



WHAT IF? WHAT NEXT?

SPECULATIONS ON HISTORY'S FUTURES

SESSION 1A

MODES OF ARCHITECTURAL HISTORY

Ecologies of History: Histories of Ecology

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IMAGES AS HISTORICAL SOURCES: ANALYSING PERSIAN MINIATURE PAINTINGS AS DOCUMENTATIONS OF ARCHITECTURAL HISTORY

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The mixed-methods research approach remains central to the writing of cultural histories. Within this framework, experts recommend using interdisciplinary methodologies to incorporate historical evidence, new analytical themes, experimental techniques and concepts. Although few medieval architectural structures have remained in Iran, the representation of architectural structures in Persian miniature painting is a significant phenomenon in Islamic art. Based on a different way of seeing and visual tradition, such paintings, mainly from the Timurid and Safavid eras, illustrate a variety of architectural spaces. In the absence of buildings, these images are suggested as primary references for structural and socio-cultural studies of medieval Iranian architecture. However, a lack of familiarity with the visual language of Persian miniature and the absence of an analytical method seem to be obstacles for decoding spatial settings in such paintings. Methodological experimentation undertaken in this study has sought to enhance how the multifocal perspective characteristic of architectural elements and spaces depicted in Persian miniature paintings could be better understood. Such experimentation has resulted in a significant extension and refinement of an analytical method suggested by previous scholars that has evidently never developed and applied so thoroughly before. The particular folding and pop-up technique developed here produces three-dimensional paper projections of Persian miniature paintings through which the spatial arrangement and structure of the architectural elements depicted can be decoded. Applied to spatial analysis of various architectural settings in medieval and pre-modern Persian painting, including 'landscape', 'mobile architecture', 'urban complex' and 'palace', three-dimensional pop-up models facilitate the use of Persian miniature as a primary resource for the history of medieval architecture, advance the iconographical analysis and expedite the socio-cultural connotations associated with that spatial environment.

Introduction

Scholars from diverse disciplines affirm the value of Persian miniature painting, especially historical illustrations, as visual evidence of cultural aspects such as contemporary society, architecture, costume, armour and interior decoration.¹ Architecture of many descriptions, from mobile tents to monumental mosques and palaces, are among the most consistent and recognisable elements within Persian miniature paintings. Although few architectural structures belonging to the medieval era remain,² Persian miniature paintings, especially from the Timurid and Safavid eras, illustrate a variety of architectural spaces.

To visualise architectural descriptions, painters, as expected, turned to their environment and contemporary buildings. Therefore, in the absence of such buildings, these images have been used as a primary visual reference to study Iranian medieval architecture.³ Although previous scholars have recognised Persian miniature paintings as a potentially rich alternative source of primary historical evidence where written sources are lacking, the conceptual distance and visual ambiguity of that medium relative to present-day artistic practice and perceptual conventions have presented persistent obstacles to interpretation and understanding.

Background of the Study

The representation of architecture in Persian miniature paintings, and the characteristics of the architectural language that can be identified in these paintings, has been the focus of valuable but unconnected and differently oriented studies by previous scholars.⁴ Some of these studies have also recognised the benefit of interpreting such paintings to understand the historical functions and qualities of architectural spaces and monuments in which historical documents and architectural drawings are deficient.⁵ However, relatively little work has been done to date to advance knowledge and understanding of the representation of architectural spaces in Persian miniature. In turn, the lack of familiarity with the visual language of Persian miniatures, and the absence of fully developed analytical methods to decode their spatial order and logic, has presented persistent obstacles to the interpretation of the social content and contexts of such paintings.

The conventional and idealised representation of space and architectural structures, as a two-dimensional device to display, define and frame human figures has always been part of Persian painting themes. Imagery conventions for the depiction of architecture advanced, along with developments in the visual medium.⁶ Different types of architectural structure, including mobile and sedentary (such as tents, palaces, mosques and fortresses) were depicted.⁷ Gradual alterations of picture layouts from the horizontal⁸ to the vertical⁹ that emerged towards the end of the 14th century raised the horizon and increased the sense of depth. Such modification allowed figures and buildings to move away from the baseline of the frame and into the picture space.¹⁰ The transition of the image into a vertical format, enriching the arrangement of visual elements, in turn, increased spatial complexity of full-page compositions to a more detailed visual composition. The expansion of architectural space in this method made the built environment a predominant part of the human story within miniature painting.¹¹

Despite fundamental stylistic and compositional differences, Il-Khanid manuscripts such as the *Shahnama* and *Jami' al-tawarikh* shared the role of architecture as a stage or background for human action, amplified by the ever-present hanging or draped curtain.¹² While architecture in earlier paintings of Islamic Iran had been devised as a backdrop for human action,¹³ Timurid painting established architecture as a context.¹⁴ Early Safavid painters working in the 16th century in Tabriz were seeking a new style of architectural expression that elaborated and refined Timurid expression.¹⁵ Imagery conventions of Safavid painting enhanced and brought architecture more in line with a human scale.¹⁶

Following the visual tradition, Persian painters did not use scale to distinguish distance between items. Thus, all objects were the same size. Instead, overlapping planes of architectural and

natural layers such as walls, domes, *iwan*, hills and mountains from the foreground at the bottom to the background at the top, gave the impression of depth.¹⁷ Scholars have recently begun to explore how Persian painters illustrated their architectural environment within their paintings.¹⁸ However, decoding architectural spaces which are depicted based on a complex multifocal vision remains challenging.

