

Principles of Designing Optimized Dwelling Apartments in Small Scale

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Abstract

As the title shows, the purpose of the paper is to study dwelling physical element in apartment scale. Today high mass of residential zones and high price of land leads the employers and users to residential architecture. Apartment life creates an undeniable situation for human beings of which we can point out chances and threats for residents. Unfortunately compact structure of big cities and lack of land along with financial issues and growing needs of users to dwellings and also inconformity of dwelling structure with today's life, and also high physical and social price leads to denial of the identity of dwelling. Also scales of apartment units is decreasing by sharp increase of condense and high price of land in center of big cities. This fact reveals the importance of exact structure for apartment in small scale. The purpose of this research is to reach at principles of designing optimized dwelling in large scale by taking into account factors such as society, family and individuals. This article by studying revenues needed in each section, along with using questionnaire and by conforming residents in small scale, gets closer to the proposed principle of optimizing apartment in small scale. 3 main principles for optimizing apartment in small scale are: contracting, applicability, flexible furniture and glassines.

Keywords: Optimized Dwelling, Apartment, Physical Elements, Function, Flexible Furniture, Transparency.

Introduction

Dwelling is one of the challenging issues in architecture designing which takes into consideration in most of researches with different attitudes. Today high condense of residential zones and high price of land lead designers, employers and users from traditional dwellings to apartment architecture. Apartment life creates an undeniable condition for individuals. Conditions like chances and threats for its residents. For any reason in architecture market in big cities and especially in center of cities residential apartments are going towards applying small scale.

In the condition like his users urgent needs to dwelling makes architectures to building mass construction without any identity. In this disordered structure, identity of Persian architecture is not taken into consideration. An identity with a reach background like validity of Persian history which is fitted to Persian culture in denied in this condition. In the situation of Increasing population along with this ruined Persian culture in condense setting of big cities what is more needed than before is designing optimized spaces along with identity of Persian culture which is fitted to its surrounded setting. Dwelling as the most useful subject of designing more than other issues needs optimized architect. This fact shows the importance of principles for designing optimized dwellings.

Method

This article by identifying physical element of apartments in small scale through observation interview and documentary investigations along with study of the architectural standards creates principles for small scales apartments. Also in this study we have used experimental research program by distributing questionnaire. After data collection by using questionnaire and analyzing the quantitative items effective variable has been revealed.

By physical analyzing through documentary investigation and adaptation of needs and planning concepts by applying experimental approach we got to this proposed principles. Finally by adapting architectural standards in dwelling designing and with the considering purposes and needs, the principles of small scale apartment is created. This article is studying dwelling setting quantitatively. A historical-explanatory method is used for studying historical Persian dwellings. Librarian resources and designing standards showed the trace of research. In this study the rules of documentary investigation is crucial. Finally the final conclusion drawn quantitatively

Stating the rule of Persian dwelling in study format

Human beings are initially perfectionist and are always seeking for better condition to improve the quality of his life. Improving quality of dwellings which are a place to take rest is not an exception. As a result improvement of human life from caves to luxurious apartment can confirm this fact. Dwelling can find meaning in relation to the concept of family. Family is the smallest unit of society which has an important Rule in eastern societies, Home and family are two inseparable items. As family has always been an important issue, dwellings also is an unchangeable concept but today globalization of economy and industry along with high dwelling demand, domestic culture also faced with some changes (Haeri, 1388). In this situation everyone is seeking for growth and improvement of his life style. Now a days dwelling have becoming just like other industrial products we even use the concept of “building industry” in our everyday talks.

One of the most important issues in the recent century which leads to building apartments in US, UK and IRAN was lack of lands and high demands for dwelling in big cities. By growing of technology and the movement towards applying concrete and steel structures along with transformation occurred in modern period a solution for this issue was moving from horizontal architecture to vertical one (einifar.1382) Here we will briefly talk about the process of moving from primary houses to luxurious apartments and then we will examine the features of an optimized dwelling. There are several categorization related to evolution process of transforming traditional houses to apartments. We will take a look at one example related to this issue. Haeri in his book named home, culture and environment divided this style of architecture to 3 main periods:

