

THE PHYSICAL STRUCTURE OF TABRIZ IN SHAH TAHMASP SAFAVID'S ERA BASED ON MATRAKCI MINIATURE

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1. Based on the research of Yahya Zoka, among several earthquakes occurred in Tabriz city, the four earthquakes in the years 244AH/858AD, 434AH/1042AD, 671AH/1272AD, and 1193AH/1780AD damaged this city more than others (Zoka, 1980, 149).
2. Tabriz Bazaar is the biggest roofed bazaar of the world that was registered as the global cultural heritage of UNESCO in 1975. (Wikipedia)
3. The Arg of Tabriz is the remaining part of a mosque that was built in 1316-1324 by Khajeh Tajeddin Alishah the vizier of Oljayto in Miyar Miyar Alley of Tabriz (Karangh, 1972, 240).
4. Cahanşah Mosque or the Blue Mosque is located in Northern part of the street opposite to Sadr Alley. This mosque was built in 1465 under the supervision of Can Beyim Xatun the wife of Cahanşah Qara Qoyunlu, in the reign of Sultan Yaqub it was restored (Karangh, 1972, 281-4).
5. The year 961AH/1554AD, Moreover, at the time of Ottoman King Murat Khan III about the year 993AH/1585AD and finally, Ferhat Koca Paşa, Serdar of Sultan Murat III constructed Qullu Castle in Tabriz Beylank region (Katip Çelebi, 1935, 247).

INTRODUCTION

The spatial structure of Tabriz as one of the most important historical cities in Iran is still ambiguous as a result of being located in geographical and political borders and also due to numerous earthquakes that have always struck this ancient (1) city even though it owns world famous monuments such as Bazaar (2) of Tabriz, Arg-e Ali-Shah (3), and the Blue Mosque (4). On the other hand, from the beginning of Safavid dynasty, Tabriz was involved in war with Ottoman military. Some of these wars such as Battle of Çaldıran in 920AH/1514AD occurred outside the city (Shokri, 1984, 503). But in most incidents, Tabriz was the host of the wars. Katip Çelebi in his book named "Cihannüma" pointed to four main (5) wars among which the war of 959AH/1552 occurred during the reign of Shah Tahmasp, and Tabriz was occupied by Suleiman Khan (Katip Çelebi, 1935, 247).

The mentioned events indicate serious damages to physical structure of Tabriz during Tahmasp Safavid dynasty, in a way that the contemporary architects and urban planners do not have any precise picture of Tabriz in these periods, and nowadays, this issue has created many problems with regard to renewal and reconstruction of the important parts of this city due to lack of existence of valid and precise historic documents. It becomes more important when we realize that the physical structure of Tabriz had inspired builders of the later capitals of Safavids, for instance Qazvin and Isfahan. As an example, the design for Tabriz's Hasht-Behesht Palace was planned because of compulsory migration of artists and architectures of northwestern Iran to the Central Asia according to Timur's order that led to experiencing nomadic life in that region by the mentioned people; then the capital of Turkmen was transferred to Tabriz. Hasht-Behesht was built, and Qazvin and Isfahan were affected as capital cities during Safavid's Era. It seems that geographic location of Azerbaijan and ongoing political tensions between Ottoman and Safavid led to spreading architectural form of Hasht-Behesht and its reflection on Chinali Palace; moreover, Indian

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6. Tabriz city has an ancient history that is indebted to its appropriate geographical and climatical situation. This geographical situation has changed it to a permanent habitat from long time ago. Since the first centuries of Islam also, Tabriz has been an important administrative and trading center having a unique somatic-spatial structure. As in the second century AH, Ravad Azodi landed in Tabriz and built a palace there and fortified the city with a barrier and the people also went there (Balazari,1967,169) (Abi Yag-houb,1964,361) (Ibn al-Faqih,1970, 127) . Then at the time of Mutawakkil Abbasid in the year 244AH/858AD an earthquake occurred that ruined Tabriz (Karbalayi Tabrizi,1965,17). Prosperity of the city during the Ilkanid era, encouraged Abagha Khan to choose the city as his capital. The last fortification of Tabriz had been built before this date and at the time of Hulagu Khan (651-663 AH/1253-1264AD) with a perimeter of 6000 feet, and 10 gates were built around Tabriz (Hamdollah Mostofi,1957,153).

The importance of Tabriz as capital city and the reign of Arghoun and Qazan Khan Ilkanid the population of it increased so that the residents outside partially destroyed fort of the city became more than that of inside the city. Hence, Qazan Khan after being the king ordered to build a new fortification around the city. The perimeter of Qazani fortification was 25000 feet (8th century) and had 6 gates namely, 1-Owjan, 2-Ahar, 3-Şervan, 4-Sardroud, 5-Şam Qazan, 6-Sarab (Mostofi,1957,154). After the death of Ilkanid kings and dissolution of central government, local dynasties governed in Tabriz. One of those was Jalairid Sultanate (736-813AH/1335-1410AD).

Other dynasties were Timurid Empire and Qoyunlu, and nearly at the time of the Timurid Empire, Qoyunlu dynasty was governing on parts of the West of today's Iran, Turkey, and North of today's Iraq. Important religious spaces were built in this era. The Blue Mosque, that was built in Eastern entrance of the city by the order of Jahanshah the Qara Qoyunlu king (Karbalayi Tabrizi, 1965, 524). In addition, based on the order of Janan Shah Qara Qoyunlu the governmental palace was transferred from the downtown to the North of the river and to the location of Sahib Abad Garden. (Karbalayi, 1965, 470). King Hassan Mosque, Shah Hossein Vali School, and Jahan Shah Bathroom are important elements that have been built at the time of Aq Qoyunlu dynasty. Uzun Hassan 872-882AH/1467-1477AD resided in Sahib Abad Garden-Palace. (Karbalayi, 1965, 470) Since that time, the complex's name was changed to Hassan Beigi Palace (Venetian,1970,388).

representatives, who were in Iran because of good relationship of India and Safavid government, transferred the design of Hasht-Behesht to Indian subcontinent (Mirzaei et al., 2016, 77-88).

Accordingly, the present paper attempts to respond to two questions regarding the recreation of the physical structure of Tabriz during the reign of Shah Tahmasp Safavid:

1. Is it possible to identify structural elements of Tabriz in Shah Tahmasp Safavid's era through Miniature of Matrakçı and other historical documents?
2. Is it possible to recreate physical structure of Tabriz in Shah Tahmasp Safavid's era through locating the identified elements on the map of Qarajadaği?

Before answering the first question, it is necessary to provide an inclusive image of pre-Safavid Tabriz in addition to full introduction of both pictorial and historical documents (The miniature of Matrakçı and Qarajadaği Dar Al-Saltaneh) based on historical evidence (6). The body of the paper has been divided to four main parts:

1. Since this research aims to visually identify some historical information using an old pictorial document, the opinions of the researchers regarding visual specifications of the miniatures in Beyani-Menazil have been collected by analytical-interpretive method considering the special complexity surrounding the first question of the research.
2. The visual specifications of Tabriz Miniature have been given by six titles as follows: 1. Relational elements and viewpoint, 2. Three-dimensional view, 3. Geometrical basis and spatial symmetry in locating the elements, 4. Miniature scale, 5. Realism in drawing artificial elements, 6. Formative typology of analysis and results, which are provided in typology table of architectural and urbanism elements. The complete explanations about the formal specification of Tabriz miniature are given at the Typology and Form part of the paper.
3. In order to respond the second question, other historical documents should be considered about Qarajadaği Dar Al-Saltaneh map using the structural pattern of Iranian commercial-productive cities after Islam by analytical and comparative method. They were located on four titles as follows: 1. Gates and ramparts, 2. Paths, 3. Boroughs and urban spaces, 4. Commercial and religious services as well as governmental elements,
4. And finally, the anatomic structure of Tabriz during the reign of Shah Tahmasp was recreated as the conclusion.

WRITTEN AND PICTORIAL DOCUMENTS OF THE RESEARCH

To access more precise results, historical documents addressed in this article should be introduced and studied, and since many first-hand sources such as buildings and urban spaces have not remained from this period, to answer the research question, we will cite the writings and drawings prepared by travelers and tourists. Indeed, recreation of physical structure of Tabriz in the mentioned era requires studying the historical resources before and after mentioned periods. To achieve this purpose,

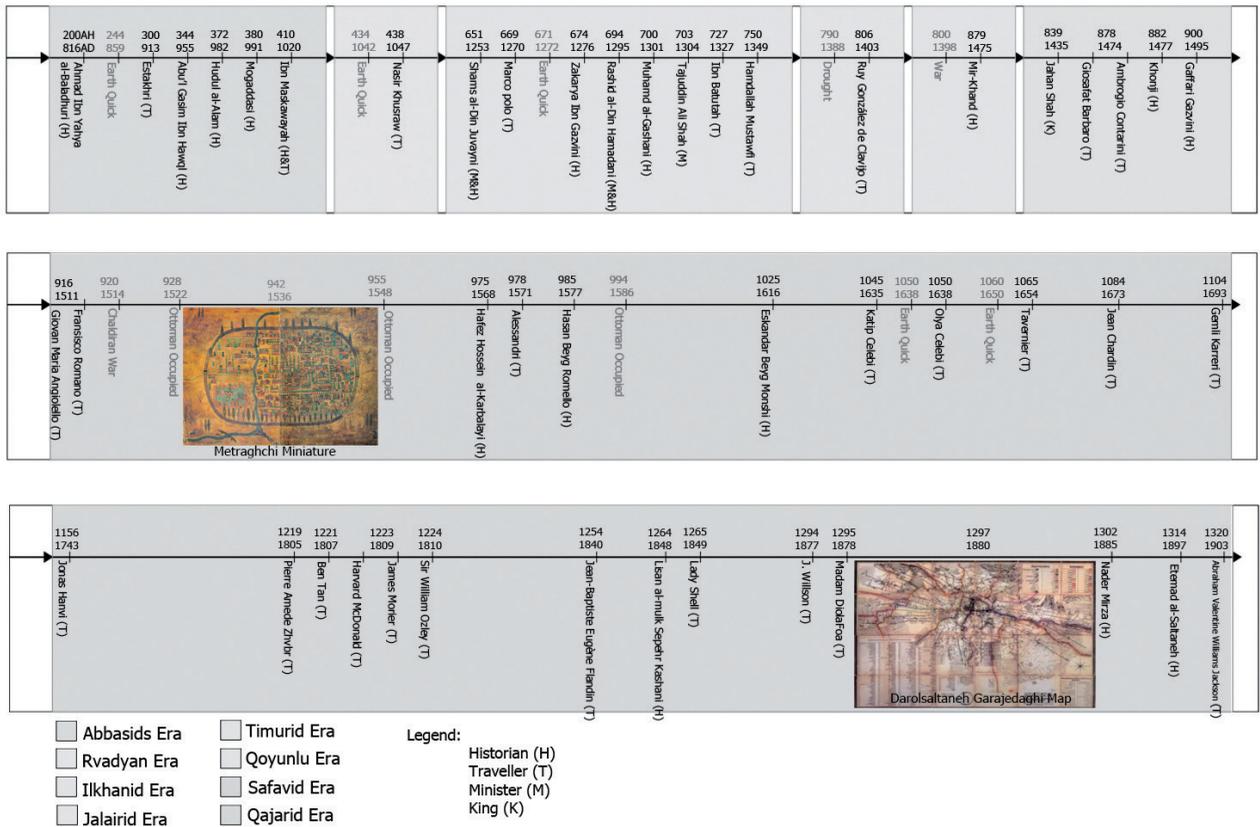


Figure 1. The written and pictorial documentations of Tabriz from early centuries of Islam until the end of Qajarid Dynasty, based on chronological order (Prepared by the author)

in Figure 1, all important historical documents about Tabriz from early centuries of Islam up to the end of Qajarid dynasty have been recorded based on their priority, including war and earthquakes along with names of historians and tourists (Figure 1).

The written references are recorded as used in the article, but only two referred pictorial documents are to be introduced in this part.