Hatice Yazar, in her thesis on Architecture in Miniature, focuses on the representation of space and form in illustrations and buildings in Timurid Central Asia.¹⁹ She confirms consistent similarities between architecture and miniature in building elements and typologies²⁰ and tried to devise a way of three-dimensional modelling of painted buildings.²¹ In search of a technique that would be most revealing and would perhaps correspond to the sense of depth in the miniature, Yazar used three experimental stages. One of these stages includes the idea of cutting and folding paper to give the impression of a contained space or a built enclosure. To do so, she cut strips in a piece of paper and folded 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”.²² Yazar’s intended application of this technique to suggest a three-dimensional spatial model of the building, despite its evident potential, remained at an early stage, and one that did not examine various illustrated folios.²³ Therefore, despite a valuable experiment towards addressing conceptual and technical aspects of Persian miniature paintings – in this case, those from Timurid Central Asia – the beholder’s understanding of the visual language and spatial arrangement within the painted ‘space’ remains incomplete.



Figure 1. (L) The capture of Qotb od-din Qormi and bringing him to Atiq Jame’ Mosque in Shiraz, attributed to Kamal od-din Behzad, Timurid, The Zafarnamah of Shah Tahmasp (no.708, Herat or Tabriz,1528), Courtesy of Golestan Palace, Iran.



Figure 2. (R, above) The Masjid-i 'Atiq in Shiraz, Courtyard view, looking southeast towards the east (right) and south iwans with Khuda Khane seen on the left, photo courtesy of Saeideh Setayesh, October 2018.



Figure 3. (R, below) The Masjid-i 'Atiq in Shiraz, courtyard view, northern *iwan* on the left and Khuda Khane at the centre, photo courtesy of Saeideh Setayesh, October 2018.

Different methods of analysis that Yazar used to interpret or construct a possible language of architectural space in the miniature, suggested the similarities between the expression of form and space in miniatures and the experience of space in buildings. Therefore, she disputed the

description 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”. Instead, she proposes that investigating miniatures as enduring documents can offer a conceptual perception of qualities designed into buildings.²⁴ A pertinent example that confirms Yazar’s proposition is a folio belonging to Timurid Zafarname by Yazdi (no.708)²⁵ which illustrates Jame’ Mosque in Shiraz (Fig. 1).²⁶ This mosque, identified as the Masjid-i ‘Atiq, still exists in Shiraz today and remains an important historical marker (Figs 2 and 3).²⁷ Examination of the image by revealing some significant similarities between the illustration of Masjid-i ‘Atiq and its existing structure proved that the painting matched the real structure in detail. Some of these comparisons are between the image and the building in its first Pahlavi period (1925–1941), before major renovations.²⁸ Apart from the ‘Atiq mosque, only a few extant remains of medieval buildings are visible today. Therefore, as an invaluable primary visual resource, this folio has exceptional potential for the study of Iranian medieval architecture and its social implications.²⁹ Therefore, the key question is: how can the Persian miniature paintings be spatially decoded as visual primary documents?

Methodology and Analysis: Reverting the Gaze, Decoding the Space

To understand the spatial arrangement of Persian paintings, experts suggest that the observer make certain visual and mental readjustments to a different and highly sophisticated way of seeing. Despite valuable discourse addressing Persian miniature’s conceptual and technical aspects, making that readjustment remains difficult. This current study contributes to this growing area of research by extending and developing a technique that provides a practical tool to test and extend existing theoretical discussions on the vocabulary of Persian miniature painting.

To understand the visual language of Persian miniature painting and objectify the spatial depth and sequence offered by their orthographic projection, this study envisages a practical tool to surpass existing theoretical and experimental limitations in the vocabulary of the Persian miniature. This method defines different spatial layers in the two-dimensional picture-plane of the original paintings and delaminates them by cutting and folding printed paper reproductions of those images, creating pop-up three-dimensional models. This method has been applied to the analysis of various architectural settings which are sedentary and mobile.

In terms of design, by adopting a pop-up and folding method, the conceptual and conventional features of Persian miniature painting can be explored. Persian miniature painting based on a different pictorial mode offers a visual description of the world as experienced and imagined through time and space, rather than an objective snapshot.³⁰ This pictorial mode is not based on axonometric projection and linear perspective that, following the Italian Renaissance, have become widely accepted as standard models for the artistic portrayal of the outer world.

