The typology of traditional houses in Tabriz

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Abstract

Traditional houses are the most important places to represent the life style of the past. The lack of recognition and appreciation of these buildings on the part of authorities, and the public too, will gradually lead to their destruction and replacement by contemporary buildings. This research aims to introduce specific architectural features of traditional houses in Tabriz. Preserving the features of these houses helps in maintaining the architectural heritage and culture of the region.

Most of the old houses of Tabriz were reconstructed at the beginning of the *Qajar* era after the devastating earthquake of 1780. The existing houses from the past are those that have survived from the modern age invasions. The destruction caused by contemporary constructions, in the chaos of the modern period, makes it difficult for researches to gather information about the principles of traditional buildings and to identify their typology. This survey is a compilation of the typology of 52 traditional houses of *Qajar (1779-1925)* and *Pahlavi (1921-1978)* periods in Tabriz.
Keywords: Tabriz traditional houses, architectural elements, house typology.

1   Introduction

Tabriz is one of the most significant historical cities of Iran with a history dating back to the pre-Islamic period (Sultanzade [1]). At the beginning of the rule of the *Qajar[1]* dynasty, Tabriz became the second capital of Iran and was established as the formal settlement for the crown princess of this dynasty.

In 1780, a huge earthquake destroyed the city completely and eighty thousand people lost their lives (Khamachi [2]).

The last complete destruction of the city coincides with the beginning of the *Qajar* era. The reconstruction of the city had started in that period and continued to the present. Previous studies on the old houses of Tabriz include a research paper written by Shirazi in 2002 (Shirazi [4]). This study was done on 21 houses on the basis of the limited maps available at the time. Due to the limited number of cases studied in that research, the present research includes a deeper study on 52 houses. In recent years a large number of international papers have done valuable research to achieve traditional patterns [5–8]. This paper considers the quality of elements, and tries to convert the quality into quantity in an appropriate way. The paper written by Ipekoğlu [10] has been helpful in this research.

2   Field of study

Tabriz is located at latitude 38º8′ N and at longitude 46º17′ E. The area of Tabriz is about 1650 square kilometers. It is 619 km from west of Tehran – the capital of Iran – in North- West of Iran [3].

The purpose of this research is the study of old dwellings of Tabriz. All of the 52 selected houses, belonged to the *Qajar* period (1779–1925), *Pahlavi*[2] I (1921–1941) and the period of *Pahlavi* II (1941–1978) [10].

The majority of these houses are those which were registered by the East Azarbaijan Cultural Heritage, Handicraft, and Tourism Organization (EACHTO), thus their plans were provided by this organization.

Both the quantitative and qualitative study of historical buildings need a special deductive method. This study uses a method which can convert the qualitative structures of the building to quantity to be used in interpretation and conclusion.

3   Methodology of gradation of the traditional dwellings

Owing to the vastness of the subject, interior and functional features of these old houses were surveyed and their plans evaluated and graded. For the precision of this procedure the study of façades was also added to the work. Papers and articles which partially dealt with the subject were studied in the preliminary stages of the research [3, 4].

A list of features of plan elements has been provided for the purpose of classification and evaluation. A list of general features of facade elements was also considered and graded. Finally the following simple formula was used.

$$\text{Final evaluation} = [(P_e \times C_t)] + [(P'_e \times C_f)] \times C_a$$

where P_e is the point of plan elements, C_t is the coefficient of plan type; P'_e is the point of façade elements, C_f is the coefficient of façade type and C_a is the

coefficient of alteration. In evaluation and gradation of plan and façade elements, the chronology of the houses have been considered, and higher grade were given to the more traditional and historic features, whereas lower grades were given to those closer to present time. Information related to this part was accessed from different sources with comprehensive explanation about Iranian architecture and dwellings [12–14].

