

IDENTIFYING POTENTIALS AND DEFICITS OF THE WORN OUT TEXTURES TO SUSTAINABLE URBAN DEVELOPMENT (CASE STUDY: THE WORN OUT TEXTURES OF AMOL)

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Abstract. This research aims to identify potentials and deficiencies of the worn out textures of Amol. It seeks to increase movement and improve the current situation by developing this area, which it leads to progress in the surroundings. So, identifying the weaknesses, strengths and potentials of the worn out textures as well as providing constructive strategies for organizing the neighborhoods not reduce inefficiency and inability of the textures, but can lead to city integration in terms of access to facilities and organizing urban sustainable development with proper supervision of executive agencies and educating culture for public participation. The results of expert and public questionnaires were used in SWOT technique and provided results based on public participation, housing and economic, environmental, and social factors.

Keywords: the worn out texture, stability, organizing, quality of life, SWOT

1. Introduction

Rehabilitation, modernization and revitalization of old urban textures are the major challenges facing urban management in developing countries, including our country (Parviz Varjavand, Internet website). The damaged urban areas are known by three features: microlithic, access problems and instability (Ghalibaf, 2007: 3). Like other old cities of the country, Amol in Mazandaran province, has a deteriorated core. According to the latest population and housing census in 2011 (Statistical Yearbook of Mazandaran, 2011), its population is 222,066. With 67831 households and household dimension of 3.3, Amol has located in Mazandaran Plain, in both sides of Haraz River with attitude of 76 m, in distance of 70 km from west of Sari, the province capital, 18 km south of the Caspian Sea, 6 km north of the Alborz Mountain range and 180 km northeast of Tehran. According to the obtained graph from Amol Bureau of meteorology –which it is a synoptic station- it can be found that on 2011, average temperature and annual atmospheric raining were 13.3 °C and 635 mm in Amol respectively; while its average relative humidity is 80%. The worn out textures have 300 years old in Amol that have been completely surrounded by the conducted renovations on the first and second Pahlavi era (Consulting Engineers of Research and Development, 2006). With an area of approximately 404 hectares, population of 20073 people, 5282 households and household size of 8.3 (Statistical Yearbook of Mazandaran, 2011), the textures locate in geometric center of the city, like other historical arteries in spatial viewpoint. They are surrounded by contemporary sectors of urban textures and main urban arteries (17 Shahrivar and Enqelab Streets in south, Taleb Amoli St. in west, Shahid Beheshti St. in east and the worn out texture area of Amol in north). It has 14 neighborhoods with the whole area of 404 hectares. A large part of buildings in the 14 districts of Amol worn out texture have no enough strength and stability, due to many reasons including age, using non-durable materials and lack of considering proper methods of construction. Totally, in terms of microlithic and impermeable items, indices of worn out textures can be identified in parameters such as lack of emergency relief network in some areas, lack of fitting width of passages, public spaces and recreational deficiency, low economic level of many families, lack of regulatory and participatory units, the ruined houses and mismatch in visual appearance. As a result, by considering the mentioned issues,

this range has been located in the burnout cycle and decay. Therefore, by considering the above-mentioned factors and central situation of the structure in the city that can have a huge impact on development or lack of development of the city, we looked to identify the potential and deficiencies of the worn out texture and provide new strategies for sustainable urban development.