1. Houses before year 1300 which have been called Persian houses.
because of so many reasons such as archaism of Persian architecture and denying external structures all around Iran, architects observed some principles in building which was not only based on the way of elimination people needs and representation of great construction but also was a useful pattern. In most of the small and old big houses there were some needed items which was main elements of traditional architecture.
2. Rudimentary urban dwellings (years 1300-1400). In those period scales of dwelling was based on people. Also because of non- existence of mass builders in that period even poorest people in the society with minimum income could have bought their own houses. But by thriving the capitals, grow of tendency towards moving to Tehran, building industry also was improve and by doing this some of traditional concepts of Persian architecture diminished. On the other hand some importing concepts also walked in and as a consequence the architecture got away from its traditional form and hanged into urban architecture. Also Persian architects who were used to principles of Persian architecture, in the beginning of modernism period, started to apply a mixture of modernized and traditional concepts in their works.
3. Contemporary houses was show up by rush of population and increase of demands in big cities and at the same time increase in prices. In spite of the accordance of apartment living in small cities, in most of the big cities these apartments are the result of unprofessional imitation of western apartments. The general forms of urban apartments are defined by municipality rules. In general we can recognize some physical concepts of urban apartment like Moving from passage to public yard, south yard, ground floor. Parking, services, neighborhood partition, outwards of building, general access, roof and apartment units.

Houses in Persian architecture have been passed along way in the way of transforming from traditional houses to big cities apartments. Disappearance of private place along with low security and mess of residential zones decreased the quality of dwelling structures of cities (Ghorbani, 1391). Still by applying past knowledge and experiences there is a hope that future architecture can create houses which can meet people needs. This study is going to path the way for future architecture for this purpose it takes a quick glance at dwelling principles.

Dwelling principles

Dwelling principles can be divided into 3 main categories of economical, social and physical. As these principles are the main foundation of a comprehensive plan and principle devices for showing economical, social, cultural, ecological and physical dimensions, they have a special place in dwelling planning domain. These principles give a better view of dwelling condition in past, present and future and as a result by applying them we can adopt a useful politics in future (Azizi, 22, 1383). Present study is based on Azizi view point (1383) in an article named “the place of dwelling principles in planning process”. These principles are divided into 3 main categories as follow:
Economical, Social and Physical

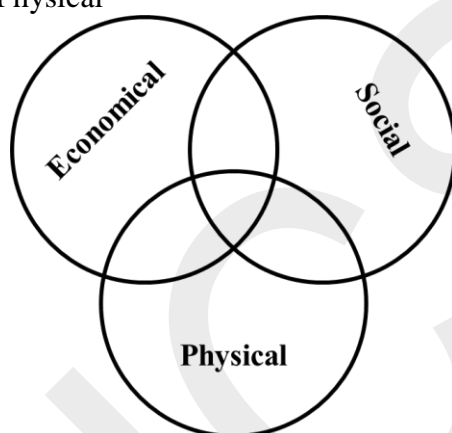


Chart 1: Housing indicators structure in relation with each other

Social indexes:

These indexes are main criterion in dwelling which create boundaries in different places related to dwelling range. Of these indexes are number of family members, number of individuals in each room basis capitation, and dwelling quality based on welfare. Social indexes can be studied in both large scale and small scale.

Economical indexes:

These indexes by an economical approach showing boundaries in dwelling plan which only can be studies in large scale. Of economical indexes is land cost, yearly construction, job production, Cost of construction in one square meter in various patterns.

Physical indexes:

Dwelling frame is one of the most important indexes in this study which are items directly connected to some examples of dwelling setting. Some examples of the index related to this study are: dwelling accumulation, building compression, employment rate, methods of outward building and building materials.

Stating realm of study:

For this purpose we first need to define addresses of dwelling needs. And then based on those needs the scope of the need in which this study trying to cover would be stated. If we divide human needs in two categories of minimum and maximum (based on matzo), we can define minimum needs as those needs we cannot live without. But on the other

hand are probable needs which observing them can improve human life (heydaripour 1392-1394)

Based on these definitions we can define scope of needs focused in this study as all the minimum needs and some of the probable needs. We use the concept of tradition for the purpose of defining scope of needs focused in this study. Tradition in each society divides this scope into factors of time and place.



Chart 2: The respondent needs of residential space

Present study aims to represent residential areas in Tehran by considering minimum needs in relation to probable needs.

In analyzing internal areas of residential dwelling in each level after studying physical features of space we tried to reach at planning principles of these areas and initial patterns of dimensions.

In studying physical principles of dwelling, based on Haeiri categorization, we divide dwelling area into 4 parts, related to society, semi related to society, related to family and related to individuals. In general spaces like entrance are a part of spaces related to society and spaces like hall, dining room, terrace, or balcony and TV room, are parts of semi related to society. Spaces like kitchen and internal dining room are family places and rooms, bed rooms, and study room are personal spaces.