Matrakci's Miniature

Miniature of Matrakci (7), the most original document of this research, was prepared by Nasuh as a pictorial manuscript for Suleiman the Magnificent in 944AH/1537-38AD. The title of the document was "Beyan-i Menazil" and aimed to explain the military expedition route of Ottoman Empire to Iraq (8). The book of "Beyan-i Menazil" has 109 framed pages that include 130 images; the dimension of each page is 230 x 315 mm. The text of each page is written in frames of 130 x 220 mm that are in the center of the page; there are uneven margins on the page. Most of the pages do not have margins, and it seems that some of the paintings are cut after being drawn (Yurdaydin, 1963, 13). The manuscript has textual and illustrated pages that describe and portray Sultan Suleiman I's two-year military campaign of 940-42AH (1533-36CE), launched from Istanbul and penetrating into two Iraqs as far as Baghdad. This route begins in Istanbul; after passing Sivas and Erzurum, reaches Xoy (Khoy) and Tabriz and continues through Zanjan, Sultaniyeh and Hamadam, then goes out of Iran and reaches

7. Nasuh Efendi (Matrakci), as Dehkoda, Nasuh Ebne Qaragöz Ebne Abdollah, was an Ottoman skilled person that lived during reign of Suleiman the Magnificent and Sultan Selim. He had been mathematician, historian and writer, as well as a calligraphy and painting artist. It is said about him that he had modified Iranian calligraphy style to facilitate its reading. During expedition of Suleiman the Magnificent to the west of Iran, he used to paint every station of army based on his own observations and write explanations about them. He used to paint and color them during expedition and two years after it whenever he could. In fact, this book is the result of his four-year challenge, which was submitted to the court in 944 AH. (Raeisnia, 2000)

8. Iraqs means western part of Iran (including Azerbaijan and Persian Iraq) and Arabic Iraq. Iraqs includes: Khoy, Tabriz, Zanjan, Soltaniyeh, Hamadan, Ghaasr-e-Shirin and Baghdad.



Figure 2. The image of miniature of tabriz 28a-27b from Beyan-i Menazil Book and Numbering Graphic Elements (Istanbul University Library- Yurdaydin, 1963) (Prepared by the Author)

9. Mohammad Reza Mohandesi and Colonel Qarajadaği were educated in Dar ul-Fonoun School of Tehran. It is said that they had an important role in establishing Dar Ol-Fonoun School of Tabriz and used to teach there (Fakhari Tehrani et al., 2006, 44).

10. The maps of Trezel-Fabvier 1807-1808, the map of Tabriz suburb, 1872, the map of Tabriz defense building 1872 and the map of Tabriz floods 1871, the maps of Tabriz are drawn before the map of Qarajadaği Dar-Alsaltaneh. Among the 4 mentioned maps, only the map of Trezel-Fabvier gives detailed information about Tabriz that only is limited to Nəcəfqulu Khan surrounding wall. Other maps, prepared by Russians, English and French, only gives information about the dimension and districts of Tabriz (Balilan et.al. 2014, 40).

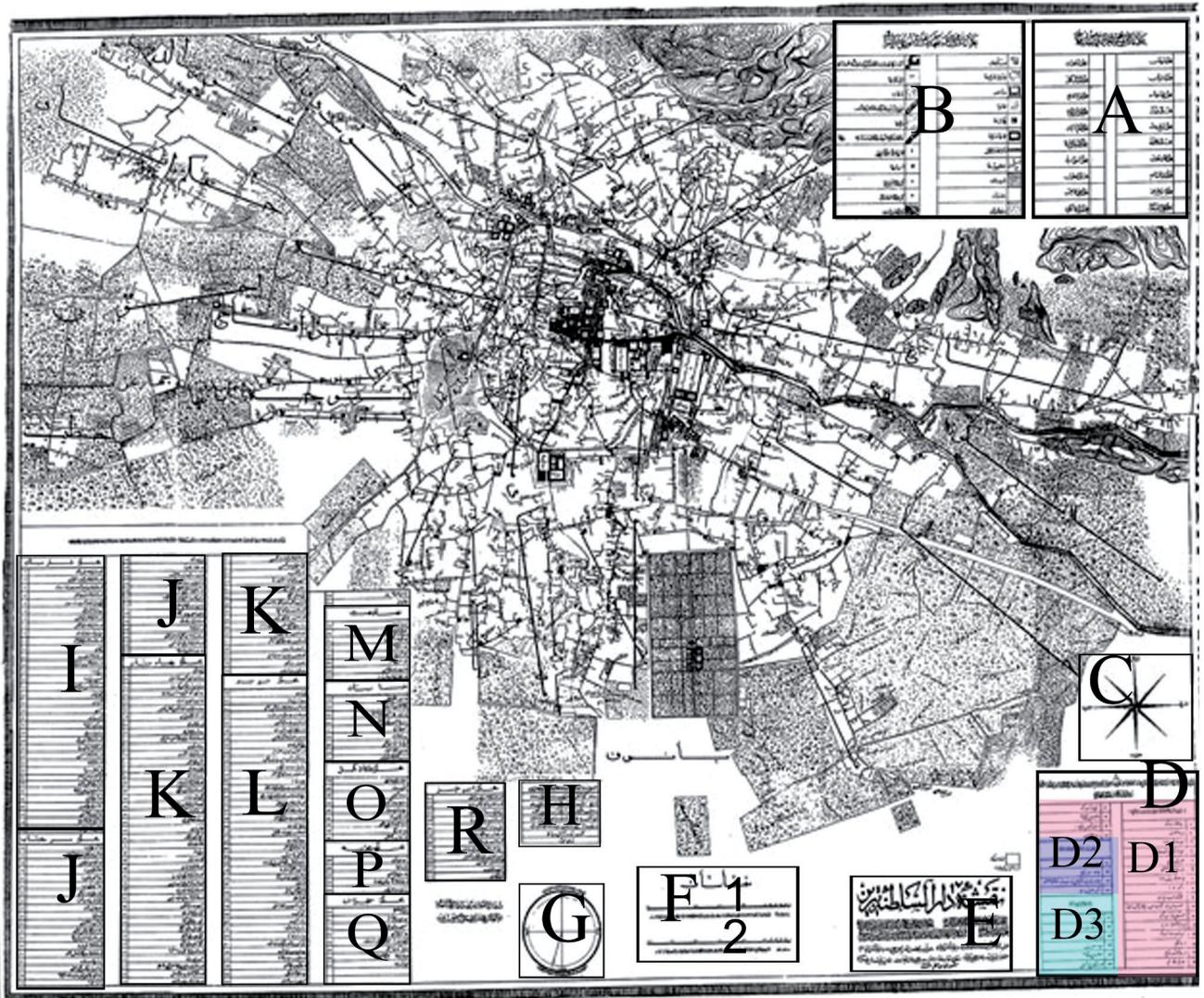
Baghdad, Aleppo, and Najaf; turning back to Istanbul, it uses the southern route, through Diyarbakir and Konya (Yurdaydin, 1963, 21).

Many researchers in different fields, like art, architecture, and urbanization, are interested in these paintings, and they believe that these miniatures are pictorial references, so they may be used for studying spatial structure and organization of different cities of 500 years earlier. Since the paintings were prepared to gather information for Ottoman expeditions, and because Tabriz was very important for Suleiman the Magnificent, they were painted based on the most precise information available; therefore, they are the oldest and at the same time, the most precise documents for this research.

Figure 2 shows this miniature painted in two consecutive pages (28a-27b) of Beyan-i Menzil (Yurdaydin, 1963). The painting elements on the miniature are marked based on the direction of Ottoman Army's entrance to the city to facilitate the identification.

Map of Qarajadaği Dar Al-Saltaneh

The Map of Qarajadaği Dar Al-Saltaneh is the first and the most complete map that has been prepared by Prince Müzefferiddin Mirza's command after the destruction of Najaf Qolu Khan Fortification by Colonel Qarajadaği (9)- one of the first graduates of Tehran Dar ul-Funun School at the end of Qajarid dynasty on Shaban, 12th 1297AH/1880AD (10). Although the map of Trezel-Fabvier was prepared eighty-two years earlier than the map of Dar Al-Saltaneh of Tabriz by a French board using modern



Legend

- A. The table introduces the colors of the neighborhoods
- B. Topographics Signs Table
- C. Main navigation chart
- D. D1. The names of the ark buildings
- D2. The names of Ali-Shah Ark
- D3. The names of Bagh Shomal buildings
- E. Describe the map of Tabriz Dar Al- Saltaneh
- F. Scale F1. Cubit F2. Foot
- G. Qible Finder Chart
- H. Descriptions of the river
- I. Dəvaçi
- J. Sırxab
- K. Dörd Minar
- L. Nowbər
- M. Mahad Məhin
- N. Xiyavan
- O. Gəcil
- P. Vəyju
- Q. Şhüttürban
- R. Xiyavan

Figure 3. The map of Qarajadaği Dar Al-Saltaneh 1297 AH/1880AD (Qajar Museum of Tabriz- No. 110741)

mapping equipment, the map of Dar Al-Saltaneh of Tabriz is significant because of two specific reasons: First, the map of Dar Al-Saltaneh of Tabriz signifies the beginning of modern era in Iran, and it should be noted that this map was accomplished by an Iranian who had educated in Dar ul-Funun School of Tehran. Therefore, they were familiar with Western surveying method completely. Second, the approach to the map and its semiotics are approximately taken from Iranian culture. Signs of using mentioned semiotics are clear as follows: the frame of map, the used calligraphy (Nastaliq- Tholth), and even its orientation (emphasis on *Kiblah*) (Fakhari Tehrani et al., 2006, 44) (Figure 3).

Hereafter, for the first time the modern concept of topography has been applied, and for the first time the districts are determined by emphasizing

11. Redrawing the Qajarid map is carried out in a research by the author in Islamic Azad University of Tabriz, titled as "Studying the effective factors in spatial organization of architectural and urban elements of Tabriz emphasizing the map of Qarajadaği Dar-Alsaltaneh in 1879" in 2008.

12. M.A. of Architecture Theory from Massachusetts University and Ph.D. of Architectural Restoration from Poly Technic University of Istanbul; Her Ph.D. dissertation and some other articles are about miniatures of Beyan-i Menzil.

on the borders among them (Fakhari Tehrani et al., 2006). Drawing the paths and generally Tabriz access network at the end of Qajarid dynasty is one of other remarkable points of this map (Balilan Asl, 2009, 44). This map has 218 numbered guides for architectural and urban elements by separate neighborhoods at its left side. In addition, there are 30 numbered guides in French at the right side of the map indicating different parts of the governmental palace, Arg-e Alishah, and Baghshomal Complex. Linear scale based on cubit and foot has been drawn at the middle bottom of the map (11). Considering the precision of drawing, this map is the best pictorial document to build an image of Safavid Tabriz.

VISUAL FEATURES OF MINIATURES OF BEYAN-I MENZIL FOR SCHOLARS

Because of the importance of this subject, many researches are conducted on miniatures of Beyan-i Menzil, and each of them has its own attitude through analyzing the mentioned paintings. Although most of the researches have analyzed miniature of Istanbul, as Kosebay (12), the other images of this book, like miniatures of Tabriz, Aleppo are worth to be studied (Kosebay, 1998, 3). Later, through a brief study on the conducted researches, visual features of miniatures in Beyan-i Menzil will be summed up and prepared briefly.

Many researchers have studied features of miniatures in Beyan-i Menzil regarding aspects of the works, including Albert Gabriel, a French architect and archeologist (Gabriel, 1928), Frantz Taeschner, a German orientalist researcher (Taeschner, 1956), Walter Denny, an American historian from Massachusetts University (Denny, 1970), Hüseyin Yurdaydın, a Turk-Islamic historian (Yurdaydın, 1963), Norman J. Johnston, an expert of architecture and urbanization from Washington University (Kelley, 2015), Nurhan Atasoy, an expert of Islamic and Ottoman Art (Atasoy, 1972), Eleanor G. Sims- researcher and historian of visual arts (Sims, 1978), Richard Ettinghausen, an American-German historian of Islamic Art from Princeton University (Ettinghausen, 1984), Uşun Tukel an expert of Art History and Visual Arts (Tukel, 1990), Yonca Kosebay, Ph.D. of Restoration from Polytechnic University of Istanbul (Kosebay, 1998; 2013), Cagman, a researcher of Ottoman Miniatures (Cagman, 2003), Filiz Adiguzel, an assistant professor of Eylul University of Turkey (Adiguzel, 2016), Hüseyin Zahita Turkish expert in the field of Cartography and historical maps techniques (Zahit, 2017). Researches show that:

1. Nasuh's miniatures were quite innovative in the Islamic World because of their eclectic nature and utilization of different art schools;
2. Theses miniatures are considered precious visual documents for understanding historical structure of cities in 16th century because of their high precise topologic geometry and topographic details; therefore, mostly, the paintings had high conformity with realities;
3. Since the paintings were prepared for the Ottoman army, Suleiman the Magnificent to be used for political and martial purposes, they included multi-layered information for Ottoman Empire about the visited places, using a special symbolic language.

