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Analysis and Investigation of Factors Influencing Spatial-Physical Structure of Decayed Urban Texture(the Case of Decayed Texture of Dogonbadan Town)

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ABSTRACT: Many traditional textures in which cities once took pride are now exposed to decay and destruction. A great proportion of the residents of those areas have moved out and the cultural, historical, and social heritage specific to those historical neighborhoods has been destroyed or is being destroyed. Only a few buildings have persisted. These buildings are the monuments of the past and represent the old identity of the texture. Decayed urban texture is an area of the legal confines of the cities which is vulnerable due to physical decay, inappropriate roadway access, inappropriate equipment, services, and vulnerable urban infrastructure. Such textures have low geographical, environmental, and economic value. In general, the decrease in the efficiency of each phenomenon leads to its decay. The present study is an applied research in terms of objectives and a descriptive-analytical library survey in terms of methodology (400 questionnaires were distributed according to the Cochran method). The objective of the study was to investigate factors influencing special and physical conditions of decayed urban texture and to find strategies to improve, reconstruct, and reform the decayed texture of Dogonbadan town. The collected data was processed, tested and analyzed through Excel and SPSS programs. In order to draw the maps, Arc GIS10 was employed. According to the findings, there is a significant relation between low financial capability of residents of decayed textures and lack of reconstruction of decayed textures. The fact that the residents of these areas do not have appropriate, sufficient income precludes the implementation of reforming and reconstructing plans (with correlation coefficient 0.289). Besides, analysis of the physical structure of decayed urban texture is the prerequisite for organization and reconstruction of decayed textures (with Chi square 258.500 and significance level 0.000 for the index of the quality of structure ad chi square 321.425 and significance level 0.000 for the index of reconstruction materials).
Key words: decayed texture, special-physical analysis, reconstruction and improvement, Dogonbadan.

INTRODUCTION

Many traditional textures in which cities once took pride are now exposed to decay and destruction. A great proportion of the residents of those areas have moved out and the cultural, historical, and social heritage specific to those historical neighborhoods has been destroyed or is being destroyed. Only a few buildings have persisted. These buildings are the monuments of the past and represent the old identity of the texture. Decayed urban texture is an area of the legal confines of the cities which is vulnerable due to physical decay, inappropriate roadway access, inappropriate equipment, services, and vulnerable urban infrastructure. Such textures have low geographical, environmental, and economic value (Habibi et al. 2007). In general, the decrease in the efficiency of each phenomenon leads to its decay. When the life of a part of a city is challenged due to any reasons, the urban texture of that area is exposed to decay (Rosemary: 2005: 9). Decay of a texture or its internal elements is caused

by obsolescence or lack of development plans and technical supervision of the formation of that texture (Loosim, 1996: 79). Due to the poverty of their residents and owners, these textures have not had the chance of automatic reconstruction, and investors are not willing to invest in them.

The decay texture of Dogonbadan town is no exception. Today, great construction is taking place in other areas and the decayed textures are becoming dilapidated. However, attention has been paid to the decayed textures of the town in the recent years and the authorities of the town are trying to find a solution to this problem.

Statement of the problem

As a spatial-temporal phenomenon, a city is constructed at a specific point. It develops and grows in space and at each historical period turns its quantitative changes into the required qualitative changes of that period. If these two aspects are not in coordination and alignment with each other and city-time is against city-time, the urban climate and physical conditions lose their efficiency and ability to meet the current and future needs of the residents (Habibi, 1998: 4). Prior to the rapid growth of urbanization, urban spaces and the physical conditions of cities would be formed on the basis of the needs of the citizens and enjoyed optimal coordination. Therefore, in addition to forming the physical shape of the cities, the existing elements of the cities also represented cultural and social values of the residents. With the rapid growth of urbanization caused by domestic and foreign economic changes in the cotemporary age, the country's urban system underwent great transformations which resulted in excessive immigration to cities (Khan Ahmadlou, 1999:1).As a result, urban organization designed plans to control such immigrations. However, the majority of the measures taken by the responsible organizations failed (Shakou'ee, 2004: 410).

Significance of the study

The fundamentals of urban life collapse when the physical conditions of the city lose their function and fail to meet the current and future needs of their residents. This issue, which is the result of the contrast of time and space, is clearly evident in the old textures of Iran and has led to the collapse of urban spaces.