2. Research Theoretical Foundations

Semi or completely derelict buildings, poor housing and declining socio-economic qualities can be mentioned as effects of urban worn out textures, which the processes wear out cities internally. However, following changes in lifestyle and current settlements, especially in the wake of changing needs to various services and needs resulting from changes over time, living in such urban textures will be forced with the processes, due to comply with new conditions. In general, the worn out urban textures can be defined as follows: “the worn out urban texture refers to urban legal limits that have low place, economic and environmental value due to their physical exhaustion. Several factors involve in their occurrence and formation such as physical, performance, environmental, socio-economic and cultural factors. The destructive impact of each factor will reduce quality and quantity of environmental values in areas of city. Renovation efforts will be stopped in such regions, due to decline habitual-performance values. As a result, there are increased the desire to no change and wear out and inefficiency state is predominate (Matoof & Khodai, 2008). According to the approved regulations by Supreme Council of Civilization and Architecture, indices of diagnosing the worn out textures include: 1) instability that shows lack of suitable structural system and instability of buildings; 2) impenetrability that represents lack of proper access and less passages with sufficient width to move the mounted motion (more than 6 m); 3) microlithic that indicates density of textures and multiplicity of small parts (land separation plaques); 4) urban blocks are bases to identify the worn out textures; in other words, any urban block that 50% of its parts are covered by these criteria are considered as the worn out textures; 5) unstable block is a block that at least 50% of its buildings are unstable, due to lack of suitable structural system and non-compliance with technical standards; 6) impermeable block is a block that at least 50% of its passage is less than 6 m. In addition to resolve their problems that is considered as a necessary matter, we can take steps by identifying potentials and shortcomings of the worn out textures and provide new strategies for sustainable urban development. It should also be noted that the word of “development” in sustainable urban development means a process that happens stability during it, but stability in “urban sustainability” is a collection of situations that lasts over time (Laghai & Mohammadzadeh, 1999). The final goal is that we can achieve urban sustainability, in addition to participate public, private and government sectors as well as municipalities that play a special role to in this process.

3. Methodology

This research is applicable-developmental objectively; while it is a combination of descriptive, documentary and solidarity methods in terms of method and nature. In this study, we will answer two questions, by attitude of changing land use and renovating the worn out textures tissues: 1) What are the main problems to settle the worn out textures in Amol, in order to achieve sustainable development? 2) What are suitable solutions to achieve optimal sustainable urban development in the worn out textures of Amol? The research objectives are the ultimate purposes of the researcher in the research process that can be divided into primary and secondary objectives in line with the research importance. In the present research, we consider the

following goals: the research main objective is to provide strategies for organizing the worn out textures in neighborhoods of Amol, in order to achieve sustainable urban development. Recognizing exhaustion aspects of the worn out textures in Amol, identifying factors contributing to burnout in the textures, providing solutions for sustainable urban development and emphasizing on public participation can be considered as the research secondary objectives. The research hypotheses are as follows: 1) lack of appropriate access in this texture is related with problems the worn out textures in Amol; 2) organizing the worn out textures in Amol by emphasizing on public participation is very effective. Library methods were used to

collect data. In the first steps of collecting data on library methods included using books, journals, the printed articles in field of the research, the related theses in universities and scientific centers and scientific resources in the Internet. Tables, maps and designs were used to assess and analyze the research results. Due to use the expert and public questionnaires, its population is divided into two categories: 1) heads of households in the area (n= 5282, according to equation 1); the related experts inn Renovation and Development Organization and Cultural Heritage Administration (n= 30).

$$\frac{\text{Total population in the worn out textures on 2011}}{\text{Family dimension}} = \frac{20073}{3.8} = 5282 \text{ (number of families in texture)} \quad (1)$$

For heads of households, n= 304 in the obtained sample rate through the Cochran Formula (Eq. 2).

$$n = \frac{z^2 pq}{d^2} \quad 304 = \frac{1.96^2 (0.7)(0.3)}{(0.005)^2} \quad (2)$$

$$1 + \frac{l}{N} \left(\frac{z^2 pq}{d^2} - 1 \right) \quad 1 + \frac{1}{5282} \left(\frac{1.96^2 (0.7)(0.3)}{(0.005)^2} - 1 \right)$$