From a conceptual perspective, the spatial arrangement of Persian miniature painting consists of different plane surfaces. These surfaces are meant to demonstrate different grades of reality from the horizon of material existence to a higher state of consciousness known as the ‘imaginal world’ or ‘*ālam-i-khayāl*’. These conceptual features can be described as ‘seeing without seeing’. Such an ideal is attained by practical approaches which result in a complex vision by merging multiple viewpoints within a single image, juxtaposing the plan, elevation and section and representing the interior and exterior space simultaneously to maximise the conveyance of information (Fig. 4). Such a vision can be defined as an ‘omnipresent transcendent gaze’. To create the pop-up models, Persian miniature pictorial conventions such as the juxtaposition of plan and elevation, previously a limitation, are applied. This method distinguishes, cuts, delaminates and pops up the plane surfaces that comprise the hierarchical and stratified spaces of the Persian miniature. These surfaces include architectural plans, animals and human figures and natural elements such as rocks, hills and vegetation. The result is a pop-up image that has been visually deciphered from an ambiguous two-dimensional multifocal perspective which juxtaposes different viewpoints in a single frame to a three-dimensional model.



Figure 4. Defining the juxtaposition of elevation, section and plan in a Persian Miniature painting. Figure generated by author, based on gold coins poured over Humayun, Khamseh by Khvaju Kirmani, Courtesy of British Library © British Library Board, Add 18113 folio: 45v, Baghdad, c. 1396.

Figure 5 depicts the birth of Zāl; son of Sām and father of Rostam. This palace setting has been horizontally divided in two by a brick wall. The upper part represents Sām's *harem* (women's quarters) where his wife gave birth to his first child, Zāl. In the lower part, located outside the women's quarters, a number of curious courtiers are shown standing along the brick wall while they gossip amongst themselves. A man with his *Taji Haydari*, probably Sām, sits on the tiled stairs. The combination of front and top views and juxtaposition of plan and elevation enabled the painter to display the interior and exterior spaces at the same time. However, the folding and pop-up model offers a three-dimensional rendition of the setting which thereby enables the observer to look at the palace from its standing point, or where the courtiers stand behind the walls (Fig. 6). The second folio to be transformed into a three-dimensional pop-up model is "the meeting of the clans", a 16th-century encampment scene attributed to Mir Sayyid 'Ali that has been praised by scholars due to its meticulously observed and recorded scene (Fig. 7). The detailed execution of tents and the lively representation of nomadic life makes this painting an exceptional visual resource to study mobile architecture, nomadic life and the socio-cultural connotations associated with that living environment. Figure 8 represents the pop-up model of this encampment scene from the front and elevated views.

In both cases (Figs 6 and 8), the pop-up models based on a single point perspective offer an unambiguous spatial arrangement which clearly shows different layers of space that have been arranged from the bottom to the top of the page. Within these overlapping layers, people, furniture, animals and tents were distributed. Contemporary buildings and their decoration were the starting point for the process of translating a three-dimensional form onto the two-

dimensional surface of the paper. By reverting the gaze to the three-dimensional version of the scene, the folding and pop-up method offers a spatial arrangement of levels and elements in a way that is easy to perceive, understand and interpret. Thus, such a three-dimensional version of the image can be used as a primary resource to study architecture and its social implications. This alternation occurs because the pop-up models feature a more 'objective' rather than 'subjective' image. If we accept that the realm of Persian miniature painting lies between intelligible and sensible worlds, the realm of three-dimensional images better reflects the 'sensible world' which is the place of the 'material'.



Figure 5. Defining two main sections of the palace (private quarter and outside of the barrier). Figure developed by author, based on the birth of Zal, Shahnameh of Shah Tahmasp (1520s–1530s).³¹



Figure 6. Applying folding and pop-up method to suggest a 3D model of the space.
 Above: Front view. Below left: Slightly elevated front view. Below right: Angled elevated view.



Figure 7. The meeting of the clans, previously attributed to Mir Sayyid 'Ali, Persian (sixteenth century), probably a folio from a manuscript of *Leyli and Majnun* of Jami, date c. 1540, Middle East, Iran, Tabriz, Safavid period. Courtesy of the Harvard Art Museum /Arthur M. Sackler Museum, Gift of John Goelet, formerly in the collection of Louis J. Cartier
Copyright: Photograph ©President and Fellows of Harvard College. Accessed 23.11.2018, <https://harvardartmuseums.org/collections/object/216252>.



Figure 8. Applying folding and pop-up method to suggest a 3D model of the space. (L) Elevated view. Demonstration of depth and different spatial settings by overlapping layers from the bottom to the top of the page. (R) Front view.

