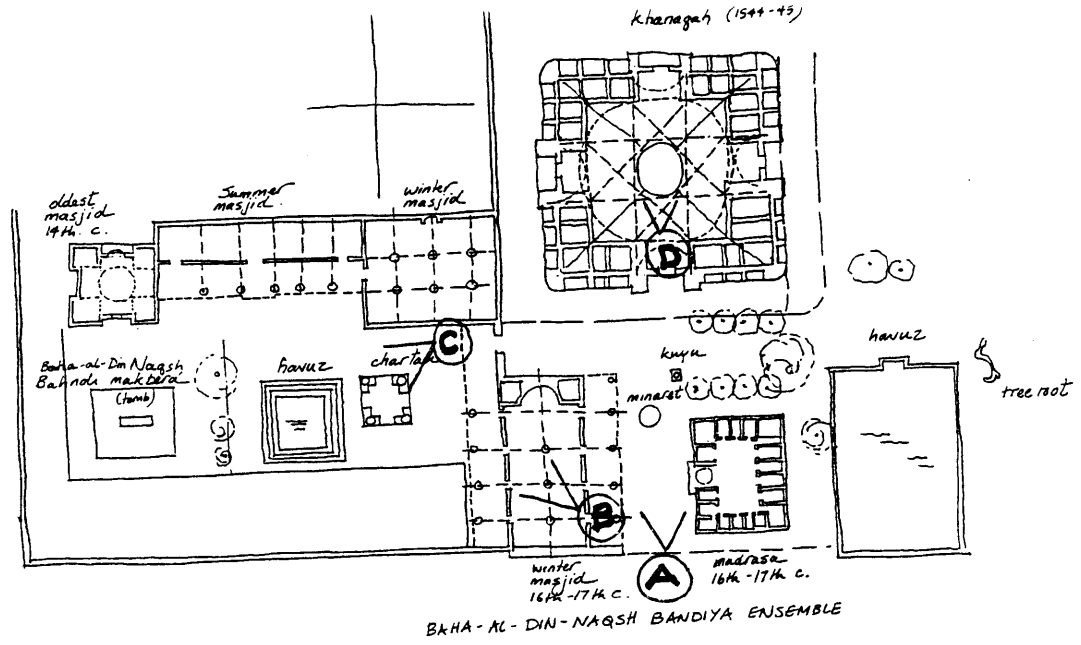
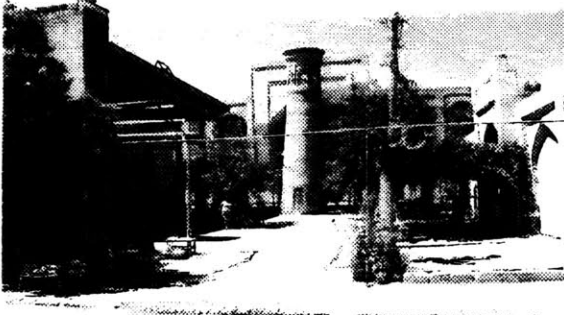


Fig. 29 Baha - al - Din Ensemble plan and Axonometric sketch



(a)



(b)



(c)



(d)

Fig. 30

Photographs of Baha - al - Din Ensemble keyed into plan

development of some of the concepts previously introduced in Discussion II. This is done with the intention of developing an understanding of the contemporary concepts of space through an experiential and perceptual analysis. The ideas explored are those of scale and juxtaposition within the iwan and portal that can best be revealed through a progressive narrative. If a form such as the Ulugh Beg madrasa in the Registan ensemble of Samarkand is considered, the organization of the Registan square allows one approach to the portal obliquely from a distance and frontally from nearby. (Fig. 31) One then rises to the platform, enters the deep iwan and



Fig. 31a. Registan Square with Ulugh Beg madrasa to left

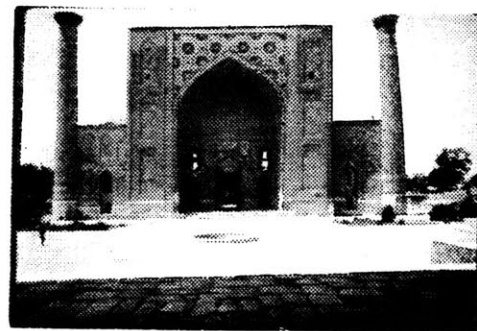


Fig. 31b. Facade of Ulugh Beg

perceives the interior through a stone screen set within a small deep arch nested in the portal. (Fig. 32) This screen itself has different properties under different lighting conditions from dawn to dusk. To enter one must then move off this axis to one side through a series of vaulted cells that extend the experiential depth of the journey. Here one passes through a second layer and scale of space. One emerges out through a small shallow cell and upon turning back realizes that one is off to one side of a different portal, a smaller one that is proportional to the courtyard (Fig. 33a,b).

One of the inscriptions in the entrance iwan is a reference to the Ko'ran. The parts that are legible are as follows: Sura 3/1 - middle 3, middle of 6 - middle of 7. These refer to the faith one must have in the Ko'ran and the punishment for those who misrepresent the revelations.

This has been a passage through three different types of enclosure. The exterior was an open enclosure of one face, a volume created by intermittent surfaces, the interior was the volume of passage where the sense of progression was extended and heightened, and then the courtyard was a creation of limited space within a closed horizon. Now this progression can also

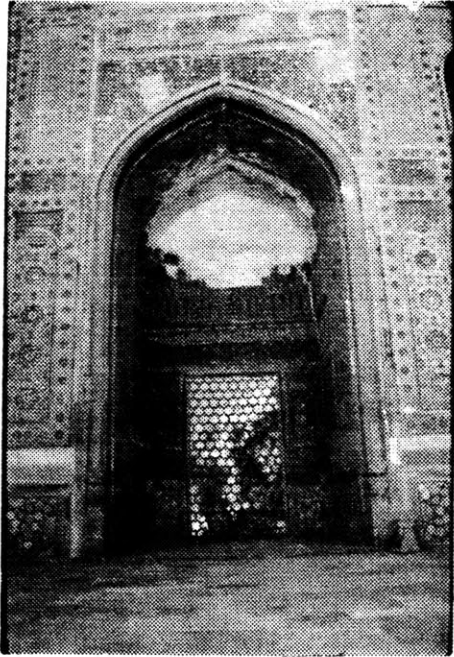


Fig. 32a. Stone screen in iwan

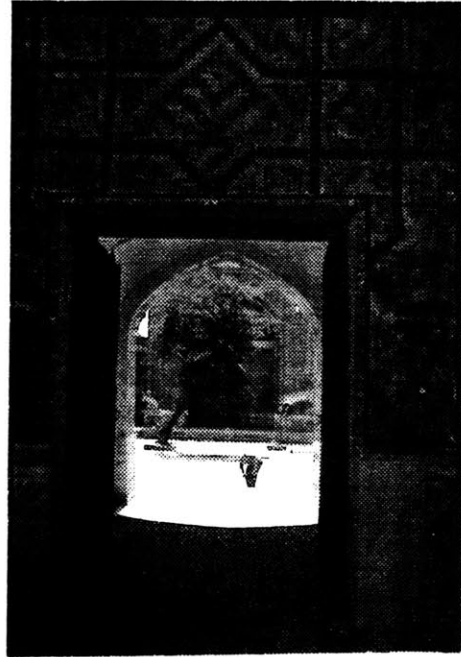


Fig. 32b. Entrance into courtyard

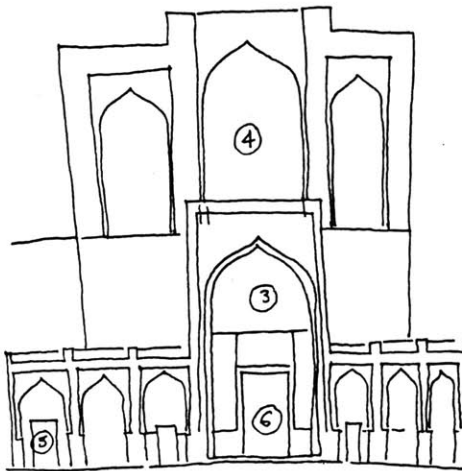


Fig. 33a. Interior courtyard view of entrance portal to Ulugh Beg madrasa

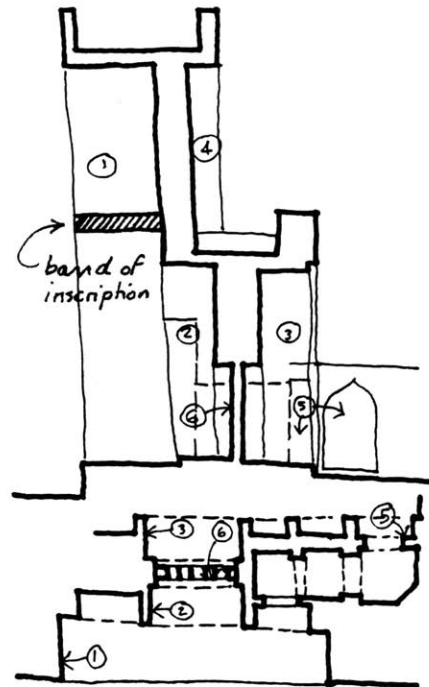


Fig. 33b. Section and plan through entrance. For plan refer to Fig. 27a.



be perceived to have been compacted together just within the narrow depth of the entrance: the deep portal, the passage and the shallow cell. Such spaces for manipulation range from the depth of decorative tile arches, where there is no relief between the frame and the interior, to a lightly etched surface, a shallow iwan, a deep iwan at various scales and sizes, and finally to a series of iwans nested within each other. This coherent and fluid usage determines an order in which one passes through vertically and horizontally compressed spaces created by the scales of the openings.

While the section through the center of the portan is of iwans nested within one another, a visual analysis of the composition of the entire entrance portal reveals another pattern. This is a pattern of three layers of iwans of different sizes juxtaposed against one another in depts corresponding to those in the passage through the cells below. In the Ulugh Beg madarasa, while the frontal view of the portal is of a single iwan flanked by walls with lightly etched decorative arches, the rear view is of a series of three iwans above and behind a smaller portal that is flanked by small cells (Fig. 33). This juxtapositioning in the rear is visible from a great distance and it is clearly intended to be regarded in its own right, not just as the rear of a portal which exhibits such a great and singular compositional unity (Fig. 23).

This quality in the portal is visible in many madrasas and masjids, such as the opposite Shir Dor madrasa in the Registan ensemble (Fig. 34 ), the Kalyan Masjid and Ulugh Beg madrasa in Bukhara ( Fig. 35 ) and in the interpretation of what the rear of the portal of the Bibi Khanun Masjid must have looked like (Fig. 22). In the later buildings the designs become a play of scales.

