

# Quality Analysis and Typology Assessment of Traditional Settlements in Tabriz

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**ABSTRACT:** Looking from an historical perspective, it can be seen that many civilizations have lived in the country and consequently produced many different cultures and architectural products. One of the oldest cities which contain such historical examples which have lived until present is Tabriz. Its traditional houses are the most important places to represent the life style of the past. Lack of recognition and appreciation of these buildings by authorities and the public will gradually lead to their destruction and replacement by contemporary buildings. The present study seeks to introduce specific architectural features of traditional houses in Tabriz. Preservation of the features of these houses helps maintain the architectural heritage and culture of the region.

Most old houses in Tabriz were reconstructed at the beginning of the *Qajar* era after a devastating earthquake in 1780. The destruction caused by contemporary constructions, in the chaos of modern period, makes it difficult for researchers to gather information about the principles of traditional buildings and to identify their typology. The survey is a compilation of a process in the typology of 52 traditional houses of *Qajar* and *Pahlavi* periods in Tabriz. The study revealed that it is possible to accomplish the classification of the monuments with the application of a quantification process in which the qualitative data related to architectural elements was successfully converted into quantitative data by assigning numerical values and using coefficients.

**Keywords:** *Typology assessment, Plan and façade elements, Tabriz traditional houses.*

## INTRODUCTION

Cities take their identities from their historical and cultural continuity. In studying the architectural features, it is necessary to consider the factors which cause towns or sections of the towns to be considered as peculiar settlement, and produce the circumstances of its formation (Worskell, 1969). Consequently the agents which form its identity as a united end result of cultural, social and economic features must be conceived. This way of thinking brings into mind that the subjects which will be preserved are not only physical characteristics. Therefore, it is obvious that models related to the social and economic structure are necessary for designing projects oriented toward physical characteristics. The evaluation of the physical properties of the historic fabric one by one is among the subjects, which have a great role in the success of the conservation plan (Nijkamp, 1995; Carter and Bramley, 2002).

Tabriz, as one of the most significant historical cities of Iran, has an old history dating back to the pre-Islamic period,

(Sultanzade, 1997). At the beginning of the rule of the Qajar<sup>1</sup> 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, 1991). The last complete destruction of the city coincides with the beginning of the Qajar era. The reconstruction of the city has started in that period and continued to the present. Previous studies on the old houses of Tabriz include a research paper written by Shirazi, (Shirazi and Keynezhad, 2005). This study was done on 21 houses on the basis of the limited maps available at the time. In recent years, a large number of studies published internationally have done valuable research to achieve valuable knowledge about traditional patterns (SerefhanogluSozen and ZorerGedik, 2007; Ozdemir, Tavsan, Ozgen, Sagsoz and Kars, 2008; Cevik, Vural, Tavsan and Asik, 2008; Sagsoz, Tuluk, Ozgen, 2006; Ipekoglu, 2006).

This paper considers the quality of elements, and tries to convert the qualitative data into quantitative in an appropriate

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way. The paper written by Ipeko lu (Ipeko lu, 2006) has been helpful in this research.

### General Characteristics of the Study Area

Tabriz, with an area of about 1650 square kilometers is located in North-western Iran; 619 km from Tehran (Omran and Esmali, 2006). The purpose of this research is to analyze old dwellings in Tabriz. All of the 52 selected houses belonged to the *Qajar* period (1779-1925), *Pahlavi*<sup>1</sup> I (1921-1941) and the period of *Pahlavi* II (1941- 1978) (Balilan, 2009; Ghobadian, 2004). The majority of these houses are those which were registered by the East Azarbaijan Cultural Heritage, Handicraft, and Tourism Organization (EACHTO), and 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. Due to the fact that the fundamental object of this study is to investigate the main structure in formation of the old houses; therefore, in order to identify the properties of individual components of the architecture of the house and then score them based on priority use of any of the elements, a method called rating system has been used. This method is one of the techniques used in research operations since with the use of this method, it can be estimated systematically the effect of architectural features those related to the history of the old buildings. According to this method, an equation proposed by Ipekogluin 2006 was considered in this study. Case studies and finding sin the context of traditional buildings in the similar sites of different countries reflect the process of research on characteristics of architectural elements (Dobby, 1978; Kain, 1981; Fitch, 1982; Arseh Consulting Engineers, 1994).

