

## The Strategies of passive defense in architecture of old districts in Kerman city

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### Abstract

Passive defence is a strategy to increase life quality, when Internal or external enemy is trying to torment people and break the people stability. Old Iranian scientists of urban planning have planned some strategies to decrease such torments that nowadays are called passive defences. Nowadays passive defences is not considered in most houses and its importance is decreased. The most important factor in people welfare is their feeling of security in their private places that would be obtained by passive defence principles. Ignoring this case destroy feeling of security. In Iranian traditional architecture some strategies were considered that are in accordance with today's passive defence principles. This research is conducted to recognize these traditional strategies, by literature reviewing and field observation. Recognizing such strategies would result in knowledge that could be used in planning and improving of nowadays urban spaces by modern architects.

**Keywords:** Passive defence, stability, security, Neighborhood, parish

### Introduction

Human being has always tried to find ways to confront social anomie and prevent it from happening during centuries. One of the important strategies to prevent misbehaviour and develop mental relaxation in urban spaces is taking passive defense into account by urban architecture and environmental designing.

Suitable design and effective framework can lead to decrease in criminal opportunity, fear of crime and improvement in life quality and thus can result in mental relaxation and psychological security. Indeed, lack of citizens security along with lack of security in residential spaces leads to seclusion, depression and social gaps in urban neighbourhood that are urban chronic diseases. The concept of social security and citizens feeling of security can be considered as the key element in order to reach the ideal city far from urban damage and social deviation.

Wars and natural disasters as the most minatory factors for humans life have lost many lives, destroyed many buildings and equipments and have caused irreparable economic and social expenses. Throughout history, cities as centers of human's gatherings, have suffered the most.

Today's, readiness to face disasters is considered as an important and essential factor. The importance of the factor is so much that developed countries have assigned an important part of their national comprehensive planning for it. Therefore, managers, designers and urban planners should consider it as the most important factors. In this regard, urban passive defense is the most important category that could cause citizen's comfort and their security of life and property and security of urban infrastructures.

House is considered as human's resort place, therefore house peripheral spaces, alleys and residential places should be secure to cause residents tranquility and comfort.

According to urban sociological researches, one of the basic factors in improving the residents feeling of security in urban residential places, is favourable relationship among the neighbours. It seems that nowadays urban architectures have not paid attention to it. Thus, crimes occurrence may be less in modern texture due to improved standards, but the extent of feeling of security as a mental matter, is higher in old texture due to neighbours relationship. This research

was conducted in Kerman old districts to show the effective factors on neighbourhoods security, by regarding the concept of passive defence.

### **Feeling of safety, security and protection**

According to Abraham Maslow category of human's needs, that is one of the most accepted one, safety and security is the second human need after biological needs, therefore it is essential to feel comfort and tranquility (Aynifar, 2002).

According to Maslow, when biological needs are satisfied, human being pays attention to safety and security immediately. These needs are closely related to social and physical environment capabilities (Salehi, 2008). The words safety and security in Persian are *amiyat/imani* that means to be safe. To have comfort and tranquility. To be safe from being raped or violated, being immune from assault and forcible seizure (Poor-Ahmad et al, 2012).

Safety and security depend on not being threatened and optimum utilization of opportunities (Khalili, 2002) and are called defense and protection of ourselves, our family, friends and property. In order to be safe from social abnormalities and psychological insecurity, passive defense can be considered to cause users tranquility by security of life and property. Passive defense is a set of actions that needs no war tools and by using them, we can prevent life and property losses (Zarepoor et al, 2011).

### ***Effective factors on creating feeling of safety and security***

The purpose of architecture is preparation of comfort, tranquility and relaxation for users. Architecture can be considered as a key factor in producing feeling of safety and security and many factors are effective in this case such as environmental, textural, social, behavioural and cultural factors, and so on. In this paper, textural, social and cultural factors are studied.