Spaces related to society are included spaces out of apartment units in relation to other units which are not take into consideration these days. The edge of family and social life creates an intermediary space of consequences of Persian architecture. Present study by proposing fourfold division and adding an extra spaces named semi related to society improves Harei's threefold division. Home is where the family live and is the place of creating various behavior factors.

In houses of small scales family life has the priority and even spaces like hall is design along with observing family needs.

Personal spaces are for personal matters which needs a high privacy. Because of private nature of these spaces they should have the ability to be changed every often. Personal spaces are included parental spaces, child spaces, and work and study spaces. Alexander (1388) pointed out that instead of using rooms we can divide house into 3 man spaces of public, parental, and children spaces. Habibi (1367) also studied these spaces in minimum dwelling.

Process of applying optimized dwelling principles in small scale

In present study we use experimental method by distributing questionnaire for the purpose of access to main needs of inhabitants and at least get to principals of designing optimized dwelling.

For this purpose target statistical community, dwelling inhabitants are about 80 to 100 square meter and the number of questions is based on inhabitant needs. Some inhabitants of a residential complex have been chosen and asked to answer the questions by

consulting to other members of family. In questionnaire were some questions about prior needs of inhabitants. Results have shown that in most of the cases the first and second priority of inhabitants is to pay careful attention to the space dimensions.

	Priority	Priority 1:	priority 1:	priority 2:	priority 2:	others
Space		real extend	1: figurative extend	2: real extend	2: figurative extend	priority1&2
Related to society	20	11	6	20	33priority	from80
Semi related to society	23	13	12	16	16priority	from80
Related to family	27	9	11	15	18priority	from80
Related to individuals	15	23	20	12	10priority	from80

Table 1: Respondent priorities in questionnaire

To assure the reliability of results questionnaire were distributed between two groups of 20 members and in two different time spans. The alliance between two groups was 0/78 so the reliability of the test was calculated 0/87. Stability coefficient in 2 groups in 4 priority and 4 space groups was about 0/7 to 0/85 which shows an acceptable stability. Based on what Shahbazi and Einifar said and also by referring to these results we can define principles of designing apartment quantitatively

Construction of principles:

1st we present concentrated studies on dwelling frame. In this area the most important example is Einifar study (1382) which presents a pattern for analyzing flexibility. In this study flexible samples of traditional dwelling in 3 categories of variable, changeable, adjustable, are present which because of conformity of inhabitants needs with this pattern the findings are important.

Also study of Zandieh and et al (1390) is devoted to flexible dwelling which we can take into account 3 flexible groups in service area, furniture, and design. Also in Shahbazi study (1385) he presents a view of expansion issue which can play an important Rule in improvement of visual frontage.

Related to this by referring to Novinfar (1381) and by study dimensions and measures of each function and considering the function which Novinfar didn't take into account and finding frontage of each function and based on sketching with quality improvement focus of inhabitant, and considering all related issue 3 main principles are highlighted.

Principles of designing optimized dwelling in small scale:

We can consider the result of this study as a starting point to present new pattern of urban dwelling. Based on analyzing in present study and also the flexibility pattern of Einifar (1382) and Shahbazi theories (1385). We present principles of designing optimized dwelling in apartment scale which caused to increasing productivity.

First principles: coalescence of usages

This study includes usage of each function from small scale to large one. Various usages in 2 factors of time and space have similarities and differences which caused to using their mutual space. To consider smaller space for both of them in traditional dwelling, flexibility of addresses leads to coalescence of usage in the way that in 3 door rooms, at the mealtime they would set a table cloth, at the evening is a place to get together and at the bedtime they would set beds. Today coalescence of usage along with flexible furniture can be a good answer to the dwelling space problems.

Second principle: flexible furniture

In this face by furniture we mean any object which can be moved. Flexible furniture, have the ability of coordinating with the space and the condition could back to previous if needed (Einifar 1382). In traditional Persian dwelling in spite the lack of facilities to get to flexible structures we can seek for flexibility in some points. An example is sash windows in Borojerdiha house in which if they are closed they let the light pass through colorful windows and if they're open they change the space of house from semi closed to semi open. In the case of central yard also some of verandas and room which separated from other rooms through 3 doors by being open it could create consistent space. Today because of lack of direct connection between designers and main users of the dwelling in most of the cases the dwelling does not meet inhabitant needs. (1382.Einifar). Today's flexible structure can greatly create the ability of coordinating the dwelling with inhabitant needs.