Aiming at removing shortcomings and deficiencies in some of the patterns and models designed for Dogonbadan town, this study attempts to help to theoretically analyze and explain physical urban development theories and organize and revive the central part of the cities. The fast, excessive growth of cities and lack of attention or scant attention paid to old textures, especially the decayed texture of Dogonbadan, has led to the excessive physical development of the city. This leads to negligence of the central city parts and the abandonment of old, decayed textures and ultimately results in the destruction of old textures which contain an area of cultural identity and thoughts of different historical periods. In addition, from a social and cultural perspective, old textures or the central areas of old towns are the epitome of original culture and behaviors of Iranians and mirror the culture and a collection of Iranian local cultures. Therefore, to prevent indiscipline and chaos in old city textures it is necessary to pay attention to changes and logical evolution.

In Dogonbadan town, the collapse of old textures is in an early stage. Therefore, to prevent what has happened in other areas, it is necessary to promote its life.

The factors showing the necessity of paying attention to the old texture of Dogonbadan town are as follows:

The importance of the textures in the physical conditions of cities as the heart of economy: most of the country's old textures are located near structural and principle axes of the city , the market and business areas, and physical and performance decay will sooner or later reach these centers.

lack of coordination of the texture and new needs of the users, inconsistency and lack of proportion of new criteria with the texture's identity, existence of new inappropriate uses in the texture, and the per capita distance of current uses from the standard, acceptable per capita standards.

the importance and necessity and offering services at critical situations: inefficiency and weakness of accessibility and communication networks and lack of public transportation and emergency services in all areas of the texture, extreme shortage of urban equipment such as firefighting teams, emergency centers, rescue sites, etc.

Reduction of the quality of residential units in the texture over time in terms of structure and materials and lack of reconstruction and repair of these residential units.

Review of literature

The early steps to revive old textures of cities should be sought in Western Europe, especially in France, England, because of the commencement of Industrial revolution in these countries (1760-1830) and the subsequent development of industrialization which led to the city's greater experience compared with other countries. In fact, the movement of revival of city centers has started 150 years ago in these countries (Rahnama, 2009: 180-181). In Iran, however, changes in cities started from the dynasty period. In other words, the Industrial

Revolution served as the basis of such transformations in the West by making essential changes in production and social relations and the reconstructions after World War II (Ablaqi 2001: 114). The first attitudes to old textures in Iran were formed in 1971 in the first seminar on restoration of historical buildings and cities where the issue of protection and restoration of cities and buildings was discussed as the factor influential in the development of the country (FarrokhZenouzi, 2001: 7).Important studies have been conducted on the decayed urban texture in Iran and in the world. The following are some of these studies:

Chan and Grass (2008) attempted to identify the concept of sustainable urban design and to investigate required essential factors for improving social sustainability in projects of urban improvement and revitalization. In this research which was conducted in Hong Kong through distributing questionnaires, the opinions of architects, designers, finance directors and local citizens were collected and investigated. The findings of data analysis reveal that the specific features of the plan must be aligned to achieve social sustainability (Chan and Lee, 2008:243).
Geuzey (2009: 27) investigates strategies of improvement and revival of deserted, decayed residential areas in Ankara city. He considers the revival and reconstruction of such areas as spatial strategies to give identity to the residents of such areas and increase the citizen's required equipment.

Besides, in Iran, Falamaki (2001), in his book on reconstruction of historical buildings and cities, investigates theories and characters and studies the evolution of common methods of revival in the section on architecture and association with the environment, from the physical spaces to biological spaces, factors of decay and destruction of historical cities, from single buildings to urban textures and changing its foundation in the architecture section. He concludes that people's culture, manners, and traditions and other factors must be taken into consideration in reviving cities. It does not suffice to merely attempt to improve the physical quality; rather, we should take into account the economy and society of the area under study. In their book on improvement and reconstruction of old urban textures, Habibi et al. (2007) investigate various types of textures and their problems and issues; the history of designing, reconstruction, an improvement of old and decayed textures in Iran; and the issues pertaining to these plans. They conclude that in each type of improvement and reconstruction, objectives, resources and means to achieve the resources must be coordinated with each other, and all facilities must be used with prior planning.