Although linear perspective space is created only by looking, the Persian painter's way of thinking and illustrating meant that a visual image reflected a mental image that the painter saw. Thus, a reverted gaze through the three-dimensional models created a window toward the artist's vision and imagination. It displayed that phase of the imagery process that existed before transference of the three-dimensional outer world into multifocal two-dimensional plane surfaces of the Persian miniature. On the basis of such a quality, three-dimensional models also offer a view of the artist's mental image by revealing aspects that have been devised and inserted in the painting, but they are not apparent in the original image. The concealment of such features is a result of manipulating different methods through which Persian miniature painting combines two-dimensional elements to create an illusion of three-dimensional effects of space, motion, depth and perspective. This illusion includes the visual information suggested by the text, implemented by the painter and existing in the image. However, they are concealed in the process of creating such an illusion and are revealed by this method. The disclosure of such hidden aspects is possible when the iconological analysis process interacts with three-dimensional models and the text that the image illustrates.

Here, an example of such interaction between the folding and pop-up model and the text is examined in a pivotal moment in *Khosrow and Shirin*, the famous Persian tragic romance by Nizami, which describes Khosrow's first sighting of Shirin, while she bathed in a pool. Khosrow passes a meadow (*marghzār*) with a spring, and he finds Shirin naked, bathing and washing her flowing hair. Nezami declares that Shirin at first did not see Khosrow because her sight was blocked by flowers and plants:

سمنبر غافل از نظاره شاه
که سنبل بسته بد بر نرگشش راه

This sensual part of Khosrow and Shirin's love story is an attractive scene illustrated in different schools and by various artists. Focusing on the moment when "Khosrow spies Shirin bathing", they are usually familiar with Khosrow on his horse standing on a raised platform, such as hills or rocks, gazing at Shirin from his vantage point while Shirin sits in the pool trying to hide her body with her long hair hanging over her shoulders and down to her waist. Here, two different illustrations of the story are considered. The first is attributed to Sultan Muhammad in the first half of the 16th century (Figs 9, 11, 13, and 15).³² The second is attributed to the late 15th century (Figs 10, 12, 14, and 16).³³

In both cases, the landscapes consist of various overlapping layers of rocks, trees and

vegetation, arranged from the bottom of the page to the top, thereby signifying a sense of perspectival depth. Despite such a spatial arrangement, the renditions appear relatively flat. Here, no architectural elements provide privacy and seclusion to the framed female figure in each case. Located in the middle of the pool, Shirin is entirely in Khosrow's gaze as well as that of the observer of the painting. The painters have made minimal effort to use the rocks and trees to cover the view of Shirin's body. However, a remarkable feature of these landscape settings, which is only revealed through observing the three-dimensional models, is how trees, plants and rocks are encircling Shirin like a natural enclosure (Figs 9–12). To create the pop-up models, first, different layers, including rocks, trees, figures and animals, have been defined and cut. By folding these layers, the models which signify the three-dimensional version of the images are prepared. Figures 9 and 10 present the pop-up models at a slightly elevated view, through which stratified spaces from the foreground to the background are perceptible.



Figure 9. (Above) Pop-up model based on Shirin bathing, Khamseh of Nezami, attributed to Sultan Muhammad, active first half of sixteenth century.

Figure 10. (Below) Pop-up model based on Khosrow surprises Shirin bathing, Khamseh (Quintet) of Nezami, Iran, Tabriz, 1481AD.



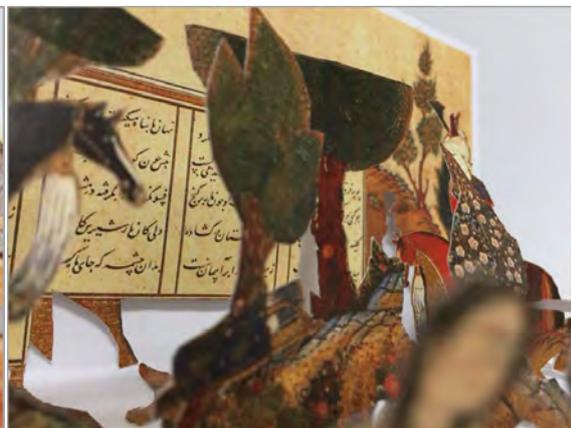
Figure 11. (L) Pop-up model based on Shirin bathing, Khamseh of Nezami, attributed to Sultan Muhammad, active first half of sixteenth century Shirin encircled by a natural enclosure.

Figure 12. (R) Pop-up model based on Khosrow surprises Shirin bathing, Khamseh (Quintet) of Nezami, Iran, Tabriz, 1481AD. Shirin encircled by a natural enclosure.