4. The Studied Area

Like other old cities of the country, Amol in Mazandaran province, has a deteriorated core. According to the latest population and housing census in 2011 (Statistical Yearbook of Mazandaran, 2011), its population is 222,066. With 67831 households and household dimension of 3.3, Amol has located in Mazandaran Plain, in both sides of Haraz River with attitude of 76 m, in distance of 70 km from west of Sari, the province capital, 18 km south of the Caspian Sea, 6 km north of the Alborz Mountain range and 180 km northeast of Tehran. The worn out textures have 300 years old in Amol that have been completely surrounded by the conducted renovations on the first and second Pahlavi era (Consulting Engineers of Research and Development, 2006). With an area of approximately 404 hectares, population of 20073 people, 5282 households and household size of 8.3 (Statistical Yearbook of Mazandaran, 2011), the textures locate in geometric center of the city, like other historical arteries in spatial viewpoint. Space of housing units is as open system that is influenced by climatic and cultural characteristics of the city's position. The houses' roofs are sloped and clay and windows and doors are wooden. In terms of building, almost half of residential area is less than 200 square meters and in terms of number of floors, 1 and 2 storey buildings constitute the highest percentage. The types of used materials include the brick and wooden supporting walls and age of most of buildings is between 30 to 45 years old. In terms of communication networks, its streets and passages are three meters wide (Takht-e-Poolad Consulting Engineers, 2010; the researcher field surveys). Some effects of worn out in old urban areas can be the exhaustion in physical, social, economic and environmental aspects of the regions, which all of them have joined hands that most of the buildings are being demolished and

they are unsecured and uninhabitable, in terms of residential viewpoint. They have a complex and tangled network of narrow alleyways, traffic problems, exhaustion and failure in installations and urban facilities. Over the years, they have not lost their indigenous population, but they have become a location for living low-income immigrants, non-native residents and rural migrants and even foreign nationals such as Afghans, who were looking for the cheapest urban areas for resident (Soltanzadeh, 2009: 3).

5. Results

After distributing questionnaires, the results of expert and public questionnaires were used in SWOT technique and there was formed a SWOT matrix. The purpose of SWOT matrix and determining aggressive, competitive, conservative and defensive strategies are stated as the following:

1. How we can utilize maximum opportunities from strengths?
2. How we can eliminate or reduce effects of threats using the strengths?
3. How we can change weaknesses into strengths or reduce severity of the weaknesses using opportunities?
4. How we can reduce or remove effects of threats by reducing the weaknesses?

In fact, we can take steps to improve conditions of the worn out textures and sustainable urban development by identifying potentials and deficiencies of the worn out textures and providing strategies. There were presented results of SWOT analysis based on popular participation, housing and economic, environmental, social and physical factors (table 1).

Table 1. ST, SO, WO and WT strategies for neighborhoods of the worn out textures in Amol

SO strategy	SO ₁ : using natural potentials of neighborhood to design and create public and cultural spaces
	SO ₂ : holding social meetings to attract eager people to participation
	SO ₃ : attracting private capital, due to high percentage of private property
	SO ₄ : improving business environment by focusing on the region economic activities
	SO ₅ : promoting and strengthening the sense of belonging to a place among residents by creating symbols and ... in different parts of neighborhoods, especially at its center
	SO ₆ : optimal using neighborhood mosque as a cultural and information institution as well as social interactions
	SO ₇ : full implementation of urban regulations for optimal intervention in the worn out texture and maximize proper using monuments to keep neighborhood originality
ST strategy	ST ₁ : allocating spaces for parking by considering the land suitable price
	ST ₂ : job creation by emphasizing economic activities in neighborhood to reduce inactive population