Table 1. Schools of improvement and reconstruction of decayed urban textures

Culturalism	Priority of spiritual needs over material needs: improvement and reconstruction by reviving past cultural values
Progress-orientedness	When reconstructing old cities, nothing is kept but roads: prevalence of bulldozer urban development
Ecological school	Stagnation of the city's old texture caused by social and economic groups and segregations cause by social injustice
Structured-orientedness	Taking into account a coherent whole in urban improvement and reconstruction: paying attention to harmony and cohesion in this process
Functionalism	Improvement and reconstruction must be aligned with the city's economic and functional development
Structuralism	A systemic approach toward the city; improvement and reconstruction of physical-spatial structures in collections and single buildings
Aestheticism	Paying attention to the visual aspect and emphasizing beautification as the only appropriate approach to urban improvement and development
Modernism	Excessive tendency to preserve historical monument to the extent of improvement and reconstruction of dead, non-historical buildings.
Post-Modernism	Mostly think about social relations in the city; stimulating the sense of place; reviving what is of local and specific value
Humanism	Paying attention to people and their participation in improvement and reconstruction of urban spaces; people-oriented interference
Neo-classicism	Paying attention to history and culture, not by imitating the past, rather by updating the buildings

Source: Shama'ee and Poorahmad, 2005: 129-204

The following are some of the most important theories about reconstruction and improvement of decayed urban texture.The conservative theory: Advocates of this theory believe that we must refrain from interfering with the current conditions as much as possible. According to John Ruskin, an ancient building serves as a piece of historical evidence and no attempt must be made to remove the uncoordinated parts, add new parts, or strengthen the unstable, dangerous parts.

The radical theory: advocates of this theory prescribe changing old textures along with protecting valuable cultural monuments to interfere with old urban textures. They consider destruction and reconstruction as the only solution.

The rational theory: the theoretical fundamentals of this group are restoration, revival, and conditional reconstruction of old textures. On the basis of this theory, Leonardo Benevelo, the professor of the University of

Venice elaborates on the different stages of the formation of cities in the history (from the Agricultural Revolution to the Industrial Revolution) and explains how they have been destroyed. He finally concludes that if we intend to protect an old city, we have to achieve a new discipline for managing cities. Benevelo maintains that an ancient city must be protected and restored when a comprehensive plan aiming at improving people's life conditions has been developed (Beigzadeh, 2000: 144). Geddes believed that natural environmental studies are very important in urban planning, especially in improvement and reconstruction. He also believed that in improvement and reconstruction of cities, buildings or urban collections must be aligned and coordinated with spatial and temporal conditions. He stresses that improvement and reconstruction should not be the repetition of the past actions; rather, they should be the continuation and transformation of those measures as it has been the case during history. Of course historical memories and cultural heritage must be preserved. It is necessary to train experts, people, and city authorities in urban improvement and reconstruction. According to Lynch, in the process of urban improvement and reconstruction, it is necessary to make plans with people's participation, do counseling with specialists, and coordinate authorities with people. Attempts must be made to exhibit historical-cultural values of each historical period in spaces and urban collections, and to support open-space museums. In the urban revival theory, this important issue is the revitalization and revival of some parts of urban areas which lack common standards of ordinary urban life (Shama'ee and Poorahmad , 2005: 212-219).

Theoretical framework

Decayed urban texture

Decayed urban texture is an area of the legal confines of the cities which is vulnerable due to physical decay, inappropriate roadway access, inappropriate equipment, services, and vulnerable urban infrastructure. Such textures have low geographical, environmental, and economic value. Due to the poverty of their residents and owners, these textures have not had the chance of automatic reconstruction, and investors are not willing to invest in them (Habibi et al. 2007: 66). In fact, it could be said that problematic (decayed) textures are urban textures where the presence of different factors and elements has reduced the qualitative value of human environment (from physical, functional, environmental, economic, and social aspects). As residential values diminish, reconstruction in the texture is stopped and tendency to emigrate in the residence increases (Jahanshahi, 2003: 18).

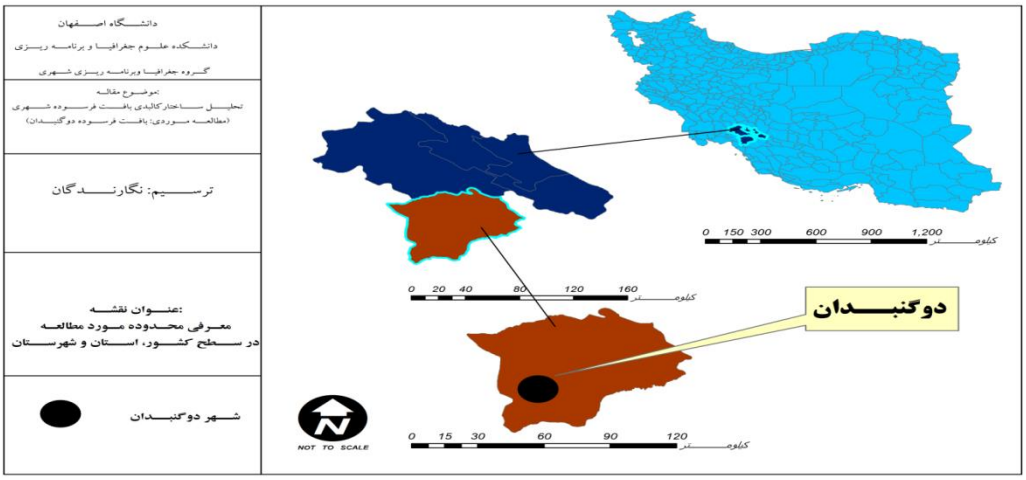
Schools, theories, and models for organizing and reviving old and decayed textures