Concept of defense: The word defense is *padâfand* that is made of two parts *pad/pâd*+ *âfand*. It does mean not fighting. Sadri-afshar and Hokmi translated it as defense and explain that it is any action to prevent any enemy to attack or victory over any enemy (Sadri-Afshar and Hokmi, 1994). There are two types of defense: passive and active.

Active defense: active defense is direct confronting and facing enemy and using war tools in order to parry and neutralize offensive actions.

Passive defense: passive defense is the set of acts that are done without any war tools to minimize as less as possible, the life and property losses by enemy (Zarepoor et al, 2011). In this order, architecture and textural spaces can have effective role in producing the feeling of safety, security, tranquility and comfort of users.

### **History of Kerman**

Kerman is one of the ancient cities of Iran with a long term history that has been faced many events in various ages such as being captured by Nader Shah Afshar in 1160 AH (1747 AD), being capital in Safariyan dynasty 1133 AH (1721 AD). In 1209 AH (1794 AD) Kerman was captured by Agha-Mohamad-Khan-e Ghajar, after 4.5 months of Kermani resistance. The cruel King ordered to take out 20,000 pairs of Kermani people's eyes (Sorooshiyan, 1992).

Interestingly, this city has preserved its historical inheritance and its ancient texture. Kerman is one of five ancient and historical cities of Iran. There are many historical places in Kerman such as *bâzâr* (roofed markets), that is one of the longest straight Bazaar. It consists of Ganjalikhan complex, *bâzâr-e-mesgar-hâ* (markets of copper makers), *bâzâr-e- talâ forooshân* (markets of Gold sellers) and beautiful *masjed-e-jâme'e* (central mosque) (Daneshvar, 2002).

Old parts (texture) of Kerman can be simile as a tree that *bâzâr* is its trunk and alleys as its branches, gathering center and residential places as its fruits. Roads can be described as its roots, because in ancient cities due to its trading function should be a part of trading net.

During the medieval centuries, due to these reasons, cities are grown that were located along main roads and highways. In other words, because the most amount of income in the cities was obtained from trading, cities such as Rey, Shiraz, Bishapoor, Kerman and so on, they were located along main trading roads.

This city main axis (bâzâr) is main supporting and service provider of whole city. The axis that peopled walk in it, sell and buy, and reach social and economic centers such as kârvânsarâ-hâ (caravan-serai/ public house), mosques, schools, public bathrooms and so on. Finally, it reaches city gates. These centers indicate the importance of traders and craftsmen castes, in these centuries .

In medieval centuries, bazar was made of two sides of city main square, where central mosque and government palace were made. When benefits of these two poles were separated, governmental pole changed its place and transferred to city side. Thus, Bazar became the connecting link between governmental and religious poles.

Alleys and neighbourhoods as lateral axis form branches of the tree of urban texture. Alleys are meandrous due to both the organic texture of residential texture and also to prevent desert winds that carry dust and even soil. Water ways is another axes in traditional cities of Iran, especially Kerman.(Fig 1).



**Figure 1: Old city of Kerman**



**Figure 2: Map of old city of Kerman**

Kerman city was protected by a wall all around it having 6 gates. There was a ditch outside the wall. Its width was 4-6 meters, and its depth was 6-8 meters. There were brick towers every 300 meters and in some places every 500 meters. Other towers and the wall was made of clay soil. The length of wall was nearly 10 kilometers (1.5 farsakh). Each gate has its suitable name (Fig. 2).

### **Strategies of passive defense micro and macro scales**

In macro scale, passive defense is studied by studying urban designing of Kerman. Kerman has frequently been attacked by foreign invaders. Therefore, governors and residents of this city have used patterns in urban designing to overcome these invasions that are called passive defense, nowadays.

Clever strategies that have been used to prevent invasion of foreign invaders are a set of passive defense patterns that decreased as less as possible direct facing with enemies. These macro scale strategies have varied in various ages of history, and some important ones are mentioned briefly.

