

Passive Defense Strategic Measurement and Zoning in Urban Historical Context (Case Study: Dezful, Iran)

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Abstract

The city of Dezful, especially its old tissues, is very important owing to its location in Khuzestan boundary province; moreover, during the eight years of sacred defense, the city has suffered many damages. Investigating and evaluating the internal and external state of Dezful old text makes it possible to present strategies based on the principles of passive defense to create a sense of security. This research seeks to answer this question: "What are the solutions for improving the old textures of Dezful based on passive defense principles?" In this regard, the research method used is based on the nature of deductive-a posteriori methods and adaptive study method. ArcGIS and Expert Choice softwares were applied and SWOT and AHP techniques were combined to scale the vulnerability. The strengths, weaknesses, opportunities and threats of Dezful worn out textures have been investigated and strategies have been presented that are in accordance with the principles of passive defense. The results of the research show that defense strategies are more important than other strategies. Strategies with a weight of more than 0.05 include ten cases, the most important of which are the location of sensitive users with a weight of 0.082 and the improvement of infrastructure networks with a weight of 0.081, and the remaining strategies have a weighing less value. Therefore, there are some solutions for the top ten strategies at the end of the research.

Introduction

This old texture has become vulnerable to natural and anthropological damages in the center of cities due to the presence of old buildings, worn-out texture, and unsuitable accessibility. Since safety and security are the most basic requirements to achieve desired standards of people's comfort and well-being, the passive defense in the history of Iranian architecture has been considered as one of the important measures of the rulers during the development of cities. As a result, the passive defense is one of the most basic requirements in the initial design of cities and their installations to provide the maximum security with minimum discomfort for people to defend against threats. Every act to secure the human society and natural and built environment is a passive defense if it is protection-oriented with civil nature. Therefore, this study tries to present suitable solutions in terms of physical and social indicators form obtained in the field and library studies and master plans based on passive defense principles.

One of the most important issues that should be considered when designing and planning cities is to adhere to some passive defense measures and

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principles to reduce the effects of these types of crises. Iran has always suffered many casualties and financial losses due to its geographic and political situation. This issue is very significant in Khuzestan province because it is a border province, and the eight years of sacred defense have shown that the cities of this province, including Dezful, have suffered considerable casualties and financial losses. Therefore, the theoretical and practical condition of defense and passive defense has been important in the face of the crisis in this area. Hence, one of the prerequisites for the sustainable and comprehensive development of worn-out textures, including the old texture of Dezful, is to explain the plans for preventing and reducing damages to natural and unnatural accidents. This research seeks to answer this question: "What are the solutions for improving the old textures of Dezful based on passive defense principles?" This research aims to identify the weaknesses, strengths, opportunities, and threats of crisis management by considering the current condition of the worn-out and old texture of Dezful. Identifying the weaknesses, strengths, opportunities, and threats of crisis management and providing suitable solutions for the conditions of these textures is necessary for the proper planning of worn-out urban textures like Dezful old texture.

Materials and Methods

The nature of the research method is the development of use. The research method is a combination of descriptive-analytical methods. The research has two parts: 1) zoning, and 2) strategic measurement of old texture based on passive defense. In the first part, the target effective criteria were extracted by using the library method, questionnaire, and literature review. Then, the relative weight of criteria obtained in Expert Choice by using AHP statistical models was produced in ArcGIS as GIS layers.

The vulnerability zone is obtained by the overlap of these layers. In the second section, through library research, field observation, and SWOT matrix, the strengths, weaknesses, opportunities, and threats of the old Dezful texture have been studied and a table has been compiled. Then, according to the SWOT table, strategies are presented in line with passive defense principles and then, the most important strategies that have the highest scores are presented as design solutions.

Results and Discussion

Based on the study and the gathered information of Dezful maps, 20 criteria including high-density places, populated areas, high-rise buildings, education centers, broadcasting centers, centers with supportive functions, military bases and sensitive martial centers, industrial and hazardous materials centers, open spaces, land slope, soil type, water, electricity, gas and telecommunication lines, highways, roads, sub-roads, communication networks, and city center were produced as GIS layers. Then, they overlapped with ArcGIS. The results were obtained by considering the relative weights of criteria in Expert Choice software using AHP statistical models. Analysis showed that Katkatan, Shah Rokneddin, and Sakian old neighborhoods are less vulnerable than other places; however, regarding figure (3), the total old texture of Dezful is more vulnerable, especially Roodband, Ghaleh, Choolian, Kalantarian, Majdian, and Ali Malek neighborhoods.

This figure also shows the 10 prioritized strategies. According to this figure, strategies with a weight of more than 0.05 are included in the 10 strategies. The results of prioritizing the strategies presented for adhering passive defense principles in the worn-out texture of the study showed that locating sensitive uses and improving infrastructure networks are among the most important

strategies and the remaining strategies have less weight. Two strategies, namely preserving the desired properties of buildings and utilizing the desirable properties of the region to minimize the crisis have achieved the lowest weight.

Conclusion

Changes and transformations in urban textures are inevitable. One of these changes is that textures wear out over time and this is the most important issues in terms of safety for the people. These types of textures are highly vulnerable to natural and unnatural accidents. One of the most important ways to improve such environments is to use passive defense principles and provide solutions in this regard. Therefore, to achieve the goals of passive defense in the country and the mobilization of the people, the role of their place of living, i.e. cities is very important. Dezful, with all its old textures, is an important city at the border Khuzestan Province. This city has suffered many damages during the eight-year war of Iran-Iraq. The study and evaluation of the internal and external conditions of Dezful old texture provide suitable strategies for the current conditions based on the passive defense principles and create a sense of security.

There are some researches about passive defense in recent decades in Iran but research about presenting strategies and solutions based on passive defense principles in the old texture of Dezful is scarce. Therefore, this research tries to present solutions based on the current conditions in forms of physical and social indicators according to the field and library studies and master plans. Accordingly, in this study, vulnerability assessment and evaluation of strengths, weaknesses, opportunities, and threats in Dezful worn-out texture were done and appropriate strategies for this texture were introduced using SWOT and GIS. To reduce the vulnerability of Dezful historical texture, some neighborhoods are given priority like Roodband, Ghaleh, Chollian, Kalantarian, Majdian and Ali Malek. The results of the study show that the neighborhoods of KatKatan, Shah Rokneddin and Sakian are less vulnerable than other neighborhoods. In addition, defensive strategies are more important with the weight of 0.261 because these strategies should cover the weaknesses and threats of the textures. On the other hand, the mean vulnerability of Dezful was 0.05. Strategies with a weight of more than 0.05 include ten cases, the most important of which are the location of sensitive users with a weight of 0.082 and the improvement of infrastructure networks with a weight of 0.081, and the remaining strategies have lower weights. Two strategies, namely preserving the desirable properties of buildings with a weight of 0.017, and taking advantage of the desirable properties of the region to reduce the crisis with a weight of 0.018, have received the minimum weight. Finally, some suggestions are proposed for ten top strategies including WT: identifying sensitive uses in Dezful texture; WO: suitable location of water, gas and electricity networks; ST: reducing the building height in proportion to passage width, and SO: formulating a comprehensive crisis management plan. Table (6) shows the priority of these ten strategies based on their weight. This table provides operational solutions for each strategy.

Keywords: Security, Passive Defense, Historical Texture, Worn-Out Texture, Dezful.

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