4   Physical characteristics gradation

4.1 Gradation of functional features of the plan elements

In this research seven functional features of plan elements were analyzed and evaluated as shown in Table 1 (Codes in [] are shown in table 1):

1- Main entrance: which includes main and side wings called *Yorts*[3]. The main *yort* element is: 1) *Hashti*[4]/hallway- hallway [A_4] which was given the lowest grade 1. because the direct entrance to the main *yort* is of little importance in Iranian traditional architecture. The side *yort* elements are divided into two groups: 1) *Hashti*- hallway/side *yort*- courtyard [A_1], 2) Hallway/*hashti*- courtyard [A_2], which were given 4, 3 grades. A separate feature [A_3] (direct access to the yard) with 2 points was also considered in the case of houses which had undergone some alterations during city development or division of the property through inheritance procedure.

2- Central courtyard: Houses with more than one central courtyard were graded 4 [B_1] and those with one were graded 2 [B_2].

3- Hallway: In general, different types of hallways are: 1) located on the peripheral axes of the building [C_1], 2) located on the axes of symmetry and [C_2] 3) located in the rear part of the house [C_3]. These hallways are graded 3, 2 and 1 relatively according to their location in the building.

4- Entrance through the courtyard to the main *yort*: the following six features were considered: 1) First floor with two hallways on the peripheral axis[D_1], 2) Ground floor with two hallways on the peripheral axis, [D_2], 3) First floor with a hall (a wider hallway) on the axis of symmetry [D_3], 5) Ground floor with a hall on the axis of symmetry[D_4], 5) First floor with a hallway on the axis of symmetry[D_5], 6) Ground floor with the hallway on the axis of symmetry[D_6]. These features were graded from 4 to 2 as indicated in table 1.

5- Staircase: Three locations were considered: 1) Two staircases on the peripheral axis [E_1], 2) A Central staircase on the axis of symmetry [E_2], 3) A side staircase [E_3]. The grades were 3, 2, and 1 relatively.

6- *Eyvān*[5]: 1) *Eyvāns* on the southern façade with the total height of the building [F_1], 2) *Eyvāns* located on the southern side of the façade with as high as one storey [F_2], 3) *Eyvāns* with the height of one storey and located on the other facades of the buildings [F_3]. The grades were 3, 2 and 1 respectively.

Table 1: The criteria of the seven functional characteristics of plan elements.

Plan functional elements	Point	House code →	27	8	44	24	9	50	6	13	37	4	28	32	14	18	39	31	45	38	42	20	40	25	2	15	10	46	49	16
		Group	Group A																		Group B									
Total			92	90	90	88	88	84	80	80	80	78	78	76	74	74	74	72	70	70	61.5	60	58	56	56	56	56	54	54	52
The coefficient of plan type (C_i)			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1.5	2	2	2	2	2	2	2	2	2
7) Living spaces	1	G_{11}			•			•		•	•		•			•		•				•			•			•		
	1	G_{10}																												•
	2	G_9							•					•									•		•			•	•	•
	3	G_8	•	•	•		•	•	•	•	•	•	•	•				•	•	•							•	•		
	3	G_7								•	•	•	•	•		•					•	•	•	•	•	•	•	•	•	•
	4	G_6	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	4	G_5			•							•			•			•			•		•				•			
	4	G_4	•	•	•	•	•	•	•		•	•	•	•			•												•	•
	4	G_3	•	•	•	•	•	•	•		•			•		•			•	•	•	•								
	4	G_2	•	•	•	•	•	•	•	•	•	•	•	•		•		•	•		•	•	•	•		•				•
	4	G_1	•	•	•	•	•	•	•	•		•	•	•				•	•	•										
6) Location of *eyvan*	1	F_3							•												•									
	2	F_2								•							•													•
	3	F_1	•	•		•	•	•	•	•							•		•	•									•	•
5) Location of staircase	1	E_3																												•
	2	E_2												•							•			•						
	3	E_1	•	•	•	•	•	•	•	•		•	•	•		•		•	•	•	•	•		•			•	•		
4) Entrance from the courtyard to the main *yort*	2	D_6																												
	2	D_5																			•									
	3	D_4																												
	3	D_3																												
	4	D_2							•							•													•	•
	4	D_1	•	•	•	•	•	•	•	•		•	•	•		•		•	•	•	•	•	•	•	•	•	•	•		
3) Location of hallway	1	C_3		•																										
	2	C_2				•		•	•					•							•									
	3	C_1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2) no. of yard	2	B_2							•		•					•		•			•	•		•	•	•	•	•	•	•
	4	B_1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•		•	•								
1) Main entrance — Main *yort*	1	A_4	•		•	•										•						•		•	•					
— Side *yort*	2	A_3	•						•	•		•			•	•	•	•				•						•	•	•
	3	A_2	•		•	•	•				•				•		•		•	•							•	•	•	•
	4	A_1		•			•	•				•		•		•														

Table 1: Continued.