By employing the sustainable urban development theory, this research attempted to direct the future urban growth and development in appropriate directions and in an intensive and sustainable fashion because the central part and the middle texture of the city could serve as appropriate resources for the future of the city. The study also attempts to identify areas facing shortage of specific uses especially in old and decayed urban textures and to define the intended uses for these areas.

Introduction of the investigated area

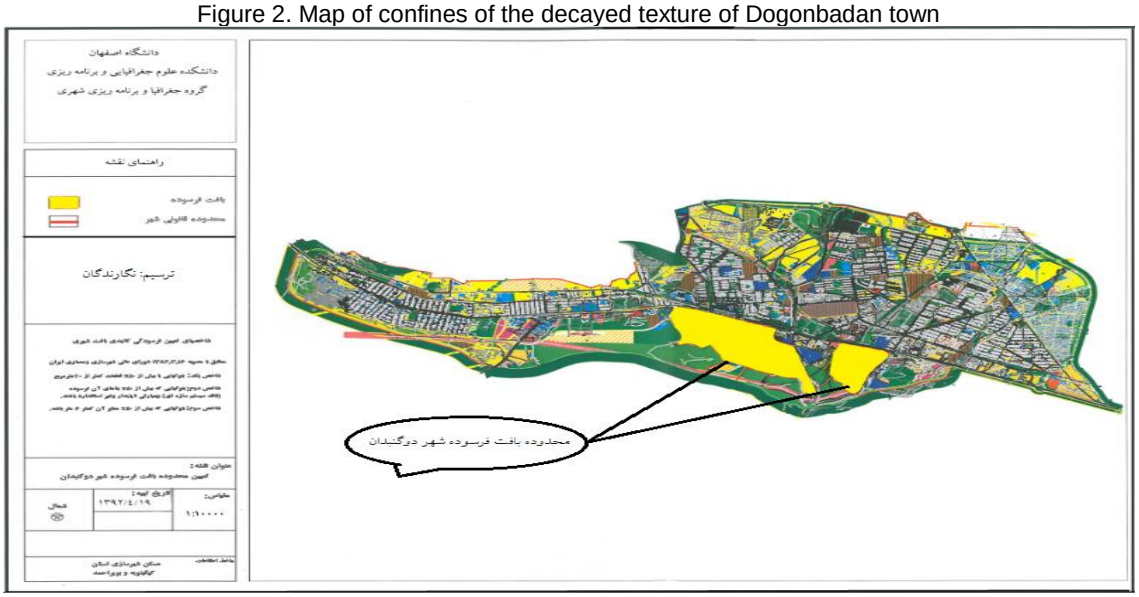
The study investigated the decayed texture of Dogonbadan town. The old texture of this town is a 164-hectare area defined and introduced by the municipality and the Organization of Roads and Urban Development in the central part of the town. This area covers about 9 percent of the urban area of this town (1800 hectares) and contains more than half of the town's traffic (Organization of Roads and Development of Kohkilooyeh and Boyer Ahmad, 2008: 25).

Figure 1. Introduction of the area under study in the country, province and Gachsaran town



Designed by the author

Figure 2. Map of confines of the decayed texture of Dogonbadan town



Designed by the author

Research hypotheses

A hypothesis is a proven guess or speculation which is almost certain and by testing and investigating it we can reach the research objectives. Based on what was mentioned in the previous sections, this research has two hypotheses:

The first hypothesis

It seems that financial inability of the residents of these areas has impeded the implementation of plans related to improvement and reconstruction of the decayed texture.

The second hypothesis

it seems that organization and preservation old the old urban texture requires analysis of the physical structure of the old texture.