## MATERIALS AND METHODS

Owing to the vastness of the subject, interior and functional features of these old houses were surveyed and their plans assessed and graded. To increase the precision of the procedure, the study of façades was also included. Articles dealing with the subject were studied in the preliminary stages of the research (Pirnia and Memarian, 2002; Banimasood, 2009; Sultanzadeh, 1997). 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.

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

Where  $P_e$  is the point of plan elements,  $C_p$  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 elements, 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.

### Gradation of Plan and Facade characteristics

#### Gradation of Functional Features of the Plan Elements

In this research, seven functional features of plan elements (Table 1 and 2) were analyzed and evaluated as shown in Table 1 (Codes in square brackets “[ ]” were shown in Table 1 and 2).

**Main entrance:** which includes main and side wings called *Yorts*<sup>3</sup>. The main *yort* element is: 1) *Hashti*<sup>4</sup>/hallway- hallway [ $A_1$ ] 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.

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

**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. 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.

**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.

**Eyvân:**<sup>5</sup> 1) Eyvâns on the southern façade with the total height of the building [ $F_1$ ], 2) Eyvâns located on the southern side of the façade with as high as one storey [ $F_2$ ], 3) Eyvâns with the height of one storey and located on the other façades of the buildings [ $F_3$ ]. The grades were 3, 2 and 1, respectively.

**Living spaces:** These include: 1) *Tanabi*<sup>6</sup> with the height of two stories reaching *gooshvars*<sup>7</sup> or *Kale'ees* [ $G_1$ ], 2) *Hozkhâneh*<sup>8</sup> [ $G_2$ ], 3) *Tanabi* with a *shâhneshin*<sup>9</sup> [ $G_3$ ], 4) *Tanabi* with *orosis*<sup>10</sup> or windows with colored panes as the main ornaments of these old houses [ $G_4$ ], 5) Rooms located behind *tanabi* or *hozhkhâneh*, which were very rare [ $G_5$ ], 6) The odd<sup>11</sup> 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<sup>12</sup> pattern in the peripheral axis of the main

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

Plan functional elements	1) main entrance				2) No. of yard				3) Location				4) Entrance from the courtyard to the main				5) Location of staircase				6) Location of eyvan				7) Living spaces				The coefficient of plan type (C)	Total									
	Side yard	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Main yard	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>			G <sub>7</sub>	G <sub>8</sub>	G <sub>9</sub>	G <sub>10</sub>	G <sub>11</sub>				
Point	4	3	2	1	4	2	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	1					
House code	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	G <sub>7</sub>	G <sub>8</sub>	G <sub>9</sub>	G <sub>10</sub>	G <sub>11</sub>						
27	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	92	
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	90
44	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	90
24	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	88
9	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	88	
50	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	84
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	80
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	80
37	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	80
4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	78
28	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	78
32	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	76
14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	74
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	74
39	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	74
31	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	72
45	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	70
38	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	70
42	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	70
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	60	
40	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	58

Table 1 (continued): The criteria of the seven functional characteristics of plan elements

Plan functional elements	1) main entrance				2) No. of yard				3) Location of hallway				4) Entrance from the courtyard to the main yort				5) Location of staircase				6) Location of eyvan				7) Living spaces							Total									
	Side yort	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Main yort	A <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	G <sub>7</sub>		G <sub>8</sub>	G <sub>9</sub>	G <sub>10</sub>	G <sub>11</sub>					
Point	4	3	2	1	4	2	3	2	1	4	3	2	2	3	2	1	4	4	4	4	3	2	1	4	4	4	4	3	2	1	1	1	1	1	1	1	1				
House code	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	G <sub>7</sub>	G <sub>8</sub>	G <sub>9</sub>	G <sub>10</sub>	G <sub>11</sub>									
25	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	56	
2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	56
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	56
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	56
46	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	54
49	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	54
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	52
43	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	50
29	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	52.5	
41	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	51	
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	48	
47	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	46.5	
48	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	46.5		
36	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	46	
23	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	40	
7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	38	
21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	38	
19	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	36	
22	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	37.5		
52	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	36		
26	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	2	36		
34	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	34.5		
35	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	31.5		
3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	30		
11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	30		
51	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	24		
33	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	24		
1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1.5	21			
5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	19			
30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	17			
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	17		

