Short Paper

Ref 129

The Effect of Transportation System in Suleymaniye on Abandonment

Insigts for Urban Integration

Ahmet Verdil
Istanbul Technical University, Department of Architecture, Istanbul, Turkey
averdil@yahoo.com

Alper Ünlü
Istanbul Technical University, Department of Architecture, Istanbul, Turkey
aunlu@itu.edu.tr

Keywords
historical environment; spatial abondenment; space syntax; topography

Abstract
This paper uses the space syntax methodology to decipher the creation of the physical map of the historical commercial district of Süleymaniye. Süleymaniye is located in the historical urban centre of Istanbul and exhibits many historical architectural features. Since most of the commercial and residential areas are not open to use today, many buildings are old and physically damaged.

Space syntax is found to be a fertile means to investigate the reasons behind the relationship between this emptiness and the urban heritage itself. First of all the physical depth analysis of the district is made by using space syntax. Then, the continuity and interaction values of the streets are found by line analysis. As a result, the high and low real integration values of the streets are determined. Although the initial expectation was to have high values in high circulated streets, the study found that high valued streets have lowest circulation of vechiles and people. The historical and spatial reasons of this unexpected result is that the district is divided into zones by topography and historical sustaining walls, which create a strong factor. This factor plays a significant role in the spatial abandonment in some areas. The zones with low integration values have the highest abandonment level.

The paper does also indicate that topography has a descent effect other than urban spatial configuration. Finally the paper attempts at contributing to the development of new projects in Süleymaniye district which can restructure it and enhance its conditions.

1. Introduction: Objective and methodology

Süleymaniye is a neighbourhood in the city of Istanbul. It is situated in a cosmopolitan area where people from different cultures have lived for centuries (Byzantium and Ottoman Empires) and used the buidings for multiple purposes. However, many of those places have now been abandoned. This problem has recently been addressed by some renovation projects (building plots and blocks). Yet, those attempts were unable to rectify the problems, given that the very reasons behind abandonment were not examined in the first place. Based on the idea that urban projects need a good analysis of the spatial dynamics, this paper investigates the reasons behind the abandonment.

The area of the research is the region which is situated between Süleymaniye Mosque and the Golden Horn on the Historical Peninsula. The main spatial units of analysis are the transportation network and buildings which are located between Süleymaniye Mosque, The Golden Horn, “Tahtakale” Commercial Zone, “Küçükpazar” Residential Area. The methodology of the paper is

based on space syntax analysis, line analysis via Spatialist programme, observations of the researcher himself and the data provided by the municipality administration (slop data, drawings).

Space syntax refers to the representation of the patterns of spatial relations of the physical structures and the formation of the principles of form grammars according to spatial layers (see Hillier and Hanson, 1984; Stinly and Gips, 1978). The main objective is to systematize the residences and buildings which are the physical elements of the real world into a model. The value of space syntax lies in its ability to make a good social description of the modern socio-spatial formations (Peponis and Wineman, 2002) and to relate the morphological structure to the social structure. It focuses especially on the patterns of relations which emerge as a result of the segregation, division, differentiation, formation and regulation of the physical borders and space (Peponis, 2001). The basic measurement in the space syntax literature is the integration value (Hillier and Hanson, 1984), which is the mathematical average of the depth of the root to the other nodes. The higher the integration value of the node, the lowest is its depth. The integration value is the measure of the syntactic accessibility since it shows which buildings and spaces are more privileged than others.