	ST ₃ : recruiting eager people in renovation to improve performance of improvement councils	
	ST ₄ : using moorlands to create green space, proper perspective and cultural and recreational spaces	
	ST ₅ : improving communication network and narrow passages and geometric development of the texture for better access to the main street	
	ST ₆ : considering long living history of people to conduct actions for renovating the texture	
	ST ₇ : considering private property to restore old buildings	
	ST ₈ : considering long-term and low interest loans for low-income residents	
	ST ₉ : establishing the affiliated improvement and modernization branches on neighborhood centers	
	ST ₁₀ : approving a comprehensive law on discount operating and engineering costs in the field of worn out texture	
	WO strategy	WO ₁ : aligning constructions with climate and historical texture of the neighborhood
		WO ₂ : suitable space distribution with local uses and services
WO ₃ : determining fines and regulations to obligate owners of the abandoned and inefficient spaces for renovation		
WO ₄ : determining appropriate conditions and facilities for allocation to owners of lands to the required uses		
WO ₅ : attracting private capitals to create tourism spaces and job creation		
WO ₆ : providing favorable conditions to reduce social harms by participation of the residents		
WT strategy	WT ₁ : preventing distribution of drugs in neighborhood and reducing its social damages	
	WT ₂ : changing and improving sport, health and cultural usage per capita	
	WT ₃ : developing incentive programs to attract private investors in renovation and improvement affairs	
	WT ₄ : rehabilitating the ruined and barren spaces and convert them to appropriate land uses and public open spaces to right attract people	
	WT ₅ : using indigenous forces to participate in renovation and modernization	
	WT ₆ : establishing supportive funds to bring order to financial situation of residents to renovate their residences and avoid more worn out	
	WT ₇ : improving neighborhood structure according to modern applications and required for residents	
	WT ₈ : upgrading and widening passages network to increase public safety	
	WT ₉ : more stringent implementation of environmental laws to improve public health situation of neighborhoods	

After recognizing all weaknesses, strengths, opportunities and threats, there were prioritized internal and external factors in the

textures, which they are summarized in Table 2 for various neighborhoods.

Table 2. Summing up the results of internal and external evaluation of performance in the neighborhoods of the worn out textures in Amol

Feature	With fundamental strengths	With fundamental weakness	With fundamental opportunity	With fundamental threat
Neighborhood				
Aspehkala		*		*
Sabzeh Meidan	*			*
Ski Mahaleh		*		*
Gorji Mahaleh		*		*
Kardgar Mahaleh	*		*	
Gol Bagh Mahaleh	*		*	
Mashai Mahaleh	*		*	
Shahandasht Mahaleh	*		*	
Niaki Mahaleh	*			*
Ghadi Mahaleh		*	*	
Paein Bazar	*		*	
Kasha Mahaleh		*		*
Chaksar Mahaleh		*	*	
Old town		*		*

6. Conclusion

According the output of the expert questionnaires and Table of summing up results of internal and external assessment performance on the worn out textures in Amol as well as results of public questionnaire, there were proposed strategies for organizing the worn out neighborhoods in Amol. The suggestions were proposed to organize the textures for maintaining their skeletal and body and improve level of serving. They were suggested according to the highest ratings in both internal and external assessments in each neighborhood and the identified priority areas that were at the completion of field surveys of areas. The suggested items are presented as follows:

- Widening Tabarsi Blvd. in Ghadi Mahaleh and considering a space for public green space and sport equipments as a neighborhood park between Shrine of Imamzaedh Abdullah and Taleb Amoli Blvd in south side of Tabarsi Blvd;

- Plan of creating the mixed-driven commercial, office and residential axis along the Tabarsi Blvd in Chaksar, Paein Bazar, Ghadi Mahaleh and Kashi Mahaleh neighborhoods;
- Establishing fire stations in Chaksar Mahaleh between Mir Haydar Alley and Shahid Beheshti St. with an area of approximately 350 square meters on the north side of Tabarsi Blvd because of its proper widening;
- Widening sidewalks and streets less than five meters wide, in order to facilitate standardization of services and improve the textures of neighborhoods and paved roads (it should be noted that in some areas, due to high value historical buildings, there is not possibility of widening five meters completely. For this reason, in the areas, access to pedestrian and roads is considered as priority -to preserve and restore historical identity- that includes widening 3-5 meters);
- Allocating spaces to construct parking lots, in order to reduce and ease traffic in the neighborhoods;
- Considering spaces for medical, sporting, cultural, recreational and services applications to improve well-being of residents and enhance the quality of neighborhoods;