Group	House code	A₁ (4)	A₂ (3)	A₃ (2)	A₄ (1)	B₁ (4)	B₂ (2)	C₁ (3)	C₂ (2)	C₃ (1)	D₁ (4)	D₂ (4)	D₃ (3)	D₄ (3)	D₅ (2)	D₆ (2)	E₁ (3)	E₂ (2)	E₃ (1)	F₁ (3)	F₂ (2)	F₃ (1)	G₁ (4)	G₂ (4)	G₃ (4)	G₄ (4)	G₅ (4)	G₆ (4)	G₇ (3)	G₈ (3)	G₉ (2)	G₁₀ (1)	G₁₁ (1)	C_1	Total
B	43			●	●		●	●		●		●							●		●							●	●		●			2	50
C	29				●	●		●	●									●											●					1.5	52.5
C	41	●					●		●	●				●				●		●				●		●		●	●	●				1.5	51
C	17		●											●				●		●	●	●		●		●		●	●	●				1.5	48
C	47		●	●	●	●			●			●	●		●			●						●				●	●		●			1.5	46.5
C	48				●	●			●				●		●			●										●	●	●	●		●	1.5	46.5
D	36	●					●	●				●						●											●		●	●	●	2	46
D	23	●					●	●												●									●					2	40
D	7			●			●	●	●		●																	●	●		●			2	38
D	21			●			●	●			●	●																●	●		●			2	38
D	19		●				●	●	●		●		●				●	●										●	●	●	●			2	36
D	22		●				●		●	●				●				●											●		●			1.5	37.5
D	52						●		●																				●					1.5	36
D	26	●					●		●					●			●							●		●					●			2	36
D	34	●					●		●					●				●											●	●				1.5	34.5
D	35		●				●		●						●														●					1.5	31.5
D	3				●		●		●									●			●							●	●		●			1.5	30
D	11				●		●		●							●		●			●							●	●		●			1.5	30
E	51				●		●	●	●		●				●						●								●	●				1	24
E	33				●	●			●						●															●				1.5	24
E	1			●			●		●						●	●		●											●					1.5	21
E	5		●				●		●							●												●	●	●				1	19
E	30			●			●		●	●						●		●										●	●					1	17
E	12			●			●		●			●							●										●			●	●	1	17

7- Living spaces: These include: 1) *Tanabi*[6] with the height of two stories reaching *gooshvars*[7] or *kalle'ees* [G_1], 2) *Hozkhāneh*[8] [G_2], 3) *Tanabi* with a *shāhneshin*[9] [G_3], 4) *Tanabi* with *orosis*[10] or windows with colored panes as the main ornaments of these old houses [G_4], 5) Rooms located behind *tanabi* or *hozkhāneh* which were very rare [G_5], 6) The odd [11] pattern in the main *yort* [G_6], 7) *Tanabi* with the height of one storey [G_7], 8) The odd pattern in the side *yort* [G_8], 9) The even[12] pattern in the peripheral axis of the main *yort* [G_9], 10) The even pattern in the axis of symmetry of the main *yort* [G_{10}], 11) The even pattern on the peripheral or central axis of the side *yort* [G_{11}]. These spaces were graded as 4 to 1 respectively as shown in Table 1.

In gradation of plan types, these types of plan were considered:

- Plan with *tanabi* or *hozkhāneh* in the middle with peripheral hallways or halls (graded 2).
- Plan with *tanabi* or *hozkhāneh* in the middle with a central hallway or hall (graded 1.5).
- Plan with central or peripheral hallway or hall (graded 1).