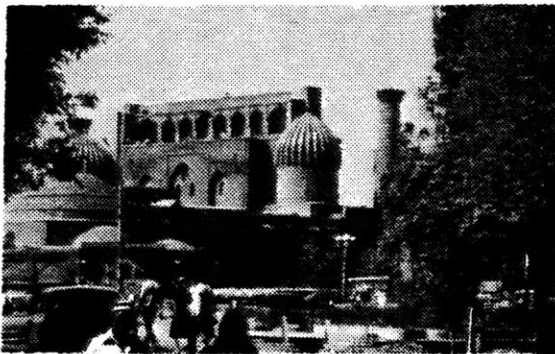


Fig. 34a. Shir Dor madrasa

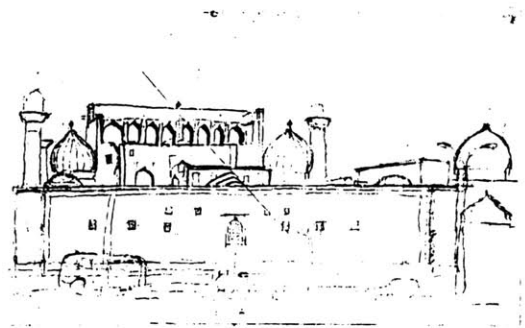


Fig. 34b. Sketch of Shir Dor madrasa

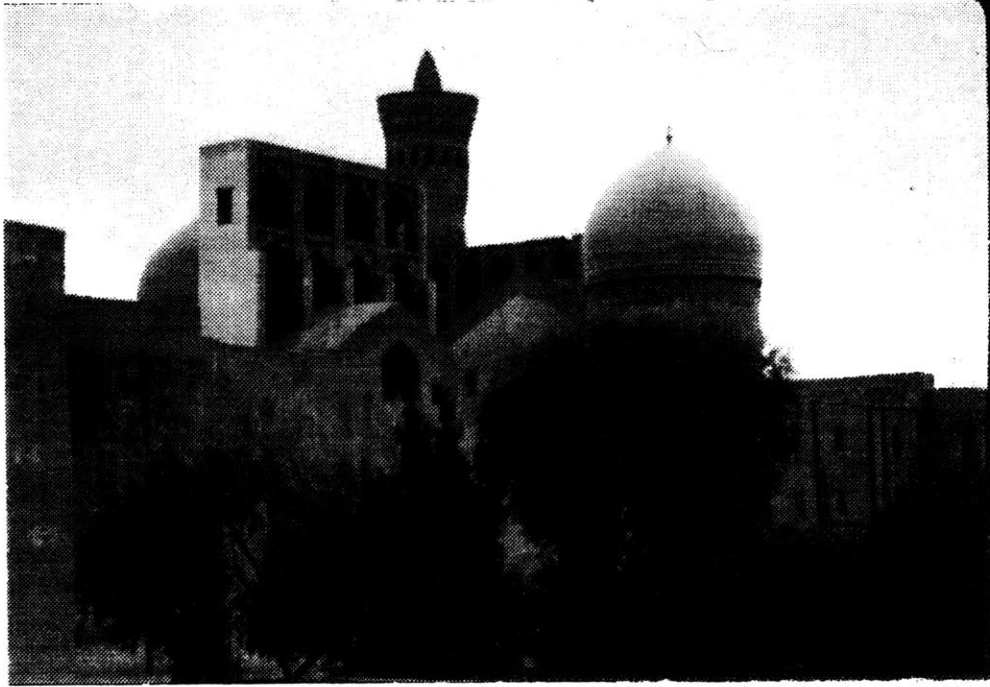


Fig. 35      Ulugh Beg madrasa in Bukhara

## DISCUSSION V: COMPARISONS : MATRIX ANALYSIS MODEL ANALYSIS

Two comparative methods of analysis were pursued as part of the study. The matrix method was a visual analysis that yielded observations about forms and types. The model analysis yielded observations about space and spatial sequences. In the discussion which follows architectural characteristics that were identified in the miniature and some particularly striking characteristics identified through the analysis of the architecture will be outlined for reference. These will then be expanded upon throughout the discussion of the matrix and model analysis.

### IMPRESSIONS AND CHARACTERISTICS OF FORM IN THE MINIATURE

- |   |                    |  |
|---|--------------------|--|
| 1 | Elements of Form   |  |
| 2 | Types of Buildings | -Madrasa, Masjid, Hammam, Palace, Urban Group  |
| 3 | Composite Forms    | -Entrance, Enclosure, Iwan (pistaq)  |
| 4 | Space              | -Shallow space, Juxtaposition, Contrast, Experience and Sequence of passage                |
| 5 | Folded Planes      | -Divison of space, Continuity between foreground and background, Articulation of Enclosure |

### IMPRESSIONS AND CHARACTERISTICS OF FORM IN ARCHITECTURE

- |   |                       |  |
|---|-----------------------|--|
| 1 | Elements              | -Mihrab, Porch, Iwan (pistaq), Minbar  |
| 2 | Types of buildings    | -Madrasa, Masjid, Mausoleum, Hamam   |
| 3 | Composite Forms       | -Pistaq, Entrance  |
| 4 | Experiential Sequence | -Passage through entrance, Experience of enclosure<br>Juxtaposition of Elements( <i>Pistaqs</i> , iwans, domes, hypostyle arcades) |
| 5 | Folded Planes         | Articulation of Space and Enclosure, treatment of the surface  |

### MATRIX ANALYSIS

The purpose of the Matrix method of analysis is to incorporate and integrate the different issues that have been considered. At first glance these are issues of art form, structure, and style; of literature and poetry; of architecture and experience: they exist separately and each can be investigated as an individual phenomenon in its own right. However, in this study, an attempt is made to develop an understanding of how one influences the other in the form of a conceptual model. Also to determine whether there are many common expressions among them, and whether the terms used to describe one may also describe aspects of another. These issues

will therefore be used as elements in the development of an analytical matrix which will be employed in an attempt to resolve them.

The matrix of ideas and associations that has been formulated here is used as a device for conceptual organization to juxtapose these elements and see what emerges without having a preconceived ideal of what should emerge. Organization is generated by observation, the prime generator of interpretation, which begins with observation of similarities that are then compared to one another and to other areas of knowledge which are elements in the matrix. Herein lies the difficulty of trying to arrive at something that is coherent or in aiming at a unified expression and a logical progression of ideas and associations. There is the danger of inconsistency within the line of thought that is being followed, of skipping and considering relationships between things that do not have in common a metaphor, an analogy or an argument to relate them. There is also the danger of choosing examples or attempting to relate to concepts that are outside the scope of the investigation. This is especially the case in turning to western concepts and rationalizations, such as the development of perspective, which appears to be an anachronism at this time period. If methods such as linear perspective are not already in evidence in the art, then they should not be postulated. Rather than clues such as the representation of a vanishing point there is often evidence of a fixed and close horizon, like the backdrop of a theatrical scene, over which devils and other on-lookers occasionally peer. The search should be for methods that are intrinsic to the expression that is being studied.

A discussion of the different ways of dealing with distance that were available to these artists would add additional insight to the study. Such techniques include Egyptian methods of frontal and orthogonal projection. These were preferred over the perspectival effect of foreshortening which was also available to these artists.<sup>46</sup> There are also conventions of Greek and Roman foreshortening, representation of distance by placing objects in zones at different levels, or partial perspective<sup>47</sup>; of Byzantine optical distortion in images and wall paintings, multiple point perspectives or iconographic representations;<sup>48</sup> of Sasanian and Chinese artists. For instance, there is a reference in Richter to depicting an open door with two leaves by showing one leaf closed, and omitting the other.<sup>49</sup> Such depictions have also been noted in this study

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<sup>46</sup>Arnheim, p.75

<sup>47</sup>Richter discusses these techniques in different periods of Greek and Roman art.

<sup>48</sup>Mathew discusses techniques of conveying hidden meaning & creating visual illusions. .

<sup>49</sup>Richter, p.18

(eg. A11) . Representation in these miniatures is not, as it was initially considered, a spontaneous manifestation of the impact of the environment. It is more likely to have been some kind of response to things seen or thought couched in the terms of the conventions of the period. It is evident through literature on the subject that it is with the thoughts of the milieu in which they live that these generations of artists are grappling. The immediate environment must be represented in the framework of the thoughts and developed ideals of their intellectuals, poets, writers, thinkers and patrons. Therefore, it becomes doubly important to explore this framework while ensuring that it is the emergence of the representational forms of painting and architecture that remains the primary objective in the search for relationships. It must be clear that the search is not for the mastery of a form of representation, such as perspective, but rather the identification of the methods of the miniaturists that use architectural vocabulary. The search is also through other forms of expression in the arts and crafts, that are used to pictorially comment on interpretations of the poetic-philosophical text, and through the identification of a conscious use of a conceptual vocabulary and compositional discipline that provides depth to formal descriptions.

Other types of investigations coincide, with the goal of discovering more about contemporary architectural theory. These include first understanding the knowledge of architecture as a craft. There have been a number of articles written on this subject by authors such as Wilber (1976), Lewcock (1978), Grabar and Holod (1979), Holod (1986, 1988), and Necipoglu-Kafadar (1986)<sup>50</sup>. These articles have pursued the following lines of thought: commentaries on treatises of geometry and its application in design and construction ( Kashi) <sup>51</sup>and (al-Buzajani)<sup>52</sup>; treatises on materials and methods of construction ( Ibn Abdun)<sup>53</sup> and (al-Maqdisi)<sup>54</sup>; treaties in which building is placed in the context of other professions(Ibn Khaldun)<sup>55</sup>; or those which describe the monuments of a specific place (al-Maqrizi)<sup>56</sup>; treaties

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<sup>50</sup>refer to Bibliography

<sup>51</sup>Iranian writer Jamshid Ghiyath ad-Din Kashi (c. 1423) *Miftah al Hisab wa al-Risalet al-Muhitayah*, a text on application of mathematics including tables for setting arches, ref. in Lewcock (1978)

<sup>52</sup>Abu-I Wafa' al Buzajani from Khorasan (949-98) *'Fi ma yahtaju illaihi alsani'min 'alam al-handasa* ref. in Holod (1988)

<sup>53</sup>Grabar and Holod, p.311

<sup>54</sup>ibid

<sup>55</sup>Rosenthal, 1980, vol. 2, chapter 5, The craft of Architecture

<sup>56</sup>Taqi al-Din Ahmad al-Maqrizi (1364-1442) *Khitat Misr*, often quoted by Abu Lugold in *Cairo, 1001 years of the City Victorious*

in which architectural words are catalogued (Risale-i Mimariyye)<sup>57</sup>; and on optics and vision (al-Hazen)<sup>58</sup>.

The second type of investigation that may be considered are the works of those who investigate architecture in the miniature. Reha Gunay in her report on the Ottoman manuscript, the *Suleymannama*, called *Suleymanname Minyaturlerinde Mekan ve Anlatim Teknikleri* (1987) analyzes all the miniatures in that manuscript that show architectural form, and documents a catalogue of the forms such as domes, arches, doorways, and others. She also provides charts of all the methods of projection that are used. This is divided into two major groups; parallel projection: orthographic, isometric, axonometric; and conical or perspective. In a different type of study Papadopolis postulates a spiral organization of figures and space in miniatures.<sup>59</sup> This has emerged as one of the methods of organization in this study (eg. Fig 15). De Angelis and Lentz, in *Architecture in Islamic Painting* (1982) provides a survey of some building typologies in architectural representation and explores the cultural meaning of inscriptions in miniatures. Lentz pursues this line of inquiry in a number of publications.

The third type of inquiry of interest here is that pursued by Ardalan and Bakhtiar.<sup>60</sup> Their search for the understanding of a conceptual integrity in Iranian architecture especially in the discussion of surface inspired this study.

The matrix of analysis that is being considered here is flexible in the number of issues that it may absorb. Elements that have no immediate relevance are set to one side for future use and reflection. The more ways in which different aspects may be linked and cross connections made between different disciplines, the greater the depth the study will achieve. By analogy the Persian poem may itself be read as a matrix among the verses with the possibility of reading a different poem each way, up, down across, the Arabic verses interspersed with the Persian and various manipulations of word forms.<sup>61</sup> The suggestions of compositional discipline in poetry, the matrix of ideas within a style of such as the Ghazal or the Quasida not only encourages the

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<sup>57</sup>Crane, H. tr. & ed, *Risale-i Mimariyye: An Early Seventeenth-Century Ottoman Treatise on Architecture*, Leiden 1987

<sup>58</sup>noted in Grombich, p.15, also known as Ibn al-Haytham

<sup>59</sup>Papadopolis in *The spiral structure of Muslim Painting*

<sup>60</sup>Ardalan and Bakhtiar, p33-45

<sup>61</sup>Browne provides a fascinating review in his introduction to Vol2 of *The Literary History of Persia*.

use of this method but also evokes the image of the formal and disciplined quality of Timurid painting and architecture.

The selection elements which were included in the matrix were based on the following criteria. Individual illustrations found to have an exceptional density of architectural information were selected for analysis. They were then analyzed for their compositional organization. Another criteria of selection of miniatures for study was according to building type. Four building types were isolated for further analysis. The first of these was the hammam. Six miniatures showing events in a hammam were grouped together for analysis in the initial case study. (Fig. 36) This choice was initiated by an indirect architectural reference to the use of painted pictures in baths for the purpose of elevating the spirits.