- Allocating pause and living spaces in areas as community center;
- Considering areas in Ghadi Mahaleh, Aspehkala, Ski Mahaleh and the old town to revive the ancient gates by emulating Amol map in the Qajar period and four principal gateways into the city

In addition to the above-mentioned structure suggestions in neighborhoods, there were provided strategies to recreate the worn out textures in Amol with the approach of urban sustainable development, depending on physical characteristics and requirements of different neighborhoods as well as inclusion of social, economic, environmental and housing conditions and increasing public participation. According to Figure 2 and higher weight in evaluation matrices as well as the author surveys, top priorities are as follows:

SO₃: attracting private capital, due to high percentage of private property

SO₅: promoting and strengthening the sense of belonging to a place among residents by creating symbols and ... in different parts of neighborhoods, especially at its center

SO₆: optimal using neighborhood mosque as a cultural and information institution as well as social interactions

ST₃: recruiting eager people in renovation to improve performance of improvement councils

ST₆: considering long living history of people to conduct actions for renovating the texture

ST₇: considering private property to restore old buildings

ST₈: considering long-term and low interest loans for low-income residents

ST₉: establishing the affiliated improvement and modernization branches on neighborhood centers

WO₃: determining fines and regulations to obligate owners of the abandoned and inefficient spaces for renovation

WO₄: determining appropriate conditions and facilities for allocation to owners of lands to the required uses

WO₅: attracting private capitals to create tourism spaces and job creation

WT₃: developing incentive programs to attract private investors in renovation and improvement affairs

WT₄: rehabilitating the ruined and barren spaces and convert them to appropriate land uses and public open spaces to right attract people

WT₅: using indigenous forces to participate in renovation and modernization

WT₆: establishing supportive funds to bring order to financial situation of residents to renovate their residences and avoid more worn out

WT₇: improving neighborhood structure according to modern applications and required for residents

7. Suggestions for Future Studies

As the research was conducted in field of organizing the worn out textures with sustainable development approach and as there are many measurement tools for this field, the following items are proposed for the future researchers:

- Examining factors affecting to increase public participation in the neighborhoods to organize the worn out textures using structural equation modeling technique;
- Examining the role of media in organizing the worn out textures with approach of information and increase public participation;
- Examining the role and weight of self-awareness, innovation and performance limitations in organizing the worn out textures with sustainable development approach;
- Examining performance of the Improvement and Modernization Organization to organize the worn out textures in Amol, in terms of land trial

References

1. Consulting Engineers of Research and Development: Tehran. *The Detailed Design of Amol. Mazandaran Department of Housing and Urban Development*. Housing and Urban Development Office of Mazandaran, 2006.
2. Ghalibaf, MB.: *It was announced in Tehran Council: modernization of 56 worn on neighborhoods in agenda of the municipality*. Hamshahri Newspaper. Wednesday, June13, 2007. 15 (4291).
3. Laghaei, HA., Mohammadzadeh, H.: *Introduction to sustainable urban development and the role of urban planning* (No. 6). Tehran. Journal of Fine Arts. College of Fine Arts. Tehran University, 1999.
4. Matoof, Sh., Khodaei, Z.: *Examining intervention methods if the relevant organizations on renovation and improvement of urban worn out areas (Case study: Kashmar)*. Mashhad. Proceedings of the First National Conference on Rehabilitation and Renovation Urban Worn Out Textures. 2008. Vol. 1, p. 56-63.
5. Soltanzadeh, V.: *Examining factors affecting public participation in the process of reviving the worn out textures in Tabriz*. MSc Thesis. Tabriz University, 2009.
6. Takht-e-Poolad Consulting Engineers: *Project of settling, modernizing and rehabilitating the worn out textures of Amol. Mother Company of Civil and Urban Development*. Ministry of Housing and Urban Development. Reports of levels 1, 2, 3, 2010.
7. Varjavand P.: *Breaking urban worn out textures. Iran Civil and Urban Upgrading. Quoted by the Newspaper of Industry World*. 2007. P. 26.