4.2 Façade elements gradation

The elements of the main façade such as *eyvān*, column, height and ornaments were arranged in table 2-A and 2-B, and graded on the basis of the qualities of these elements. The coefficient of façade type, which is a coefficient of façade quality was also taken into consideration and graded 1.5, 1.2 and 1.

Table 2 A: Grading procedure of the façade elements.

Eyvān (0, 0.5, 1)	Column (0, 0.5, 1)	Height (0, 0.5, 1)	Ornament (0, 0.5, 1)	The coefficient of façade type (1, 1.2, 1.5)
N/A	N/A	two-storey building	ordinary	simple
two-storey	ordinary	one-storey building	good	ordinary
one-storey	magnificent	small scale	magnificent	magnificent

In table 3, the coefficient of alteration was graded as: seriously altered (1), slightly altered (1.1), and unaltered (1.2).

Table number 4 shows this procedure with 52 sample houses which is the outcome of the use of the proposed formula. It shows the classification of the typology of the houses into group A with final grade above 73, group B with final grade between 63- 73, group C between 51- 62, group D 30- 50 and group E 0-29. Finally in table 5 a sample house of each group is presented.

Table 2 B: The criteria for facade elements.

House code	Group	The point of façade general elements (P'e)				The coefficient of façade type (C_f)	Total	House code	Group	The point of façade general elements (P'e)				The coefficient of façade type (C_f)	Total
		Eyvān	Column	Height	Ornament					*Eyvān*	Column	Height	Ornament		
27	A	1	1	1	0	1.2	3.6	49	B	1	1	1	0	1.2	3.6
8		1	1	1	0.5	1.5	5.25	16		1	0	1	0	1.5	3
44		0	0	1	1	1.2	2.4	43		0	0	1	1	1.2	2.4
24		1	1	1	0	1.2	3.6	29	C	1	1	1	0	1.2	3.6
9		1	1	1	1	1.5	6	41		1	1	1	0.5	1.5	5.25
50		1	1	1	0	1.2	3.6	17		1	1	1	0.5	1.5	5.25
6		0	0	1	1	1.2	2.4	47		0	0	1	0.5	1.2	1.8
13		1	1	1	0	1.2	3.6	48		0	0	1	1	1.5	3
37		1	1	1	1	1.5	6	36	D	0	0	1	0	1	1
4		1	1	1	1	1.5	6	23		0	0	1	0	1	1
28		0	0	1	0.5	1.2	1.8	7		1	0	1	0	1	2
32		0	0	1	0	1	1	21		0	0	1	0	1	1
14		0	0	1	0.5	1.2	1.8	19		0	0	1	0.5	1	1.5
18		1	1	1	0	1.2	3.6	22		0	0	1	0.5	1.2	1.8
39		1	0	1	1	1.5	4.5	52		1	1	1	0	1.2	3.6
31		1	1	1	0	1.2	3.6	26		1	1	1	0	1.2	3.6
45		0	0	1	0	1.2	1.2	34		1	1	1	0	1.2	3.6
38		1	1	1	0	1.2	3.6	35		0.5	1	1	0	1	2.5
42	B	1	1	1	0	1.5	4.5	3		0	0	1	0.5	1.2	1.8
20		0	0	1	0.5	1.2	1.8	11		0	0	1	0.5	1	1.5
40		1	1	0.5	0	1	2.5	51	E	0	0	1	0	1	1
25		0	0	1	0	1.2	1.2	33		0	0	1	0.5	1.2	1.8
2		0	0	0.5	0.5	1.2	1.2	1		0	0	1	0.5	1.2	1.8
15		1	1	1	0	1.5	4.5	5		0	0	1	0	1	1
10		0	0	1	0	1.2	1.2	30		0	0	1	0	1	1
46		1	1	1	0	1.2	3.6	12		0	0	1	0.5	1.2	1.8

Table 3: The coefficient of alteration (C_a).