The opportunity provided by the three-dimensional models to observe the scene from different viewpoints reveals additional hidden aspects of poetic texts. Figures 13 and 14 focus on Khosrow from Shirin's perspective while also synchronising the observer's view of the image to that of Shirin, who looks at where Khosrow is standing behind the bushes. These images demonstrate the verse in the poem which denotes:

Shirin was not aware of Khosrow's gaze
That flowers were veiled her sight

سمنبر غافل از نظاره شاه
که سنبل بسته بد بر نرگش راه



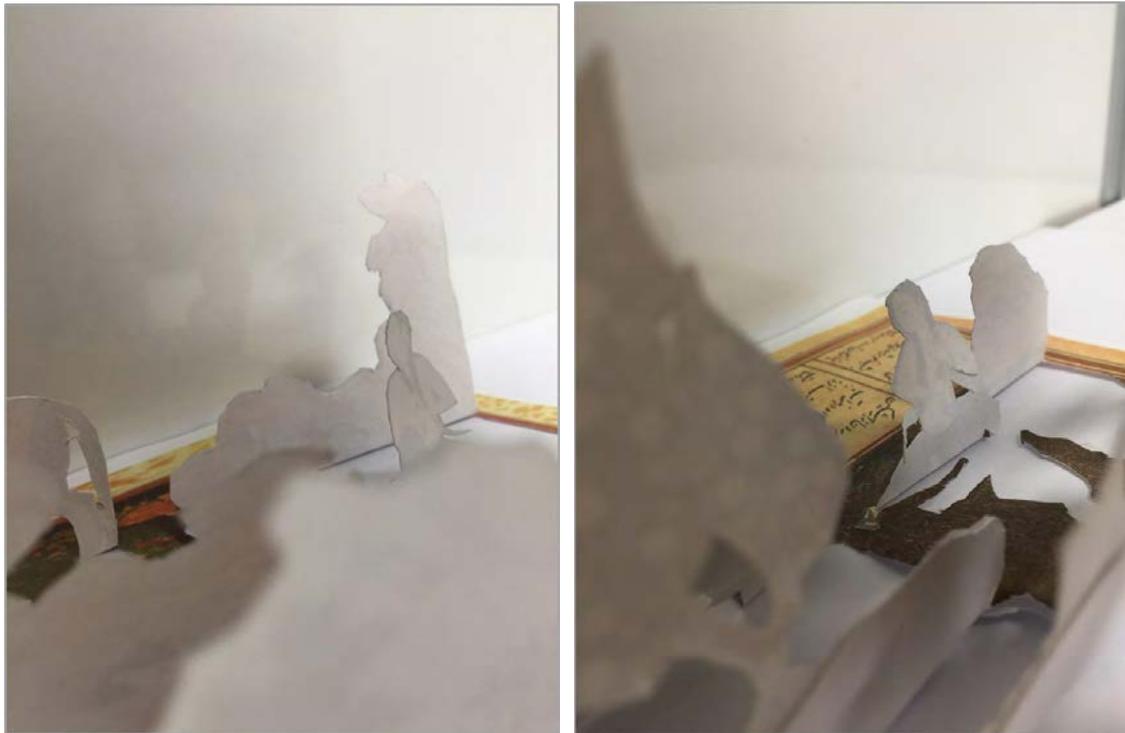
Looking at Khosrow from Shirin's perspective.

Figure 13. (L) Pop-up model based on Shirin bathing.

Figure 14. (R) Pop-up model based on Khosrow surprises Shirin bathing.

Figures 15 and 16 gaze at Shirin from Khosrow's viewpoint. Here, the perspective of the observer of the image accords to that of Khosrow looking at Shirin. These images visualise the description of the moment Khosrow is sightseeing in the meadow and habitually casts around and, in amazement, sees Shirin bathing in the spring:

ز هر سو کرد بر عادت نگاهی
نظر ناگه در افتادش به ماهی



Looking at Shirin from Khosrow's perspective.

Figure 15. (L) Pop-up model based on Shirin bathing).

Figure 16. (R) Pop-up model based on Khosrow surprises Shirin bathing.

On the basis of such analysis, one of the contributions by this proposed method is to provide a link between the illustration, the illustrated text and the artist/painter's mental image. Yet, when any script in association with the illustrations is absent, this method can also increase the accuracy of visual analysis and prevent a misreading of the image, particularly in terms of spatial elements. Therefore the pop-up method, by the subjective act of viewing from an unfocused lens, aims to unfold multifocal spaces in Persian miniature painting and reconstruct our understanding of these spaces.

Given the lack of information on women in official sources, Babayan has attempted to study images of women in Persian paintings as a source for investigating social and cultural factors associated with such imagery. In Babayan's article in which she discusses the world of urban women in Isfahan in the 17th century ('Aqai'd Al-Nisa'), she observes and examines illustrations of women in a 16th-century painting to support her argument.³⁴ The painting in Babayan's study has been referred to as "The Night-time in a Palace" (Fig. 17),³⁵ an illustrated folio likely from Shah Tahmasp's *Khamasa* of Nizami painted by Mir Sayyid 'Ali (Tabriz, 1510–1572).³⁶

This folio is detached from its original manuscript. Furthermore, the painting does not include any extracts from verse or script to provide some clue about the story narrated. Therefore, to conduct iconographical analysis, gaining information from the story is not possible. However, to realise the meaning, subject and characters in the current folio, the absence of text and identifiable story had been a problem. Furthermore, the misreading of the architectural spaces has resulted in an erroneous identification of characters' roles, activities and social status. As long as we lack knowledge of and familiarity with the arrangement of space in Persian painting and method of perspective, these mistakes in perceiving the spatial sequences, adjacency of buildings, placement of figures and their social role will be inevitable.



