

THE UTILIZATION OF SATELLITE IMAGES IN URBAN CONSERVATION PLANNING

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ABSTRACT:

The main emphasis of this study is on the using of satellite images in urban conservation planning. In this framework, there is analysis on historical development of urban conservation concept and Turkey's experiences in urbanization process with related to urban conservation. With these analyses, important results were obtained about the conservation practices. Although the developments experienced in institutional and economic areas, there are some problems for integrating conservation concept to the city planning process in Turkey. The main reason for that problem is the lack of care about the main issues of historical urban pattern. In this respect, it is assumed that satellite images in GIS applications can be used for understanding the characteristics of close and open spaces (typology) and calculations on floor area ratio which are main components of historical urban pattern.

1. INTRODUCTION

Urban conservation is a concept to provide a continuity for urban identity which based on historical past and to preserve the local values. The interest towards conservation planning has been evaluated from single building unit to urban pattern in historical process.

The development of this process in Turkey is attractive in terms of institutional and economic issues. Despite the important experiences, there are some difficulties in the process of urban conservation planning. The problem is derived from characteristics of historical urban pattern especially. Since the organic and dense structure and the existence of dead end street (cul de sac), the spatial analysis on urban pattern can be evaluated in more difficult. And, the old base map of historical urban quarter is another problem for conservation process.

As the spatial analysis of existing structure is the most important phase of urban conservation process, there is need for some instruments for overcoming this problem. In this frame, it is assumed that satellite images can be used as an important instrument for analyzing the spatial characteristics of historical urban pattern. So, the main goal of the study is to present utilization of satellite images in conservation planning. The basic outputs of this utilization process are illustration of open and closed spaces and calculations on floor based area.

2. THE EVALUATION OF URBAN CONSERVATION

Since a city is considered to be the total of natural and artificial elements peculiar to its society, changed and recreated by relationships between nature and human beings within a historical process; a city identity dependent on the society or existence of the city is also a cultural concept. The main elements of a city's identity are its cultural life and its history (Borer, 2006). In this context, a city's identity is a notion

created by the accumulation of various cultural layers and preserved within the process of history. This identity acquired from historical elements can be maintained and conserved through those living in the city maintaining the city and reaching a collective city consciousness. The participation of the public in the conservation process as a natural result of city consciousness forms and improves city identity at the same time. Therefore, conservation and city identity are concepts that are directly related to each other.

In the light of these definitions, it is more convenient to conceive the concept of urban conservation as laying and sustaining differences, in other words, the maintenance of identity based on historical past (Cohen, 2001), within the framework of explanations on the concept of locality and localization. While the earlier concept of conservation was perceived as the maintenance of structures having religious, executive and military importance in single building unit, it has recently turned into a notion of environmental protection affecting development of the city as a whole, beyond the historical and cultural assets. More importantly, within the framework of the definitions regarding locality, the concept of conservation is positioned in the new planning agenda as maintaining the identity based on the historical past as a process in which identities are seen at local level but interpreted in regional terms, differentiated places with their own specific characteristics start gaining more importance than those general places. And, concepts such as multiculturalism, cultural attractiveness, sense of location and identity of location come to the foreground (Lieber and Weisberg, 2002; Beriatos and Gospodoni, 2004; Antrop, 2005).

3. THE EFFORTS TOWARDS URBAN CONSERVATION IN TURKEY

Turkey has extensive developed experience in the conservation of cultural heritage. The efforts towards conserving and

adapting a rich heritage formed by a great number of cultures to modern life conditions covers a fairly long process from the Act for Ancient Monuments laid down in the period of Ottoman Empire in 1869 to the Law on Protection of Cultural and Natural Assets, Act of 5226 laid down in 2004. In this period, significant developments occurred over legal regulations established and economic sources.



Figure 1. Architectural heritage from different cities in Turkey
(© maps.com)



Figure 2. Safranbolu (sign in "S" in Figure 1)
(© www.safraanbolukonak.com)

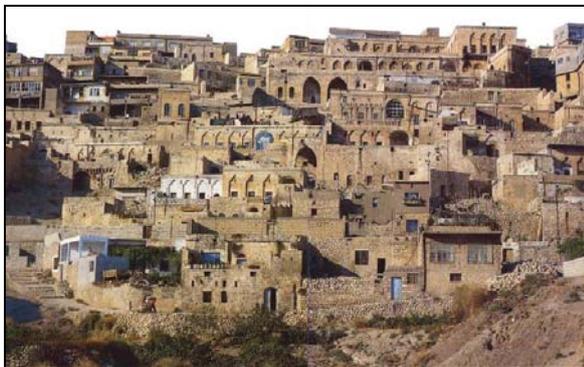


Figure 3. Mardin (sign in "M" in Figure 1)
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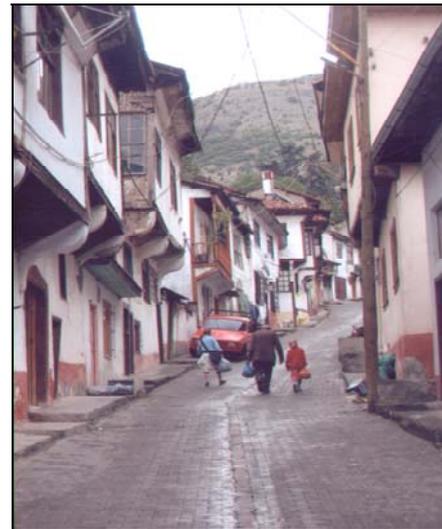