2. Fieldwork data

The data used in this paper were collected during the Winter of 2007. The way finding of general users on Süleymaniye shore and its surroundings was observed in the first place. The route of selected people among various user groups (students, porters, traders and consumers) was observed with note-taking and two main routes were determined: One included the parallel streets until the Golden Horn, the other one included the wide streets perpendicular to the Golden Horn. To find out the building density in the field area, the size of occupied areas has been calculated and the differentiation of the volume between abandonment and size was found. Every building was given a number and a table was made on the basis of the abandonment ratio of the buildings. The density of the buildings was found by multiplying the plot area and their heights. Unused and inactive remained floors were noted and the abandonment ratio was calculated. The quantitative value of abandonment was obtained as follows: Abandonment = Abandoned Volume / Building Volume

BUILDINGS	BUILDING SIZE			ABANDONMENT		USED VOLUME
No	Area [m2]	height [m]	volume [m3]	height [m]	volume [m3]	volume [m3]
1	36,6	3	109,8		0	109,8
2	25	6	150	3	75	75
3	24	6	144	3	72	72
4	27	6	162	3	81	81
5	24	9	216		0	216
195	250	9	2250		0	2250
196	30	6	180		0	180
197	67	3	201		0	201
198	34	6	204		0	204
199	45	6	270	3	135	135
200	193	12	2316		0	2316

Table 1
Abandonment Volume Analysis

The circulation in the area is found to be high on those roads parallel to shoreline and roads perpendicular to the shoreline. Within the region, the number of streets which provides accessibility is really low. After the declining role and function of the Golden Horn throughout the

years, the physical environment from the sea to the mosque was subject to enormous change: Crafts trade increased, the commercial area shifted to Tahtakale and Küçükpazar, the number of unused streets and buildings increased.

The street maps of Istanbul made by Jacques Pervititch in 1941 (for an insurance company) give invaluable clues to show how the buildings, which are on the same blocks, have changed over time. On those maps, the retaining walls are seen as garden walls in this region where there are separated houses. Also, there are pedestrian ways and transitions between the gardens. Unfortunately, the unplanned reconstructions and the increase of volume destroyed this circulation network. Since the newly constructed buildings eliminated the pedestrian network, there are now streets which are not accessed and dense areas which people do not use anymore. At the entrance of those streets one can observe small food shops or production workshops. Although there is no transport access to some streets, most buildings are used as storage spaces and transportation is made by individual porters.

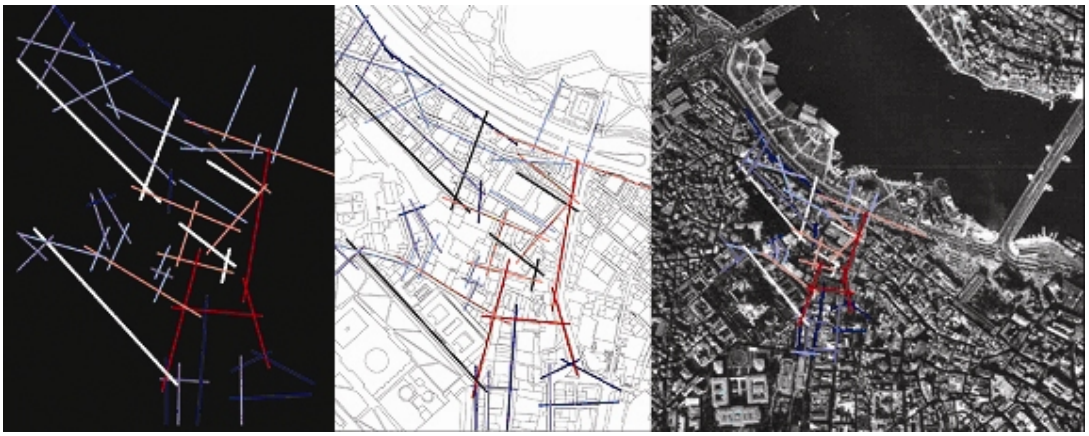

Figure 1
Line Analysis

Figure 2
The relation between building and real integration value

With the help of the plans provided by the municipality and of the line analysis, the figures A and B were obtained. A closer examination at the graphic shows that the red lines represent the highest real integration value, whereas the blue lines represent the lowest real integration. The analysis is made with respect to the red and blue colours according to the highest and the lowest integration values.