Figure 17. "Night-time in a City", probably a folio from an illustrated manuscript, attributed to Mir Sayyid 'Ali, Persian (sixteenth century), Iran, Tabriz, Safavid period, c. 1540. Courtesy of the Harvard Art Museum /Arthur M. Sackler Museum, Gift of John Goelet, formerly in the collection of Louis J. Cartier Copyright: Photo: ©President and Fellows of Harvard College, accessed 23.11.2018, <http://www.harvardartmuseums.org/collections/object/303390?position=2>

The detailed execution of this folio, and its complex spatial arrangement, invites us to look more closely for distinctive architectural spaces and elements embodied in this image. Such investigation reveals that this painting represents a cityscape, not a palace. This study suggests four main sections in the arrangement of this cityscape. First is the royal palace in the foreground. Second is the public area including the mosque, bazaar, shops and cistern on the middle ground. Third is the country house located outside the city walls in the rural area. Fourth is the background as rural landscape. Figure 18 highlights each of these four sections based on the understanding that two different royal residences are distinguishable; one in the foreground and the other in the top left corner of the folio.



Figure 18. Spatial analysis of the image based on the placement of layers from foreground to background (from left to right): (1) Foreground: the Royal Palace; (2) Middle ground: Bazaar and city area; (3) Background: the country house; (4) Background: Rural area.

The juxtaposition of plan and elevation as one of the visual features in Persian paintings which create a puzzling spatial composition in the current folio can be recognised in the depiction of the ‘Royal Palace’ and ‘countryside pavilion’, as highlighted in Figure 19. In both sections, plans have been presented in top view and elevations in front view following the Persian painting visual language. However, the bazaar area is based on the front view and a slightly elevated view of the plan. A basic three-dimensional model of this folio can be made by folding the original printed image, according to the three highlighted horizontal lines (Fig. 20). The first fold shows “the courtyard and elevation of the Royal Palace”. The second fold reveals ‘the rooftop of the Royal Palace’ and ‘the terrace of the countryside pavilion’. Finally, the third fold reveals ‘the elevation of the countryside pavilion’.

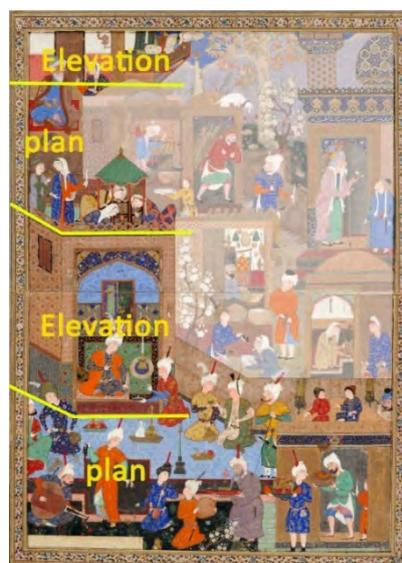


Figure 19. Detecting the horizontal lines between plan and elevation.



Figure 20. Basic pop-up model created by folding the original folio on the second horizontal line between “elevation and rooftop of the Royal Palace” and the third line between “plan and elevation of the countryside pavilion”.
Left: Front view. Right: Isometric view.

As mentioned, the juxtaposition of plan and elevation is not applied in the representation of the bazaar area. Different structures depicted here are represented only from the front view. However, the general outlook towards the bazaar implies that the observer is standing on a raised place. Therefore, the observer sees part of the main path of the bazaar and the elevation of the buildings, but not the rooftops or courtyards. To increase the precision of the three-dimensional model, we need to differentiate between these two perspectives. Therefore, the next pop-up model requires an advanced method. Accordingly, first, the four defined layers (i.e. the royal palace, bazaar, the country house and the rural area) are detached. The bazaar, as the backbone and economic heart of the city, included several public structures and facilities, including *hojreh* (shop), *masjid Jame'* (grand mosque) and *āb anbar* (cistern) is then located along the main street. These structures and facilities can then be defined. Following, each section is popped-up independently in relation to its unique perspective (Fig. 21). Finally, the four pop-up models can be reassembled to make a three-dimensional model of the complete image (Fig. 22).



Figure 21. Detachment and pop-up of (A) the royal palace; (B) bazaar; (C) the country house; and (D) the rural area.



Figure 22. Reassembling the four pop-up models. Above: Front view. Below: Elevated view.