"For the mind is refined and ennobled by the contemplation of such pictures...In addition they were not content with a single subject but undertook a division into three since they knew that the body possesses three sorts of spirits, animal, psychological, and physical."<sup>62</sup>

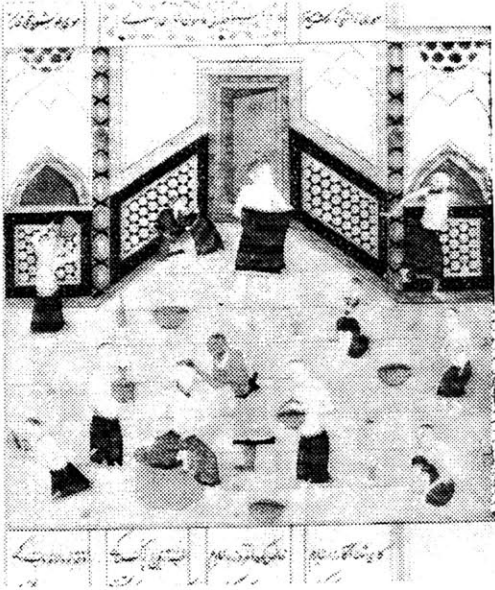
The second type was the madrasa and the masjid, close relatives and also types of buildings which still exist. Several illustrations of madrasas were analyzed for typical structures and forms.(Fig. 37) The third type was the palace form, which greatly emphasized the organization of interior space. (Fig. 38) The fourth type was that of urban building groupings, where forms were juxtaposed against one another.(Fig. 39)

Material which was included in the matrix were the following:

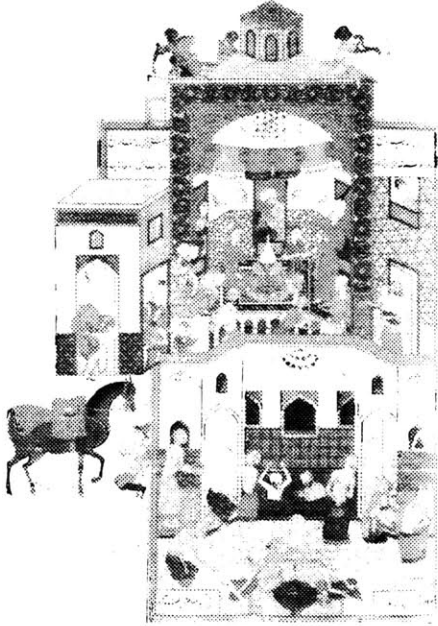
- 1 A range of about 70 miniatures that were identified from manuscripts of the schools of Shiraz, Tabriz, Herat, Bukhara and Samarkand , all originating within the 15th and 16th centuries. These miniatures were analyzed for their organizational techniques. The expression of character within them varies between different schools and cities, therefore actually making it possible, if not to identify buildings, then to identify forms and generic types of local characteristics in buildings.
- 2 Sketches of building facades, plans and building groups from Bukhara and Samarkand, as per observations made on site. These sketches were drawn while reflecting on memories of qualities and points of view in miniatures that had been analyzed prior to the field trip.
- 3 Photographs of existing madrasas and masjids in Bukhara, Tashkent and Samarkand that exemplify observations made in miniatures.

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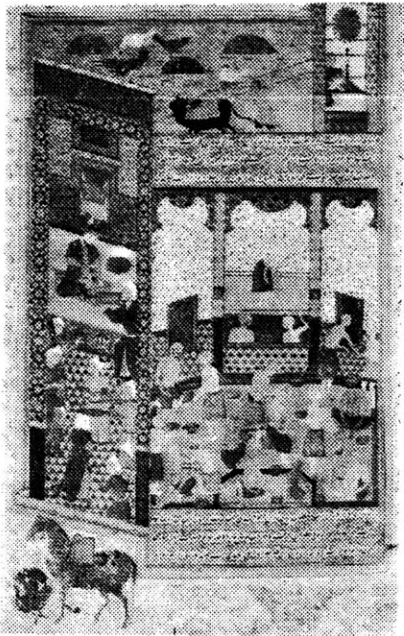
<sup>62</sup>al-Ghuzuli Matali al-budur (Cairo 1299-1300) in Rosenthal, The Classical Heritage in Islam, p.265



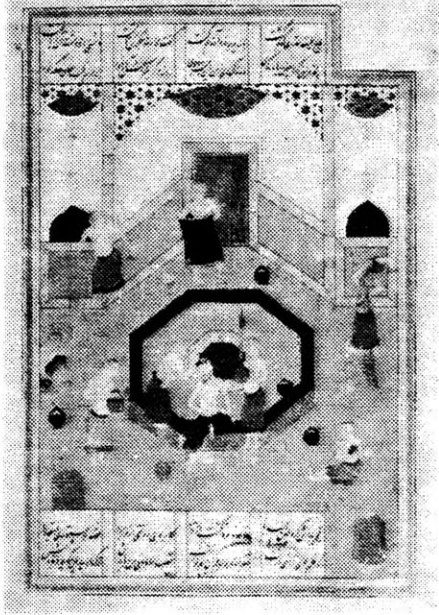
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A37



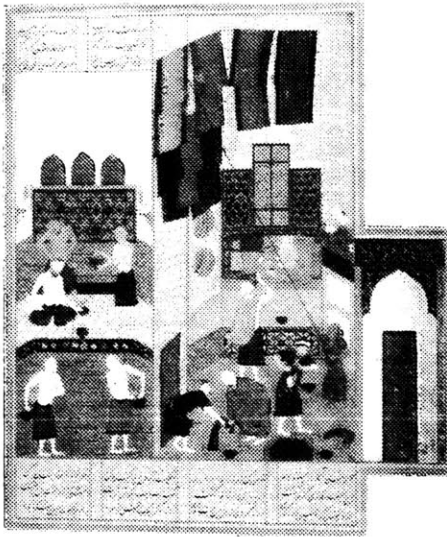
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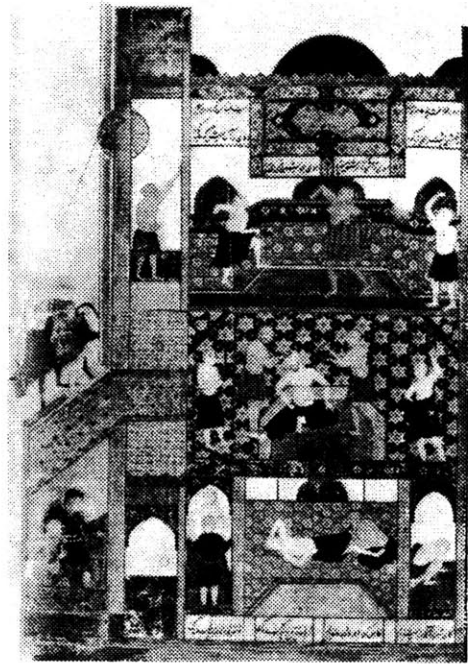
A19

Fig. 36a. Building type Hammam (Bath House)





A49

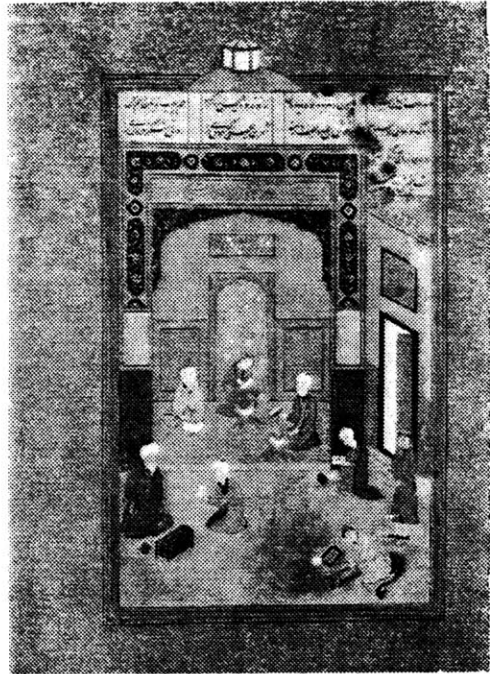


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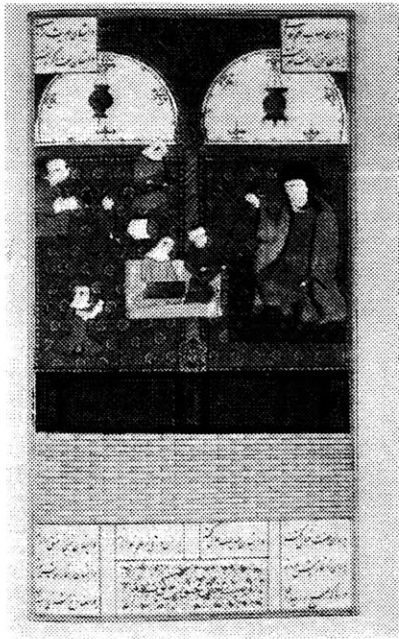
Fig. 36b. Hammam continued.



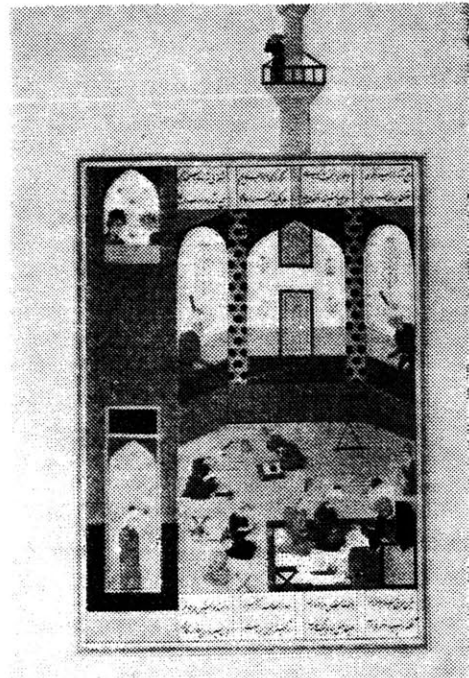
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A8

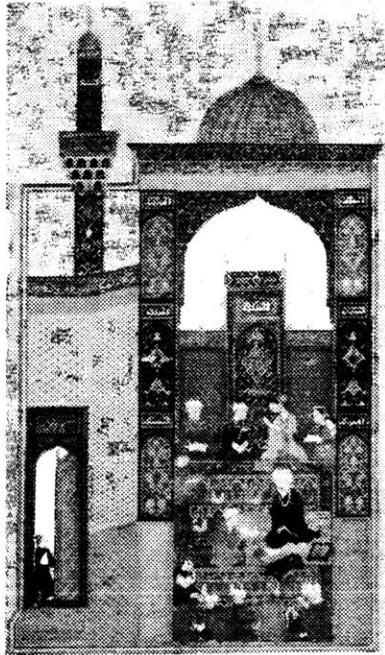


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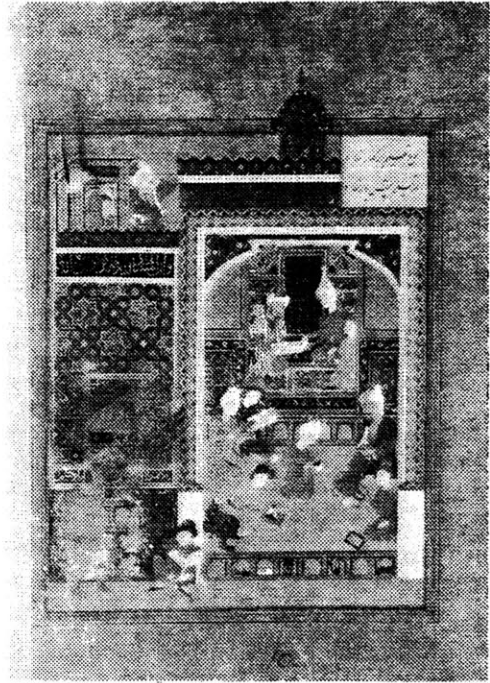