Line analysis shows that high integrated and low integrated streets are on parallel and perpendicular streets of the Golden Horn. Red gradient streets are 'Dökmeciler Hamamı Street', 'Kepenekçi Rise Street', 'Yüksekler Street', 'Ord. Prof. Cemil Bilsel Avenue' which are perpendicular and 'Fetva Rise' which is parallel. Blue gradient streets are 'Bodrum Street', 'Saatçi Sadi Street', 'Tahsildar Street' which are perpendicular; 'Ragıp Gimiþ Pala Avenue', 'Kepenekçi Medresesi Street' which are parallel.

BUILDINGS	ABANDONMENT	REAL INTEGRATION	TOPOGRAPHIC SLOPE
No	Abandoned volume / building volume		length (m) / height(cm)
1	0,00	7,74	0,73
2	0,50	7,74	0,73
3	0,50	7,74	0,73
4	0,50	7,74	0,73
5	0,00	7,74	0,73
57	0,00	6,93	3,54
58	0,50	6,93	3,54
59	1,00	7,87	17,65
60	0,40	7,87	17,65
199	0,50	7,74	0
200	0,00	6,86	0

Table 2
Abandonment / Integration / Topographic Slope Value

3. Abandonment – Real Integration Relation

The real integration value of each street was obtained from the line analysis (Table 2). The analysis generated the correlation value was found to be as 0,040. The street system has a negative correlation with the abandoned building volume. Thus, in the research area, no relation is found between real integration and abandonment.

4. Topographic Slope – Abandonment Relation

For every street, the slope value was found by the data generated by the maps of the municipality administration. The difference of the sea height value of the beginning and the end of each street was noted. The values were divided into the length of each street and the slope ratio was calculated. Regression analysis was made between these values and the abandonment value obtained on the basis of observations mentioned above. The correlation was calculated as 0,278, so there is a positive and high relation between the slope of the streets and the abandonment.

5. Topographic Slope – Real Integration Value Relation

The abandonment-street network relation was found to be neutral because of the slope. The positive value (0,319) of the relation between street network and the slope showed that high sloped streets were the same with the ones which had high real integration.

6. Conclusion

The paper suggests that the transportation network in Süleymaniye region does not have a direct and real impact on the physical abondonment. In a system full of streets, the most integrated streets should have been the mostly used ones, because the highly integrated areas were the centers of the system. Therefore, these areas should have had the least level of abandonment. However the paper revealed how the areas with high levels of inetgration were the ones which were abandoned. The paper also showed that abandonment and slope are positively correlated. Where slope is high, abandonment is also high. It also suggested that the high-sloped streets acted as a physical barrier and constrained the fludity of access. Thus, access decreased accordingly and the usage ratio decreased in a way to increase abandonment.

Such findings have important implications for future spatial developments: New construction plans need to take into account those streets with high slope and high abandonment levels. The continuity of uncontinuous and high sloped streets perpendicular to the Golden Horn, can be realized by circulative answers in the buildings. Moreover, the blocks which were destroyed or are unused can be renewed in different ways: Passages in the buildings, semi transitions and semi-closed areas can be well formulated architectural solutions to the existing problems in the region. Such proposals suggest that space syntax is not important due to mere academic curiosity or exercise, but is also relevant to bring new design solutions in urban related problems of integration.

References

Hillier, B. and Hanson, J., 1984. Buildings and Their Genotyps, in *The Social Logic of Space*, Cambridge University Press.

Peponis, J., 2001. Interacting Questions and Descriptions-How Do They Look From Here?, *Proceedings of the 3rd International Space Syntax Symposium,* Georgia Institute of Technology, 7-11 May 2001, Atlanta, xiii-xxvi.

Peponis, J. and Wineman J,. 2002. Spatial Structure of Environment and Behavior, in *Handbook of Environmental Psychology*, ed. Robert B. Bechtel, Arza Churchman, J. Wiley, New York.

Pervititch, J., 1999. Istanbul in the Insurance Maps of Jacques Pervititch, Tarih Vakfı, 141-143, Istanbul.