“Night-time in a City” is a unique folio in representing a traditional Iranian city with people in their daily activities in public and private areas. In addition to the quality and visual luxury of its artistry, the image represents several human figures, including women, interacting with their residential and public spaces. The variety of social groups and their activities and ages is exceptional, ranging from princes, royal women, courtiers, performers, servants, merchants, woodcutters, Mulla, young and old urban men and women and children. The three-dimensional rendition of this cityscape clearly defines the characteristics of an early Safavid city, probably Tabriz, as Mir Sayyid Ali’s hometown.³⁷ Featuring the reality and imagination of its painter, this cityscape can also denote contemporary information on urban setting, infrastructures and the daily activities and social roles of early Safavid people.

Conclusion

This study proposed how architectural spaces nested within the miniature may be re-examined through a series of deconstructions and extrapolations. The current study has strategically combined and tactically extended aspects of the work of others who have previously pursued some of the same aims or indicated similar techniques. Methodological experimentation undertaken in this study has sought to enhance how the multifocal perspective characteristic of architectural elements and spaces depicted in Persian miniature paintings could be understood. This enhancement has resulted in an extension and refinement of an analytical method suggested by previous scholars but has not been developed and applied so thoroughly. Based on the conceptual and conventional features of Persian miniature painting, the particular folding and pop-up technique developed here produces three-dimensional paper projections of Persian miniature paintings through which the spatial arrangement and structure of the architectural elements depicted can be decoded. Through this combination of visual and spatial tactics, this paper advanced the study of architecture by enhancing the analytical depth at which we can interpret and understand historically and culturally distant visual materials. This three-dimensional analytical technique has thereby decoded ambiguous spatial arrangements to advance the iconographical analysis of paintings, and to further the historical interpretation of recognisable architectural monuments and generic elements of the built environment.

Endnotes

¹ Charles Melville, “The Illustration of History in Safavid Manuscript Painting.” In *New Perspectives on Safavid Iran: Empire and Society*, ed. Colin P. Mitchell, Iranian Studies: Book 8, 163-97 (London and New York: Taylor & Francis, 2011), 165; Hatice Yazar, “Architecture in Miniature: Representation of Space and Form in Illustrations and Buildings in Timurid Central Asia,” (M.S. diss., Massachusetts Institute of Technology, 1991), 6,85; also seen in Guity Nashat, and L. Beck, *Women in Iran from the Rise of Islam to 1800* (Illinois: University of Illinois Press, 2003). This book focuses on women’s roles and activities in the premodern period. Kathryn Babayan, “The ‘Aqa’id Al-Nisa’: A Glimpse at Safavid Women in Local Isfahani Culture.” In *Women in the Medieval Islamic World: Power, Patronage, and Piety*, edited by Gavin R.G. Hambly, 349-81 (New York: St. Martin’s Press, 2000); Oleg Grabar, *Mostly Miniatures: An Introduction to Persian Painting* (New Jersey: Princeton University Press, 2000), 90. More examples may be found in the Introduction, Gap in the knowledge, in the current study.

² The main influential factors in damaging and destroying Iranian historical monuments are suggested as two categories. First is natural phenomena such as floods, earthquakes, famines and droughts; Second is human behaviour such as political conflicts and religious disputes that had intentionally or unintentionally caused some damage to the historical monuments. Additional details are provided in Sayyida Nargis Tanhā, Abdolrahim Ghanavat, and Maryam Muzzi, “Pathology of the Iranian Architectural Works from the Advent of Islam up to the Seventh/Thirteenth Century,” *History & Culture* 44, no. 1 (2013): 81-112.

³ Michele A. De Angelis, and Thomas W. Lentz, *Architecture in Islamic Painting; Permanent and Impermanent Worlds* (Fogg Art Museum, Cambridge, Massachusetts in association with The Aga Khan Program for Islamic Architecture 1982), 7; Manouchehr Foroutan, “Architectural Language of Persian Paintings: Survey of Persian Paintings as Historical Documents of Iranian Islamic Architecture,” *Hoviyate Shahr* 6 (spring and summer 2010): 130-41; Asma Serajuddin, “Architectural Representations in Persian Miniature Painting during the Timurid and Safavid Periods” (PhD diss., University of London, 1968); Hatice Yazar, “Architecture in Miniature:

Representation of Space and Form in Illustrations and Buildings in Timurid Central Asia” (M.S. diss., Massachusetts Institute of Technology, 1991).

⁴ Serajuddin, “Architectural Representations in Persian Miniature”; Yazar, “Architecture in Miniature.”

⁵ Manouchehr Foroutan, “Method of Understanding Iranian Architectural Space from Iranian Paintings (617-1000 Ah /1220-1591 Ad),” (PhD diss., Islamic Azad University, 2009).

⁶ Margaret Graves, “Inside and Outside, Picture and Page: The Architectural Spaces of Miniature Painting,” In *Architecture in Islamic Arts: Treasures of the Aga Khan Museum*, 295-303 (Geneva: Aga Khan Trust for Culture, 2011), 298.

⁷ Ibid, 299.