Figure 4. Amasya (sign in "A" in Figure 1)
(© M.C. Meshur 2006)



Figure 5. Konya (sign in "K" in Figure 1)
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Despite the developments experienced in institutional and economic areas, the concept of conservation which has evolved from single building scale to the scale of the conservation of the historical urban patterns, which the architectural heritage composes, has not been able to be integrated successfully into the city planning process. In more concrete terms, conservation studies carried out in settlements of Turkey in different degrees and sizes cannot constitute a part of the planning process, is limited to the efforts towards the conservation of the architectural heritage within the urban conservation area.

3.1. Urbanization Process of Turkey Last Fifty Years Related With Conservation Issues

Turkey experienced a period of rapid urbanization from the beginning of the 1960's to the end of the 1980's. During the mentioned period, central and local governments faced serious problems regarding rapid population growth. Illegal housing, the problem of squatters, and the lack of infrastructure in terms of meeting demands were major problems during this period. This period, spanning almost 25-30 years, brought forward some solution proposals towards the problems emerging with rapid urbanization. The protection of fertile agricultural lands, the development of zones for preventing squatters of the poor,

and policies intended to provide cheap land and housing were discussed extensively during this period.

A slowdown of the population growth since the beginning of 1990's altered the agenda of urban planning. The most significant point that should be emphasized about this period is the urban conservation policy which was neglected, and was of secondary importance during the rapid urbanization process.

Planning arguments focused considerably on newly developing areas during this period when the population of cities was growing rapidly. However, some developments occurring in the aftermath of this period changed the agenda dramatically. The first of these is the mentioned slowdown in the population growth. The other is urbanization without identity. In this sense, the similarity emerging due to urbanization without identity led to the importance of historical urban quarter being remembered. Unlike the newly developing areas, historical urban quarter reflect the differences belonging to the social and cultural lifestyles of that society.

The interest towards conserving historical urban pattern may be evaluated as a response to globalization. A global culture concept is intended to create a homogeneous all societies. However, this idea which is aimed at clearing away any cultural and social differences and values of societies, faces strong resistance particularly from developing countries. Hence, the growth in the interest of the concept of urban conservation aimed at the conservation of cultural and social differences of societies should be assessed within this framework.

Amendments and economic support tools emerging from the last 10 years in Turkey, demonstrate the importance attached to the urban conservation concept. However, underutilization of technological opportunities in plans for the conservation of historical urban pattern decreases the reliability of these operations. The main problem is that the maps which constitute the basis for conservation plans are not up-to-date and are not based on accurate measurements, and were prepared during the 1960's and 1980's. Moreover, the organic and dense structure of historical urban pattern makes difficulties for updating the old maps.

4. UTILIZATION OF SATELLITE IMAGES IN URBAN CONSERVATION

The most important case regarding the conservation plans is correct analysis of the current situation. As conservation plans aim to designate and protect existing values, unlike the plans of newly developing areas, defining the current situation is the most important phase within the preparation process of these conservation plans.

Analysis on the spatial indicators of historical urban pattern is the most important aspect for the conservation planning. These indicators are the characteristic of open and closed spaces and the floor based area. These can be defined as the components of the urban typology.

Within the scope of this study, the main point to be emphasized here is the use of an important technologic opportunity particularly in the analysis of the spatial values. Satellite images have been available in municipalities for 10 years especially in Turkey. They are important tools which may contribute in the urban conservation process are used for auditing illegal housing and the prevention of urbanization on fertile agricultural lands.

The opportunity of printing the data from satellite images which are used generally for monitoring in Turkey nowadays, is an important opportunity in terms of the urban conservation process.

4.1. Case Study Around The Mevlana Kulliye, Konya, Turkey

Significant results were attained within the framework of the studies carried out in Mevlana Kulliye (complex of buildings) in Konya. The study was carried out in this location because it is a place visited by people from all over the world and has international importance. The significance of the study being carried out in this location is also due to it being the core of a historical city quarter in Konya which used to be the capital city of the Seljuks. Some fundamental descriptions were made for its conservation plan using satellite images.

The main aim is to utilize satellite images in place of maps which are outdated and do not have adequate accurate measurement which are required for historical urban pattern. Within this framework, conservation plan studies are used to guide typologies for open and closed area usage regarding urban pattern and calculation of construction areas to enable the process to be carried out in a more reliable way.