METHODOLOGY

This study is an applied research in terms of objectives, and a descriptive-analytical one in terms of methodology. In order to collect the required data the study employed documentary investigations and field studies such as interviews and the use of questionnaires. Considering the research variables, the questionnaire contained 36 items. The first 7 items (1-7) were general and social, 6 of the items (8-13) were economic, and 23 of them (14-36) were physical-spatial questions. The study tests the formal validity and content validity of the questionnaires. For this purpose, the questionnaires are tested in terms of form and content by some professors and specialists of urban planning (especially urban decay). Besides, opinions of students and researchers of fields related to urban planning and urban decay were used too. Some of the questionnaire's items were corrected or deleted and some items were added to it. The study employed Cronbach alpha and SPSS program to determine the reliability of questionnaires. In so doing, 55 questionnaires were studied and the Cronbach's alpha for all questionnaires was measured at 0.8091. Considering the fact that the Cronbach's alpha above 70 percent shows high reliability of questionnaires (Mo'meni, 2007: 211), the questionnaires of this study have high reliability. The population comprises the residents of the decayed texture of Dogonbadan town. The population of this texture was estimated to be about 45246 individuals in 2011 (Municipality of Dogonbadan, 2009). In order to calculate the sample size of the respondents the Cochran method was employed. According to this method, 380 individuals (Eq. 1) were selected as the sample. In order to achieve better results, the sample size needed to increase up to 400 individuals. In order to select the sample in the population the simple random sampling was employed.

$$n = \frac{\frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}}{1+\frac{1}{45246}(\frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}-1)} = \frac{384}{1.00} = 380$$

After gaining an understanding of the current situation and collecting the required information, this information was analyzed by SPSS and Excel programs with emphasis on their place-space nature. And in order to draw the maps GIS Arc was used.

Hypothesis testing

The first hypothesis: It seems that financial inability of the residents of these areas has impeded the implementation of plans related to improvement and reconstruction of the decayed texture.

Pearson test: The Pearson test was employed to measure the variables and test the above hypotheses because the levels of measurement of independent and dependent variables is (interval-interval). According to the results of this test, the null hypothesis is rejected because Sig (0.000) is lower than the intended alpha (0.05). Also, the correlation coefficient is 0.289 which indicates direct and relatively high correlation. Therefore, our hypothesis in this regard is proven. Therefore, it could be concluded that there is a correlation between financial weakness of the residents of the decayed texture of Dogonbadan town and failure to implement improvement and reconstruction plans of urban decay. Table () illustrates the test results.

Table 2. Results of coefficient of Pearson test between the two variables of amount of income and type of participation

dependent Independent variable	If the decayed textures are reconstructed, how would you participate in this process (interval)	
Amount of income (interval)	Pearson Correlation Coefficient	(**)0/289
	Significance level	0/000
	Sum	396

Correlation is significant at the 0.01 level (2-tailed. **

Source: field studies

Regression test: This study employed the simple linear repression test to better analyze the relation between the two variables of financial ability of the residents and the implementation of improvement and reconstruction of urban decay. As shown in table (3) and table (4), the results the analysis of regression variance show that there is a significant relation between lack of financial ability of the residents and the residents' participation in implementation of improvement and reconstruction of decayed urban texture of Dogonbadan town at the high level of 95 percent and the significance degree of (Sig=0.0000). this test shows that the correlation

between the variable of lack of financial ability of the residents and the variable related to the residents' participation is 0.237 in total, which is considered as a direct correlation with medium intensity. Besides, in total, these variables could account for 5.4 percent of the changes (variance) of the dependent variable and other changes of the dependent variable are accounted for by another unknown factor.

Table 3.Accounting for changes dependent on financial ability and citizens' participation in improvement and reconstruction of decayed texture

dependent Independent variable	If the decayed textures are reconstructed, how would you participate in this process (interval)	
Amount of income (interval)	Pearson Correlation Coefficient	(**)0/289
	Significance level	0/000
	Sum	396

Source: research findings

Table 4. Variance analysis of the model of regression between the amount of citizens' participation and their financial ability

Different significance test	Sum of squares	Degree of freedom	Mean of squares	Test statistics	Significance level
Regression effect	26.042	1	26.042	23.513	0.000[a]
remainder	436.389	394	1.108		
sum	462.432	395			

Source: research findings

The second hypothesis

it seems that organization and preservation old the old urban texture requires analysis of the physical structure of the old texture.

For this hypothesis, several variables were investigated.

It seems that the building quality and form change have a relation to the physical transformation of the decayed texture of Dogonbadan town. The univariate Chi square test was employed to investigate the above hypothesis.