A18

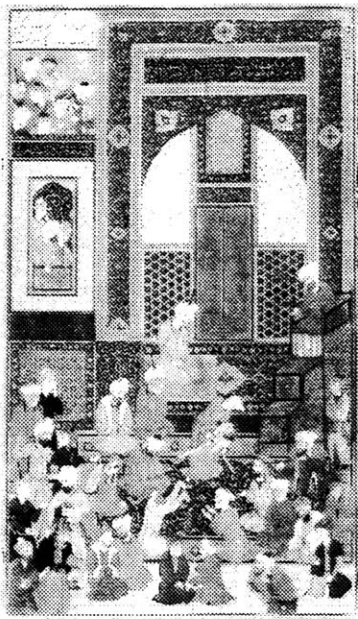
Fig. 37a. Building type madrasa and masjid



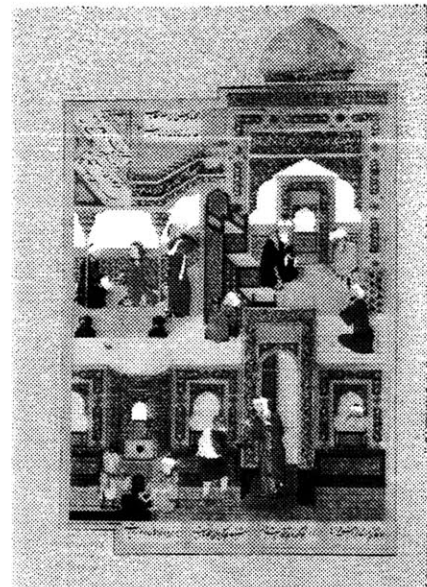
A53



A10

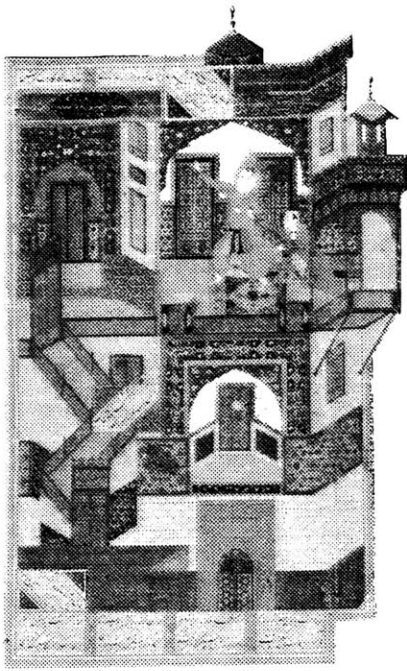


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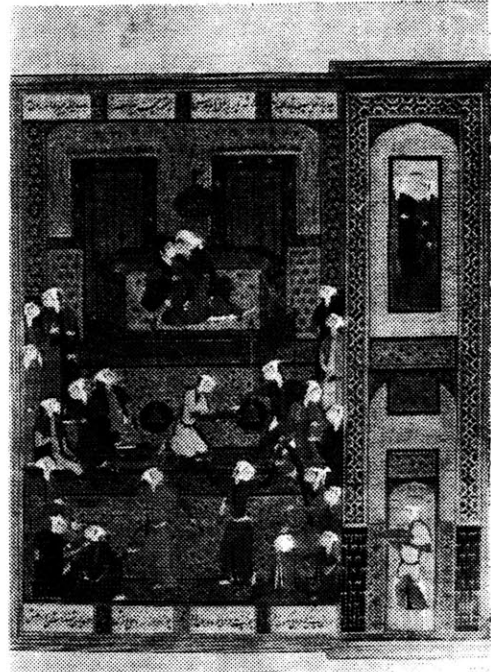


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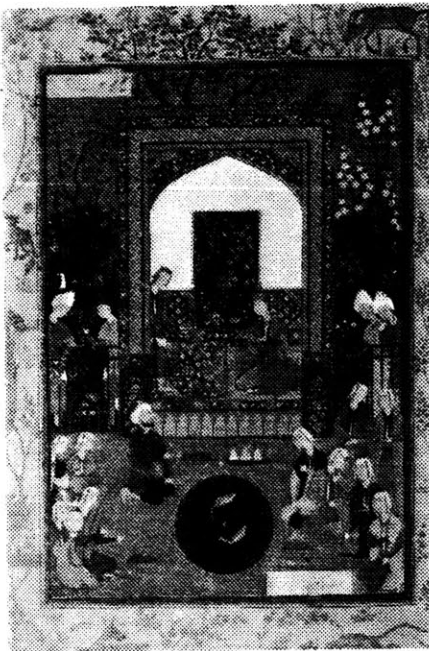
Fig. 37b. Madrasa and masjid continued



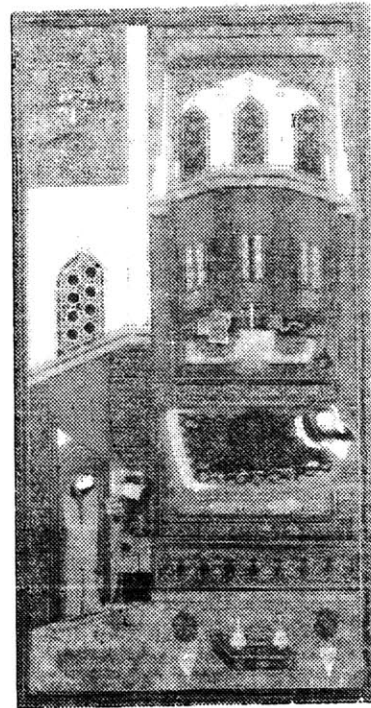
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A26



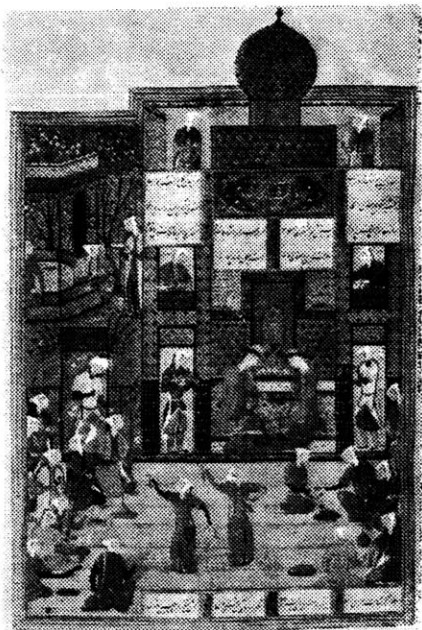
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A12

Fig. 38 Palace chambers and pavilions

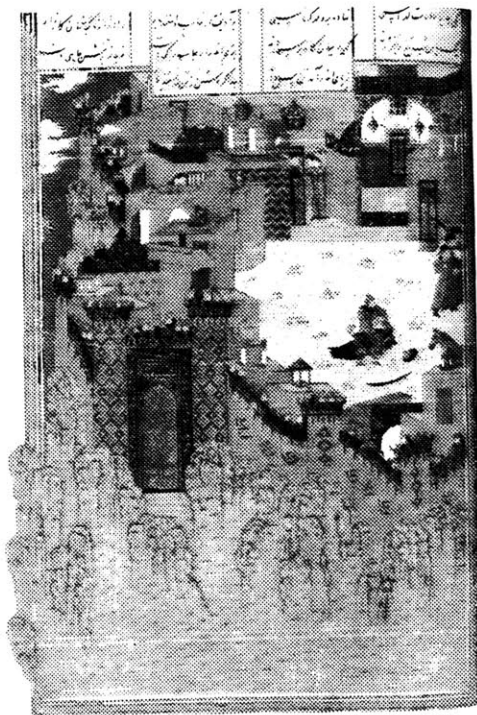




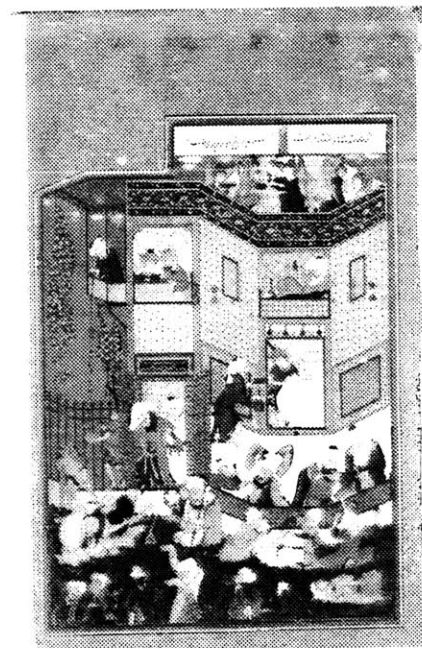
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A76

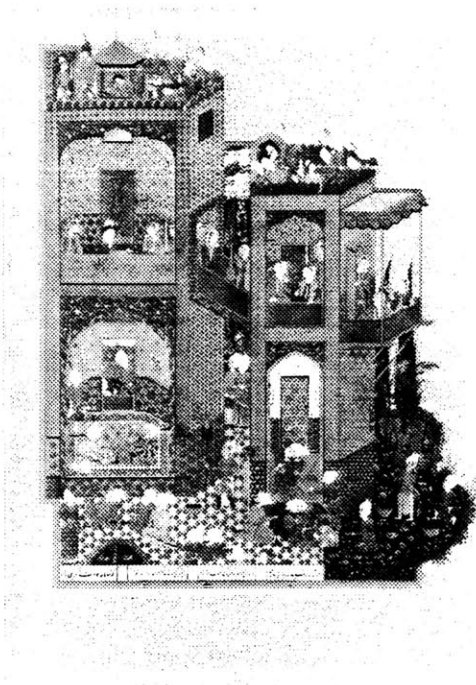


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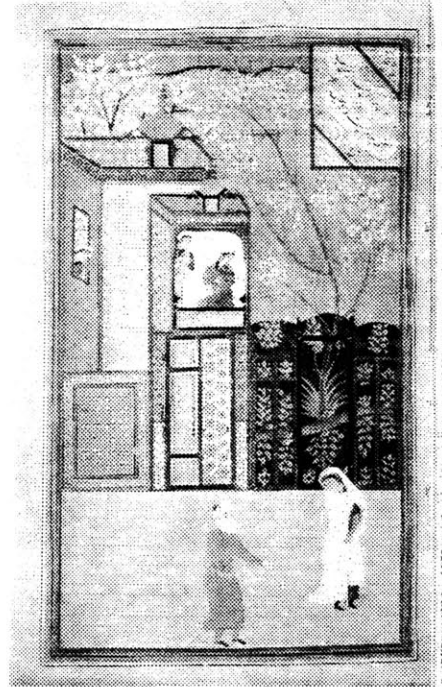


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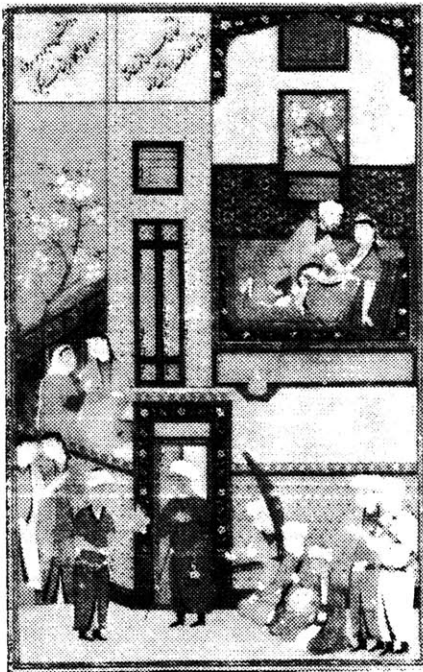
Fig. 39a. House forms and urban groupings



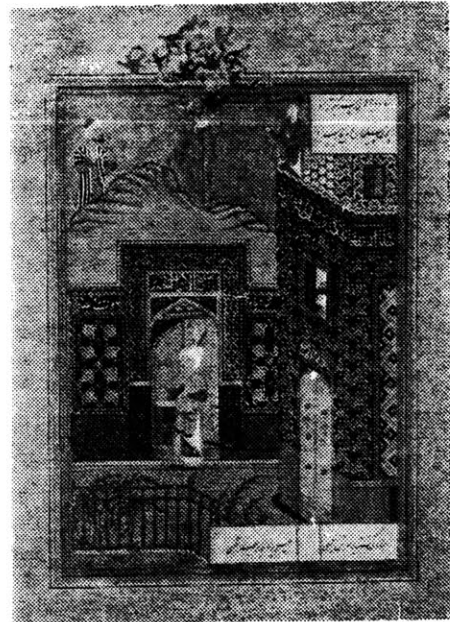
A72



A27



A68



A11

Fig. 39b. House and urban continued

4 Instances of literature and poetry that seemed to reveal links between the disciplines of poetry, painting and architecture. It may be noted that many of the authors quoted in this study such as al-Maqdisi, originated from Transoxania, Khorasan or other regions of Central Asia.