Ditches are regarded as the city external enclosure, tall wall all around the city, limited entrance and exit through 6 gates in specified day time, controlling external events by guardian towers, and continuous patrolling on defense wall, making governor castle on strategic high lands and defining districts and neighbourhoods regarding priorities in the era

Some examples of macro scale passive defense include using such priorities in urban arrangement to minimize probable losses, using safe and strategic places for public and essential usage, separating neighbourhoods according to specific standards to maximize unity and security, maximizing city self-sufficiency, and designing pass ways and urban spaces with priority of security against foreigners .

### **The study of the micro strategies of passive defense in microscale**

The main purpose of this research is to recognize and study the strategies of passive defense in micro scale (houses and neighbourhoods). Studying historical documents and field observation in historical parts has shown the following mentioned strategies for maximizing security of residents:

- Focusing on designing public spaces as bed and foundation
- Using various pass ways to separate accessibility and to increase security
- Narrow and flexuous alleys to slow down movement of enemy forces Making sâbât (rooms or roofs that were made as ceiling of alleys) in a height that prevents moving of cavalry or tall soldiers having long war tools.
- Elimination of free spaces in residential districts/neighbourhoods and using smaller spaces as neighbourhood space and designing the houses doors in this space to increase security
- Designing closed alleys (impasse) to confuse the foreigners

One of the most important set of passive defense strategies is making houses with the priority of residents' security. The tricks that are used to increase life and property security of house residents are sets of passive defense strategies that, in addition to increase in security, have other usages such as strengthening and decorating. As an example, the following can be mentioned:

- 1- Making tall external walls to minimize penetration (Figs 3 and 4).
- 2- Making spaces such as pirneshin (seats for old persons) outside the exit door and hashti (a octagonal room just behind the door of house. This room is connected to private yard by a door and a narrow pass way so that no one can see or hear the private yard from exit door) inside the exit door to filter the entrance in order to increase the security of house inside space (figs 5 and 6)
- 3- Minimizing the external openings and making interior openings (openings toward central or private yard) (Figs 7 and 8)

4- When lightening and weathering from outside of house is essential, openings are located in the height of external surface that minimizes access from outside of house (Figs 9 and 10)

5- Using very little windows and ventilation opening so that prevents access from outside the house (Figs 11 and 12).