Third principles: transparency

Transparency of space is one of those Persian architectures concept which has been pay attention to since a long time ago. For instance sash rooms in Persian houses, have some parts which is named sash that when all the small doors go up, it creates direct visual connection with the yard or in palace halls have some rooms which are Aynekhane in which because of using small pieces of mirrors on walls and ceiling creates a kind of development in space. These examples can truly represents the concepts of transparency. This concepts needs more attention in small spaces in Persian dwelling. By applying this concepts the architect can create a bigger space in addresses mind. Transparency of space can represent in real or metaphorical form which attract addresses attention from physical form of the space. We should pay careful attention which in some cases too much expansion like placing two mirrors in front of each other can be harmful. In fact too much expansion of space leads to unbalanced space especially from its physical angle.

Conclusion:

The result of present study by confirming Einifar (1382) pattern and along with some results from Zandie and et al (1390). is starting point to follow up the study path in the area of optimized dwelling. In the way that by studying each of these proposed principals and matching them with items of two other studies we could find an appropriate categorization. Present study would not include Zandie and et al (1390). in its structure and other items of this study are present in the subcategory of its proposed principals. Shahbazi's methods (1385) are present in this study in the more comprehensive way

which is important. Result of this study can create an applicable way for criticizing optimized dwelling and in planning phase designing apartment in small scale can be applied. Increasing quality of life in optimized dwelling is going to happened through improving the quality of dwelling atmosphere.

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Tables and Charts

- Chart 1 Edited by the author on the basis of Azizi, Mohammad Mehdi, 1383, Housing indicators in the process of planning the housing, faculty of art, NO.17
- Chart 2 Edited by the author on the basis of Heydaripour, Omid, 1392, Principle of optimized house in apartment scale, course of research methodology, , faculty of art, Tehran university
Heydaripour, Omid, 1394, Design of residential apartment in small scale to promoting quality of residential life in city of Tehran, Master thesis, faculty of art, Tehran University
Ernst & Peter Neufert, 1381, Architects' Data. Translator Hasan Tarshizi, Tehran, Azade
- Table 1 Edited by the author on the basis of questionnaire

Study Questionnaire

Today high mass of residential zones along with high price of land, make designers and employers and even users to the apartment architecture. Apartment life creates an undeniable condition for human which includes chances, threats for inhabitants. In this condition urgent need of users of dwelling leads architecture to mass construction without any identity. Because of this issue for the purpose of improving quality of life in apartments we asked inhabitant to take apart in filling this questionnaire.

Your responses to this questionnaire will be used for study and will keep by researcher. Sincerely thank you for your attendance. We humbly ask you to pay careful attention filling this questionnaire to get to proper pattern of inhabitant needs

- 1 How many floors does your apartment have?
- 2 How many suites is there in each floor?
- 3 How square meter is your suite?
- 6 What is your preference on optimizing your apartments lobby?

light	embellishments	extends	view	others
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- 8 What are the shortcomings and necessities you recognize in your lobby?
- 11 What is your preference about your parking?
- 13 What are the shortcomings and necessities you recognize in your parking?
- 14 What is your preference on optimizing your stair way?

light	embellishment	extends	view	Others
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- 15 What are the shortcomings and necessities you recognize in your stair way?
- 18 What is your preference on optimizing your apartment's entrance?

Light	embellishment	extends	view	others
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19 What are the shortcomings and necessities you recognize in your entrance?

22 What is your preference on optimizing your living room?

light	embellishment	extends	view	others
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23 What are the shortcomings and necessities you recognize in your living room?

27 What is your preference on optimizing your bedroom?

light	embellishment	extends	view	others
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29 What are the shortcomings and necessities you recognize in bed rooms?

33 What is your preference on optimizing your kitchen?

light	embellishment	extend	view	others
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35 What are the shortcomings and necessities you recognize in kitchen?

38 What is your preference on optimizing your rest room?

light	embellishment	extend	view	others
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39 What are the shortcomings and necessities you recognize in rest room?

42 What is your preference on optimizing your bathroom?

light	embellishment	extends	view	others
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43 What are the shortcomings and necessities you recognize in your bathroom?

42 What is your preference on optimizing your terrace?

light	embellishment	extends	view	others
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44 What are the shortcomings and necessities you recognize in terrace?

47 What is your preference on optimizing your panty room?

light	embellishment	extends	view	others
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49 What are the shortcomings and necessities you recognize in panty room?