## INTERPRETATION

How can observations made about buildings be compared to those made about miniatures? An initial direct comparison may yield easily identifiable and common elements that occur simply in both the vocabulary of the art and existing buildings. These indicate that the artist is conveying his environment at least to a certain extent and provide a positive reason for further research.

The coincidence of forms and types may be commented on. The characteristics of existing buildings such as the madrasas and masjids described in a previous section may be compared to those in the miniatures. The single cell of the iwan form is noted in the miniature. This coincides with the cell structures in buildings such as the Ulugh Beg Madrasa in Samarkand. The depth of the floor plane varies with the type of space that is expressed. The plan under an iwan may range from shallow to square. (Fig. 40a and 40b.) The way a doorway and window in an iwan is indicated is similar to that in an actual building. A passage, or an entrance space is narrower than any other. An ancillary space may have less depth. The porch forms of madrasas and masjids are also clearly recognizable in the miniature. This leads to the belief that paintings do reflect buildings of the period.<sup>63</sup> At this point one is led to investigate if such comparisons extend to the experiential level of space.

The sequences in which spaces are used are formally defined and are repetitive over many miniatures. This sequence includes the figure that is waiting at the entry, the figure entering, the passage from exterior to interior, the figure pausing for presentation, the figure in the iwan, the figure in the window watching from above. Rarely is there a figure centered in the space. It is as if each shape of space has its particular nodes, focal points and routes. An interesting question for further investigation is how often the center of a symmetrical space is occupied by figures or by objects. This would give indications of the experiential intentions of a particular type of design.

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<sup>63</sup> also commented on by Ettinghausen in "World Awareness and Human Relationships in Iranian Paintings" in *Highlights of Persian Art*. p. 253

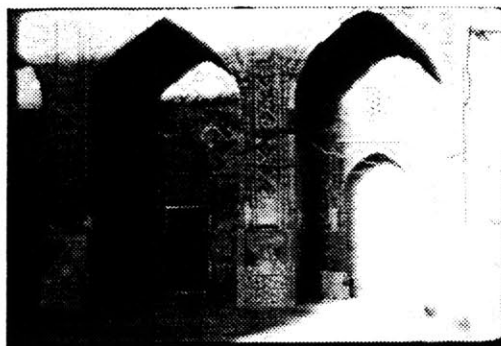
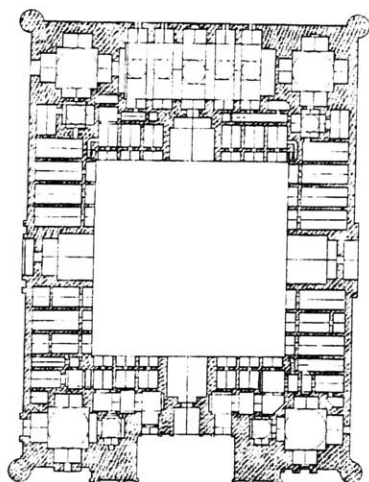


Fig. 40a. Plan - Ulug Beg madrasa (from Golombek)

Fig. 40b. Single cell of Ulug Beg madrasa

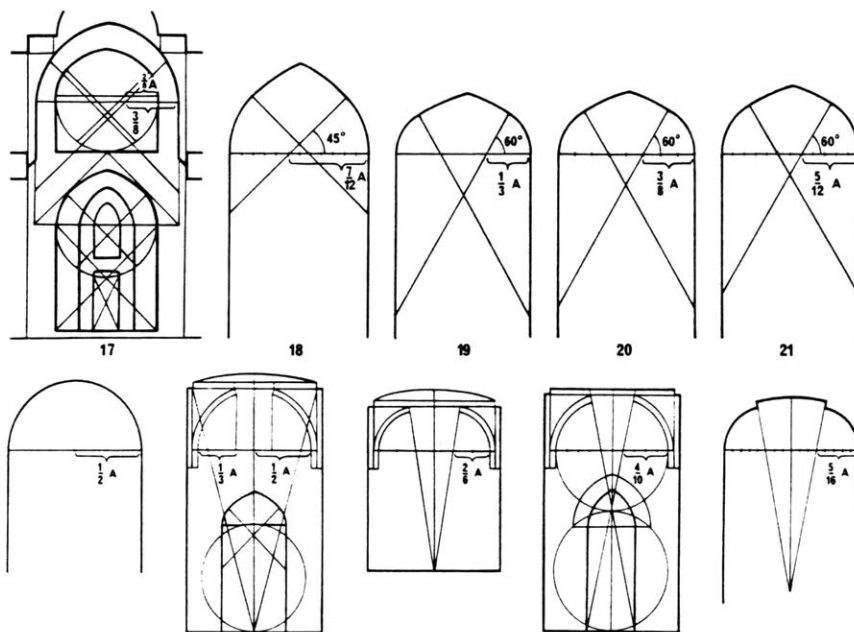


Fig. 41 Samples of arches found in Turkestan (after Golombek and Wilber)



Doorways and entrances seem to play a great part in the experiential sequence of both miniature and architecture. The arch (Fig. 41) is used as a unifying element for an enormous diversity of meanings. These include its use as a device that generates form as in a madrasa with repetitive cells, nodes, and focal points; the definition of spatial volumes and the concept of shallow compacted spaces in the entrance of Ulugh Beg madras in Samarkand, or that suggested by the varying depths in the images of floor spaces under the iwans of any building type that has been explored here; the act of using the space suggested by either experiencing a passage or visualizing heroes and heroines within it; the spiritual and poetic meanings of such a passage or destination; the intrinsic integration of the spirit and the way of life that is the essence of the Ko'ran into all forms of representation. Inscriptions from the Ko'ran are often found over door ways and iwans in both miniatures and architecture.

Possible plans, elevations and sections may be suggested from the miniatures as in Fig's 4,5,6, and 7. Ambiguities in representation indicate alternative possible interpretations for layouts. These may be conventions of representation, where each of the alternatives is a valid solution, all typified and generalized in the artists vision. The enclosure ranges from the opaque wall to the demarcation of a gate, as if the definition of manmade or urban space lies in the fact that it is in an enclosed area. Illustrations of tent encampments and nomadic scenes do not have this distinctive device. Such interpretations of forms may be compared to the way ensembles such as Baha al Din (Fig. 29) are generated in an organic and directional accretion. Surfaces fold in geometric patterns to create a sense of enclosure (Fig. 42a and Fig. 42b) that is reflective of the warping planes in the miniature.

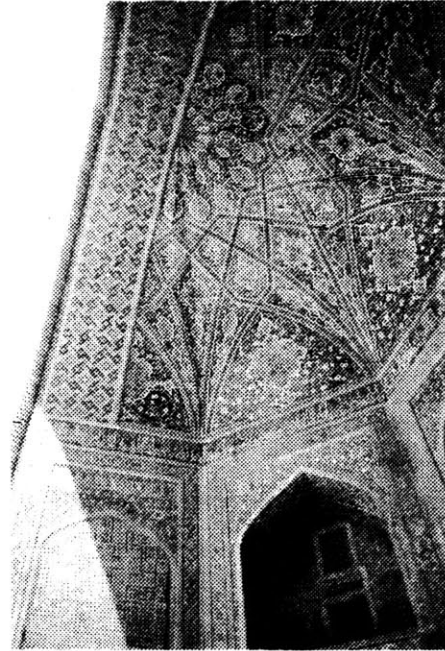
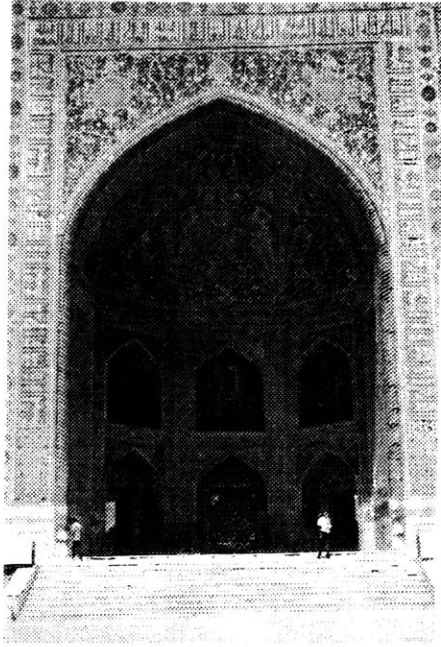


Fig. 42a. Tila Kara madrasa and masjid entrance. Samarkand.  
Fig. 42b. Arch detail from Tila Kara madrasa

## MODEL ANALYSIS

The model method of analysis was a search for a way of revealing or interpolating three dimensional form in the miniature. The attempt was made to construct a model of two miniatures and of one building element that would have characteristics of both the miniature and of constructed three dimensional form and space. The objective was also to find out if the space of the miniature had a rational way of relating the parts to each other and to a whole that could be modeled at all coherently. The alternative would have revealed that the conception of the miniature was not a cohesive and integral whole but rather a set of independent frames juxtaposed against one another.

Two cases were pursued. The first case was the modeling of the miniature SUFI IN THE HAMMAM. This was a representation of a complex space. The forms were multilevel; there was a series of sequential spaces, first entrance, then change room then cold bathing room with pool and hot rooms in the background; there was both an interior and an exterior view; the representation overlapped its border thereby including the picture frame as a spatial reference; there was ambiguity in both the relationships of the parts to each other such as which space was set back or forward more, and of the whole to the picture plane.

The search for a way of modeling that would be most revealing or that would be the closest to the sense of depth in the miniature itself took three stages. The first attempt was a simple relief model, in which each different plane that was identified in the miniature was represented by a thin sheet in the model (Fig. 43). Then these sheets were built up over one another in a thin relief of the miniature. This tended to reveal a juxtaposition of levels where the integration of planes was obscured. It became apparent that a continuity between planes was created by areas, or walls, with angled edges that would join planes in the background to the foreground. The effect apparently created by these angled walls was lost in the orthogonal relief representation. This effect was earlier identified as a tension between planes.

The search for a more effective way of representing this relationship lead to two experiments. The first was to attempt a deep model composed of a proper plan and section, thereby making a scale model of an actual space. The dimension of the floor plane was measured and the wall was set back by that amount at right angles from the picture plane. It quickly became apparent that the relationship that the miniature representation had to the picture plane would be lost. The

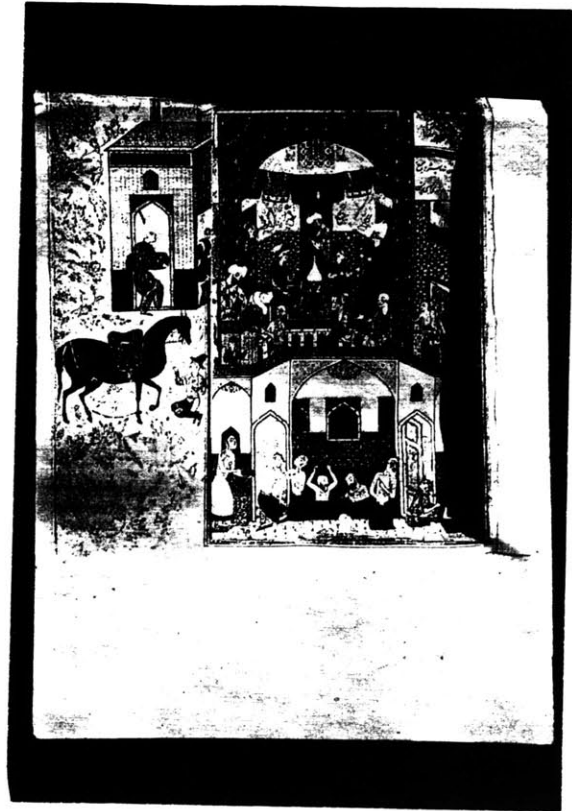


Fig. 43. Relief model of "WHY IS THAT SUFI IN THE HAMMAM (A37)

Fig. 44 Experiment with scaled model

spaces would keep stepping back deeper behind the picture frame whereas in the miniature they overlap in the upper regions (Fig. 44).