Table 5. Output of univariate Chi square for investigating building quality

Index	Newly built	Maintainable	Repaired	Dilapidated	Degree of freedom	Chi square	Significance level
Building quality	17	58	94	231	3	258.500	0.000

Source: field studies

As shown by the above table, of the 400 studies residential units in the decayed texture of Dogonbadan town, 231 were dilapidated, 94 were repaired, 58 were maintainable, and 17 were newly built. The amount of univariate Chi square with the degree of freedom of 3 equals 258.500 with the significance level 0.0000, which indicate a totally significant relation.

It seems that the type of building materials and changes have a relation to form changes and physical transformation of the decayed texture of Dogonbadan town.

Table 6. Output of univariate Chi square for investigating the type of building construction

Index	Newly built	Maintainable	Repaired	Dilapidated	Degree of freedom	Chi square	Significance level
Building quality	17	58	94	231	3	258.500	0.000

Source: field studies

According to the above table, of the 400 studies residential units located in the decayed texture of Dogonbadan town, 217 units were made of stone and cement, 79 were made of the completely non-resistant stone and chalk materials, 48 were made of joist and blocks, and 44 were made of bricks and iron. The uivariate Chi square with freedom degree of 4 equaled 321.425 with the significance level 0.000 which indicates a completely significant relation. Therefore, our second hypothesis is confirmed, too.

CONCLUSIONS AND SUGGESTIONS

CONCLUSIONS

One of the instances of current changes in Iranian cities is the physical, social, and economic decline of old parts and decayed, problematic urban textures within cities which are faced with numerous problems due to internal and external factors and have become old and decayed over time. The decay of urban textures over time must be reinvestigated in the process of the country's urbanization and urban development.

In the hypothesis testing section, it was shown that there is a significant relation between lack of financial ability of the residents and failure to implement the plans of improvement and reconstruction of decayed texture. As long as the financial problems of the residents of such areas are not solved and new strategies are not adopted to provide the financial resources by considering the benefits of the residents, we could not expect the improvement of reconstruction of decayed textures in this town. (Correlation coefficient -0.205) and significance level (0.000) and the analysis of the physical structure of the old texture influence the organizations and protection of old and decayed texture.

the quality of building is one of the factors influential in changing the form and morphology and physical transformation of the decayed texture of Dogonbadan (with freedom degree of 3, Chi square of 258.500, and significance level of 0.000). Also, the materials used in the construction of the buildings is one of the factors influential in the changes in the form and morphology and physical transformation of the decayed texture of Dogonbadan (with freedom degree of 4, Chi square of 321.425, and significance level of 0.000). Regarding the processes effective in changing the form and morphology and the physical transformation of the town's decayed texture, besides what was confirmed through the hypothesis testing, the findings reveal that the decayed texture of the town is transformed over time by some other processes and undergoes physical decay. These processes are briefly listed as follows:

a. diminution in the sense of belonging to this texture especially among youths and the non-native immigrants of the texture.
b. diminution of the importance of environments for a social and cultural perspective.
c. high construction costs especially in the center of the texture.
d. the contrast of the old and new textures which has led to the heterogeneity of the town's appearance.
e. the low price and value of land in the majority of the town's decayed texture.

B. Offering functional strategies and suggestions to be carried out in the decayed area under study

Developing improvement and reconstruction plans for the town's decayed texture. The interest of the residents in social participation in developing such plans helps the success of the plans and projects.

Existence of open spaces around the decayed texture is a potential for creating landscapes, cultural, sports, and recreational centers, parking lots, etc. in the texture facing the extreme shortage of such facilities. This will help the improvement and reconstruction of the decayed texture of Dogonbadan town, too.

The relatively young population of the texture could serve as strong support for its improvement and reconstruction, especially because the young population provides an opportunity to improve the culture and help the process of urban development in this texture. Also, attempts must be made to establish opportunities for the employment of unemployed people – most of whom are young people- in the surrounding areas.

Fostering diversity in the existing facilities and services to satisfy employees and attract the rich to the texture and change people's negative attitude to living in this part of the city.

Paying attention to the cooperation of different people and using different opinions in order to improve and reconstruct the town's decayed texture.

Taking into account tax discounts and charges with the purpose of encouraging people to obey the law in the process of construction in the decayed texture.

Creating various supportive mechanisms and providing various investment opportunities in order to attract investors to the texture considering the texture's ability to return the capital.

Establishing an institution responsible for decayed urban textures in an independent way is a strong point which could greatly aid the improvement and reconstruction of the decayed textures.

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