Table 2: Features of each group and sub-group (1 to 7) and their gradations

1) Main entrance		Grade	5) Staircase		Grade	
A <sub>1</sub>	To side yurt	Hashti- hallway/si de yurt- courtyard	4	E <sub>1</sub>	Two staircases on the peripheral axis	3
A <sub>2</sub>	To side yurt	Hallway/hashti- courtyard	3	E <sub>2</sub>	A Central staircase on the axis of symmetry	2
A <sub>3</sub>		Direct access to the yard	2	E <sub>3</sub>	A side staircase	1
A <sub>4</sub>	To main yurt	Hashti/hallway- hall way	1	6) Eyv n		
2) Central courtyard			F <sub>1</sub>	Main façade - double height	3	
B <sub>1</sub>		more than one central courtyard	4	F <sub>2</sub>	Main façade- one storey height	2
B <sub>2</sub>		one central courtyard	2	F <sub>3</sub>	Other facades- one storey height	1
3) Hallway		7) Living spaces				
C <sub>1</sub>		on the peripheral axes	3	G <sub>1</sub>	Tanabi - double height	4
C <sub>2</sub>		on the axes of symmetry	2	G <sub>2</sub>	Hozkhaneh	4
C <sub>3</sub>		located in the rear part of the house	1	G <sub>3</sub>	Tanabi with shahneshin	4
4) Entrance to the main yurt			G <sub>4</sub>	Tanabi with orosi or colored panes	4	
D <sub>1</sub>		First floor, two hallways on the peripheral axis	4	G <sub>5</sub>	Rooms behind tanabi or hozkhaneh	4
D <sub>2</sub>		Ground floor, two hallways on the peripheral axis	4	G <sub>6</sub>	Odd patterned main yurt	4
D <sub>3</sub>		First floor, a hall	3	G <sub>7</sub>	Tanabi- one storey height	3
D <sub>4</sub>		Ground floor, a hall on the axis of symmetry	3	G <sub>8</sub>	Odd patterned side yurt	3
D <sub>5</sub>		First floor, a hallway on the axis of symmetry	2	G <sub>9</sub>	Even pattern on main façade's peripheral axis	2
D <sub>6</sub>		Ground floor, a hall way on the axis of symmetry	2	G <sub>10</sub>	Even pattern on the main façade's axis of symmetry	1
-				G <sub>11</sub>	Even pattern on the side yurt's peripheral or central axis	1