One of the principles in this representation was to attempt to keep one point of view from which the model would look like the original miniature. This was a check on the modeling technique that would ensure that as many of the original relationships would be preserved as was possible.

The second experiment was to cut strips in a piece of paper and to fold the paper so that the strips would stand out from the original surface and give the impression of a cube or a building when the paper was folded at right angles. This provided two interesting effects. One was that as the paper was unfolded both the front and top view of the cube became visible. The other effect was that an oblique parallelogram was visible on the sides that resembled the angled walls or planes of the original miniature (Fig. 45). A card model of the miniature was designed that recreated this same effect like the unfolding of a piece of paper or if considered as a continuous fabric, like an accordion unfolding after compression (Fig. 46).

Most of the angled lines in the miniature were consistently represented at an angle of approximately thirty degrees from the horizontal. Therefore, this was the angle chosen for the model. Instead of a flat piece of paper, which lies at one hundred and eighty degrees, the model lay in a sheet of card folded at an angle of one hundred and fifty degrees. The picture plane, that area outside the border of the frame, was kept as a flat plane. This permitted the tilting of the middle such that the areas at the top of the model overlapped the frame as they did in the miniature itself. Except for one area of ambiguity, most of the appearance of the original miniature was kept. This model yielded some interesting observations about the miniature: The angled lines play a very important role in creating depth and space. These lines suggested a continuity of warped walls or surfaces folded back at angles that created increments and divisions of space. The figures appeared to be placed within these increments as if this too was an organizational device. The method of depth creation was quite different in another school of miniature art. As discussed earlier, the Shiraz school relied on orthogonally offset planes where foreground and background was created by displaced planes interspaced with figures. This raises the belief that an in depth study of these differences may reveal insights into differences of space conception among regional architectures. Another observation about the model was that there existed a focal point at the base of the entry where many layers of space intersected. The eye was always drawn towards this point.

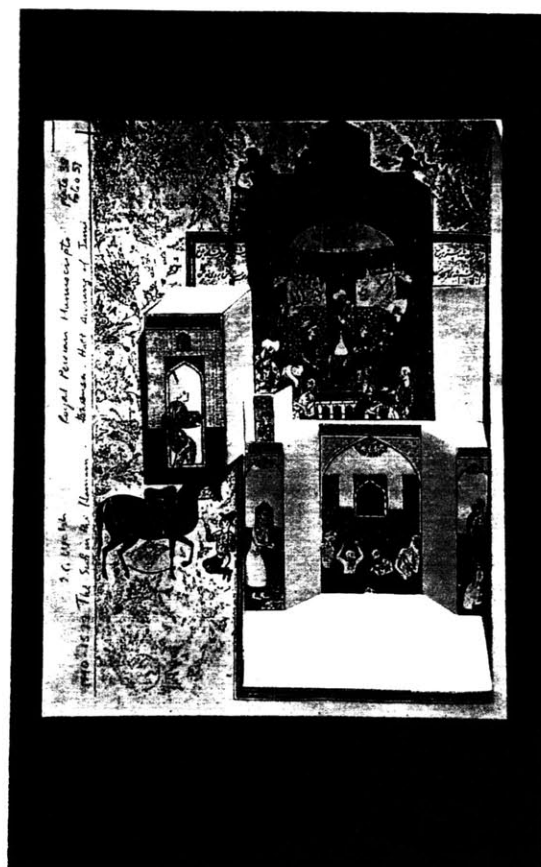
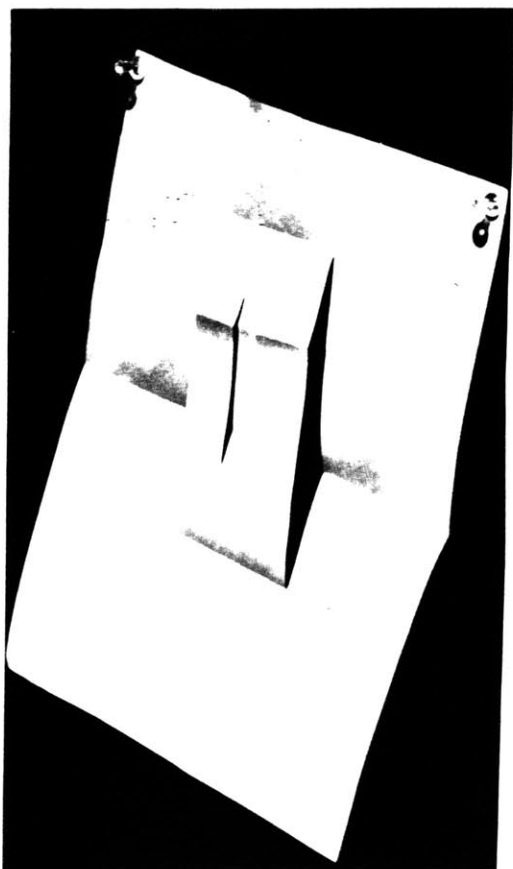


Fig. 45 Experiment with folded model that reveals side surface

Fig. 46 Card model with flat and and warped surfaces

A second miniature was modeled for further exploration and to provide more evidence. THE SEDUCTION OF YUSEF was modeled in bass wood used as a medium of precision that could be cut into planes to resemble those of the miniature (Fig. 47).

In conjunction with the models of the miniatures a representation from a photograph of Ulug Beg madrasa was experimentally converted into a model.

This model of an architectural element from this building was made to discover whether the perception of compressed space was evident. While the model appears to be distorted by perspectival converging lines, such aspects as the juxtaposition of elements are clearly visible.

## INTERPRETATION

This interpretation of the miniature suggests a number of conclusions:

Firstly that a rational method of construction is evident within the picture frame. The areas represented can be related to one another in a continuity of expression where lines coincide, and edges meet. It suggests that this method extends to the picture frame itself. Apparently the frame of this miniature is not an amorphous and undefined region with a border that is warped to suit the requirement of the illustration. It appears to be another surface considered for manipulation that can be rationalized as if two planes were tilting in differing directions.

Secondly, it suggests the illusion of shallow compressed spaces in the viewer's perception of the miniature, and these can be modeled. This space is created by dimensions suggested in the miniature itself. If one disregarded the picture plane this space could be interpreted into a scale model. However, with the picture plane it must be interpreted differently in order to ensure that what overlaps the frame in the two dimensional surface will continue to do so in its three dimensional construction

(Fig. 49). The model of WHY IS THAT SUFI IN THE HAMAM (A37) was generated from the plane surface of Fig. 49d. The model of THE SEDUCTION OF YUSUF (A50) was generated from Fig. 49e. The model of THE SEDUCTION OF YUSUF generated many observations about the use of plane surfaces that both frame the picture and step back at angles of approximately 30 degrees behind it. Though the miniature appears to be a rather loose grouping of forms, this interpretation at least has proved that it has an integral unified spatial expression.

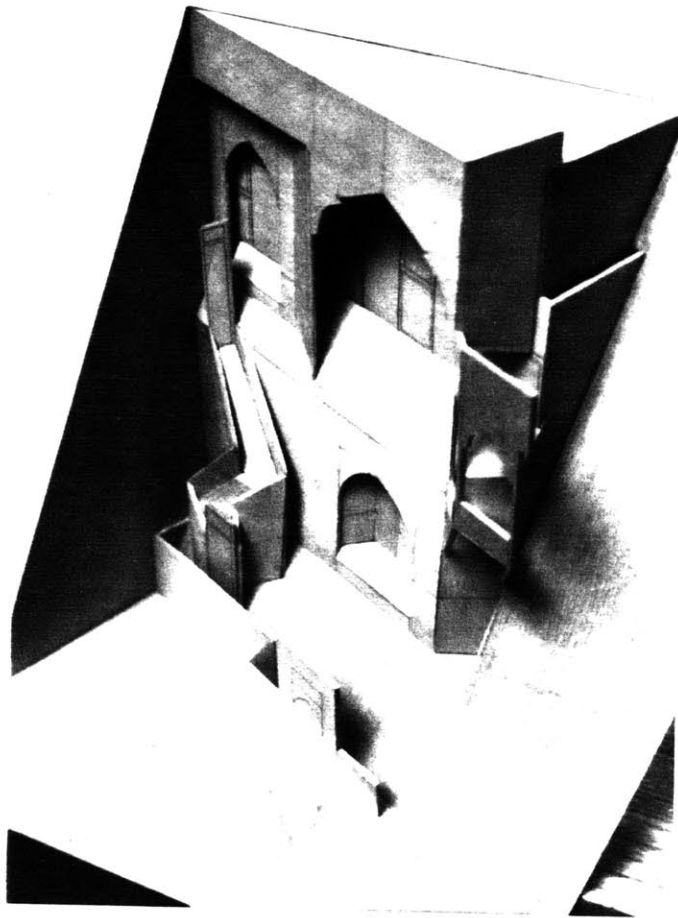


Fig. 47  
Fig. 47a. Two views of model of THE SEDUCTION OF YUSUF (A50)  
view of three dimensional space



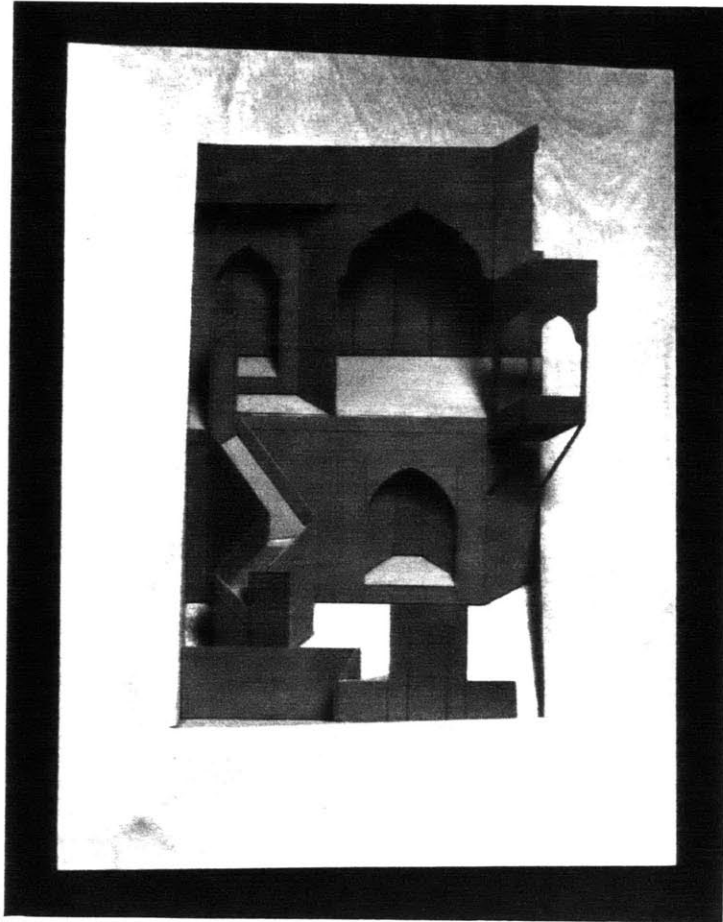


Fig. 47b. orthogonal view which looks like the miniature

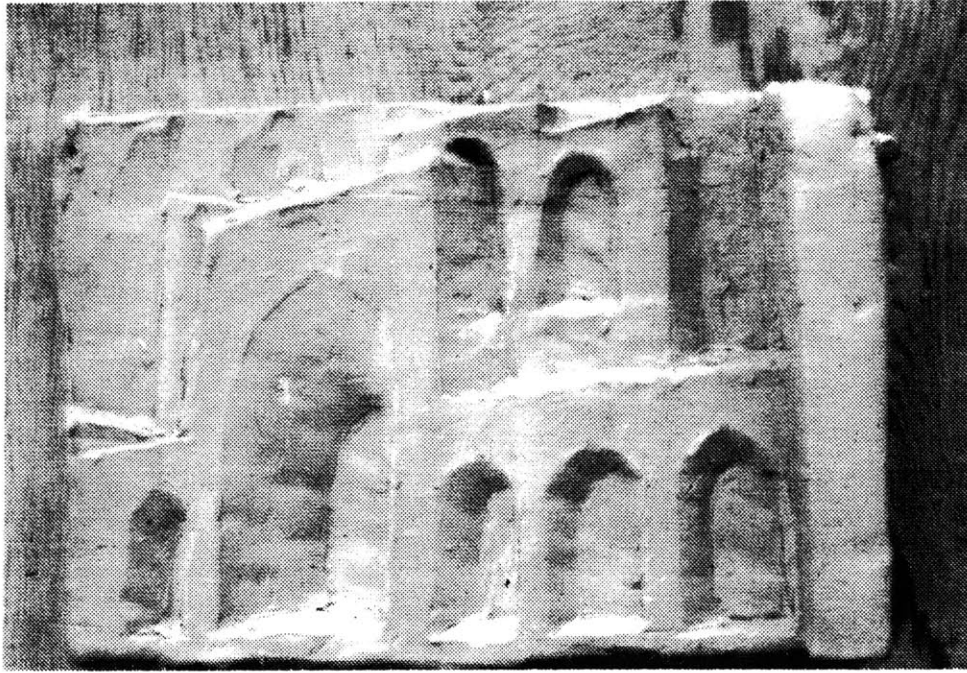


Fig. 48a. Plasticine model of Ulugh Beg courtyard facade and varying cell sizes and juxtapositioning