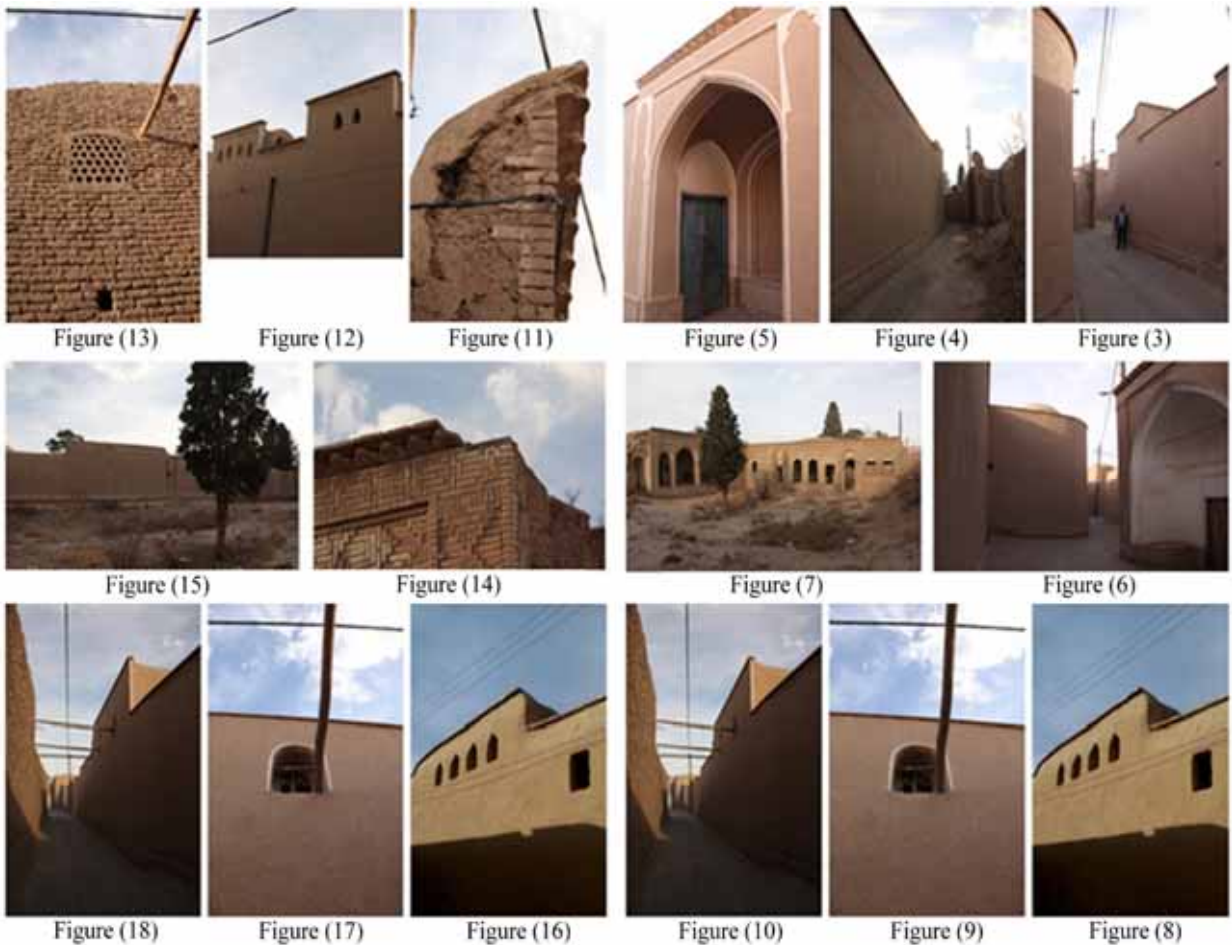
6- In some houses, there is a room upon hashti to observe outside the exit door

7- Installing special bricks that are called sharafi (observance/watching). These bricks are installed in upper edge of wall weakly, so that it would not bear weight of a person. Thus, if a person tries to go up the wall, the brick would not bear and he/she would fall down (Figs 13 and 14).

8- Embedding a hollow space that is called sandoogheh in two places. In the place that a dome is connected to walls to fill the distance between dome and walls. The round place is made on 1-meter upper part of walls. Sandoogheh lighten the weight of wall and roof and also it would be destroyed if a person tries to go up the wall.

9- Level of inner space (central and/or private yard) of house is lower than level of alley that is called godâdâl bâghcheh. Thus, the distance between the edge of roof and bottom of yard is too much that a person can jump down. The Sharafi bricks would fall down and thus prevent a person to go down by rope (Fig 15).

10- Etrance of houses were made near each other in the neighbourhood space that provide the possibility of more control (Fig 16, 17 and 18)



### **Conclusion**

This study shows that the strategies of combating with foreigner invasion in city, neighbourhood and house scale have basic similarity. The most important basic property is passive defense in all scales. The basic principle is avoidance of direct contention and fighting with a set of creative ideas in order to prevent enemy and not combat with them.

Passive defense has roots in culture of our predecessors. Even, when they have been facing hard environmental conditions, they have found solutions that with the least expense and loss had the most efficiency and were sustainable completely and have passed their life with the highest level of coexistence with nature.

Although war tools have changed and security needs have become much different, but observing past history and the way that how our predecessors have satisfied human needs regarding security needs, economic and environmental conditions is challenging. It seems that the solution of getting rid of ungovernable constructing that is inattentive to residents' spirit, cultural and environmental conditions is hidden in past architectural strategies. We hope that the results of this research can be a piece of the puzzle that would show our forgotten architecture and offer a suitable pattern to generate a new generation of Iranian architects.

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