This process is mainly composed of two steps. Firstly, digitization of different layers on the satellite image is the first step in this utilization process. Roads and dead end streets (cul de sac), constructed areas and open spaces are the layers. These layers can be indicated in different colors. Aim of that process is to illustrate the typology of urban pattern in terms of roads, open and closed spaces (Figure 6 a,b).

The second step contains the calculations on open and constructed spaces which mean floor based area. This step is based on analyzing different layers quantitatively. This is realized by calculating the total area of construction in any defined region (Figure 6 a,b). The main goal of these quantitative analysis is to understand the spatial clues which have importance in planning decisions for urban conservation area and its around.

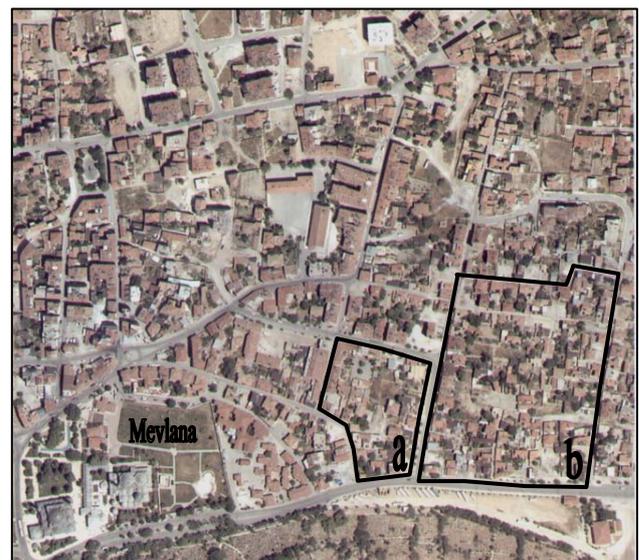


Figure 6. Satellite image of historical urban pattern near Mevlana, Konya
(© Konya Metropolitan Municipality 2007)

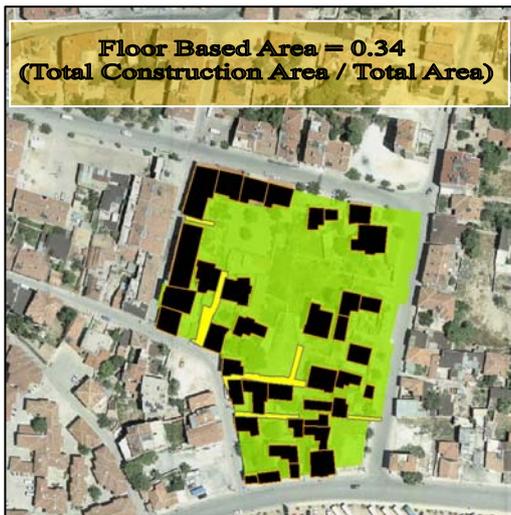


Figure 6a Characteristics of open-closed spaces and floor based area (sign in “a” in Figure 6)

5. CONCLUSION

Urban conservation process is based on preserving the historical past and maintaining the cultural differences. In this respect, the conservation planning should contain not only spatial and physical aspects but also economic and institutional approaches. So, there are important variances in planning between conservation and new development areas. The most important one is about existing structure. Unlike the plans of newly developing areas, spatial analysis of current situation has a vital importance in urban conservation planning.

Preparation of the descriptions for the historical urban patterns by using the satellite images shows great importance in terms of a conservation plan. Hence, finding the spatial data and the spatial clues which provide the necessary information about the historical pattern are very important for conservation plans. In other words, the quality of the descriptions and analysis for the historical urban patterns designate the quality of the plan decisions.

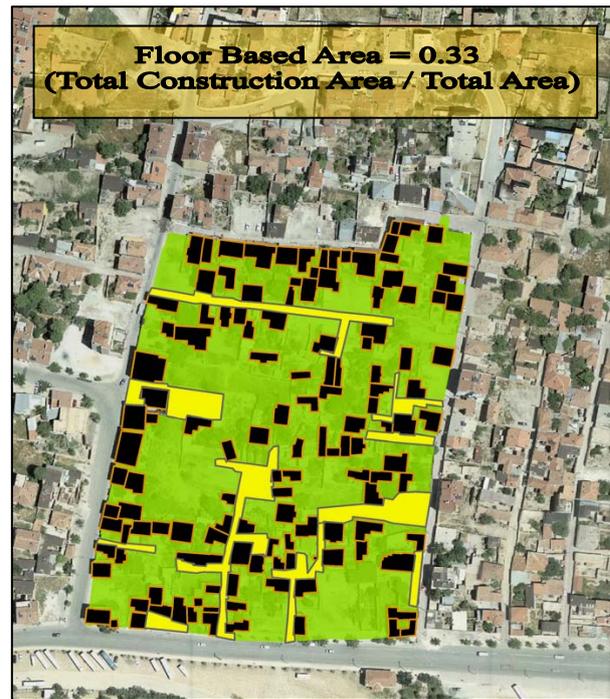


Figure 6b. Characteristics of open-closed spaces and floor based area (sign in “b” in Figure 6)

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