

**EVALUATION OF TOWNSCAPE
IN SPATIAL INFORMATION SYSTEMS
THROUGHOUT URBAN CONSERVATION APPLICATIONS**

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KEY WORDS: urban planning, urban conservation, townscape, spatial information systems

ABSTRACT:

As a profession urban conservation constitute the studies that preserve historical heritage on the scale and level of urban space; facilitate the current uses; evaluate the case within the contemporary approach on the urban system. Context of this paper is defining Spatial Information Systems with uses of townscape analysis and remodeling of urban historic quarters. The aim is evaluation of visual potential, preservation of architectural heritage, reconstruction of architectural and urban characteristics. In the study especially Computer Based Design (CAD) systems are used to get the facilities of improving information technology widespread through the urban conservation. By the means of CAD it is tried to create accurate, reliable and accessible spatial database. Method through the study is townscape analyzing, developing proposals to townscape and remodeling and visualization of the site by the help of computer-based systems.

To reveal potential effect of townscape main indicators are legibility, permeability and continuity of visual quality. Then objectives of study that highlights the townscape preservation, are:

- Ensuring legible environment,
- Providing efficient urban circulation in case of permeability,
- Improving visual quality by preserving, repairing and reconstruction. To get these objectives in the process of urban conservation as a tool computer based systems make the applications more effective and reliable.

Spatial information systems facilitate the application on arrangement on third dimension and redesigning of townscape. But as the context of this study that deal with townscape only the CAD (Computer Aided Design) are focused on and this system is considered with its detailed applications. To define the morphological structure of urban historic model and render spatial simulation is created.

As it is mentioned in the study, improving information technology makes the applications of urban conservation as well as many profession works on spatial context, more integrated on computer based systems well-defined representations and interactive design process.

1 SPATIAL INFORMATION SYSTEMS BASED TOWNSCAPE ANALYSIS

Townscape is the physical environment that is perceived on the third dimension of urban space. "it stands for something more than the complex of built and inbuilt spaces that compose the urban landscape, the urban environment and genius loci." (Burke 1976)

"The maintenance of the visual identity and continuity of an historic quarter's physical character is critically dependent on the preservation and, where necessary, the rehabilitation of the quarter's historic fabric wherever possible." (Tiesdell 1996) So design parameters should be defined to preserve spatial and architectural characteristics on urban conservation implementation. On the process of urban conservation –documentation, analysis, design or planning, rehabilitation and control- evaluation of townscape is one of the design criteria. Unfortunately townscape effects are being neglected because of the documentation difficulties. And also more time and work is needed to survey on third dimension on the huge scale. As an architectural sub-discipline "Restoration" that deals with third dimension studies on scale of a building. However architectural heritage should also be evaluated with surrounding as a whole.

In this study it is tried to get the facilities of improving information technology widespread through the urban conservation; use accurate, reliable and accessible spatial information system databases; achieve these in the design applications of urban conservation. Technology that urban conservation uses may be defined as spatial information systems as well as photogrammetric technologies that are improved for surveying and documentation. Also all these technologies may response various aerial sizes and scales. Research methodology on this case study is townscape analysing, proposing townscape restoration and modelling and visualization of the site by the means of computer-based systems.

2 A CASE STUDY IN EVALUATION OF HISTORIC QUARTER'S TOWNSCAPE BASED ON SPATIAL INFORMATION SYSTEMS, ZEYREK NEIGHBOURHOOD

Zeyrek is one of the few settlements in Istanbul where the original settlement pattern has been preserved. This neighbourhood is situated at the north slopes of the Historic Peninsula, viewing Golden Horn. The monumental buildings and civil architecture of Zeyrek all bearing importance from historical, aesthetic and architectural perspectives, are such that this area has been included in the List of World Heritage Sites. Most important architectural heritage is Zeyrek Mosque that had been the Church of St. Pantokrator in the Byzantium Period. So this diversity on cultural layers is reflected on urban space. Urban pattern of Zeyrek may be defined repetition of traditional Turkish House's architectural characteristics.