13. Turkmens of Aq Qoyunlu had collected an enormous treasure of paintings and artists in their court. This treasure was transferred to Ottoman court because of direct transfer (war between Uzun Hassan and Sultan Mohammad, the second) and indirect transfer (through court of Shah Ismail).

The above-mentioned categorization shows that Nasuh could use a special symbolic language to paint structure of cities in 16th century and provide precise and multi-layered information for army of Suleiman the Magnificent, having been inspired by different art schools. Later, we will discuss the matter through this article.

The origin of Ottoman manuscripts is complicated. Although references of 16th century show that the Empire Workshop was established during reign of Sultan Mohammad II (855-86AH/1451-81AD) (Atil, 1973, 20-103), the first painted miniatures of this era (886-918AH/1481-1512AD) had eclectic nature; they were affected mostly by Iranian and Turkmen traditions because of contacts with artists of Herat and Tabriz; thoughts of Italian artists whom Sultan Mohammad had invited to work in the court could not affect that much (Rogers, 1992, 230). The trend to visualization of literary texts of Iranian writers is the most prominent factor for dominance of Iranian painting achievements on Ottoman painting (13) (Farrokhfar, 2012, 21). Moreover, in *Beyan-i Menazil* book, the illustration and the text support each other; what is not described by one is stated in details by the other (Kosebay, 2013, 96). This matter may be taken from narrative nature of miniature school of Herat and Tabriz which emphasizes on fellowship and sequence of poetry and painting; images are placed in the middle of written pages along the reading direction of Arabic alphabet which was used as Ottoman Turkish calligraphy, and communicational elements like mountain and river that specify the reading direction of manuscripts (Teschner, 1956, 53-55).

Perspective and simultaneous view from different viewpoints for architectural spaces is one of the outstanding features of Herat School (Mohammadzadeh and Mesineh, 2016, 44). Moreover, Nasuh (1536) has used different simultaneous views to show different purposes during painting miniatures of *Beyn-i Manazil*. Kosebay (Kosebay, 1998, 18) believes that the images of *Beyan-i Menazil* are arranged in a way that enables the viewer to have a three-dimensional perception from the city images. The most original viewpoint of painting the main structure of miniatures had been the direction and point of the army entering the city.

Artists of Herat and Tabriz schools have been interested in outer and inner spaces simultaneously in their paintings (Mohammadzadeh and Mesineh, 2016, 44). Behzad, as the representative of Herat School in Tabriz, used the full space in miniature. He used to picture near and far views and places, and also different details of buildings in the painting (Ashrafi, 2009, 29). In miniatures of *Beyan-i Menzil*, elements are placed in a way that they do not overlap each other; the farther elements are placed at the top of page. Scale of elements is observed; therefore, elements are painted according to their importance. Walter Denny mentions this point that scale and precision of painted buildings show their importance; bigger buildings show the unique ones and smaller buildings show the ordinary ones (Denny, 1970, 63).

Later, Behzad continued his innovations. Three-dimensional view, which enables us to see three different sides of a cube, is one of the most salient features of Herat and Tabriz schools. The said feature acts against perspective; perspective shows every part of painting with a specific viewpoint. Such geometry facilitates suggestion of three-dimensional space in a two-dimensional page, without using rules of perspective geometry (Mousavilar, 2003). Nasuh has not used a single method to demonstrate elements of cities in *Beyan-i Menzil* either; he has used different methods



Figure 4. Left: Miniature of Galata; Middle: Places specified in Google Earth; Right: Specifying up to date place of elements using Map Analyst Software (Zahit, 2017)

14. Realism affected miniature of Harat School and then miniatures of Behzad and bonds works of artists of 9th and 10th Hijra centuries in Iran and affected regions like a continuous line. When Behzad moved to Tabriz, miniature artists of the second school followed his traditions and connected painting to architecture and Persian Literature. (Ansari and Saleh, 2012; 5)

like facing, axonometric, and cavalier, to convey three-dimensional effect to the audience. In other words, images of Beyan-i Menzil are arranged in a way that the viewer is able to understand the three-dimensional nature of the city. (Kosebay, 1998, 18; 2013, 103)

Another reason for using art of Iranian miniaturists by Ottoman artists was their realism and expected meaning (14). Nasuh has tried to paint according to the available realities, except in two conditions: cases whose initial design was prepared in the place and then completed in his workshop (Kosebay, 1998) and or cases that he has tried to magnify Ottoman atmosphere in the view of a city (Kosebay, 1998). As Dr. Hüseyin Zahit mentions, miniatures are topologically very accurate; studying miniature of Istanbul and Galata showed that Matrakçı had been Google Earth of that time (Figure 4).

Plants and animals painted in miniatures provide precise information about vegetation and lifestyle of regions; and also, their salient feature is that there is not magnification; they are real (Yurdaydin, 1963). In Beyan-i Menzil, more than 60 different plants and trees are painted in their real color, according to their geographic location. It should be mentioned about other natural elements, like mountains, animals, and rivers that all miniatures include certain animals like rabbit and deer; and mountains are realistically painted most of the time.

The mentioned content can be summarized in a comparative table of the general characteristics of the three schools of Herat, Tabriz and Ottoman (Table 1).

Table 1. The comparison of graphic features of Herat, Tabriz, and Ottoman Schools (Bakhtavar and Shirazi, 2009, 31-41) (Farrokhfar et.al, 2012, 19-31) (Mozaffarikhah and Goudarzi, 2012, 7-20) (Prepared by the author)

Taking into account the above mentioned issues, Nasuh’s important innovation had been either using a special symbolic language or being inspired by different art schools. Studying the painted buildings in miniatures of Beyan-i Menazil show that specific forms and colors are

Features	Schools	Harat	Tabriz	Ottoman
Horizon Line		Near the Upper Edge for Grater Depth	Mainly Rocky & Irregular-Often out of the Top of the Staff	Relatively Flat & Long
Frame		Using the Vertical frame	Deal freely & Wrap Around	Binding Deal (Not Exceed the Outlines)
Figures		Micro & Small	Fewer Figures	Crowded & Busy Paintings
Buildings	Drawing Type	Humanistic	Lack of Reality Reflection & Documentation	Realistic & Illustrated Document
	Presentation Type	Heaven & Domestic (Multi-temporal)	No Perspective, Faced Lines, No Vignetting	Using the Perspective & Vignetting
	Building Form	Open & Spacious Space	Rectangle, Octagonal, Circular & Four Porch	
	Materials	Wood, Stone, Tile	Stone & Tile	
Plants (Nature)		Realism	Eternal	Impalpable Use of Perspective & Penumbra
Elements Composition		Symmetric & Asymmetric-Circular	Circular Composition- Many Details	Static & sometimes Crowded (without Details)
Decoration		Abundant	Delicate, Arabesque & Angelica Drawing	Unwillingness to Delicacy & Tiling, Simple Background
Color		Rich & Transparent Colors	Bright & Varied Colors	Bright & Radiant Colors
Proportions		Proportionality	Accuracy in the Proportins	

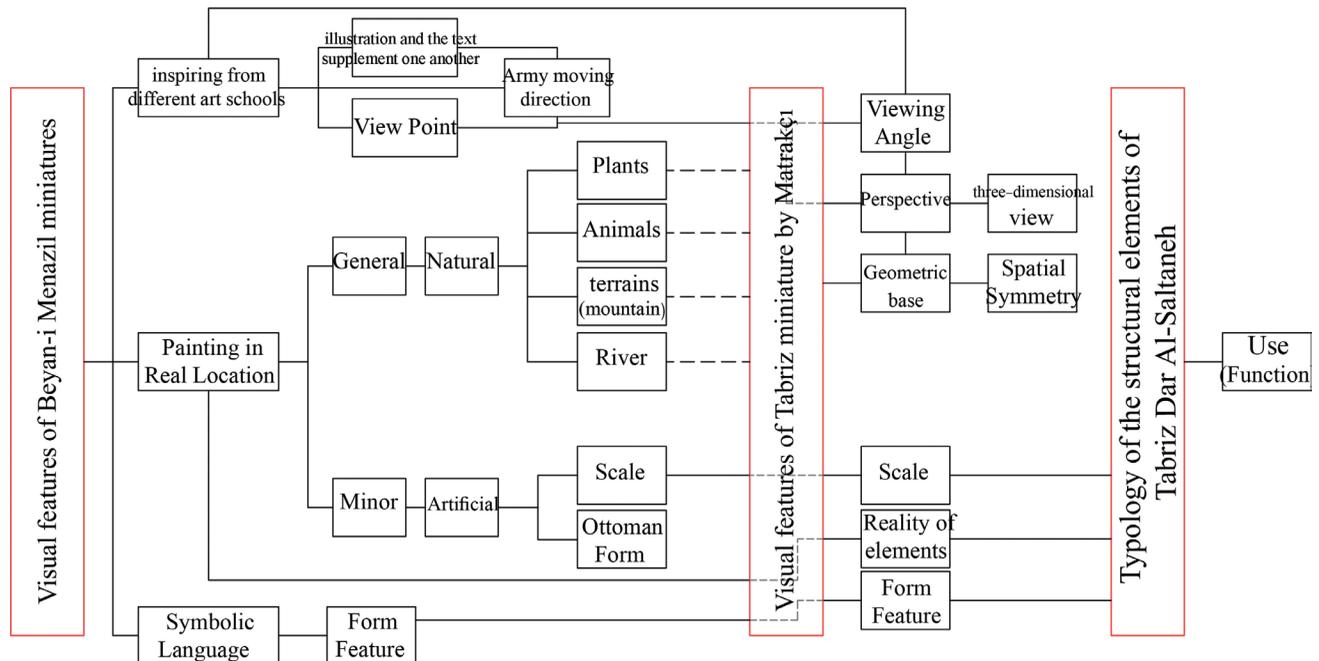


Figure 5. The theoretical frame of research (prepared by the author)

used to demonstrate structural elements with different applications to make them look different. As an example, mosques, tombs, and baths are demonstrated using complete and defected Platonic solids in different colors. However, none of the images is the same; all the buildings have trivial changes to be distinguished. Kosebay (1998) has generally categorized symbols and forms of images using certain applications through studying all the miniatures of Beyan-i Menazil; she is the only researcher who has studied details of artifact elements (15). The mentioned examples show that the way of painting enables us to distinguish kinds of buildings through their architectural features, for instance their relation with place and other buildings.

After the analysis, providing a theoretical frame becomes possible. The first step includes general features of miniatures based on viewpoints of scholars and the analysis of images. Then, using this diagram, we will be able to analyze visual features of Matrakci's miniature.

15. She believes that castles are demonstrated as constructed walls or gates and battlements around it. Tombs are demonstrated as independent buildings with a dome. Sometimes muqarnas ceilings are used instead of domes. Baths or their most distinct elements, for instance domes and small lanterns are painted. Palaces are painted in many ways, as a big building with a few holes on it or like castles surrounded by towers. Also, houses are painted as single-unit buildings without much diversity in windows and doors, in one or two floors. Bazaar is a single commercial building which is demonstrated as arched or having different openings. Bazaar is demonstrated with flat ceilings except for Istanbul. Bridges are demonstrated with different number of openings (Kosebay, 1998, 30-4). Detailed studies are conducted in her M.A. thesis in Massachusetts University (Supervisor: Nasser Rabbat) in 1998.

IDENTIFICATION OF STRUCTURAL ELEMENTS OF TABRIZ IN SHAH TAHMASP'S ERA RELYING ON ANALYZING VISUAL FEATURES OF MINIATURE OF TABRIZ

Communicational Elements and Angle of View

In 1535AD, the Ottoman Army, after entering Iran and passing Xoy and Sufian cities, entered Tabriz from the Northwest (Rogers, 1992, 245). Figure 6 shows the relationship between the miniature of Tabriz with Sufian and Xoy from northwest and Saadabad, and Ucan from southeast by the rivers.