⁸ Of the best examples of using a horizontal frame in the 14th century is the Khalili manuscript of Rashid al-Din’s illustrated history of the world; “Jami’ al-tawarikh”, Tabriz, Iran dated 714 AH (1314–15 AD).

⁹ Many scholars admit that composing visual elements in a vertical frame and representation of architectural spaces reached its zenith in some of the illustrated folios of *Shahnameh* by Shah Tahmasb, circa 1525–35 AD.

¹⁰ Graves, “Inside and Outside,” 298.

¹¹ Ibid, 299.

¹² Angelis, and Lentz, *Architecture in Islamic Painting*, 8.

¹³ Ibid, 10.

¹⁴ Ibid, 11.

¹⁵ Ibid, 12.

¹⁶ Nonetheless, a distinctive feature of Safavid painting is its ability to include a large number of figures and objects in a two-dimensional space. In a mode where all elements appear on the surface of the painting, architecture often facilitates the distribution of figures by operating as a recessional device; see Ibid, 12.

¹⁷ Ibid.

¹⁸ Ibid, 7-8.

¹⁹ Yazar, “Architecture in Miniature,” 22-3.

²⁰ Ibid, 89-91.

²¹ Ibid.

²² Ibid.

²³ Ibid, Figures 45 and 46, 91.

²⁴ Ibid, 99.

²⁵ This manuscript is an illustrated biography of Timur (1370–1405), compiled by a man of pen and scholar in the 15th century and renowned historian, Sharaf od-Din Ali Yazdi (d. 1454). This copy of *Zafarnameh Timuri*, produced in Herat in 1529 and hosted by the Golestan Palace Library of Tehran, is significant due to its attribution to Kamal-o-Din Behzad, the Iranian painter (probably 1460/865-1535/942); see Ebadollah Bahari, *Bihzad: Master of Persian Painting* (London, New York: I.B.Tauris, 1996), 209; Ruin Pakbaz, *Encyclopedia of Art*, 3rd ed. (Tehran: Farhang-e Maaser, 2002), 423-24.

²⁶ Bahari, *Bihzad: Master of Persian Painting*, 209; Abdolmajid Hosseini-Rad, *Iranian Masterpieces of Persian Painting* (Tehran: Tehran Museum of Contemporary Art, 2005), 85.

²⁷ Shiraz is a city located in south-central Iran in the Fars province.

²⁸ For example the arched frames with doors and small windows in north *ivan* toward the north *shabistān* (female chamber) of Atiq Jame’ mosque represented in Figure 1, is comparable with the courtyard view of Atiq Jame’ mosque, north *ivan* and adjoining halls before restorations as presented in Donald N. Wilber, *The Masjid- I ‘Atiq of Shiraz* (Shiraz: Pahlavi University, Asia Institute, 1972), plate 43, 62.

²⁹ Sareh Abooali, “Space, Gaze and Femininity: Representation of Women in Architectural Spaces in Persian Miniature Painting (Timurid to Safavid eras)” (PhD. diss., The University of Adelaide, 2020), Chapter 10.

³⁰ Graves, “Inside and Outside,” 299.

³¹ Mohammad-‘Ali Rajabi and others, ed. *The Shahnameh of Shah Tahmasp* (Tehran: Farhangestan-i Honar, 1392/2010), 210, 107.

³² Shirin bathing, Khamseh of Nezami, attributed to Sultan Muhammad (active first half of sixteenth century).

³³ Khosrow surprises Shirin bathing, Khamseh (Quintet) of Nezami, Iran, Tabriz, 1481AD.

³⁴ Kathryn Babayan, “The ‘Aqa’id Al-Nisa’: A Glimpse at Safavid Women in Local Isfahani Culture.” In *Women in the Medieval Islamic World: Power, Patronage, and Piety*, ed. Gavin R.G. Hambly, 349-81 (New York: St. Martin’s Press, 2000), 367.

³⁵ To identify the title and further information about this painting, Babayan relies on *The Houghton Shahnameh* by Martin Bernard Dickson and Stuart Cary Welch, published in 1981. Here the painting has been introduced as the “Nocturnal Palace Scene or Night-time in a Palace”, probably from Shah Tahmasp’s *Khamsa* of Nizami

painted by Mir Sayyid 'Ali (Tabriz, 1510–1572), one of Shah Tahmasp's painters in his court atelier; additional information may be found in Martin Bernard Dickson, and Stuart Cary Welch, *The Houghton Shahnameh* (Fogg Art Museum, Harvard University, 1981), 184, 188.

³⁶ Ibid.

³⁷ To investigate this hypothesis, by comparing the suggested 3D model based on Mir Sayyid Ali's painting and the Map of Tabriz by Matrakçı Nasuh (16th century), and investigating available scholarly materials on the urban features of Tabriz in the early Safavid period, some spatial and structural similarities on a micro and macro scale have been evident. Such comparison suggests that this cityscape characterises Tabriz in Mir Sayyid Ali's time, as seen in Abooli, "Space, Gaze and Femininity," Chapter 11.