First documentation studies of Urban Conservation Implementation started in 1968. Zeyrek historic quarter was designated as a "conservation area" in 1975. With the support of UNESCO in 1983 Istanbul, including the site was inscribed to the World Heritage List. First Urban Conservation Implementation Project was prepared in 1995. Other project was prepared in 1995 and was not approved by the "Istanbul (no.1) Board of Protection for Cultural and Natural Assets". Last study for Zeyrek neighbourhood was carried out in 1999 and this paper is based on this study. (N. Z. Gülersoy, A. Tezer, R. Yiğiter, 2001)

Aim of this study is the evaluation visual potential and reconstruction of architectural and urban characteristics in Zeyrek neighbourhood. Objectives of study that highlight the townscape preservation, are:

- Ensuring legible environment,
- Providing efficient urban circulation in case of permeability,
- Improving visual quality by preserving, repairing and reconstruction.

2.1 DOCUMENTATION ON THIRD DIMENSION

First step of the study is documentation of data that is taken from the chosen historic quarter's townscape characteristics. Before all else building proportions are defined on the computer aided design (CAD) in the scale of 1/500. Then in the scale of 1/200 detailed data that achieves colour, material and texture elements are modelled. (fig. 1) To visualize the modelling the photographs are used in Photoshop.

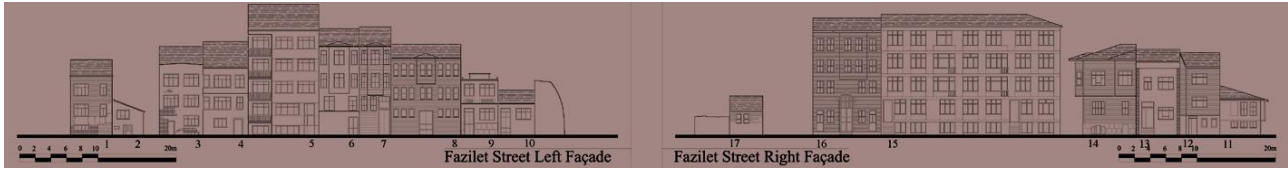


Fig. 1: Drawing form Existing situation of Fazilet Street

2.2 MODELLING ON THIRD DIMENSION

Firstly building masses are modelled to evaluate proportion and scale of townscape. Then details are covered that include façade elements on defined perspectives. All these implementations are achieved on CAD system. Photographs and sketches renders colour, materials and texture characteristics on modelling system to visualize the scene. To create more photo-realistic view Photoshop is used as well as CAD systems.

2.3 ANALYZING OF TOWNSCAPE

Townscape analysis is defining the parameters that constitute perceived and survived urban space on the reflection of third dimension. Main parameters that make townscape legible are proportion, scale, form, occupancy and borders of uses, as the other definition ownership that comes from origins or urban space.

Privacy level influences the formation of urban pattern and this phenomenon explains the reflection between traditional urban life and changes on socio-cultural structure. The borders of this formation occur ownership. In this context on the street pattern segregation of public and individual uses, sizes of lots and buildings, distances from the street axes are the main parameters on this analysis.

To analyse story heights on two-dimensional plans neglects the differentiations on own building heights. When height analysis carried on three-dimensional figures eave and roof levels are easily experienced. In this manner proposed silhouette may effectively evaluate the structural action on existing silhouette. There are mostly three story buildings in Fazilet Street. So the eave level should be proposed on this level.

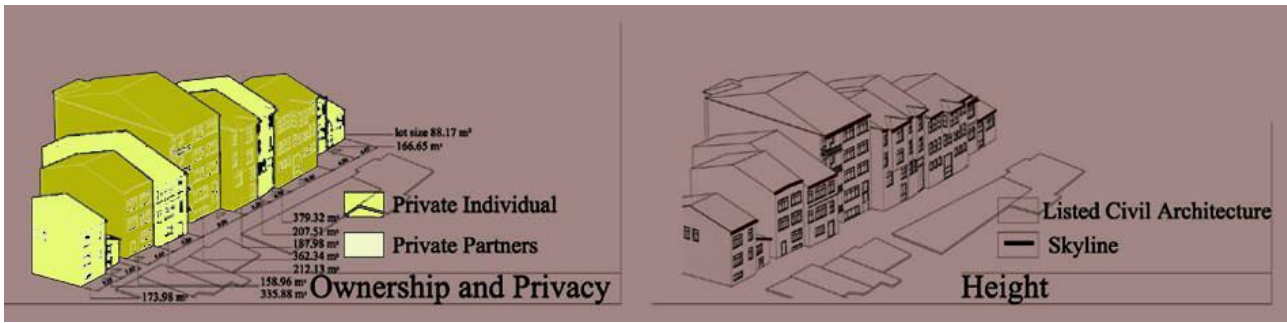


Fig. 2: Ownership-Privacy and Height Analysis of the left Façade of Fazilet Street

Building form cannot be defined without the effects of holes on the façade. Because voids on the façade can make urban space be perceived. So void analysis should be examined with analysis of mass on various perspectives. On the case area, these analysis' highlights, the voids' and windows' origins. In traditional buildings there is a typical and unique proportions. But in new buildings the sizes are getting bigger.