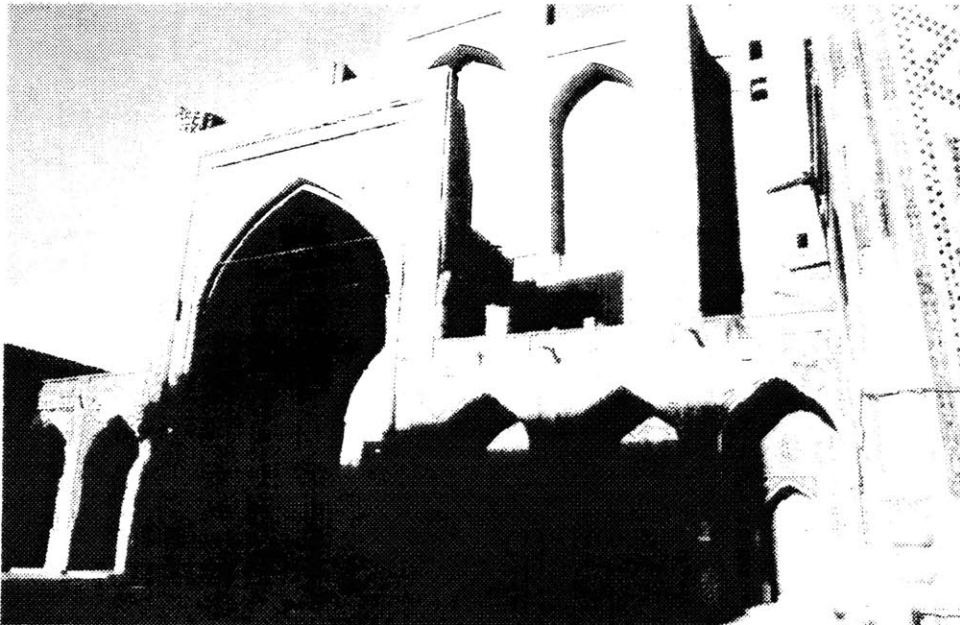


Fig. 48b. Ulugh Beg courtyard facade.

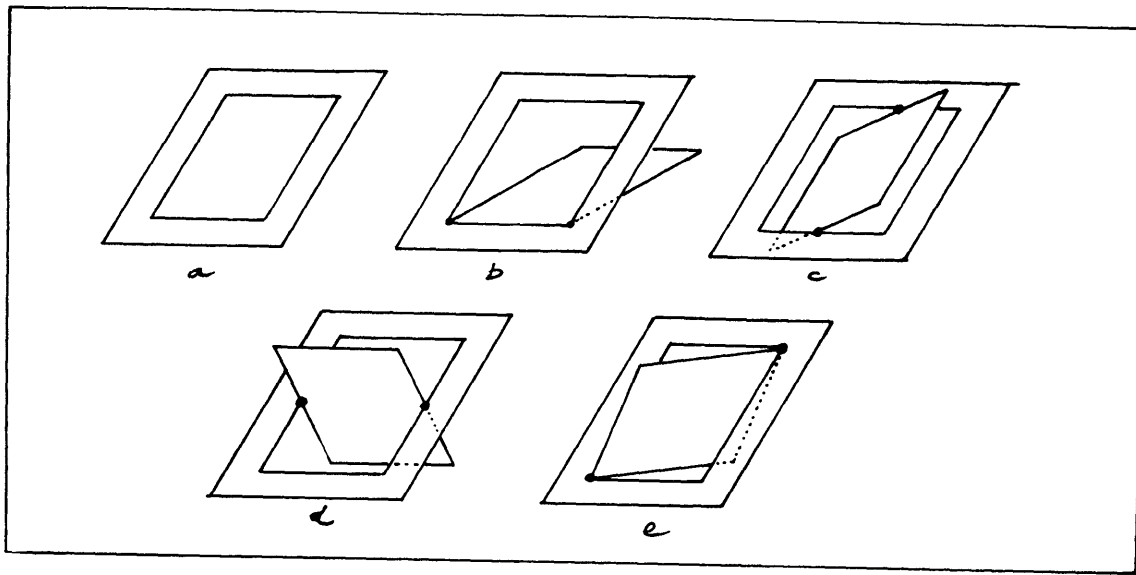
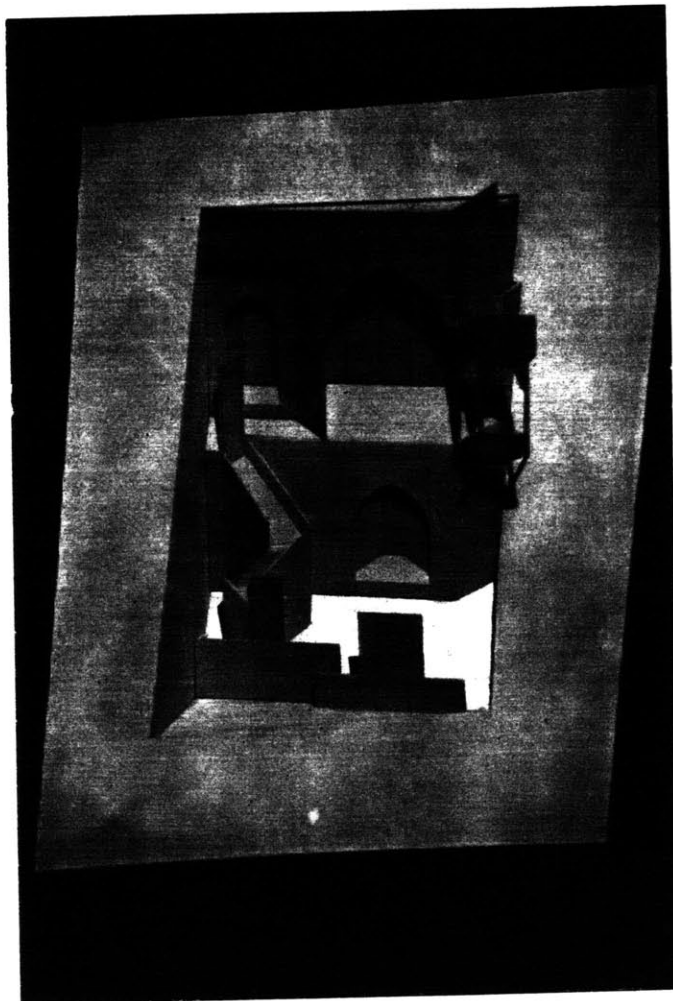


Fig. 49 Possible treatment of planes in a miniature.



## SUMMARY

In this study five different methods of analysis were used to decipher or construct a possible language of architectural space in the miniature. The first method was a formal analysis of the visual space. The second method was an analysis of the content of the miniature and the culture that produced this form of expression. The third method was an analysis of architectural form itself for characteristics that parallel those in the miniature. The fourth method was a comparative juxtaposition of the formal the poetic, and the architectural analysis. Finally, the fifth method was to create a three dimensional model of the plane surfaces of the miniature. Each of these methods was undertaken with the aim of identifying an architecturally descriptive terminology.

One of the initial questions was simply to determine if there was such a language relevant to and present in the miniature at all. Many positive indications to confirm this were revealed. A cohesive unity was recognizable in structures and buildings expressed in the miniature. Building typologies were found to be recognizable by the presence of characteristic elements. Composition of forms and spatial identities appeared to have their counterpart in the architecture.

It has been suggested in this study that there may be similarities between the expression of form and space in the miniature and of a possible interpretation of the way space may be experienced in the building. This challenges the contemporary description of this architecture as an archeological artifact, or its analysis based solely on a formal composition. It also challenges the characterization of miniatures as a vision of an idealized art form unrelated to the world of built form and the suggestion that their artists did not exchange ideas with contemporary architects. Rather it is hoped that through investigations of such remaining documents as miniatures a conceptual perception of qualities intentionally designed into the buildings may be suggested.

The architect's intentions for formal and spatial design may be explored through the records of the artist's expression of the same intentions. This explanation may be extended to suggest that the artists expressions affected those of the architect in a symbiotic exchange. Although as yet very little evidence of this has been adduced, there is ample precedence in the relationships evident between the western painter and his counterpart the architect throughout

the Renaissance, that promotes a similar investigation within Islamic civilisations. The few interpretative passages which have resulted from this involved process that draws from multiple sources reveals an exciting potential for a conceptual and symbolic vision of the unique Islamic culture of Timurid Central Asia.

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i) Preachers make a big show before mihrab and minbar . When they are off alone, they do something else ii) Your nest is on the arch of my eye's gaze iii ) Mind your own business, preacher! Why are you raising a cry ? I've lost my heart in love: what have you lost ? iv ) O Opener of gates
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- Fig. 46. Card model with flat and warped surfaces
- Fig. 47. Two views of model of THE SEDUCTION OF YUSUF (A50)
- Fig. 47a. view of three dimensional space
- Fig. 47b. orthogonal view which looks like the miniature
- Fig. 48a. Plasticine model of Ulugh Beg courtyard facade and varying cell sizes and juxtapositioning
- Fig. 48b. Ulugh Beg courtyard facade.
- Fig. 49. Possible treatment of planes in a miniature.