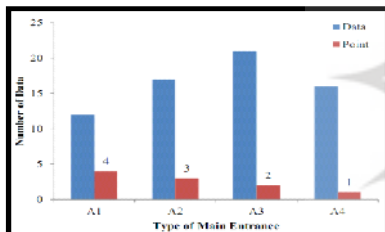


Fig. 1: Main entrance

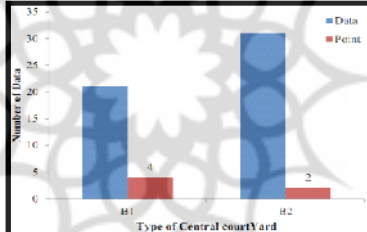


Fig. 2: Central courtyard

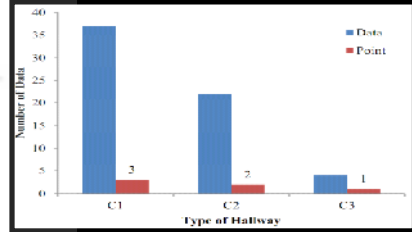


Fig. 3: Hallway

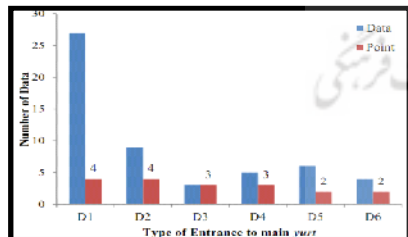


Fig. 4: Entrance to the main yurt

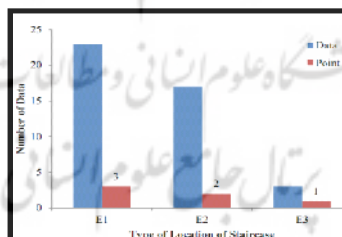


Fig. 5: Staircase

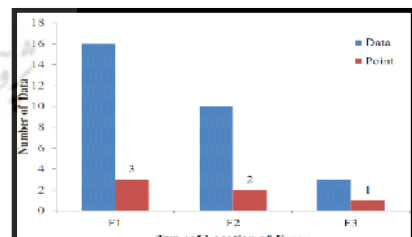


Fig. 6: Eyv n

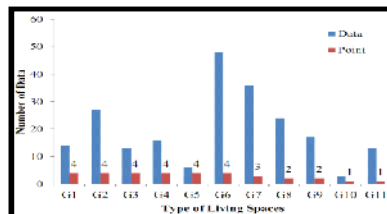


Fig. 7: Living spaces

*yort*[G<sub>9</sub>], 10) The even pattern in the axis of symmetry of the main *yort* [G<sub>10</sub>], 11) The even pattern on the peripheral or central axis of the side *yort* [G<sub>11</sub>]. These spaces were graded as 4 to 1 respectively as shown in Tables 1 and 2.

In gradation of plan types, these types of plan were considered (as in Table 1.): Plan with *tanabi or hozkh neh* in the middle with peripheral hallways or halls (graded 2). Plan with *tanabi or hozkh neh* in the middle with a central hallway or hall (graded 1.5). Plan with central or peripheral hallway or hall (graded 1). The following figures present diagrams of each group of features in terms of their frequency along with the coefficients assigned.

### Façade Elements Gradation

The elements of the main façade such as *eyv n*, column, height and ornaments were arranged in Tables 3 and 4, 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. The result of façade assessment and the effect of its coefficient are represented in Table 5.

In Table 4, the coefficient of alteration was graded as follows: seriously altered (1), slightly altered (1.1), and unaltered (1.2). Table 6 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 between 63- 73, group C between 51- 62, group D 30- 50 and group E between 0-

29. Finally in Table 7 a sample house of each group is presented.

## RESULTS AND DISCUSSION

### General Characteristics of Each Group

Group A:

- In general, houses in this group, built in a large scale with both *andaroni*<sup>13</sup> and *bironi*<sup>14</sup> 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 *tanabis* and often as high as 2 storey.

Group B:

- Hallways located on the peripheral axes.

- In a few of houses *eyv n* built on the main façade ( in one case- code No. 40 - *eyv n* was as high as one storey and in another case- code No. 43 - a small *eyv n* 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.

Table 3: Grading procedure of the façade elements

Eyv n (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

Table 4: The coefficient of alteration (C<sub>a</sub>)

Type	Present condition of the house	Present space pattern	House codes	Coefficient (C <sub>a</sub> )
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	

- 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 evy ns (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.
- What follows is a representation of the above table in the form of diagrams. The diagrams show the frequency and percentage of each group. Group A (with 47%) has the highest frequency; group B (with 26%) has a lower frequency; group C (with 8%) has even a lower frequency;

Table 5: The criteria for facade elements

House code	The point of façade general elements (P'e)				The coefficient of façade type (C <sub>f</sub> )	Total	House code	The point of façade general elements (P'e)				The coefficient of façade type (C <sub>f</sub> )	Total
	Eyy n	Column	Height	Ornament				Eyy n	Column	Height	Ornament		
27	1	1	1	0	1.2	3.6	49	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	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	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	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	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 6: The coefficient of alteration