Fig. 3: Mass and Void Analysis of the left Façade of Fazilet Street

Main change on historic townscape is the change on building and its component's materials. Careless changes on component of building as well as building material influence the townscape in less visual appropriate manner. So material analysis should be examined with joinery, plastering and roofing tiles. In Fazilet Street there are actually more changes on joinery and plastering. Timber houses may be plastered with concrete or joineries may be changed with steel or aluminium ones instead of timber.

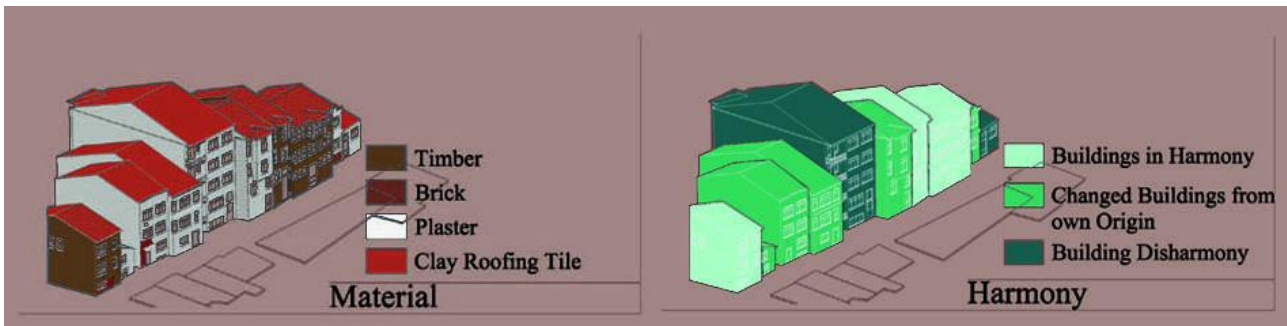


Fig. 4: Material and Harmony Analysis of the left Façade of Fazilet Street

After all these analysis, existing situation of townscape is evaluated on historic quarter. But another important parameter is harmony that may be defined as the relations between origin and perceived perspective of urban space. By the help of harmony analysis the changes on proportion, scale, material, form, occupancy and ownership and the effects on existing townscape are achieved. In the case area mostly similar with Zeyrek neighbourhood, there are two main less visual appropriate changes on built environment. Civil architecture has changes that does not appropriate with building. And new housing has dominancy with their masses and heights to their surrounding.

2.4 RESTORATION OF TOWNSCAPE

After the documentation, modelling and analysing steps, the final step is restoration of townscape. Restoration of townscape should be based on the planning decisions and proposals for traditional environment that are taken from conservation implementation project on upper scale. Then designing the third dimension and remodelling the proposed townscape can create restoration of townscape.



Fig. 5: Drawing form Proposal for Fazilet Street

3 CONCLUSION

At the end of the study that has an effective analysing method for townscape, main design approaches are considered. These approaches can be listed as:

- Preserving the origins
- Restitution of townscape elements
- Reconstruction of visual appropriateness.

These approaches have directly response for the aim of the study. Architectural heritage is the most important element for evaluation of townscape in historic urban quarter to be carried for future. To keep legible the urban quarters the first action should be preserving the origins of historic quarters. In this street there are so many listed civil architecture that preserve own characteristics. So they achieve the origins to create effective townscape. Other approach is restitution of elements that has lost their own characteristics. These cases may be examined in the listed civil architecture that has some changes on their structure. So their image should be re-created. The last approach for area that is analysed and proposed on, is reconstruction of visual appropriateness. To design new buildings in urban historic quarter main design principle should be visual appropriateness. The harmony between new and old is the context at this approach. In the study there are new housing that has no visual appropriateness with. They have no similar proportion, scale with the surrounding. So proposals for this area should be evaluated to create harmony in townscape.

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