The miniature of Tabriz was drawn in two pages considering the viewpoint of northwest to the city; in fact, the right page includes the Southern elements and the left page includes the Northern elements of the city. Figure 7 shows the drawing angle of miniature of Tabriz, which has been adapted on Qajarid map 1297AH for more clarification. The important point to consider is that the orientation of buildings within the city

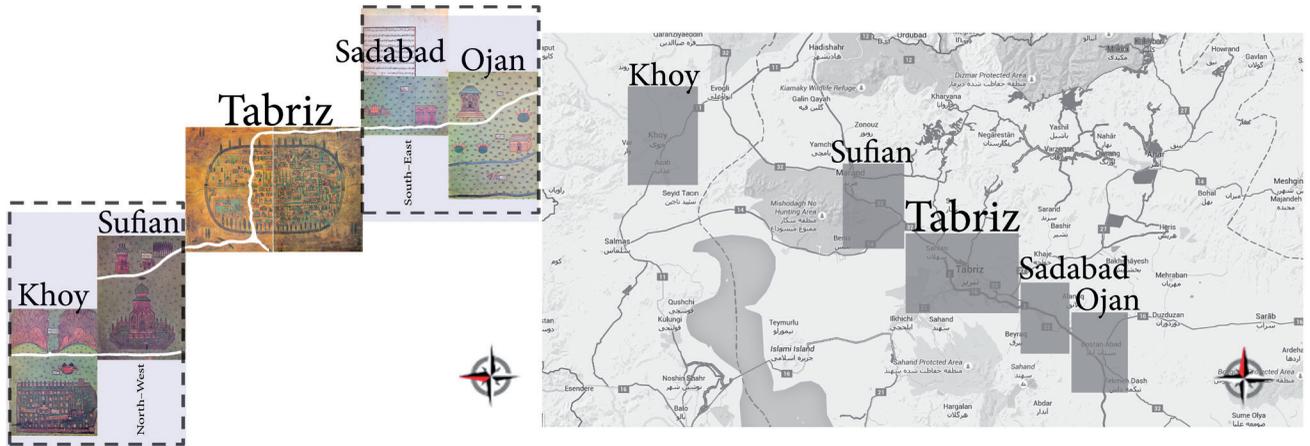
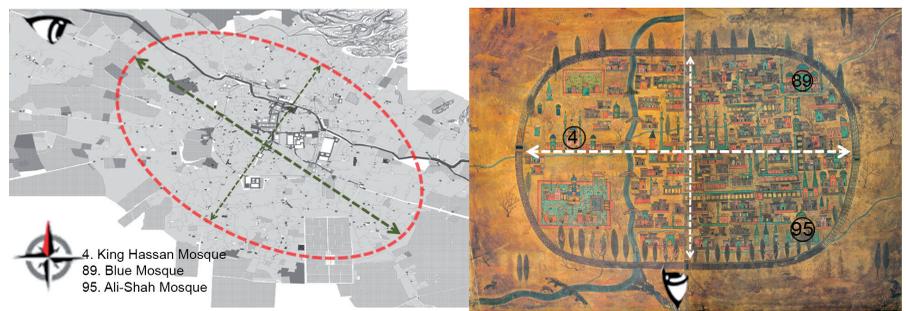


Figure 6. The relationship between miniature of Tabriz with the cities around it through rivers and passages (Yurdaydin, 1963) (Prepared by the author)

Figure 7. The location of point of view of miniature of Tabriz (Right Side) (Yurdaydin, 1963) on Qarajadaği Dar-Al Saltaneh map (Left Side) (Prepared by the Author)



therefore represents the progress of Sultan Suleiman’s army. In addition, the prominent buildings have been drawn in the direction of entering point to the city. Moreover, distinctive buildings like the Alishah mosque, Blue Mosque, and King Hassan Mosque have been drafted with rotation angle of 90 degrees counterclockwise.

Inverted Perspective

Inverted perspective is a kind of perspective that allows us to see objects from three directions: above, front, and side. This kind of perspective is found frequently in schools of Herat and Tabriz. Pavel Florenski (16) explains this phenomenon in his famous book, *The Inverted Perspective*, suggesting that the illustrative technique used in Islamic cultures enables the viewer to see not only the front façade of objects, as in a linear perspective, but also other parts of the building at the same time (Florenski, 2001, 26). Miniature of Tabriz has a multi-centered view because of symmetry of time and narrating events; therefore, the transmitted information is more than using linear perspective, such as what happens through demonstrating views of polygonal structures or closed environments like fortification of city and/or open spaces in architectural complexes. Most of the elements are depicted as façades and some of them are represented in a three-dimensional view, either in the axonometric or cavalier styles. (Figure 8)

Kosebay suggests an easier way of visualizing these perspectives which is envisioning them as models drawn on a two-dimensional surface. If the buildings were cut along three sides and lifted up at a ninety-degree angle to the paper surface, they would provide a model of a city view (Kosebay, 1998, 18). To get a better understanding of the issue, the above mentioned hypothesis was to be tested through redrawing the miniature of Tabriz and a 90-degree rotation around the horizontal axis. The interesting point is

16. Pavel Florenski: Azerbaijani-Russian scientists and artists that have many books in different fields such as painting and art.

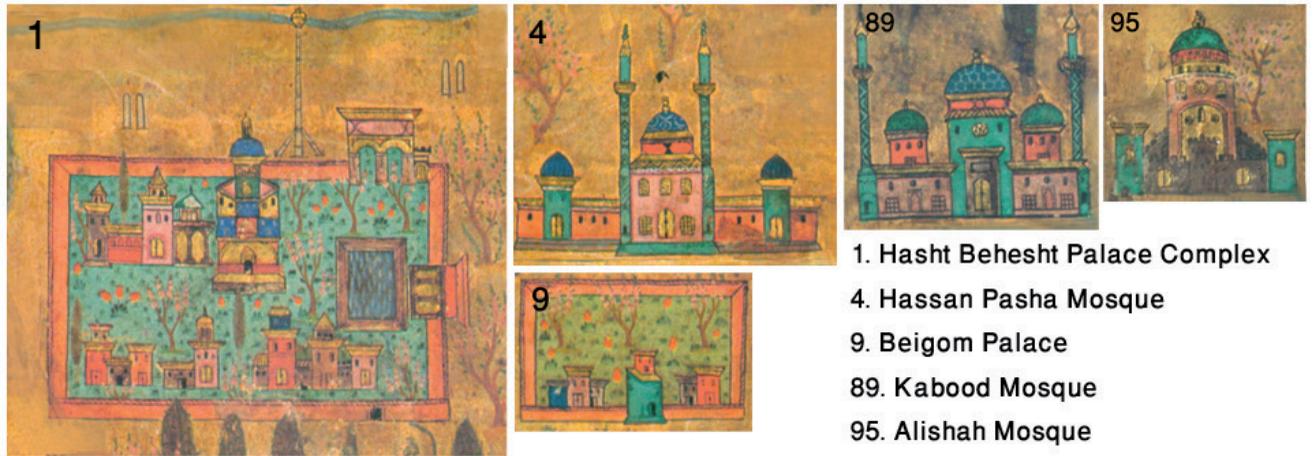


Figure 8. Samples of using inverted perspective in depicting miniature of Tabriz (Prepared by the author)

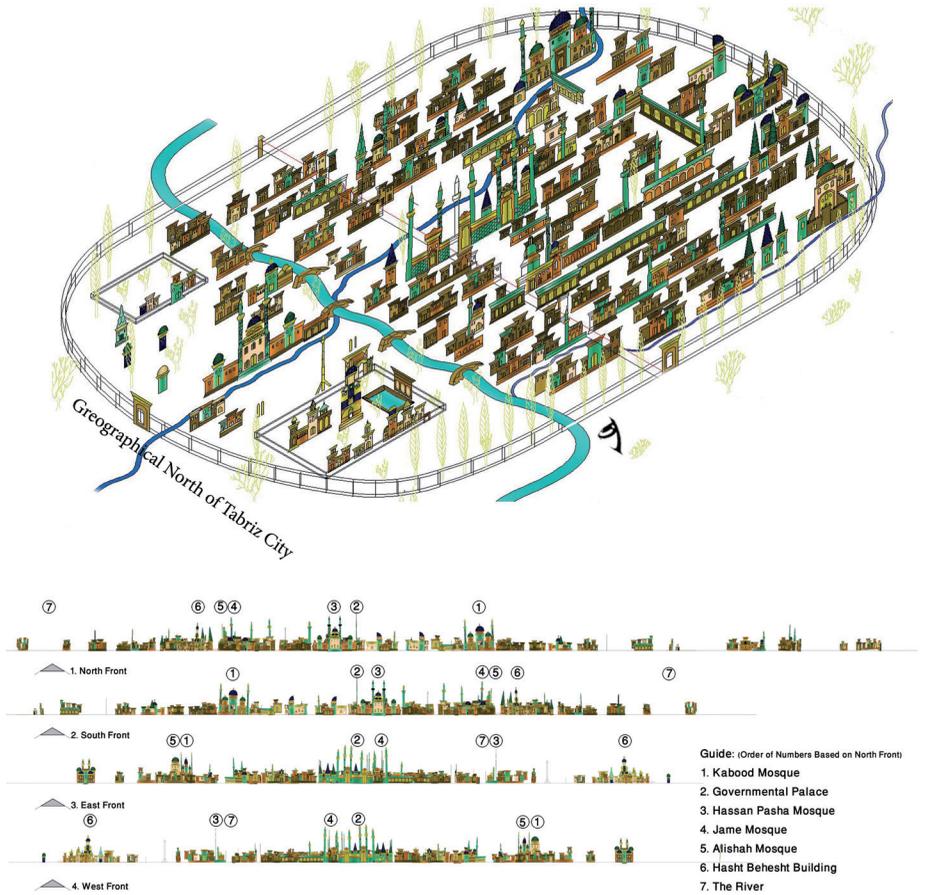


Figure 9. Up: Inverted perspective to miniature of Tabriz; elements have rotated 90 degrees horizontally taking into account angle of view, Down: Views of Tabriz in Safavid's Era (Prepared by the author)

17. This way: consecutive division is done through drawing diameters, perpendiculars and half diameters. Perpendiculars divide the surface into four parts; then diameters of half of the surface are drawn; if a line is drawn from intersection of diameter of half of the surface with the general diameter, surface is divided into three equal parts. Continuation of this method leads to certain geometric proportions (Ayatollahi and Gholamhassani, 2003, 56), using certain geometric proportions, breaks the past symmetric composition (Nassi, 1999, 158).

that, with this method, we are able to provide views of Tabriz during the Safavid era (Figure 9).

Geometric Base and Spatial Symmetry in Locating Elements

According to the mentioned documents at the first steps of the research, static geometry and sequence of division evolved in Herat School, and consequently, Tabriz Second School generated a kind of symmetric composition, while asymmetric state went on (17). This composition makes

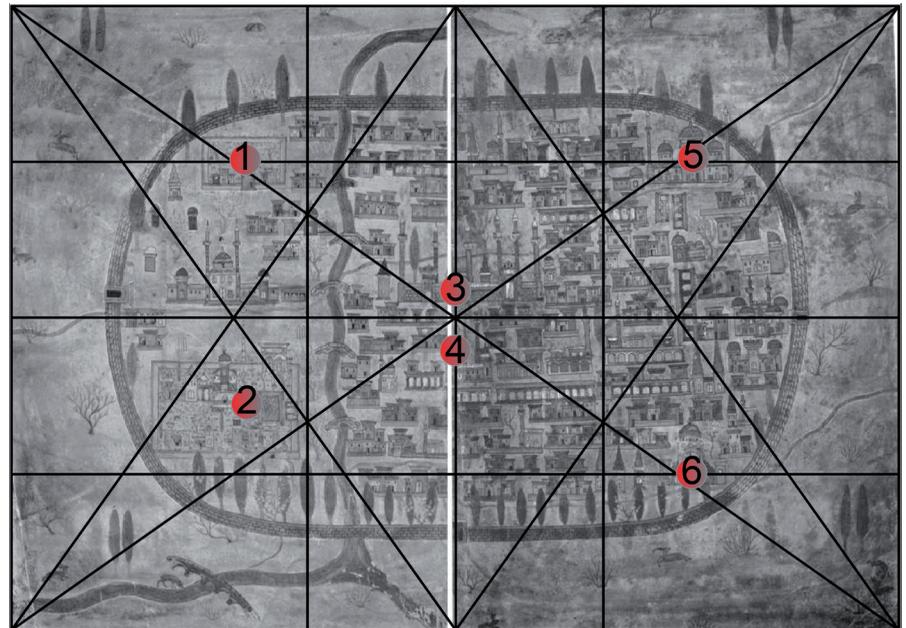


Figure 10. Spatial symmetry based on geometric proportions in locating important painted elements in four corners and center of miniature of Tabriz (Prepared by the author)

an informal space and also makes a real world. Moreover, the painter is able to use multiple angles of view.