Type	Present condition of the house	Present space pattern	House codes	Coefficient (C_a)
Type 1 (Unaltered)	Renovated	House main space pattern	20, 22, 29, 6, 44, 8, 30, 47, 17, 43, 1, 42	**1.2**
	No renovation		33, 3, 23, 16, 24, 48, 2, 35	
	N/A info		34, 50, 21, 7, 38, 49, 26	
Type 2 (Slightly altered)	Renovated	Fewer alteration in house space pattern	37, 4, 31, 41, 28, 51, 40, 19	**1.1**
	No renovation		46, 52	
	Renovating		36, 5, 11, 12, 15, 13, 32, 10, 18	
	N/A info		25, 45, 27	
Type 3 (Seriously altered)	Renovated	Include attachment	39	**1**
	Renovated	Much alteration in house space pattern	9	
	Renovating	Slightly seen main space pattern	14	

5 General characteristics of each group

Group A:
- In general, houses in this group, built in a large scale with both *andaroni*[13] and *bironi*[14] courtyards (private and main yards), and belonged to well-known people with high social and economic status.
- Houses with a complete and ornamented hozkhaneh in the shape of a cross or different cruciform with a fountain.
- Access to the basement from the peripheral hallways.
- Connection to other parts of the basement through hallways or rooms on both sides of *hozkhaneh*.
- *Hozkhaneh* and other parts of basement are built half a storey below the yard level.
- Huge highly ornamented *tanabi*s and often as high as 2 storey.
- Ornamented *eyvān* on the southern façade, located in front of the *tanabi* and *hozkhaneh*.
- Entrance to the main *yort* (southern side) through peripheral staircases to the peripheral hallways.
- Access to the second floor through the first floor by two peripheral staircases.
- Odd patterns on the main façade and side façades.
- *Eyvāns* built on the side façade solely as high as one storey.
- Main entrance to the yard from the side facades and through ornamented *hashti* and *dalan*[15].
- Huge magnificent and colorful *orosis* on the axis of symmetry with odd pattern.
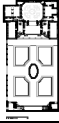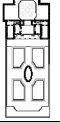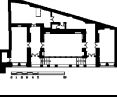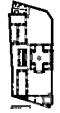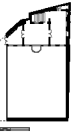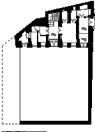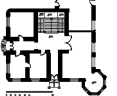
Table 4:   The coefficient of alteration.

House code	Group	Total grade for the points of plan elements ($P_e \times C_t$)	Total grade for the points of plan elements ($P'_e \times C_f$)	The Coefficient of alteration (C_a)	Final grade: [($P_e \times C_t$)] + [($P'_e \times C_f$)] ×(C_a)	House code	Group	Total grade for the points of plan elements ($P_e \times C_t$)	Total grade for the points of plan elements ($P'_e \times C_f$)	The Coefficient of alteration (C_a)	Final grade: [($P_e \times C_t$)] + [($P'_e \times C_f$)] ×(C_a)
8	A	90	5.25	1.2	**114.3**	40		58	2.5	1.1	**66.55**
44		90	2.4	1.2	**110.88**	10	B	56	1.2	1.1	**62.92**
27		92	3.6	1.1	**105.16**	43		50	2.4	1.2	**62.88**
24		88	3.6	1.1	**100.76**	29		52.5	3.6	1.1	**61.71**
50		84	3.6	1.1	**96.33**	41		51	5.25	1.1	**61.875**
28		78	1.8	1.2	**95.76**	48	C	46.5	3	1.2	**59.4**
37		80	6	1.1	**94.6**	17		48	5.25	1.1	**58.575**
9		88	6	1	**94**	47		46.5	1.8	1.2	**57.96**
4		78	6	1.1	**92.4**	52		36	3.6	1.2	**47.52**
6	A	80	2.4	1.1	**90.64**	22		37.5	1.8	1.2	**47.16**
38		70	3.6	1.2	**88.32**	36		46	1	1	**47**
18		74	3.6	1.1	**85.36**	23		40	1	1.1	**45.1**
32		76	1	1.1	**84.7**	34		34.5	3.6	1.2	**45.72**
13		80	3.6	1	**83.6**	7	D	38	2	1.1	**44**
31		72	3.6	1.1	**83.16**	21		38	1	1.1	**42.9**
42		61.5	4.5	1.2	**79.2**	26		36	3.6	1.1	**43.56**
39		74	4.5	1	**78.5**	19		36	1.5	1.1	**41.25**
45		70	1.2	1.1	**78.32**	35		31.5	2.5	1.2	**40.8**
14		74	1.8	1	**79.8**	3		30	1.8	1.2	**38.16**
15		56	4.5	1.2	**72.6**	11		30	1.5	1.2	**37.8**
46		54	3.6	1.2	**69.12**	33		24	1.8	1.1	**28.38**
25		56	1.2	1.2	**68.64**	1		21	1.8	1.2	**27.36**
2	B	56	1.2	1.2	**68.64**	51	E	24	1	1.1	**27.5**
20		60	1.8	1.1	**67.98**	5		19	1	1.1	**22**
49		54	3.6	1.2	**69.12**	30		17	1	1.2	**21.6**
16		52	3	1.2	**66**	12		17	1.8	1.1	**20.68**