House code	Group	Total grade for the points of plan elements ( $P_e \times C_e$ )	Total grade for the points of plan elements ( $P_e' \times C_e'$ )	The Coefficient of alteration ( $C_a$ )	Final grade: $[(P_e \times C_e)] + [(P_e' \times C_e')] \times (C_a)$	House code	Group	Total grade for the points of plan elements ( $P_e \times C_e$ )	Total grade for the points of plan elements ( $P_e' \times C_e'$ )	The Coefficient of alteration ( $C_a$ )	Final grade: $[(P_e \times C_e)] + [(P_e' \times C_e')] \times (C_a)$
8	A	90	5.25	1.2	114.3	40	B	58	2.5	1.1	66.55
44		90	2.4	1.2	110.88	10		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		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		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		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	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	

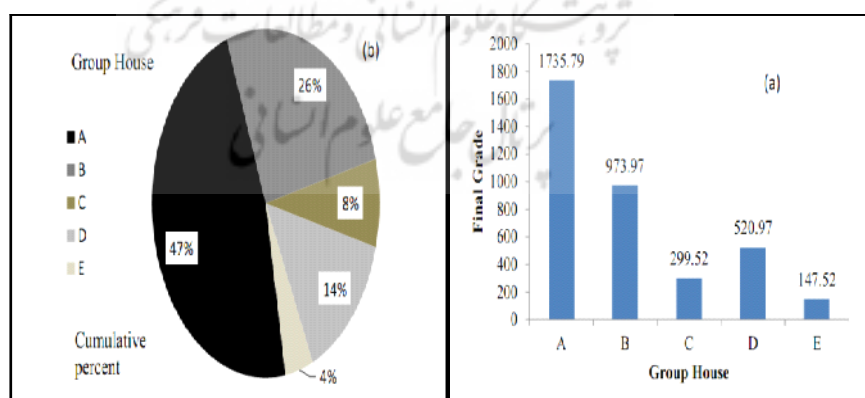
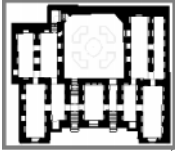

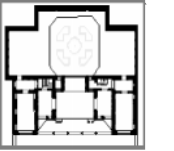

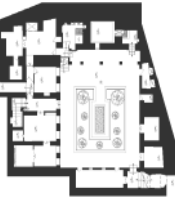
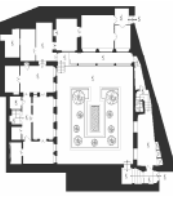

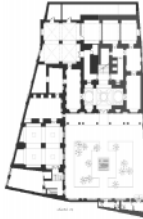
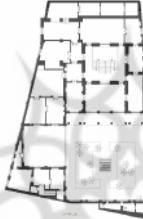


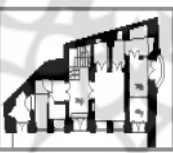

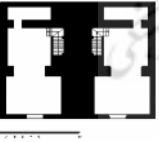





Fig. 8. Frequency and percentage of Groups A to E



Table 7: 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				

and finally, group D has the least frequency among the groups.

## COCLUSION

The purpose of this paper is to present a method for Architectural Assessment of old traditional homes in traditional context of the city. This method is a systematic technique of evaluating the architectural elements to

identify, preserve and convey the useful experience to the world of contemporary architecture. Validity of the method can be tested and determined through further application in similar sites and cities. 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.

## ENDNOTES

- 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- Eyvan (also written Iwan or Iwan): 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- Gooshvar or Kalle'e: the room located on the second floor on both sides of the hall and connected to it.
- 8- Hozkhaneh: A high roofed space in the basement with a fountain in the middle and generally connected to other spaces.
- 9- Shahneshin: 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- Darian: a covered hallway, usually with an L form at the main entrance of old houses.

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