There are two kinds of symmetry in miniature of Tabriz: spatial symmetry and time symmetry. Miniature is painted in two pages sticking together; in case of considering them as a single page and drawing diameters, perpendiculars, and their intersections, the general image is divided into three parts. Tabriz and the fortification around it are painted in the center of the main page. The city is not symmetric and again, elements are scattered on its surface where symmetry is observable everywhere. The river occupies one third of the city precisely, showing spaces allocated to the government and or people. Jami Mosque (No.4, **Figure 10**), the governmental-administrative complex (No.3, **Figure 10**), the four main points of Blue Mosque (No.5, **Figure 10**), Ali-shah Mosque (No.6, **Figure 10**), Hasht-Behesht Palace (No.2, **Figure 10**), and an unknown governmental-recreational complex (No.1, **Figure 10**) in four corners of the city are five main points of the painting. These elements are painted in an exaggerated way with a bigger scale compared with other elements, which symbolize their importance. Another interesting point is that king Hassan Mosque Complex and Bazaar are placed in one stroke at the center, which is realistic.

Miniature Scale

According to outputs of miniature conformity, painted by Matrakçı, and the up-to-date map of Tabriz in Google Earth, using Map Analyst software, the result is as follows: the approximate scale of miniature of Matrakçı is 1:11200 (**Table 2**).

Helmert (4 Parameters)	
Scale	1:11,200
Rotation	86° [ccw]
Std. Deviation	±165m
Mean Pos. Err.	±234m

Table 2. Results of Helmert (4 Parameters) Based on Map Analyst Software (Prepared by the Author)



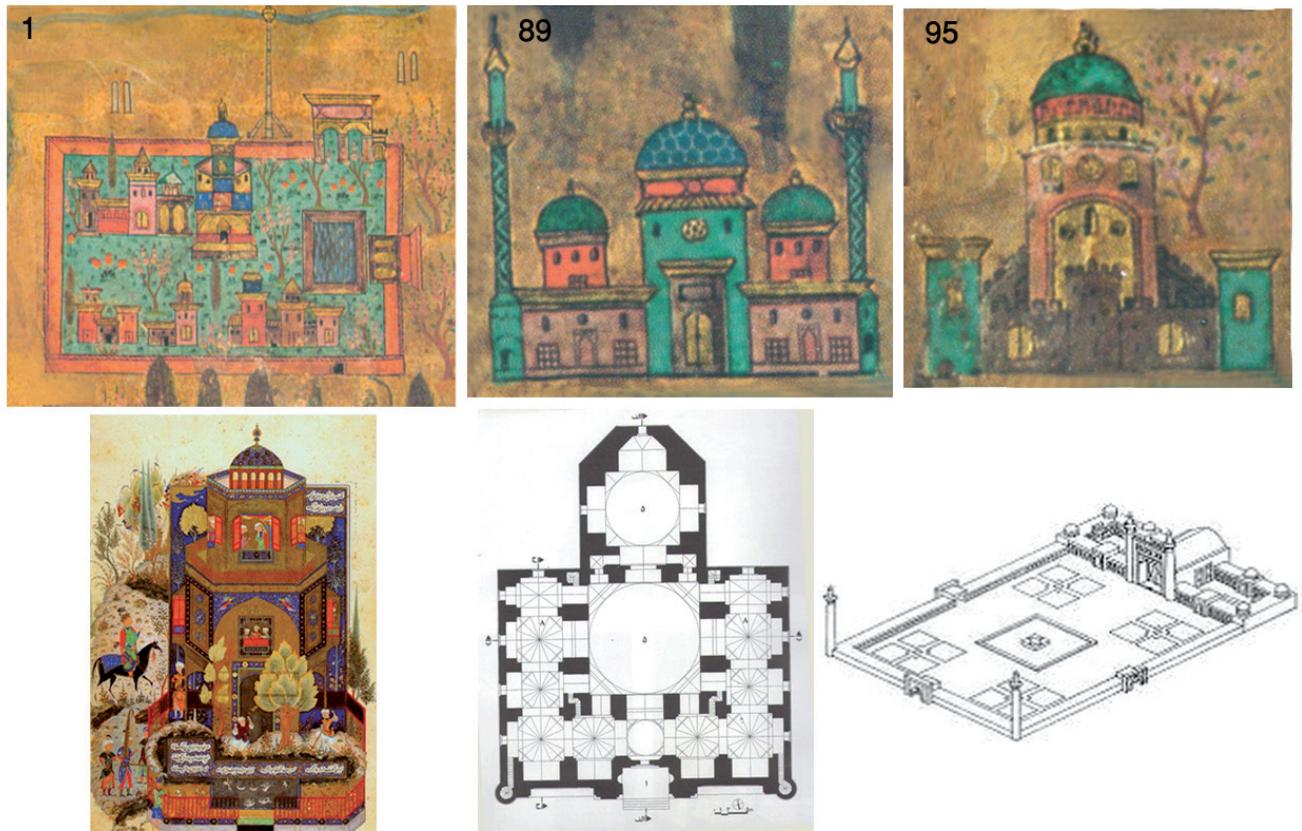
Figure 11. Left and Right: Results of Helmert (4 Parameters) based on Map Analyst Software: 6 distinctive points, Including: 1.Ali-Shah Mosque, 2.Blue Mosque, 3.Jami Mosque, 4.Governmental Center, 5.Hasht-Behesht Palace, 6.King Hassan Complex, on the Miniature of Tabriz; Middle: the Same Points on the Present State Map (Prepared by the author)

Figure 11 shows the location the of points: 1. Ali-Shah Mosque, 2. The Blue Mosque, 3. Jami Mosque, 4. Governmental Center, 5. Hasht-Behesht Palace, 6. King Hassan Complex; it also shows the displacement chart (Distortion Vectors) and specified limits as circles on the map. It should be mentioned that more length of diagram shows low precision of location.

Realism in Painting Artifact Elements

We may claim about miniature of Tabriz that most of the time paintings match the real ones. Firstly because, Safavid Tabriz in 940-42AH was as powerful as Istanbul and based on drawn miniature, several famous architectural and urban elements such as Sahib Abad Square, King Hassan Mosque, Hasht Behesht Palace, Ali-Shah Mosque, Blue Mosque, and many tombs and governmental palaces existed in the city. Secondly, the miniature of Tabriz, after Xoy, was the second drawn miniature from Iranian cities that based on the documents; Nasuh himself was with the army and had a role in drawings. (Rogers, 1992, 236) Thirdly, by precise investigation of Tabriz miniature, we found out main and prominent

Figure 12. The comparison of depicted details of Matrakci's Miniature from Hasht Behesht Palace (No.1) with the depicted miniature in 901AH (Archive of Museum), Blue Mosque (No.89) with the plan of the existing situation and Ali-Shah Mosque (No.95) with the recreation of the collection (Giyasi, 2002, 7-31) (Prepared by the Author)



18. The comparison of the plan of the Blue Mosque with what is drawn in the miniature, or the comparison of the miniature drawn from Hasht Behesht Palace in 901AH at the time of Uzun Hassan Aq Qoyunlu entitled "Khosro under the windows of Qasre shirin" (Hamidian, 2008) with what is depicted in the miniature of Matrakçı, and also the comparison of the three-dimensional plan that is recreated from Ali-Shah Mosque with what is depicted in the miniature indicate that in most of the cases these elements have been depicted based on the reality.

19. Like other elements of nature such as water and mountains, painters have a special look at the trees, and among them, due to Iranian beliefs, have a special attention to the cedar tree, depicted in most of the paintings of Tabriz's second school. (Saleh Shoostari and Shirazi, 2008, 6)

differences in drawing architectural and urban elements and their uniqueness (18) (Figure 12).

In this miniature, terrains were not painted, probably because of angle of view of the painter or because the other elements had more political and martial importance. The element of the river, painted in the city, was painted in one third of the map conforming precisely. Among miniatures of Beyan-i Menzil, miniature of Tabriz has the most cedar trees (19) which conform to climate of Tabriz. Also, there are trees with blossoms between the buildings in the city which symbolizes fertility (Kangarani, 2009, 90) and on the other hand, there are important urban open spaces. (Balilan, 2009) Tulips were considered royal flowers then so, painting them in two fenced gardens shows existence of royal gardens. Finally, there are dry trees growing out of the city fortification which show that it was autumn then.

Form Typology

Typology has numerous definitions but, because of nature of this article and its approach, it is defined as means of identifying geometrical patterns applied in the physical part of the building in the frame of façade, volume, and form that complies with accepted and countable geometrical process of geometrics and makes us know the elements and ingredients of the building in a better way (Seyyedian et.al., 2017, 17). Since miniature complies with a subjective process of a designer using designing lines and originates from geometrical principles, application of geometric principles in the paintings is important. Having this background in mind, basic figures and the way of their geometrical combination using different colors make us understand the painted elements of miniature of Tabriz because of their patterns.

Colors help us to know not only the material applied through the construction of the buildings but also the application of the buildings according to the applied geometry in different parts of them including; basic line, body, and roof. It is because Nasuh has chosen colors close to the natural color of applied material.

Colors used in miniatures indicates materials, for instance use of blue indicates lead and using the same color with some geometric patterns drawn on it, indicates ceramic tile cladding. Red color indicates the adobe brick tile, yellow indicates the chalk brick, and gray indicates the stone masonry. (Kosebay, 1998, 30) In addition to issues mentioned above, in Miniature of Tabriz applying pink color in both religious and non-religious buildings, shows that probably they were governmental or governmental depended buildings and in most of the cases, they had private functions. For example the pink color in King Hassan Mosque's building (number 4 in Figure 2) which according to historical documents was a royal mosque. The orange color has a public usage by having the governmental features (No.99, 101 and 103 in Figure 2).

According to Atasoy yellow is a sign of public spaces and in some bodies it shows the direction which is towards sun. Of course it is a very general classification and more exact conclusion needs the simultaneous analysis of color, form and drawn elements that involve different concepts such as function, direction of the buildings in addition to determining the materials.

Having a more detailed glance to form of the drawn elements in Tabriz Miniatures, shows that using Platonic volumes with different colors in drawing the base line, body and ceiling is observable, in which some volumes with some changes, omissions or attachments used.

The applied baseline in drawings can be divided to three groups. Grey single linear baseline just used in some cases to draw public buildings (No.10, 13 and 60 in **Figure 2**). A baseline with two gray lines can be used to demonstrate accumulation of several buildings like the Bazaar with other buildings. Three lines in a rectangle form in gray color (for example elements No. 2, 11, 16, 64, 98 in **Figure 2**) orange (elements of: 17, 28, 30, 96) and green (elements of: 29, 52, 58) which is used to show the collection of buildings and mosques that their number in miniature shows the Tabriz's districts in 10th century. The reason for this claim is number of boroughs recognized in miniatures that is 45 and it is compatible with number of boroughs mentioned in Allessandri itinerary in 978 AH/1571AD, who traveled in the era of Shah Tahmasb the First.

The mosques in districts are drawn in different colors. The green color shows the neighborhood's mosque's importance in the city (element No.29, 52, 74). On the other hand different colors show the variety of used materials in mosques and of course the sun direction (element No.28) and the neighbor's locating (element No.62). The baseline in trapezoid shape with three lines and gray has been used to indicate the building that is a part of one collection and has a religious structure (element No.21). The baseline in stair shape with three lines and gray can be seen in some structures like Bazaar (element No.82) and the same form in green can be seen in religious buildings like tombs (element No.7).

The arched bodies are drawn alone and they show the expanse of Bazaar buildings. The existence of different colors is because of using different materials such as stone (element No.66) a brick (element No.77). The variety of colors suggests the Bazaar's locating direction (element No.94) and the sun direction (element No.53) and also grading the Bazaar on the base of importance (element No.90) and existence of each guild (element No.82) in the rows.