Table 5:   A sample house's plan and façade in each major group.

Group	Plan			Facade
	Basement	First floor	Second floor	Main (Southern)
A				
B				
C				
D				
E				

Group B:
• Hallways located on the peripheral axes.
• In a few of houses *eyvān* built on the main façade (in one case- code No. 40 - *eyvān* was as high as one storey and in another case- code No. 43 - a small *eyvān* is built above the peripheral hallways).
• Entrance to the building from the courtyard both through stairs to the first floor and through the ground floor hallways.
• *Tanabis* in this group are also located on the axis of symmetry often with windows or *orosis* with colored panes.

Group C:
• Houses on this group also belonged to people with high social status.
• Hallway and main access to the building changed into a hall (a wider hallway) on the axis of symmetry, or divided into two hallways leading to large staircases on the peripheral axes.
• The basement, ground floor, first floor and the second floor, in all the houses (with the exception of one- code No. 29), connected through the staircases.
• The hall leading to a wide central staircases seen in this group of houses, where *tanabi* and even *hozkhaneh* is located on the axis of symmetry.

Group D:
• Hallways in this group located on the axis of symmetry.
• The main staircase often located behind the main parts of the building.

- In one case a small balcony built on the main façade on the second floor indicating a revolution in the form of *eyvāns* (Code No. 3).

Group E:

- Smaller functional spaces with no special order and hallways on different sides of the house located on peripheral axis.
- *Tanabi* or the guest room located closer to the peripheral axes.
- No organized arrangements or ornaments in plans.

6   Conclusions

In conclusion this paper presented the characteristics of the plans of traditional houses in Tabriz, and delineates the changes of these physical characteristics with the passage of time. Based on the research that has been done, it can be said that the study of plans of these houses, their classification and evaluation will not be possible without considering the general characteristics of the façade. Therefore, in this paper the general characteristics of the main façade (Southern façade) have been considered for evaluation. As a result, for future researches, an environmental study of the houses is recommended.

Glossary of terms

1- Qajar: the Qajar Dynasty ruled Iran from 1779 to 1925 which includes reigns of eight kings. It has been represented with Q in tables throughout this article. **2**- The period between post-Qajar era prior to the Islamic Revolution. Pahlavi I (1921-1941) and Pahlavi II (1941-1978). **3**- *Yort*: Used by *Pirnia* – professor of architecture, 1922-1997, for each of the four wings surrounding the central courtyard in Iranian traditional architecture. **4**- *Hashti*: Octagonal vestibule that forms an entry foyer to a building or a complex. **5**- *Eyvān* (also written Ivān or Iwān): the half-open roofed space walled on three sides with one end entirely open. **6**- *Tanabi*: the main big hall where guests were entertained **.** **7**- *Gooshvār* or *Kalle'ee*: the room located on the second floor on both sides of the hall and connected to it. **8**- *Hozkhāneh*: A high roofed space in the basement with a fountain in the middle and generally connected to other spaces. **9**- *Shāhneshin*: King's Seat; Royal Parlor; a recessed place typically in the wall of Panjdari or Sedari room built like a low platform considered as the seat for the master of the house or an honored guest. **10**- *Orosi*: the large wooden window with vertical sliding openings and stained glass which completely covers one full front of the room. **11**- Odd pattern: shown as *sedari* ("*se*" means three and "*dar*" means door or window*, and "i" is a noun-maker suffix*), *panjdari* (5), *haftdari* (7), etc. It is a main and primary spatial element of Iranian vernacular architecture. It is a room with three, five, seven, etc. side by side big windows facing the courtyard. **12**- Even pattern: shown as *dodari* ("*do*" means two and "*dar*" means door or window*, and "i" is a noun-maker suffix*), *chardari* (4), *sheshdari* (6), etc. It is a secondary spatial element of Iranian vernacular architecture. It is a room with two, four, six, etc. side by side big windows facing the courtyard. **13**- *Andarooni*:

a part of the house in which the private quarters are established. It is allocated to the woman, children, the maids and other members of the family. **14**- *Birooni*: a part of the house allocated for accommodating the guests. **15**- *Dālān*: a covered hallway, usually with an L form at the main entrance of old houses.

References

[1] Sultanzade, H., Tabriz, *A solid cornerstone of Iranian architecture*, Cultural Research Bureau: Tehran, pp. 30-50, 1997.

[2] Khamachi, B., *Geographical encyclopedia of Eastern Azerbaijan*, Soroush Press: Tehran, pp. 257-258, 1991.

[3] Omrani, B. Esmaeli Sangeri, H., *Historical texture of Tabriz*, Samira Publication: Tehran, pp. 2-20, 2006.

[4] Arseh Consulting Engineers, Tabriz comprehensive planning, 1994, Ministry of Housing and Urban Development, Tehran, Iran.

[5] Shirazi, M. Keynezhad, M. A, The physical analysis of old houses of Tabriz, *Proc. of the 3rd cong. on The History of Iranian Architecture and Urbanization,* Cultural Heritage, Handicraft, and Tourism Organization: Bam, pp. 162-196, 2005.

[6] Sagsoz, A., Tuluk, O.I., Ozgen, S., Influences of different ages and cultures on each other from architectural point of view: Examination of historical buildings in Trabzon/Turkiye. *Building and Environment*, 41, pp. 45-59, 2006.

[7] Serefhanoglu Sozen, M., Zorer Gedik, G., Evaluation of traditional architecture in terms of building physics: Old Diyarbakır houses. *Building and Environment,* 42, pp. 1810-1816, 2007.

[8] Ozdemir, I.M., Tavsan, C., Ozgen, S., Sagsoz, A., Kars, F.B., The elements of forming traditional Turkish cities: Examination of houses and streets in historical city of Erzurum. *Building and Environment,* 43, pp. 963-982, 2008.

[9] Cevik, S., Vural, S., Tavsan, F., Asik, O., An Example to Renovation–Revitalization Works in Historical City Centres: Kunduracılar Street/Trabzon-Turkey. *Building and Environment*, 43, pp. 950-962, 2008.

[10] Ipekoglu B. An architectural method for conservation of traditional dwellings. *Building and Environment*, 41, pp. 386-394, 2008.

[11] Balilan L. The Analysis and Classification of Welfare indexes and determination of priority of development in Iranian provinces using factor and cluster analysis. *University of Tabriz Journal of Geographic and planning faculty of Humanities and Social Sciences*, 14 (29), pp. 35-60, 2009.

[12] Khamachi, B., *Famous precincts and people in the region 8 in Tabriz*, Sotodeh Publications: Tabriz, 2005.

[13] Pirnia, M.K., Memarian, G., *The Islamic Architecture of Iran,* University of Science and Technology Publication: Tehran, 2002.

[14] Pirnia, M.K., Memarian, G., *The Typology of Iranian Architecture*, University of Science and Technology Publication: Tehran, 2004.

[15] Gobadian, V., *Architecture of Tehran during Naseredin Shah Period*, Pashutan Publications: Tehran, pp. 244-245, 2004.