## APPENDIX A: LIST OF MINIATURES<sup>1</sup>

From Ashrafi, M. *Persian-Tajik Poetry in XIV - XVII Centuries Miniatures*

A1	FARIDUN WITH JAMSHID'S DAUGHTERS from <i>Shahnamah</i> Firdausi, 50's-60's, 15th century, Shiraz Style	(table 15)
A2	BROTHERS KILL IRADJ from <i>Shahnamah</i> Firdausi, 50's-60's, 15th century, Shiraz Style	(table 16)
A3	KHUSRAW IN FRONT OF SHIRIN'S PALACE from <i>Khamsa</i> Nizami, 896/1491, Shiraz Style	(table 19)
A4*	IN SCHOOL from <i>Khamsa</i> Nizami, 896/1491, Shiraz Style	(table 20)
A5	BAHRAM GUR IN THE BLACK PALACE from <i>Khamsa</i> Nizami, 896/1491, Shiraz Style	(table 21)
A6*	LAILA AND MADJNUN IN THE MADRASA from <i>Madjnun va Laili</i> Amir Khusraw Dehlavi, 896/1491, Herat Style	(table 22)
A7	A SCENE IN THE MADRASA from <i>Madjnun va Laili</i> Amir Khusraw Dehlavi, end of 15th & early 16th cent., Herat Style	(table 24)
A8*	IN SCHOOL from <i>Madjnun va Laili</i> Amir Khusraw Dehlavi, end of 15th & early 16th cent., Herat Style	(table 25)
A9	FIRUD'S FUNERAL from <i>Shahnamah</i> Firdausi, 931/1524, Tabriz	(table 30)
A10*	IN SCHOOL from <i>Shah va Darvish</i> Hilali, 944/1537-38, Tabriz Style	(table 38)
A11*	SHAH'S TALK WITH A DERVISH from <i>Shah va Darvish</i> Hilali, 944/1537-38, Tabriz Style	(table 39)
A12*	AT SHIRIN'S RECEPTION from <i>Pandj Gandj</i> Amir Khusraw Dehlevi, 50's of 16th century, Tabriz Style, Painter - Agha Mirak	(table 41)
A13	KHUSRAW AT SHIRIN'S PALACE from <i>Pandj Gandj</i> Amir Khusraw Dehlevi, 50's of 16th century, Tabriz Style	(table 42)
A14	A TALK WITH THE SHAH from <i>Bustan and Gulistan</i> Sa'di, 956/1549, Isfahan, made by a painter from Tabriz studio	(table 43)

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<sup>1</sup> \* Illustrated in Discussion II

- A15 A DERVISH, A JUDGE AND A SCIENTIST TALKING (table 44)  
from *Bustan and Gulistan* Sa'di, 956/1549, Isfahan, made by a painter from Tabriz studio
- A16 UAYNA'S MATCH-MAKING (table 47)  
from *Silsilat Az-Zahab* Jami, 60's-70's, 16th century, Mashad Style
- A17 THE POET LAGARI AND A STOUT NOBLE (table 50)  
from *Tuhfat al-ahrar* Jami, 80's, 16th century, Painter - Sheikh Muhammad (?)
- A18\* IN SCHOOL (table 55)  
from *Khamsa* Nizami, 950/1543-44, Shiraz Style
- A19\* IN BATHS (table 56)  
from *Khamsa* Nizami, 950/1545, Shiraz Style
- A20 KHUSRAW AND SHIRIN'S PALACE (table 57)  
from *Khamsa* Nizami, 950/1545, Shiraz Style
- A21 BAHRAM GUR IN THE WHITE PALACE (table 58)  
from *Khamsa* Nizami, 950/1545, Shiraz Style
- A22\* A SERMON IN MOSQUE (table 59)  
from *Kulliyat* Sa'di, 70's-80's, 16th century, Shiraz Style
- A23 AT THE RULER'S RECEPTION (table 60)  
from *Mehr va Mushtari* Assar, 70's-80's, 16th century, Shiraz Style
- A24\* IN BATHS (table 61)  
from *Shahnama* Firdausi, 992/1585, Shiraz style
- A25\* BAHRAM IN SANDAL PALACE (table 66)  
from *Kulliyat* Amir Khusraw Dehlevi, 70's-80's, 16th century, Shiraz style
- A26\* KHIZRKHAN AND DUVALRANI IN THE PALACE (table 68)  
from *Kulliyat* Amir Khusraw Dehlevi, 70's-80's, 16th century, Shiraz style
- A27\* AN OLD MAN MEETS WITH A YOUNG BEAUTY (table 73)  
from *Tuhfat al-Ahrrar* Jami, 60's, 16th century, Bukhara Style
- A28 BAHRAM GUR FIGHTING IN SHINGIL'S PRESENCE (table 77)  
from *Shahnamah* Firdausi, 1011/1602-03, Bukhara Style
- A29 RUSTAM'S APPOINTMENT WITH TAHMINA (table 83)  
from *Shahnamah* Firdausi, 1556-57
- A30 BIJAN AND MANIJA IN THE MARQUEE (table 84)  
from *Shahnamah* Firdausi, 1556-57  
Painter- Muhammad Murad Samarkandi

- A31 ISKANDAR AND NUSHABEH IN THE PALACE (table 102)  
from *Khamsa* Nizami 835/1431, Herat
- From Welch, S.C. *Royal Persian Manuscripts*
- A32\* SCANDAL IN A MOSQUE (plate 16)  
from *Diwan* (collected works) Hafiz, 1527, Tabriz  
signed by Shaykh Zadeh
- A33\* WORLDLY AND OTHERWORLDLY DRUNKENNESS (plate 18)  
from *Diwan* (collected works) Hafiz, 1527
- A34 NUSHIRVAN LISTENING TO THE OWLS ON THE RUINED PALACE (plate 19)  
from *Khamsa* (Quintet) Nizami, 1539-43  
Attributable to Aqa Mirak
- A35 BARBAD PLAYING MUSIC TO KHUSRAW (plate 26)  
from *Khamsa* (Quintet) Nizami, 1539-43  
Attributed to Mirza 'Ali (Tabriz school ?)
- A36 DONKEY FOR SALE (plate 34)  
from *The Haft Awrang* (The Seven Thrones) Jami, 1556-65  
Attributable to Mirza 'Ali (Tabriz school?)
- A37\* WHY IS THAT SUFI IN THE HAMMAM (plate 38)  
from *The Haft Awrang* (The Seven Thrones) Jami, 1556-65
- From Lentz, T.W. and Lowery, G. *Timur and the Princely Vision*
- A38 HUMAY AND HUMAYUN ON THE DAY AFTER THEIR WEDDING (cat. no. 13)  
from *Diwan* Khwaju Kirmani, 1396 Baghdad
- A39 THE LION ATTACKS THE BULL SHANZABA (cat. no. 21)  
from *Kalila u Dimna*, Nasrullah, 833/1429, Herat
- A40 KHUSRAW RECEIVES FARHAD (cat. no.32)  
from *Khamsa* Nizami, 1445-46, Herat
- A41 A VIZIER REDUCED TO POVERTY SITS BEFORE THE KING'S PALACE (cat. no. 41)  
from *Gulistan* Sa'di, 1426-27, Herat
- A42\* TAHMINA ENTERS RUSTAM'S CHAMBER (cat. no 45)  
possibly from a *Shahnama*, 1434-40, Herat
- A43\* ARJASP SLAIN BY ISFANDIYAR IN THE BRAZEN HOLD (cat. no 43)  
from *Shahnama*, 1444, Iran
- A44 THE BEGGAR BEFORE THE KING (cat no 153)  
from *Mantiq al-tayr* (conference of the birds), 1483, Herat
- A45 THE ELDERS PLEADING BEFORE HURMUZD ON BEHALF OF KHUSRAW (cat. no 140)  
from *Khamsa* Nizami, 1494-95, Herat?

- A46 SA'DI AND THE YOUTH OF KASHGAR (cat. no 157)  
from *Gulistan* Sa'di, 1486, Herat?
- A47 THE CONSTRUCTION OF THE PALACE OF KHAWARNAQ (cat. no 140)  
from *Khamsa* Nizami, 1494-95, Herat?
- A48 CONSTRUCTION OF THE MASJID-I JAMI' IN SAMARKAND (cat. no 147)  
from *Zafarnama* (book of victory) Sharafuddin Ali Yazdi,  
1467-68, Herat?
- A49\* HARUN AL-RASHID AND THE BARBER (cat. no 140)  
from *Khamsa* Nizami, 1494-95, Herat
- A50\* THE SEDUCTION OF YUSUF (cat. no 146)  
from *Bustan* Sa'di, 1488, Herat, Painter - Bihzad
- A51\* THE PROPHET MUHAMMAD IN A MOSQUE WITH HIS (cat. no 159)  
COMPANIONS  
from *Baharistan* (abode of Spring) Jami, 1547, Bukhara

From *Bihzad: Images and Types from the school of Bihzad in the Art collection of Cairo*  
(in Arabic)

- A52\* SCENES IN A MOSQUE (also referred to as AN OLD MAN REFUSED (Fig. 4)  
ADMITTANCE TO A MOSQUE) in Timur and the Princely Vision  
from *Bustan* Sa'di, 1488, Herat, Painter - Bihzad

From Cagman, F. and Tanindi, Z. *Islamic Miniature Painting*

- A53\* LAYLA AND KAYS AT SCHOOL (Fig. 16)  
from *Khamsa* Nizami, 1461, Herat Style

From *Artistically illustrated manuscripts of works by Ali sher Navoi*

- A54 FEAST IN THE PALACE (17)  
from *Collected Diwan* Tabriz, 1500 -50

From Yusupov, E. Yu *Miniatures Illuminations of Amir Hosrov Dehlevi's works*

- A55 BAHRAM IN THE SANDAL PALACE (60)  
from *Khasht bekhisht* of *Khamsa*, Dehlevi, first half of

- A56 A TALE ABOUT BROTHERS WHO COULD NOT DIVIDE THEIR (61)  
INHERITANCE  
from *Matla-al-anvar* of Kulliyat, Dehlevi, 1560's-1570's,  
Shiraz

- A57 HOSROV WITH SCHOLARS AND POETS (65)  
from *Shirin and Hosrov* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz

- A58 BAHRAM IN THE MUSK PALACE (67)  
from *Khasht Bekhisht* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A59 BAHRAM IN THE SAFFRON PALACE (69)  
from *Khasht Bekhisht* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A60 BAHRAM IN THE BASILICA PALACE (70)  
from *Khasht Bekhisht* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A61 BAHRAM IN THE RED ROSE PALACE (71)  
from *Khasht Bekhisht* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A62 BAHRAM IN THE VIOLET PALACE (72)  
from *Khasht Bekhisht* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A63 REVELRY AT ISKANDAR'S PALACE (76)  
from *Aiinai Iskandari* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A64 A FEAST AT NASRETDIN BUGRAKHAN'S PLACE (78)  
from *Qiran As-Saydain* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A65 SULTAN MUIZIDDIN KAIKUBAD WITH HIS SON BUGRAKHAN (79)  
from *Qiran As-Saydain* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A66 SULTAN KAIKUBAD AND BUGRAKHAN REVELLING (80)  
from *Qiran As-Saydain* of Kulliyat, Dehlevi, 1560's-70's,  
Shiraz
- A67 KHIZRKHAN TRYING ON FOOT-WEAR (81)  
from *Dovalrani and Khizr Khan* of Kulliyat, Dehlevi,  
1560's-70's, Shiraz
- From Robinson, B.W. *Persian Drawings from the 14th through the 19th  
Century*
- A68\* THE MARIAGE OF MIHR AND NAHID (plate 96)  
from a manuscript of the *Mihr and Mushtari* (The Sun and  
Jupiter), Bukhara Style, 1523
- From Ettinghausen, R. and Yarshater, E. *Highlights of Persian Art*
- A69\* SCENE IN A BATHHOUSE (Fig 167)  
from *Khamseh* Nizami, Shiraz 1529

From Grabar, O. "Cities and Citizens" in *The World of Islam*

- A70\* THE BATH (Caliph al-Ma'mun in the bath) (18)  
from *Khamseh* Nizami, Shiraz 1528

From Welch, S.C. *A King's Book of Kings*

- A71 BAHRAM GUR IN THE WHITE PAVILION (9)  
from *Khamseh*, Nizami 1481 Tabriz
- A72\* THE NIGHTMARE OF ZAHHAK (28 verso)  
from *Shahnameh* of Shah Tahmasp Firdausi, 1520-30 Tabriz
- A73 ARDASHIR AND THE SLAVE GIRL GULNAR (516 verso)  
from *Shahnameh* of Shah Tahmasp Firdausi, 1520-30 Tabriz
- A74 NUSHIRVAN RECEIVES AN EMBASSY FROM THE KING OF HIND (638 recto)  
from *Shahnameh* of Shah Tahmasp Firdausi, 1520-30 Tabriz
- A75 THE ASSASSINATION OF KHOSROW PARVIZ (742 verso)  
from *Shahnameh* of Shah Tahmasp Firdausi, 1520-30 Tabriz

From De Angelis, M.A. and Lentz, T.W. *Architecture in Islamic Painting*

- A76\* NIGHTTIME IN A PALACE (17)  
from Shah Tahmasp's *Khamsa* Nizami, ca. 1540

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