The flat bodies that are drawn with closed Gates in orange (elements No.99, 18), green (elements No.14, 28, 89) and pink (elements No.4, 31) colors generally are unique buildings that were dependent on government. Smooth bodies with semi-open doors could be observed in some neighbor buildings (Elements No. 27, 22, 10) that probably represents the building with public usage and finally the gray color is related to the applied materials, orange color shows the building direction and green color has been used in religious building's body.

In Tabriz miniature flat and smooth ceilings are indicated in green color that are used in drawing the elements of bazaar (elements No.38, 53, 77). Flat yellow roof generally is seen in districts mosques (element No.52) and the orange color can be seen in common buildings ceiling inside the neighbor which have green bodies and probably represent the shrines. We can see the gable roof just when there is a mosque inside the district (element No.29). In the other case we see the dome roofs which include three different kinds: semicircular (element No.89) Onion dome (element No.4) and conical shape (element No.71) in blue and green colors. Generally speaking, ceilings are used in drawing the mosques, tombs, bathrooms and some buildings with governmental function.

Element	Form & Feature	Color (Material Symbol-Function)						Uses Cases	
		Blue	Gray	Yellow	Orange	Green	Pink	Accumulation of several buildings	Collection Unit
Ceiling	Flat Roof 	✓ Lead Religious	✓ Stone Public	✓ Religious building in a complex	✓ Public Buildings	✓ Public Religious		✓	✓
	Pitched Roof 			✓ Religious					✓
	Semi-Circular 	✓ Clad coated Tiles Public: Hammams				✓ Tiles Tombs			✓
	Bulbous Dome 	✓ Religious				✓ Tombs			✓
	Conical Dome 	✓ Tombs				✓ Tombs			✓
Body	With arcades 		✓ Stone Public	✓	✓			✓	✓
	Flat with Close Doors 				✓ Public use (related to Government)	✓			✓
	Flat with Semi-Close Doors 		✓	✓ Chalk Brick	✓	✓ Private use (related to Government)		✓	
	Doors & Windows 								
Base Line	2Lines 		✓		✓			✓	✓
	3Lines 		✓	✓	✓			✓	
	4Lines 		✓		✓				✓

Table 3. The compatibility of baseline forms, body and ceiling with different colors and materials used in Tabriz miniatures (Prepared by the author)

Urban Elements			Architectural Elements					
Bazaar (Bazaar+Mosque, Bazaar+Caravan sara, Bazaar+Neighborhood)	Bazaar+ Neighborhood		Bazaar+ Caravan sara		Mosque (Mosque+Minaret, Mosque+Tomb, Mosque+Neighborhood)			
	Bazaar+ Mosque					Tomb		
Neighborhood					Religious Complex			
	Bridge					Service Complex	Church, Hospital	
					Caravan sara			
				Service Complex				
Urban Squares		River		Governmental Complex				

Table 4. Identifying architectural and urban features drawn in Matrakçı's miniature of Tabriz in 944AH /1537AD (Prepared by the author)

In Tabriz miniatures, most minarets are painted green and individually for showing religious spaces because of their importance (No. 58, 45, 31) or couple minarets (No. 89, 4). A pair of short gray minarets is only presented in a governmental building.

Finally, color and form of painted elements as two important ingredients of form feature enable us to identify different kinds of architectural and urban elements of Tabriz in 16th century. (Table 4)

LOCATING THE IDENTIFIED ELEMENTS USING OTHER HISTORICAL DOCUMENTS ON THE MAP OF QARAJADAĞI

Author	entering date to Tabriz	Architectural Elements (mosque, tomb, school, bathroom, palace)	Urban elements (Square, borough, bridge, gate, bazaar, garden, cemetery)
Maria Angeleo	Ismail I (914,913AH/ 1508AD)	1-The palace building that was started in Hasan Bəy's period and ended up by Yagoub.	1-Chogan square
Francisco Romano (unknown merchant)	Ismail I period	1-Ala Qapı (Alishah Mosque) 2- Hasan Padishah Mosque 3- A palace on the hill in east city 4- Bəyim building (Bəyim garden) (Rozeye Athar) (Rozatoljenan) 5- Hasan Bəy palace 6- The entrance building of Hasan Bəy palace 7- The hospital next to Hasan Padishah mosque	1-The city's perimeter is 24mile equal to 35568 meters (approximate limits on map 1-1) 2- Dorud in Miyanshahr 3- A great river (in west city) has a salty water 4- Polo square 5- A stone bridge on a great river
Author of Alamaray Abbasi	Ismail I period Written in: 916-926 AH	1-Jami mosque 2- King Hassan mosque 3- Şam Qazan	1-Chogan square
Matrakçı	Tahmasb I period (942-940 AH)	1-Blue mosque 2- Alishah mosque 3- Ustad Şayırd mosque 4- Jami mosque 5- King Hassan mosque 6- Shah Hossein Vali's tomb 7- Seyed Hamzeh' Tomb 8- Nasriyeh School 9- Gümü. Qaya building 10- The old government house (and new one) 11- Hassan Beyg palace 12- Judges Court 13- The old Mohtasabkhaneh	1-Mehran river 2- Məşq square 3- The square next to the old government house 4- The square between Jami mosque and government house 5- Polo square 6- 45 districts 7- 5 bridges 8- Bazaar (from Khiyaban gate toward the west with two branches, one to Mashg square the other to Jami mosque and the river's north) 9- Bəyim garden 10- Hasht Behesht garden 11- Sırxab cemetery 12- Gəcil cemetery.
Hasan Beyg Romello (Author of Ahsan al Tavarikh)	Tahmasb I period (981AH)	1-King Hassan mosque 2- Nasriyeh school	1-Sahibabad square 2- Dəvəçi neighborhood 3- Şeşgilan neighborhood 4- Vərci Gate 5- Səncər Gate 6- Sarv Gate 7- Miyar Miyar Gate 8- Nobar Gate 9- Aali Gate 10- Sırxab cemetery 11- Gəcil cemetery.
Hafez Hosein Karbalayi (writer of Rozatoljinan)	The late of Tahmasb I (975 AH)	1-A large No. of shrines in 6/10 AH 2- Jami mosque 3- Blue mosque (Müzəffəriyyə building) 4- Ustad Şayırd mosque (Alaiyeh building, Süleymaniyyə between Qara Daş district and Ərəblər Çarçısı 5- Aldar mosque (Dal Zal) in Miyar Miyar gate around the Qara Daş district 6- Haj Kazim mosque in Rey gate 7- Köhnəçilər Mosque (Shahi) 8- Kamal Khojandi's tomb in Tabriz street 9- Seyed Hamze tomb 10- Yeddi Bacılar tomb in Aali Gate 11- Pir Salehiye tomb 12- Shah Hosein Tekiyeh 13- Mir Heydar Tekiyeh (in Achabad alley) 14- Dervish Lagari's tekiyeh in Şeşgilan neighborhood 15- Zanjiri's tekiyeh 16- Sahebiyeh monastery 17- Cəlal Türre monastery on Nobar bridge 18- Qaziye school 19- Judges court 20- Qümüş Qaya building 21- Məqsudiyyə building 22- Qiyasiye building 23- Two minarets in Sırxab 24- The old Government House 25- Qəlil bathroom 26- Qərib bathroom in Gəro 27- Paskoshk bath 28- Şam Qazan	1-Saheb Abad square (Chogan) 2- Mehranroud river 3- Qara Daş district and Ərəblər Çarçısı 4- Şeşgilan neighborhood (from the old Government House up to Sırxab around the Pül Səngi) 5- Vərci districts , Ali Siyahpash alley, Hasan Abad 6- Əhrab 7- Kütəbağ 8- Miyar Miyar 9- Dəvəçi districts 10- Dörd Mınar strict 11- Səncər district in the west of Rasta Kütə 12- Mələkə district 13- Dabagestan 14- Konasis 15- Nobar 16- Gəcil 17- Etko (around Jami mosque) 18- Battalabad alley 19- Qasım Bəy and Acabad alley 20- Abdlixaliq alley around Məqsudiyyə 21- Dülə Sütə 22- Nobar bridge 23- Rasta Bazaar 24- Seraclar Bazaar 25- Börkçü Bazaar 26- Chenobar Bazaar 27- Beylankı Bazaar 28- Sahib Abad Garden (Nasriyeh) 29- Bağşumal 30- Pir Mohammad Seraj garden 31- Bəyim garden 32- Sırxab cemetery 33- Çərəndab cemetery 34- Gəcil cemetery 35- Sad Aldin cemetery known as peak
Vincento Dalsandry	the late Tahmasb (978AH)	-	1-The city's perimeter is 15 miles equals to 22230 meters (approximate limits on map 1-1) 2- 45 alley (each alley has a garden)

Table 5. The table of important architectural and urban elements in Tabriz from the historians and travelers point of view in 907,978AH/1501, 1570AD (Prepared by the author)

To recreate physical structure of Tabriz in 16th century, identifying and locating the elements are needed. Table 5 gives the complete and exact information from the historical texts about the architectural and urban elements related to the beginning of Safavid dynasty from the ruling of Ismail I until the end of Tahmasp I (907-978AH/1501-1507AD), separately. All these data will be located on the Qarajadaği Dar-Al Saltaneh map with the help of the outcomes resulting from the analysis of Tabriz miniature.

Tabriz has always been a commercial-production city because of its geographical position; Silk Road passes through it relating west to east. Tabriz is regarded as one of the commercial and industrial cities after Islam. Soltanzadeh writes (Soltanzadeh, 1988, 292):

“Through the most important gate or gates located in the commercial passages, first the Bazaar starts and continues to the city center; the urban

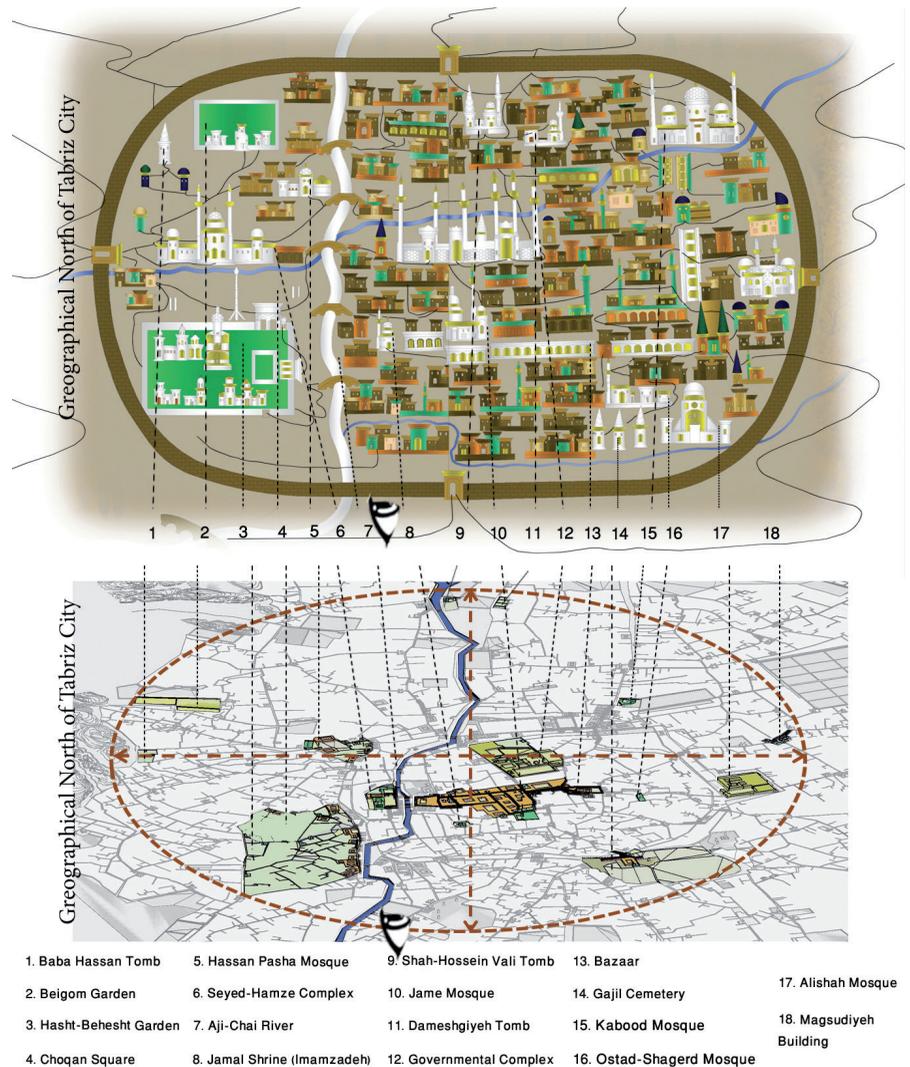


Figure 13. Reading out the main elements in miniature of Tabriz on the Map of Qarajadaği (Prepared by the author)

development causes the expansion of Bazaar's structural space along with the main roads. Most of the economic, social, religious as well as important urban services are located along the Bazaar. And also most of the public service units are related to each other through the main and secondary ways in Bazaar."

It can be concluded that, according to the documents of **Table 5**, the first step is locating important architectural elements of Tabriz in Shah Tahmasp's era on the map of Qarajadaği (**Figure 10**).

In the next step, considering patterns of commercial-production cities of Iran after Islam, the identified elements in Shah Tahmasp's era are divided to four general groups: 1. Fortifications and gates, 2. Passages, 3. The urban spaces and districts, 4. Religious service, and governmental and commercial elements. And then, locating the elements will be accomplished accordingly.

Fortifications and gates: At the beginning of Safavid dynasty, the residential borders in Tabriz were considered from the east to the west beyond the Qazani's fort because of the economic, political, social, and cultural developments. According to Venizian merchant Fransisco Romano

20. In the light of new researches it is revealed that the name of the Venizian merchant was Francisco Romano (Abuin, 1995, 247-59).

21. Mile is a unit of distance. In old Rome it was equal to 1620 English Yard and 1482 French Meter or one and half Mile Iranian mile (Dehkhoda, 1998).

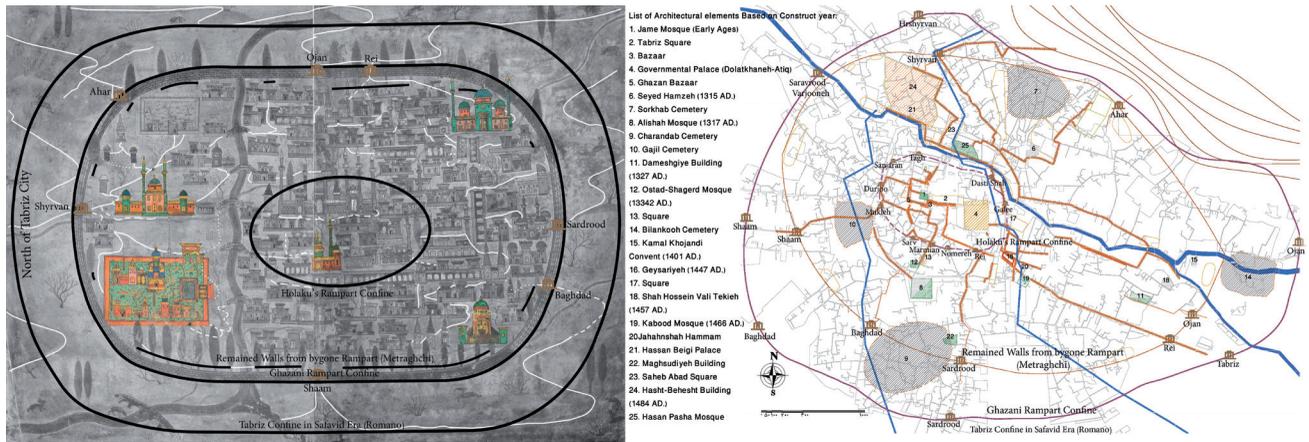


Figure 14. On the Left there is an interpretive analysis of town's border and redrawing of roads on the miniature. On the right there is an accommodation of the survey's findings in Dar-Al Saltaneh Map by Qarajadaği (Prepared by the author)

(20) in King Ismail Safavid era, Tabriz was a big city about 24 miles (21) and like Veniz, it did not have a fort (Venizian, 1970, 381). At the end of the ruling of King Tahmasp I in 987AH/ 1571AD, Alesandry gives the number of 19 miles which is 9 miles smaller than the previous ones (Venizian, 1970, 444). It means that Tabriz had lost its importance during the late seven century. In Matrakçı's miniature, Tabriz was drawn in a rectangle shaped fort with curves on its angles, and there were four gates on its four main directions, that from his point of view were the important gates of city. Thirty-eight cedar trees were drawn around the city alongside the fence but diffused. By reminding Romano and Alesandry's quotes on non-existence of a fence in Tabriz in Safavid period, by drawing the built fort he probably meant the Qazani's fort (22) (702 AH/1302 AD), and cedar trees represented the remains of the old walls at the time of drawing. On the other hand, two cedars have been drawn distant from Jami mosque (Figure 2, A', B'). If we draw a circle from the city center with a radius of trees and then accommodate it with the historical documents, we will conclude that these two trees represent the Halakoyi's Fort (651/1253). In the four corners of the miniature, out of the city, there are a couple of trees that probably show the city's limit in the early Safavid period according to Romano's description (Figure 14, Right part). After accommodating the fort in Qarajadaği's map, the next step is to draw the accessing network of the city.

Passages: With a little care on a miniature, we recognize the pale lines through the whole picture. Most likely, these lines were the city's main and secondary roads. Some of these lines are clear and visible on the picture, but some of them are interrupted or not drawn at all. To make the surveying of the existing lines in miniature at ease, they are drawn in three ways on the base of clarity and readability: 1. stretch lines, 2. interrupted lines, 3. dotted (Figure 11- left side). Then, to transfer the redrawn lines on Qarajadaği's map we used the intersections of these lines with a drawn fortification as starting point of the passages, assuming that these points are gates and the entrance of main passages to the city. They are named and located on the base of historical documents (Hamdollah Mostofi, 1957), (Evliya Çelebi, 1935) and (Romelo, 1978) **Table 4.** Then the **passages** are divided into three groups on the base of findings and their accommodation with Qajarid map.

22. Around the Qazan wall was 25 thousand steps (14th century) and had 6 gates: 1. Ujan, 2. Ehar, 3. Şirvan, 4. Serderi, 5. Şam Qazan, 6. Sarab (Mostofi 1957, 154).

1-The main passage starts from Rey Gate and after passing the north of Blue Mosque and the south of the old Government House (35) connects to Rasta Bazaar (53). It passes through the south of Jami Mosque (45)

and District (52) and Gecil Cemetery (71-72-73) and finally reaches Sham Gate. This passage was the main west to east road, dating back to Ilkanid Dynasty. At that time, Şam Qazan was located in the west and Rab-e Rashidi in the east.

2-The other main passage begins from Şirvan Gate and Ahar in north and northeast of the city. It passes through the Chogan square, Hasht Behesht palace (16), Sahib Abad square, and king Hassan mosque (4). It crosses the Stone Bridge (106) and Şeşgilan Bridge (107) and reaches southwest of the city and Shah Hosein Vali's tomb (39), and ends up in Jami mosque, central Bazaar, and the old Government House after passing the Bazaar's Bridge (108,109). This passage had connected the governmental center on the north part of the river to Jami Mosque and city center.

3-Another important passage starts from Sardrod Gate in the south part of the city. After passing the Meqsudiyeh (101) building it ends in Jami Mosque and the main bazaar. Parallel to this passage, the other passage is clearly recognizable that starts from Bagdad gate and after passing the Ali-Shah Mosque (95) and Ustad Şayırd Mosque (74) reaches the central Bazaar. These two passages had connected two main elements of the south part of the city to the center and Jami Mosque.

By drawing these passages, we notify their distributional- network structure in Tahmasp **Safavid** period.

Districts and Urban Spaces: According to Alesandry, late in Tahmasp's rule in 978AH/1571AD, there had been forty-five district names in Tabriz (Venizians, 2002, 449). This number exactly equals the number of districts in **Table 5**. Among the historians and travelers, Hafez Hossein Karbalaie 975AH/1567AD gives a complete explanation of main and subsidiary districts, important streets, and even alleys in his Rozat al Jenan. The mentioned important districts are: Sırxab, Deveçi, Emireqız, Zarjo, Gecil, Meyxaran, Sar Gate, Mirmir (Emamir), Xiyavan, Ray, Qümüş Qaya, Dörd Minar, and Pile Bağ. The mentioned subsidiary districts are: Düle Süte, Saranqaş and Malake in Gecil, Qara Daş and Arabs ring in Mirmir, Arab dome in Sırxab, Abdolxalıq around Məqsudiyə building, and Əhrab in Miyar Miyar. First Karbalaie (1965) and then Evliya Çelebi in 1050AH/1638AD cited the exact names in his travelogue (Evliya Çelebi, 1935, 13). In order to have an exact image of Tabriz's Dar-Al Saltaneh in Safavid dynasty we read the districts on the rotated image of miniature (**Figure 15**, Left Side) out locating them on Qarajadağı's map (**Figure 15**, Right Side). Locating and rotating the districts show the importance and scattering scheme of the districts and suggest the existence of variety of urban spaces in that age. To show the urban spaces on miniature the single blooming tree has been used as a symbol (**Figure 2**, letters A to S). Chogan square and neighboring Sahib Abad square were drawn as the largest urban space and specified by chogan's poles and gates as a symbol (T). Later, during the Qajarid dynasty, just one part of this massive urban space, named Sahib Abad square, has survived.

We achieved amazing results by locating the various urban spaces of Safavid on Qajarid Map. In Qajarid Map, there is no trace of A and B urban spaces in Emireqız district. The limits of district C in Deveçi are smaller and restricted only to two neighborhoods and two cemeteries.

Also, next to the D space Qurd Meydanı square can be seen in the east of Seyed Hamzeh. Spaces E in Sırxab, H in Dəvəçi and, S in Xiyavan on Qajarid map had converted to cemeteries. We can see district centers on



Figure 15. Locating the urban spaces and districts, with identified miniature different usages on Qarajadaği's map (prepared by the author)

Qajarid Map by locating the free spaces F around Pul Sengi, J in Zarjo, L in Verci, and Q in Darvaze Saravrod. Urban space of G, connecting two 107, 108 bridges to each other, and K space in Zarjo District were deserted and became wasteland. Spaces of I in the south of Amire Giz, R around the Ustad Şayırd mosque, and N in the east of Old Government House had changed into Çay square, Garakolik Cemetery, and Meşq Square.

On the other hand, the free space of P in the south of Xiyavan had changed into Qurd Meydanı, and finally, the free space of M, between the old Government House and Jami Square, converted to Bazaar and various Caravanserais.

One of the significant points of accommodating data on Qarajadaği's Map is that most of the free spaces had been destroyed and their usage had changed into Districts or Cemeteries. Just in five cases, the Safavid's Squares have the same usage in Qajarid Map. The number and extent of Safavid urban spaces illustrate the variety of religious and commercial service spaces around them about which we will talk about later.

Commercial, Religious Services, and Governmental Elements: The commercial elements of Tabriz in Safavid includes: Rasta Bazaars (46, 53, 60, 82, 90, 92), mosques (66, 77), and caravansaries (32) which, by passing through the urban districts (38,76), had an important role in forming the space structure of this city as a commercial city in Silk Road. Locating the commercial elements on the rotated image of miniature (**Figure 16**) shows that commercial spaces were located along the south part of the river, and in addition to their commercial usage, they had connected the religious and service spaces to each other and also to the urban spaces. By locating the mentioned elements on Qajarid Map we find out that Safavid Rasta bazaars had moved from around the Old Government House and Jami Mosque to the middle of these spaces along the south part of the river and next to the Sahib Abad Square in the north of the river.

Tabriz Safavid, in addition to its commercial importance, had a religious importance because of its various religious elements in 4AH/10AD. By considering the classification of **Table 5** and **Figure 16**, it can be seen that religious elements are divided into three groups: mosques, tombs, and religious collections. Four important located religious points on Qajarid Map are Jami Mosque in city center (45), Blue Mosque (89) in east south, Alishah Mosque (95), and Ustad Şayırd Mosque (74) in west south, and

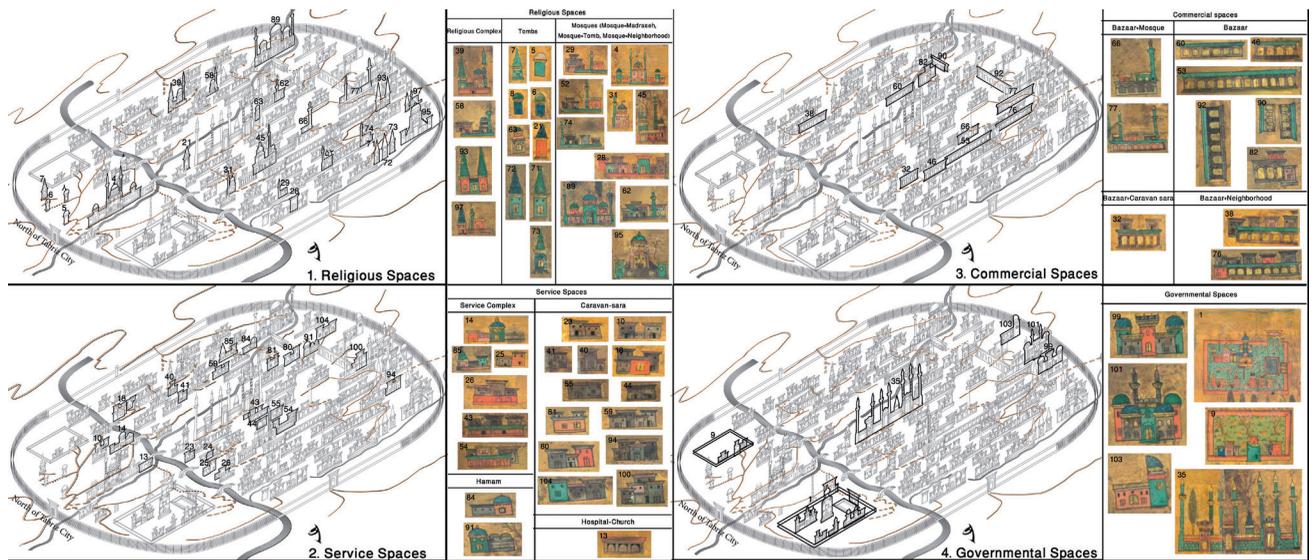


Figure 16. Locating the identified elements with different usages on miniature and drawing the scattering of commercial, religious and services by 90 rotation over the horizon (Prepared by the author)

also King Hassan Mosque in the north of the city. Around these points, schools, tombs, and neighboring Mosques (52, 31, 29, 28) and also religious collections (97, 93, 58, 39) are formed. However, the shrines of the poets, ministers and rulers were located mostly in the north of the city (5, 6, 7, 8) and in the west (71, 72, 73). The most of the identified religious elements are already located on Qajarid Map and this means that, because of the religious tendencies during a time, these places had the least changes and movements.

The variety and number of the commercial and religious elements adjacent to the urban spaces resulted in the formation of service complexes (54, 43, 26, 25, 14), main baths (84 and 91), caravansaries (104, 100, 94, 81, 80, 59, 44, 41, 40, 23, 18, 10), and the city’s big hospital beside the Sahib Abad Square (13) due to thriving the urban life. All the elements are located on the map except the hospitals and caravansaries (Figure 16).

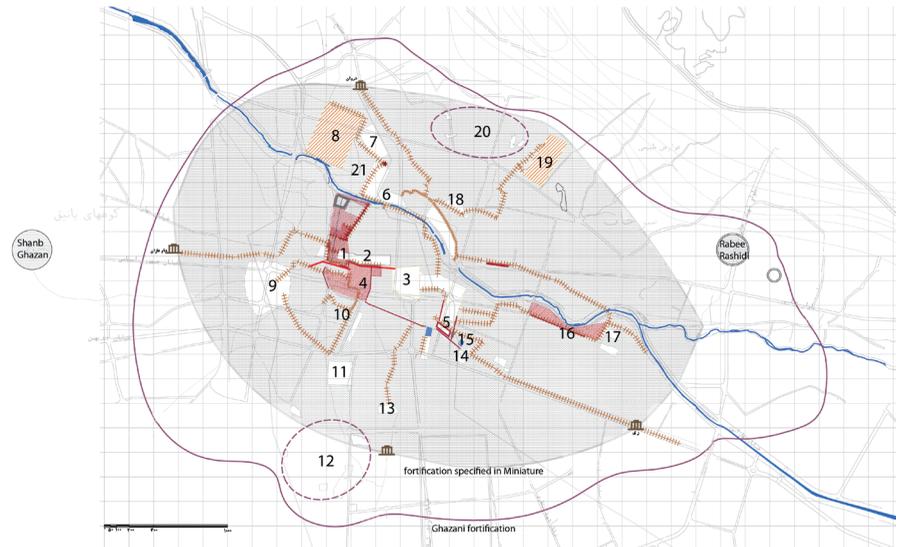
According to Table 5, some elements are recognized as governmental spaces on the miniature. Among these, only the Old Government House served as a governmental palace in Qajarid Dynasty (23). Hasht Behesht Palace and governmental complex (1) had been completely destroyed, and the governmental garden had an accordance with Qajarid Dilquşa garden. Furthermore, elements of (103, 101, and 99) had been destroyed and could not have been located on Qajarid Map (Figure 16).

CONCLUSION

At the beginning of Safavid dynasty in Tabriz, there were constructions belonging to Aq Qoyunlu. The documents show the decline of Tabriz during King Tahmasp after 70 years of Safavid reign.

1. The reason for this claim is that the city has been smaller considering the Qazani’s rampart in Ilkanid era and some elements are located out of the rampart (Figure 17).
2. Like previous eras, Two networks, for instance communicational and radial, would connect architectural and urbanization elements. The distributional structure was a way to connect the main squares and elements. However, in this era, in order to connect

23. This subject is mentioned in a paper written by author titled as “Restoring the governmental palaces of Tabriz in the Qajarid era based on historical documents”.



Tabriz in 940-42 AH

- | | | | |
|------------------------|--------------------------|-----------------------|-----------------------|
| 1. Jamee Mosque | 6. Hasan Mosque | 11. Alosah Mosque | 16. Dameshgiyeh |
| 2. Souare | 7. Chogan Square | 12. Charandab Cemetry | 17. Shah-Hossein Vali |
| 3. Sheikh Azaam Palace | 8. Saheb Abad Garden | 13. Magsudiyeh Palace | 18. Seyed Hamzeh |
| 4. Bazaar | 9. Gajil Cemetry | 14. Kabood Mosque | 19. Beygom Garden |
| 5. Geysarieh | 10. Ostad Shagerd Mosque | 15. Jahanshah Bath | 20. Sorkhab Cemetry |
| | | | 21. suleyman Castle |

Figure 17. Locating the identified commercial, religious and service elements on Qarajadaği's Dar-Al Saltaneh Map (Prepared by the author)

the neighbors' centers, urban spaces, and the other elements to the distribution structure, they had a network structure. In a way that this distributional-network structure had connected the 5 main areas of the city in east, west, north, and south, and the main paths of the boroughs and spaces were connected to each other. By contrast, collection of paths in some areas shows that some parts of the city had lost their previous importance during Safavid reign.

3. Although Hasht-Behesht Palace in Sahib Abad area in north of the river that once upon a time was the governing center of the Aq Qoyunlus was more important, the centrality of Jami Mosque, Bazaar, and the governing hall had been allocated to the religious leader of the city, and scattering of the elements and spaces was formed around them. Thus, it is understood that during the reign of Shah Tahmasp I, structural system of Tabriz was based on two centers; first one, the governmental in northern part of the river with higher urban concentration and tombs, and the other, in southern part of the river and center of the city with high concentration of religious, commercial, service, and residential boroughs (**Figure 17**).

Results of this article clarify any ambiguity related to past time of this city at the beginning of Safavids' era and provide a proper background for urban constructive actions.

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MATRAKÇI MİNYATÜRÜ BAĞLAMINDA ŞAH TAHMASP SAFEVİ DÖNEMİ TEBRİZ ŞEHİRİNİN FİZİKSEL YAPISI

İran'ın Kuzeybatısında yerleşen Tebriz şehri İslam'dan sonra ve önce ülkenin en eski şehirlerinden birisi olmuştur. Şah Tahmasp Safevi'lerin ikinci kralı döneminin ortalarına kadar (1555) Tebriz başkent olmuştur ve Kaçarlar döneminin sonuna kadar (1923), dini, siyasi, ekonomik, mimarlık ve şehircilik açılarından İran'ın ikinci önemli şehri konumundadır. Ancak peş peşe gelen depremler ve Osmanlılarla olan savaşlar şehrin mekânsal yapısını bozmuştur. Öyle ki otuz yıl sonra şehirde Safevi döneminin yapısı belirsiz hale gelmiştir. Sözü edilen döneme ait olan belgeler çok kısıtlı olup, sadece seyahatçilerin seyahatnameleri ve bazen çizdikleri haritalardan ibarettir. Nasuh Matrakçi tarafından çizilen minyatür (1537) bu belgelerin en eskisidir ve Tebriz'i siyasi ve askeri nedenlerden dolayı tasvir etmiştir. Sultan Süleyman Şah Tahmasp dönemi İran'a saldırdığında bu minyatür çizilmiştir. Ancak mimar ve şehircilerin hiçbiri bu önemli tarihi belgeyi okumaya çalışmamıştır.

Bu nedenle bu makalenin amacı Dar Al-Saltaney-i Tebriz'in fiziksel yapısını Safeviler döneminde Matrakçi'nin minyatürlerine dayanarak ortaya koymaktır. Bu amaca ulaşmak için yapılan yeniden okuma Tebriz'in en eski haritasına (1880- Karacadağlı Dar Al-Saltane) dayanarak yapılmıştır ve bu sebepten ötürü dönemin Tebriz'e ait en detaylı haritası ve tasviri ortaya çıkmıştır.

Bu çalışmada, tarih yorumculuğu metodu ve fenomenoloji yöntemi kullanılarak bilgiler toplanıp ve mercek altına alınarak analitik-mukayeseli metotla araştırılmıştır.

Tasvir modellemesi Tebriz'in yapısal sisteminin iki merkezli olduğu sonucuna varmıştır. Birincisi, divan merkezi, şehrin ortasından akan nehrin Kuzey tarafında ve birçok yaşama alanları ve mezarların bulunduğu mekânlardır. İkincisi ise Güney merkezi, nehrin güneyinde, Tebriz'in merkezi ve dini ve ekonomik hizmetlerin verildiği ve evlerin bulunduğu kısımdır.

THE PHYSICAL STRUCTURE OF TABRIZ IN SHAH TAHMASP SAFAVID'S ERA BASED ON MATRAKCI MINIATURE

Tabriz, located in Northwestern Iran, is one of the most ancient cities of the country before and after Islam. Until the middle of Shah Tahmasp's reign,

24. The word Dar Al-Saltaneh means the capital, which was the nickname of Tabriz, Isfahan and Tehran (Dehkhoda, 1998).

the second King of Safavid dynasty 962AH/1555AD, Tabriz was the capital city; and after that, up to the end of the Qajarid dynasty 1194AH/1780AD, it has always been the second most important and unique city in Iran considering the religious, political, and economic standpoints, and consequently the architecture and urbanism. Unfortunately, consecutive earthquakes and wars with the neighboring Ottoman Empire have destroyed the spatial structure of this historical city. Likewise, after three decades, the spatial structure of Tabriz during Safavid era is ambiguous. The only documents related to this era are limited to itineraries and some drawings recorded by tourists. The miniature drawn by Nasuh in 944Ah/1537AD known as Matrakçı is the oldest and most important recorded document from Safavid Tabriz because of political- military reasons. It was drawn during the military campaign of Sultan Suleiman, the Ottoman king, to Iran under the reign of Shah Tahmasp I; however, none of the architecture and urbanism researchers has attempted to reread this important historical document.

Therefore, the purpose of the present paper is to reconstitute the physical structure of Dar Al-Saltaneh (24) of Tabriz in Safavid dynasty using historic texts based on Matrakçı miniature and other historical documents. For this purpose, the recreation was done on the oldest and most complete historical map of Tabriz drawn in 1297Ah/1880AD named Qarajadaği Dar Al-Saltaneh, so that a fairly accurate picture of Tabriz could be presented in this period.

Information was gathered using historical-interpretative method or phenomenological approach and data were analyzed and interpreted using analytical-comparative method.

The results of the pictorial modeling showed that the structural system of Tabriz was based on two main centralities. First, the governmental center, located at North of the river, with aggregation of the urban spaces and tombs, and the second, the southern center, located at south of the river, which was considered city center or aggregation of religious and commercial services as well as residential spaces.

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